Program Design Report

City of Yellowknife

Prepared for:

CITY OF YELLOWKNIFE

dunsky Energy + Climate

Submitted to:

CITY OF YELLOWKNIFE

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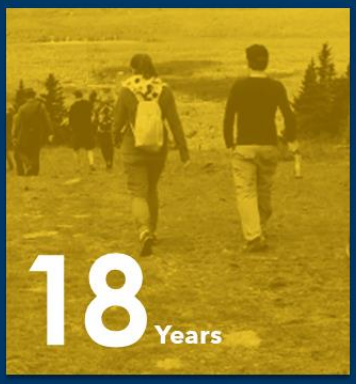
About Dunsky



Founded in 2004, Dunsky supports leading governments, utilities, corporations and non-profits across North America in their efforts to **accelerate the clean energy transition**, effectively and responsibly.

Working across buildings, mobility, industry and energy, we support our clients by creating change in two distinct ways: we provide rigorous **Analysis** of opportunities and performance, and provide ambitious yet practical **Strategy** by designing and evaluating plans, Programs and policies.

Dunsky is proudly Canadian, with offices and staff in Montreal, Toronto, Vancouver, Ottawa and Halifax.

Executive Summary

The City of Yellowknife (Yellowknife) has committed to reducing greenhouse gas emissions (GHG) through their Corporate and Community Energy Action Plan (CCEAP). The CCEAP outlined ambitious goals to reduce GHG emissions by 30% by 2025 compared to 2009 levels and increase the share of renewable energy (RE) use from 18% to 30%.

To achieve the ambitious CCEAP goals, home retrofits were identified as an essential tool. Nearly 70% of the community's energy consumption is associated with heating buildings. Approximately 70% of dwellings in Yellowknife are single-family homes with most being single-detached, or semi-detached, most are at least 30 years old and primarily heated by heating oil.

To advance home energy retrofits, Yellowknife engaged Dunsky Energy + Climate Advisors (Dunsky) to design a four-year Home Energy Financing (HEF) Program (Program) that leverages a local improvement charge (LIC) mechanism.

Innovative, municipally supported financing can help enable energy retrofits by reducing the upfront cost barrier for homeowners who are either unwilling or unable to access the capital needed to invest in home energy improvements. The resulting energy and bill savings can help to offset the loan repayment costs partially or completely.

To complete the HEF Program design and implementation plan, Dunsky undertook six activities:

1. Reviewed Yellowknife's CCEAP, Loans for Heat feasibility study and other relevant reports.
2. Assessed the Yellowknife landscape to understand the baseline, Yellowknife's unique context, and the local challenges and opportunities for home retrofit financing.
3. Facilitated nearly 20 engagements with internal and external stakeholders.
4. Gathered public input through an open house and online survey.
5. Modelled estimated Program uptake, costs and impacts under three scenarios: low, medium, and high.
6. Developed a detailed design and implementation plan.

Summary of findings

Yellowknife's unique subarctic location brings simultaneous challenges and opportunities for home retrofit financing. The subarctic is unique and extreme compared to other parts of Canada. In addition to traditional financing and program design challenges, we must also factor in local conditions. Yellowknife experiences extreme cold, is remote, has very little daylight (4–6 hours/day) in the winter vs., 10–11 hours in the summer, high electricity costs compared to the rest of Canada, almost half of Yellowknife residents are renters and the community is transient. With insights from our desktop analysis, landscape review, and stakeholder feedback, five key findings influenced the Program design:

Program Design Recommendation #1: The Program design should aim to increase homeowner access to Energy Advisors and local contractors and ensure quality work.

Program Design Recommendation #2: The Program delivery model should alleviate the administrative burden on City staff, lessen the risk of Program interruption due to staffing limitations, and seek administrative support from third parties where appropriate.

Program Design Recommendation #3: The Program delivery model should not rely entirely on FCM funding and include options to ensure long-term Program sustainability.

Program Design Recommendation #4: A City-supported financing Program is of interest to homeowners to help pay for energy improvements. The financing should include attractive features like low interest, early repayment, easy application, and quick approval.

Program Design Recommendation #5: The Program should have a simple application process, reduce the complexity of conducting energy improvements, and allow for multi-year funding where possible.

Program Design Recommendation #6: The Program should raise awareness and educate homeowners about the benefits of efficiency and renewable energy.

Based on the Program design recommendations above, Yellowknife's GHG emissions reduction goals, local interest and existing enabling legislation Dunsky recommended program is a **City-led partnership with third-party lenders that leverages the City's LIC repayment mechanism**. The Program design intends to help reduce risk, mitigate municipal capacity constraints, and leverage local financial institutions to help homeowners access financing and accelerate home energy retrofits.

Program Design Summary

The HEF Program aims to achieve the following goals:

- Improve home efficiency, increase renewable energy use, and reduce GHG emissions
- Expand access to financing to complete home energy retrofits
- Support economic development.

The Program is designed to develop and test the approaches, processes, systems, and resources needed to deliver a City-supported finance Program and analyze how it can contribute to the City's broader CCEAP goals.

Simply put, the Program offers an integrated **turnkey** service that includes **financing from third party lenders** secured with a **LIC**. The financing offer:

- **Leverages third-party lenders** so that the City does not have to play the role of a bank, and they can focus their modest resources to supporting homeowners. Homeowners in good standing will **repay the lender directly**.
- Uses the **City's LIC repayment mechanism as a credit enhancement** to negotiate better interest rates and terms and/or expand homeowner access to financing. The LIC is applied only in the case where a homeowner is significantly delinquent in their repayments, thereby reducing lender risk while increasing access to attractive lending.

Financing alone does not drive demand. To be successful, financing must be combined with enabling strategies to help homeowners along their retrofit journey. The Program design includes the following enabling strategies:

- A set of **approved energy improvement measures list and Arctic Energy Alliances NWT vendor directory** to assist homeowners to select energy-saving and GHG emissions-reducing measures.
- **Energy Concierge service** to help homeowners throughout the entire process from having a home energy assessment, selecting measures, engaging contractors, and accessing rebates.
- **One-stop window** to simplify the process and reduce complexity for homeowners. Yellowknife will develop a program-specific website that will act as a hub for information.
- **Supporting home energy assessments** to address the backlog and ensure timely access to pre- and post-energy assessments. Yellowknife will coordinate home energy assessments on behalf of homeowners and once there are enough homes enrolled in the Program (e.g., 10), Yellowknife will coordinate an EA blitz.
- **Build Capacity** to ensure long-term sustainability, meet increasing demand and develop local skills and capabilities. Yellowknife will collaborate with key partners to support certifications for local Registered Energy Advisors and skilled trades.

Estimated Program Impacts and Costs

The CCEAP estimated 1,250 homes would participate in a LIC-based retrofit financing Program.[1] Dunsky applied its proprietary finance model that incorporates evidence from other jurisdictions and Yellowknife's market analysis to model three uptake scenarios: low, medium, and high. The modelling results showed that the HEF Program is estimated to attract 40–220 participants over the first four years (see Table below).

Table 1: Estimated Program Uptake

Uptake Scenario	Annual average for the first 4-year	Cumulative adoption by year 4	Percent market penetration by year 4
Low	10	40	0.8%
Moderate	30	120	2.5%
High	55	220	4.7%

These volumes appear modest compared to the retrofit activity needed to meet the CCEAP goals. However, in Northwest Territories' evolving energy policy context, it is likely that other complementary policies could increase energy upgrade activity and homeowners' need for financial assistance.

The estimated energy and GHG savings across the three uptake scenarios are shown in Table 2.

[1] City of Yellowknife. 2015. *Corporate and Community Energy Action Plan 2015–2025*.

Table 2: Estimated Program Energy and GHG Savings

Uptake Scenario	Energy savings (GJ)		GHG savings (t CO_2e)	
	First 4-year average	Cumulative year 4	First 4-year average	Cumulative year 4
Low	700	2,900	200	900
Moderate	2,100	8,600	700	2,900
High	3,900	15,700	1,300	5,200

The estimated cumulative GHG savings over the first four years is equivalent to 61% of CCEAP's target (4,688 t CO_2e). [2]

In addition to the energy and GHG emissions reductions, the Program is expected to result in non-energy benefits like improved homeowner comfort, improved health and safety, increased resiliency and climate adaptation, improved home values, and increased economic activity (e.g., jobs created, skills developed, renovation activity increased).

Under the moderate scenario, the estimated funding required to set up and implement the Program is $3.5M. Of that, $1M is for administrative costs and $2.5M is for home retrofit project loan capital. Administrative costs would be covered by a combination of FCM funding (75%), municipal funding (20%) and participant administration fees (5%). A local lender(s) is assumed to provide 100% of home retrofit project loan capital.

The Program objectives and outcomes will be evaluated following a rigorous evaluation plan that addresses specific research questions and key performance indicators (KPIs).

Project Timeline

The Program is estimated to begin in Q1 2025 and run for four years[3]. An illustrative project timeline from stakeholder engagement to Program launch is shown in the figure below.

[2] City of Yellowknife. 2015. *Corporate and Community Energy Action Plan 2015-2025*.
[3] The Program was expected to start in 2024, however, due to municipal operational delays and extreme weather events, the design could not be finalized until Q1 2024. This pushed out the start date to Q1 2025.

Figure 1: Illustrative Project Timeline

<table>
<tr><th>2021</th><th colspan="4">2022</th><th colspan="4">2023</th><th colspan="4">2024</th><th>2025</th></tr>
<tr><td>Q4</td><td>Q1</td><td>Q2</td><td>Q3</td><td>Q4</td><td>Q1</td><td>Q2</td><td>Q3</td><td>Q4</td><td>Q1</td><td>Q2</td><td>Q3</td><td>Q4</td><td>Q1</td></tr>
<tr><td colspan="9">Landscape assessment, stakeholder engagement and final Program design and implementation plan.</td><td>Council approval, apply for FCM grant</td><td>FCM review, approval and contracting</td><td>Program set up</td><td>Program launch</td></tr>
<tr><td colspan="5"></td><td colspan="9">Steps can be taken while awaiting FCM approval:
Continue stakeholder engagement to test and refine the Program offers
Consult with legal/procurement
Develop enabling strategies, incl., website, Energy Concierge, capacity building
Coordinate with internal and external partners (AEA, GNWT) and develop processes, agreements/forms
Confirm funding from third-party lenders</td></tr>
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Report Purpose

This report details the key Program features, eligibility and all activities from Program set-up, launch, implementation, and evaluation. This is intended to be an internal document to support Yellowknife Staff with obtaining Council approval, fulfil FCM funding requirements and guide Program set-up and delivery.

Table of Contents

1. List of Acronyms

Abbreviation	
AEA	Arctic Energy Alliance
CCEAP	Corporate and Community Energy Action Plan
CEF	Community Efficiency Financing
CMHC	Canada Mortgage Housing Corporation
EA	Energy Advisor
EE	Energy Efficiency
EM&V	Evaluation, Measurement & Verification
ERS	Energuide Rating System
FCM	Federation of Canadian Municipalities
FTE	Full Time Equivalent
GHG	Greenhouse Gas
GNWT	Government of Northwest Territories
HEF	Home Energy Financing Program
HVAC	Heating Ventilation and Air Conditioning
KPI	Key Performance Indicator
LED	Light Emitting Diode
LIC	Local Improvement Charge
LLR	Loan Loss Reserve
NNCA	Northwest Territories and Nunavut Construction Association
NRCan	Natural Resources Canada
NT or NWT	Northwest Territories
NU	Nunavut
PACE	Property Assessed Clean Energy
PV	Photovoltaic
QA/QC	Quality Assurance/Quality Control
RE	Renewable Energy
SAH	Sustainable Affordable Housing
TDS/TDSR	Total Debt Service or Total Debt Service Ratio

2. Context

The City of Yellowknife's Corporate and Community Energy Action Plan (CCEAP) has set ambitious goals to reduce community greenhouse gas (GHG) emissions by 30% by 2025 compared to 2009 levels and increase the share of renewable energy (RE) use from 18% to 30%.[4]

Home retrofits are an essential tool for achieving these reduction goals as nearly 70% of the community's energy consumption is associated with heating buildings.[4] Approximately 70% of homes in Yellowknife are single-family homes with most of them single-detached, or semi-detached.[5] And more than 75% of dwellings are at least 30 years old and primarily heated by heating oil—which represents significant energy efficiency and GHG emissions reduction potential.

To advance the City's goals, and following a 2015 feasibility study, the City of Yellowknife engaged Dunsky Energy + Climate Advisors (Dunsky) to design a four-year home energy retrofit Program, called the Home Energy Financing (HEF) Program. The Program design is supported by a Federation of Canadian Municipalities (FCM) grant. Innovative, municipally supported financing helps enable energy upgrade activity by reducing the upfront cost barrier for homeowners who are either unwilling or unable to access the capital needed to invest in home energy improvements. In some cases, energy savings from the improvement reduce energy bills enough to completely offset the loan repayment costs.

The primary goals of the HEF Program are to reduce energy and GHG emissions and increase renewable energy use in single family existing homes. A 2015 feasibility study estimated that 100 home energy retrofits (1.3% of homes) would be completed because of the Program.[6] This was based on targets set in other jurisdictions and scaled to reflect Yellowknife's size. The CCEAP set a more ambitious target of 1,250 homes adopting a local improvement charge (LIC)-based retrofit financing by 2025. However, this does not accurately represent actual uptake experienced in other jurisdictions where uptake typically ranges from 0.6% - 1.5% by year 4 (discussed in more detail in Section 7: Impacts and Costs).

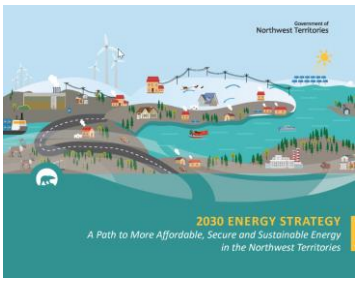
The Program will be guided by four principles established in Yellowknife's CCEAP:

1. Focus on heating
2. Diversify the energy profile
3. Include cost-effective strategies
4. Ensure long-term adaptability

[4] City of Yellowknife. 2015. *Corporate and Community Energy Action Plan 2015-2025*.
[5] Statistics Canada. 2022. *2021 Census of Population*.
[6] Pembina. 2015. *Loans for Heat – Towards a Yellowknife Energy Savings Program*.

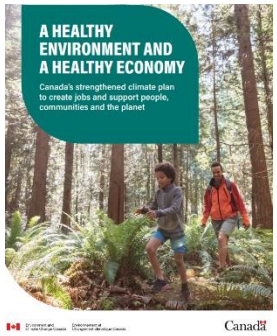
2.1 The Energy Efficiency Ecosystem

Local efforts align with territory and national policies and programs designed to support residential emissions reductions. The three key policies and programs, complementing Yellowknife's efforts and creating a favourable environment for home energy retrofits, and thus a need for financing, are summarized below.[4, 7, 8]



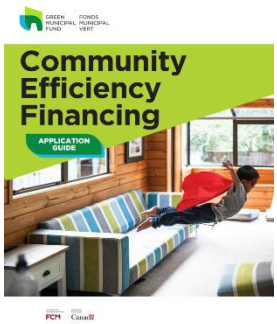
Government of Northwest Territories (GNWT) & Arctic Energy Alliance

- 2030 Energy Strategy[9]
- Increase renewable energy use for community heat to 40%
- Focus on expanding the use of biomass for space heating in the NWT and increase the accessibility of local biomass supplies
- Increase residential building energy efficiency by 15%
- Arctic Energy Alliance (AEA) provides energy efficiency, conservation, alternative and renewable energy programs and services to residents, businesses, and communities on behalf of the GNWT.



Federal Climate Commitments

- Canada Greener Homes Grant and Loan
- Retrofit Building Code coming in 2030
- Carbon pricing
- Work with provinces and territories to enable home energy labelling and disclosure



FCM Funding Available

- $300M to assist municipalities to study, design, operationalize, and implement financing Programs, including LIC.
- FCM offers several funding options: (1) Pilot Grant: Up to 50% of eligible costs to a maximum of $500,000; (2) Loan & Grant: Up to 80% of eligible cost with loan up to $10M and grant up to $5M; and (3) Credit Enhancement: credit enhancement up to $2M and grant up to $5M not to exceed 50% of total eligible costs and not to exceed total operating costs.

[7] Environment and Climate Change Canada. 2020. *A Healthy Environment and a Healthy Economy*.
[8] Federation of Canadian Municipalities. 2022. *Community Efficiency Financing Application Guide*.
[9] Government of Northwest Territories. 2018. *2030 Energy Strategy – A Path to More Affordable, Secure and Sustainable Energy in the Northwest Territories*.

Catalyzing Home Energy Retrofits

As new policies and programs drive home energy retrofits and we shift toward decarbonization, there will be increased demand for financing. Attractive and tailored financing options can support homeowners to adhere to, and benefit from, these complementary policies. By designing a finance program, Yellowknife will be better prepared to help homeowners retrofit their homes.

Financing is a critical component of a much broader carbon reduction strategy. It should be recognized that financing alone will not increase the demand for energy retrofits; municipal financing Programs need to consider complementary strategies, such as:

- Marketing and enabling activities (e.g., energy coach, contractor training and skills development)
- Incentives to lower homeowner costs
- Introducing and/or lobbying other levels of government for supportive policies and initiatives (e.g., building retrofit codes, building labelling, and performance standards, fossil-fuel-based equipment restrictions).

A financing program will benefit from complementary strategies that can increase participation through education, support, skills training, and resources.

We summarize the design process and key findings in the next section.

2.2 Program Design Methodology

Dunsky was tasked with designing a LIC financing mechanism (based on the 2015 feasibility study recommendations), a turnkey delivery approach and an implementation plan to support adoption. To complete this work, we undertook six main activities:

1. Conducted a detailed background review of Yellowknife's CCEAP, Loans for Heat feasibility study and other reports provided by the City.
2. Assessed the **landscape** to understand the baseline, the City's unique context, and the local challenges and opportunities for home retrofit financing. The assessment characterizes Yellowknife's housing stock and demographics, summarizes the current energy efficiency landscape, reviews LIC financing models, and assesses contractor capacity. Data sources to support this work included NRCan EnerGuide house files, Statistics Canada, Arctic Energy Alliance reports, and other publicly available information. The landscape assessment report is provided in Appendix C: Landscape Assessment.
3. Facilitated nearly **20 engagements with internal and external stakeholders** over the project. This included 5 meetings with the executive leadership team and internal staff from key departments, a workshop with local subject matter experts, and 14 targeted interviews with representatives from the federal and territory government, Arctic Energy Alliance (x3), NT Territories & NU Construction Association, Housing NWT, NWT Association of Communities, financial institutions (x2), Program administrator/service providers (x2), subject matter experts.

4. Gathered **public input** through an **open house** and **online survey** to understand homeowners' energy use habits, what energy improvements they have undertaken, what barriers may prevent homeowners from making energy improvements and possible ways that the city can help homeowners undertake EE and RE improvements. The public open house was held in May 2022 and included new homeowners, people who are planning to buy a home, and long-term residents looking to renovate their existing homes.
5. Modelled **estimated Program uptake and impact** (energy and greenhouse gas emissions reductions, Program costs) under three scenarios using Dunsky's proprietary financing model.
6. Developed a detailed Program design and implementation plan.
7. Sought a **legal review and opinion** from Field Law (a local law firm in Yellowknife) on what is possible for Yellowknife based on the Act. The review included interpretation of the Act, how it compares to other jurisdictions with similar LIC/PACE enabling legislation (NS, ON and PEI), and whether the program design complies with the Act.

3. Summary of Study Findings

Understanding Yellowknife's unique context, local home retrofit challenges and opportunities is an important component of Program design. The subarctic context is unique and extreme compared to other parts of Canada. What works in other places may not work in Yellowknife. We must understand the local conditions, including extreme cold climate, remote location, very little daylight (4–6 hours/day) in the winter vs., 10–11 hours in the summer, high electricity costs compared to the rest of Canada[10], almost half of Yellowknife residents are renters and the community is transient. See Section 6.5.4 for more information.

This section summarizes Yellowknife's local considerations and the process to select a preferred Program model.

3.1 Local Considerations

A previous financing feasibility study conducted in 2015, recommended that the City use a local improvement charge (LIC) mechanism and offer long-term financing at fixed interest rates to accelerate home energy retrofits. Our research, analysis and stakeholder engagement revealed several key challenges that would hamper the implementation of a traditional LIC Program administered and funded by the City of Yellowknife.

3.1.1 Challenges Associated With Program set-up, Implementation, Participation, And Sustainability

Local challenges that could affect start-up, implementation, and long-term sustainability, include local contractor capacity, the City's administrative capacity, and funding sources. Table 3 summarizes these challenges followed by a brief description of each and recommended Program design considerations.

Table 3: Key Barriers to Delivering a Home Energy Financing Program in Yellowknife

Industry Capacity	Administrative Capacity	Funding
• Energy Advisor and contractor capacity is highly limited • New projects expected to further constrain capacity • Local contractors are often not familiar with new technologies and external contractors are unfamiliar with local building by law.	• Taxation department has experience and capability, but staff training needed • Planning and Development Department has expertise with EnerGuide & code, but more staff is needed • Difficulty attracting, recruiting and retaining staff	• FCM funding covers up to 80% of eligible costs, but 20% of project costs must come from other sources • FCM funding is a competitive process • Funding approval and contracting process take time

[10] Dunsky Energy + Climate Advisors. 2022. Home Energy Finance Program Design Landscape Assessment.

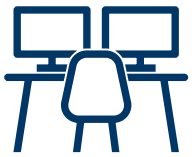
Contractor capacity

NRCan-registered **Energy Advisor (EA) capacity** for existing homes is limited to two EAs that can assess existing homes across the entire territory. This has resulted in long wait times for home energy audits. Arctic Energy Alliance (AEA), the only service organization offering EnerGuide assessments for existing homes in NT, reports a 2-year waiting list.

Yellowknife has a pool of **reliable contractors**; however, industry stakeholders report contractor capacity is constrained. It will be difficult to attract contractors with the Program's expected low volume and to conduct small and often complex retrofits in existing homes. Local contractors are typically focused on new construction and several large projects are coming (e.g., new recreational centre, multi-family properties, lift station retrofits) that will further constrain contractor availability.

Industry stakeholders suggested that in many cases, local **contractors typically install the equipment that they are already familiar with**. City staff identified potential risks associated with bringing contractors from outside of Yellowknife due to their lack of familiarity with the local building by-law and limiting jobs to local contractors. Homeowners also noted the need to have confidence that systems were available and installed properly and clearly defined minimum installation requirements. There is a need to build skills and capabilities with energy efficiency equipment to ensure a capable, qualified workforce and protect consumers (i.e., ensure equipment is installed correctly and savings will materialize).

Program Design Recommendation #1: The Program design should aim to increase homeowner access to EAs and local contractors and ensure quality work.



Administrative capacity

The City's Taxation department has experience and capability to manage traditional local improvement charges in Yellowknife (e.g., Northlands community), however, that was for a larger infrastructure project. Applying a LIC on private property requires further staff training to administer.

The City's Planning and Development Department has expertise with the EnerGuide Rating System (ERS)—a requirement under the building by-law for new construction and major renovations, however, there is a need for increased staff capacity. The City, like many organizations in the north, encounters difficulty in attracting, recruiting, and retaining staff members.

Program Design Recommendation #2: The Program delivery model should aim to alleviate the administrative burden on City staff, lessen the risk of Program interruption due to staffing limitations, and seek administrative support from third parties where appropriate.

Funding

While FCM funding covers up to 80% of eligible costs, there are challenges in funding the remaining 20%. Given the challenges facing Yellowknife as a northern community, it may pose a valuable example for FCM support, however, FCM's funding is not guaranteed, and funding approval and contracting can be a lengthy process.

To ensure the long-term sustainability of Yellowknife's financing program, third-party capital providers may offer greater flexibility and a shared interest in increasing participation. Therefore, engagement with a potential third-party capital lender is key to exploring a financing model that offers long-term sustainability, throughout the City's four-year program and beyond. Local lenders, such as First Nations Bank of Canada and Scotiabank have expressed interest in exploring opportunities with the City. Any partnership with local lenders should consider potential risks. For example, lenders that have limited experience with home energy finance programs and/or understanding of loan performance may not be willing to offer preferential terms. These challenges can be mitigated with municipal support, consumer protections and credit enhancements like a LIC to negotiate preferential rates and terms for homeowners. Additional details can be found in Appendix D: Risks and Mitigation.

Program Design Recommendation #3: The Program delivery model should not rely entirely on FCM funding and include options to ensure long-term Program sustainability.

Homeowner Barriers and Preferences

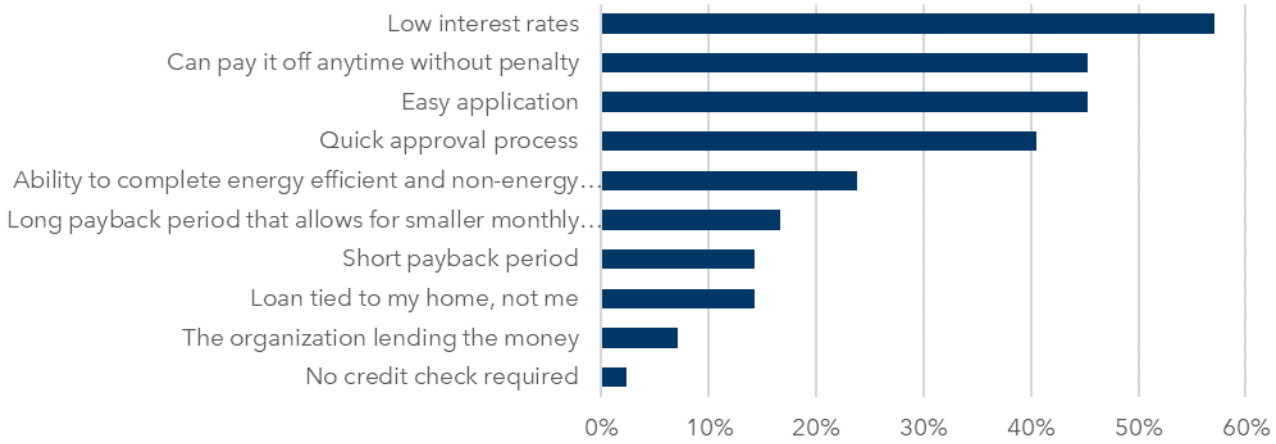
Homeowners' perspectives provided insight into Program design features that would be attractive, reduce barriers and ensure a positive customer experience. Three main findings emerged:

Cost, in many cases, is the reason homeowners do not pursue upgrades. More than half of survey respondents currently pay for home improvements through cash or savings and indicated the need for financial support for energy retrofits through financing and rebates. Over 40% would consider borrowing to fund upgrades and over 70% would consider making home energy improvements as part of a City-sponsored borrowing program

(33% selecting yes and 48% selecting maybe). The top three features of a financing program that would be most attractive, include:

- Low interest rate compared to private banks (almost 60%)
- Early repayment with no penalty (45%)
- Easy application process (45%)

Figure 2: Finance Features Most Important to Yellowknife Homeowners[11]



Homeowners want simplicity and support. All homeowners agreed that the Program should be simple, specifically noting their wish for an easy application and quick approval process. Homeowners also indicated the need for support to find qualified contractors, schedule home energy assessments, and understand upgrade costs and savings. Suggested solutions included a web-based portal to make it easy to access all Programs and services, coordinating with AEA, and providing a list of approved contractors. While some homeowners expressed a desire for flexibility, others suggested that the Program focus on smaller, targeted retrofit packages with high impact (e.g., building envelope, biomass systems). Homeowners also suggested allowing for phased funding for multi-year projects, e.g., year one—building envelope, year two—heating system. This would allow for better planning and address financial capacity constraints.

Opportunities exist to educate homeowners about deeper energy retrofits. About a third of homeowners have installed energy-efficient appliances, lighting, windows and/or doors. Less than 20% have installed measures that offer the greatest energy and GHG impacts such as building envelope measures (e.g., insulation, air sealing, windows), efficient space & water heating equipment, and renewable systems.

Program Design Recommendation #4: A City-supported financing Program is of interest to homeowners to help pay for energy improvements. The financing should include attractive features like low interest, early repayment, easy application, and quick approval.

Program Design Recommendation #5: The Program should have a simple application process, reduce the complexity of conducting energy improvements, and allow for multi-year funding.

Program Design Recommendation #6: The Program should raise awareness and educate homeowners about the benefits of efficiency and renewable energy.

[11] Full description of cut-out text:
Bar #5: "Ability to complete energy efficient and non-energy-related renovations (like a kitchen remodel) with the same loan"
Bar #6: "Long payback period that allows for smaller monthly payments."

3.2 Selecting a Preferred Model

Based on a detailed review of the local context and accounting for stakeholder input, a range of financing models were assessed. The proposed model was selected to match the City's delivery capacity and opportunities for local involvement to offer attractive financing for homeowners.

Recommended delivery model:	**A City-led partnership with third-party lenders that leverages the City's LIC repayment mechanism to reduce risk and expand access for homeowners.**

The recommended Program delivery model was selected based on five factors:

1. **The City of Yellowknife CCEAP has set commitments to implement** a Home Energy Financing Program, including actions to reduce community GHG emissions and increase renewable energy use.
2. **The community has expressed a need for financial support** to undertake home energy upgrades. See section 3.1.1.
3. **Enabling legislation.** The legislative authority to establish a LIC Program that homeowners can voluntarily access to conduct home energy retrofits was established under: Act to Amend the Cities, Towns and Villages Act—Bill 18. See Appendix A: Regulatory Authority.
4. **Third-party funding can help address administrative capacity constraints.** National and local financing products are available through Canada Greener Homes and local financial institutions. Leveraging these existing financing products allow the City to fulfil its commitment to deliver a home energy finance program, contribute to its community carbon reduction targets, and shift its focus from being a "bank" to driving demand for, and enabling, home energy retrofits. Engaging third-party lenders can expand the Program impact by leveraging additional capital beyond FCM funding and possibly expanding the Program to include commercial building retrofits in the future.
5. **A turnkey service, including financing and other supports, offers multiple benefits.** Combining existing rebates with financing will increase homeowner access to all available funding and enable them to achieve deeper energy and GHG savings. Using the City's LIC mechanism could help to negotiate better financing terms from private lenders (e.g., lower interest, early repayment, flexible underwriting, and longer terms). A turnkey service, including eligible measures list, scheduling home energy assessments and contractor directories will help homeowners to identify and complete quality upgrades. Finally, working with local financial institutions and building local contractor capacity will direct economic benefits back into the local community.

Alternative Finance Models Considered but Not Recommended

Two Program models were assessed alongside the recommended model. These alternatives offered some benefits but were not pursued due to a few key challenges or complexities in each.

Conventional City-led Local Improvement Charge Program. While the City has the authority and system capabilities to implement a traditional LIC, wherein the City raises the capital and underwrites its own lending, the City has limited administrative capacity to secure the capital and underwrite the loans. Thus, the proposed partnership model with existing third-party lenders was preferred as it allows the City to focus on the turnkey home energy upgrade process while leveraging existing lenders experience and expertise to provide the capital and manage loans.

Bulk retrofit delivery model with Housing NWT. Housing NWT owns and operates 345 housing units in Yellowknife and has a goal to increase low-carbon space heating in 40% of its buildings and increase the energy efficiency of its portfolio by 50%. A Program model was considered under which the City would piggyback onto Housing NWT's planned public housing efficiency and decarbonization retrofit projects. Combining private homes in the financing Program with the Housing NWT retrofit pool would aim to create an economy of scale to attract contractors and potentially lower costs, address capacity constraints and financial and non-financial barriers.

Discussions revealed that there is a close alignment between Housing NWT and the City's objectives; however, most Housing NWT properties in Yellowknife are multifamily buildings. Thus, the scale of implementation is very different, and the nature of the measures and projects may not align with the City's target market. The government also tends to pay construction premiums to achieve enhanced general conditions, which could result in higher costs for homeowners. The GNWT and Housing NWT indicated that they would be most interested in capacity building for contractors & education for homeowners.

4. Program Design

The primary goals of the Program are to reduce energy use and GHG emissions and increase accessibility of renewable energy systems in single-family homes. The Program offers an integrated turnkey approach that includes private financing secured with a LIC, a website, an energy concierge service, and a community engagement strategy. The Program is delivered in coordination with other key players to help participants understand and navigate the financing and home energy retrofit process and build industry capacity.

The primary goals of the HEF Program, include:

- Improve home efficiency, increase renewable energy use, and reduce GHG emissions
- Expand access to financing to complete home energy retrofits
- Support economic development

This Program is designed to develop and test the approaches, processes, systems, and resources needed to deliver a City-supported finance program and how it can contribute to the City's CCEAP goals.

4.1 Program Features

Key features of the proposed Program are based on findings from the desktop review, landscape scan, analysis, and input from stakeholders & the City. The design aligns with the City's objectives and addresses Program implementation and homeowner barriers described in Section 2. The **turnkey City-led Program** is delivered in collaboration with a range of local partners (lenders, AEA, contractors) and includes the following key features:

- **Energy Concierge service** to help homeowners conduct an energy assessment, select appropriate measures, engage with contractors, and access the full range of other grants and financing, including Canada Greener Homes, local financial institutions and AEA rebates.
- Applies a set of **approved energy improvement measures list and contractor directory** to assist homeowners to select energy-saving and GHG emissions-reducing measures.
- **Leverages third-party lenders** so that the City does not have to play the role of a bank. Homeowners in good standing will **repay the lender directly**.
- The City's **LIC repayment mechanism is used as a credit enhancement** to negotiate better interest rates and terms and/or expand homeowner access to financing. The LIC is applied only in the case where a homeowner is significantly delinquent in their repayments, thereby reducing lender risk while increasing access to attractive lending conditions.

Table 4 summarizes the recommendations to address local challenges identified in Section 3: Summary of Study Findings.

Table 4: Program Features to Address Local Challenges

Recommendation	Program Design Features

1. Increase homeowner access to EAs and local contractors and ensure quality work	• **Energy Concierge** to guide homeowners through the Program and along their home energy retrofit journey. Homeowners will be guided through the application process for all incentive programs, including Canada Greener Homes, local financing, and relevant AEA Programs. The concierge will coordinate the Energy Advisor who will conduct home energy assessments, and direct homeowners to contractor directories.
	• A list of **eligible measures** that are locally available, cost-effective and align with the City's goals. Measures include insulation and air sealing, biomass stove/furnace or boiler, and solar PV. Non-energy measures required before efficiency and renewable measures can be installed will also be eligible.
	• **Assistance scheduling a home energy assessment** – In the near-term the City will schedule EA blitzes after a defined number of homeowners have enrolled in the Program. EAs may be brought in from outside Yellowknife (e.g., Yukon). Over the long-term, Yellowknife will work to train local EAs.
	• Homeowners will be directed to AEA's **contractor directory** to find local vendors offering energy efficiency and renewable energy products and services.
	• **Coordinate with the GNWT and Northwest Territories & Nunavut Construction Association** to build local contractor capacity and efficient/renewable equipment supply to:
	  • Engage people traditionally underrepresented in construction industry (e.g., women, youth)
	  • Support and/or fund training & trade certifications
	  • Build & strengthen local wood pellet supply
	  • Influence relevant GNWT Energy Strategy actions

2. Seek support from third parties to administer some or all Program components where appropriate.	• The **City will fulfil most Program administrator activities to start** but could explore potential partners to deliver some or most Program components. **Third-party service providers** could help to alleviate administrative burden on City staff and lessen the risk of Program interruption due to staffing limitations, particularly if the Program experiences extensive participation.

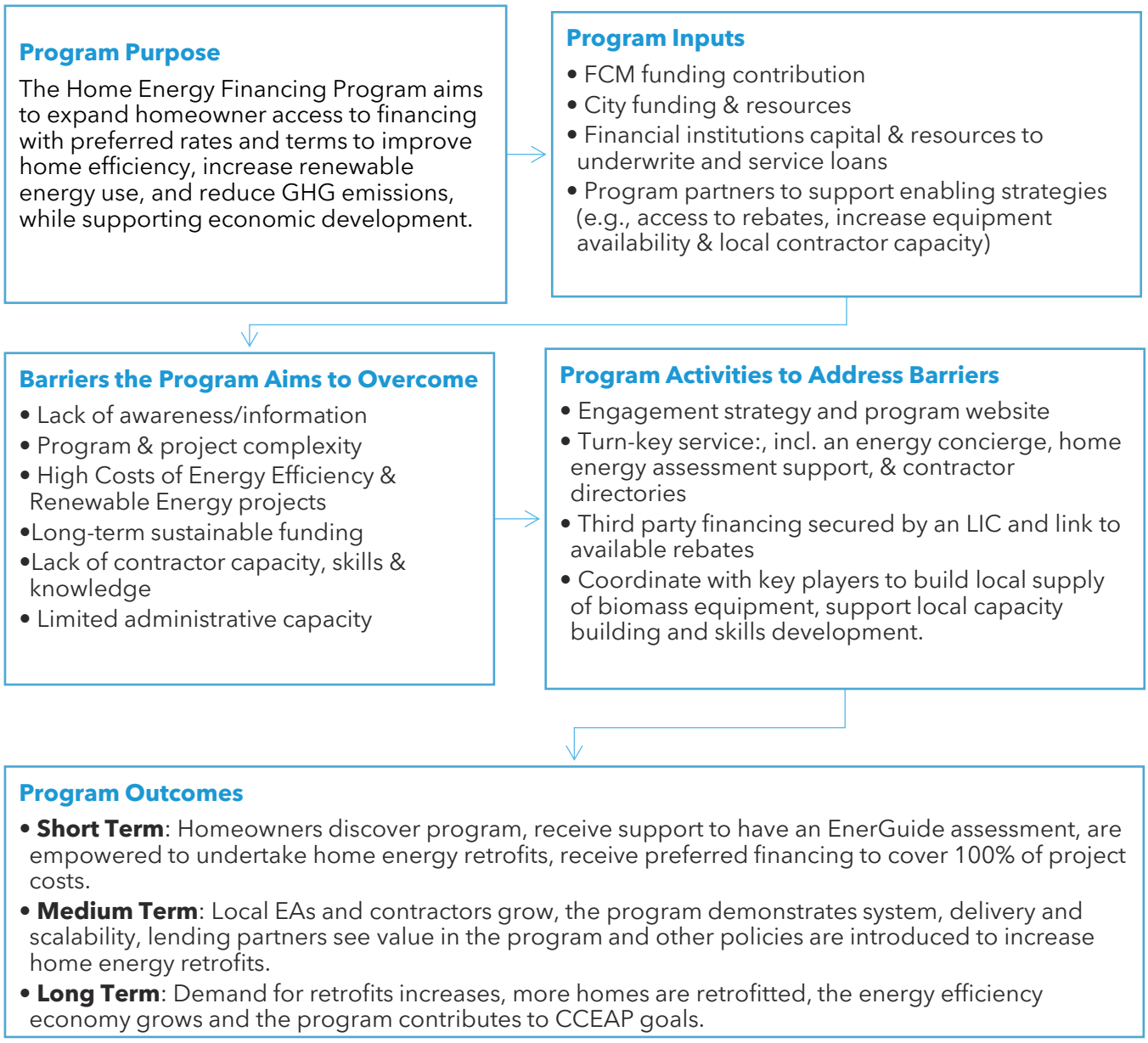
Recommendation	Program Design Features
3. Do not rely entirely on FCM funding and consider long-term Program sustainability.	Program funding will come from the following sources: • **FCM grant** for Program administration and enabling activities • **Third-party capital** to finance projects. Third-party capital could be either private or public funds, including Canada Greener Homes zero-interest loan, local financial institutions (e.g., First Nations Bank of Canada) or through third party administrators. • Advocate the **GNWT** to redirect carbon tax funding to support home energy retrofits and Program activities • A **LIC will be used to mitigate lender risk in exchange for better loan terms.** The LIC will only be registered on the property to collect payments in the event of default.
4. Help reduce costs of home energy improvements	• The Program is intended to align and be stackable with other financing and incentive programs to ensure homeowners obtain maximum benefits at the lowest costs. • Financing terms include low-interest rates, broadly accessible underwriting terms, no-penalty early repayment, and long repayment periods that are aligned with the life of energy retrofit equipment and benefits streams (15 years).
5. Simplify the process for homeowners	• An **online website** will centralize all information, application forms and processes for homeowners. This provides a single point of contact for homeowners, including but not limited to Program eligibility and processes, application forms, home energy assessment schedules, contractor directories, financing terms & conditions, and information and links to other financing and incentive programs. The portal will start as a **simple website** like the Region of Durham's Greener Homes Program. • Over the long-term, the City could explore an **advanced platform**. This will require scale (e.g., territory-wide) and collaboration, support, and funding from the GNWT. An example of this is Yukon's Good Energy Rebates platform which has automated the process end-to-end. Yellowknife's Program could be one of many initiatives available on the platform.

Recommendation	Program Design Features
6. Raise awareness and educate the community	A **community engagement strategy** to raise awareness of the benefit of efficiency and direct residents to the online portal, incl.: • Identify, segment and target audiences likely to participate • Develop high-level goals and messages • Offer a mix of in-person, traditional and digital marketing, and engagement tactics • Support the entire participant journey from initial Program awareness through to post-participation • **Engage key Program partners** (AEA, GNWT. NT Association of Communities) to ensure public messaging aligns. Generally, citizens should be directed to the online portal; however, potential participants may seek information from multiple sources. All Program partners and their front-line staff should have clarity on the available resources and key messaging to ensure consistency.

4.2 Program Theory Logic Model

A Program theory logic model provides a visual representation of the Program and the links between community barriers, activities and expected outcomes, see Figure 3 for a high-level overview and Appendix B: Program Theory Logic Model for a detailed version.

Figure 3. High-level overview of HEF Program theory logic model



4.3 Program Offer

The Program consists of third-party financing secured by a LIC, and turnkey services, including an energy concierge, support to schedule home energy assessments, a suite of eligible cost-effective measures, and contractor directory. The Program is designed to create demand for home energy retrofits and address barriers to undertaking home energy upgrades.

This section describes the financing terms and conditions, the role of LICs and enabling strategies. Program eligibility is discussed in section 4.4.

4.3.1 Financing Terms and Conditions

The financing offer uses a **third-party lender** to provide capital and manage loans **secured by a LIC**. Specifically:

- Eligible participants can receive a LIC-secured loan to cover 100% of the cost of eligible home retrofits from a third-party lender.
- A third-party lender underwrites the loan, provides capital, and services the loan.
- Participants repay the lender directly.
- The LIC is used as a credit enhancement to mitigate lender risk and allow the City to negotiate better lending terms and/or expand access for homeowners. The LIC is only leveraged in the event of delinquency to recoup costs on behalf of the lender. Lenders must demonstrate that all reasonable actions have been taken to recoup costs before the LIC is activated.
- Yellowknife will register the LIC on the property when the project is complete, and the loan is disbursed. Once the loan is fully repaid, the LIC is removed.

Table 5 details the Program terms and conditions recommendations for Program participation. Note that the terms and conditions must be negotiated with a partner lender(s) and are subject to change. These are provided as a starting point for discussions.

Table 5: Financing Offer Terms and Conditions[12]

Terms and Conditions	General Terms
Loan amount	• Participants must borrow a minimum of $10,000. Maximum loan values will depend on the homeowner's income, and total debt service ratio to be negotiated with the lender. • Loans cover 100% of eligible retrofit costs • Non-energy improvements are subject to a cap of 30% of the total cost of retrofit cost (see Section 4.4.3)

[12] HEFP Financing terms will depend on terms offered by the capital providers and third-party lenders, and thus the terms will likely be adjusted for the Program launch.

Terms and Conditions	General Terms
Lending period	• Terms for loans are 10–15 years depending on the loan size and homeowner preferences • Terms should not exceed the estimated useful life of eligible measures
Interest rates	• Targeted interest rates to be determined based on FCM and other third-party capital providers' terms. The City should aim **for below-market rates** to be attractive and provide benefits for homeowners.
Underwriting criteria	• Borrower's Total Debt Service Ratio (TDSR) shall not exceed 45% (see text box) • 2 years property tax history and account in good standing • No ($0) unpaid collection accounts, judgments • Lenders may apply their underwriting criteria
Processing fee	• A processing fee per application will be 3% of the total loan amount, up to $450[13] • The fee can be included in the loan
Time to complete work	• Participants have 24 months to complete projects with contractors of their choice. Extensions may be granted upon request.
Payment method and frequency	• The lender could pay contractors directly • Homeowners will repay the loan directly to the lender monthly
Early payments	• Payments greater than the scheduled amount due will be automatically applied to the principle. • There will be no penalty for early repayment (to be negotiated with lenders)
Advanced payments	• Up to 50% of the estimated project cost can be advanced to the homeowner and/or contractors. Advancements can be used to cover costs associated with EnerGuide evaluations, building permits and upfront contractor costs.
External rebates	• AEA, Federal and other rebates available for EnerGuide assessments and eligible measures go directly to the participant. • Participants will be encouraged to apply rebates to the loan principle but there is no requirement to do so.

[13] $450 is consistent with charges to administer programs in other jurisdictions. City of Toronto includes an administrative charge of 2% of loan value (average loan is approximately $22,000). Clean Foundation in NS charges a $450 administration fee ($150 for initial registration, $200 to review quotes/project plans, $100 for closing file).

Terms and Conditions	General Terms
Loan transfer	• The LIC security is not transferrable. The loan must be paid in full if the property transfers ownership.
Program Re-entry	• As participants repay their initial loan, they can re-enter the Program to do more. This is on condition that the lender allows them to extend their loan, they meet all the criteria above and they stay under the maximum Program loan amount.

Borrower's Total Debt Service Ratio (TDSR)

TDSR is the percentage of monthly household income that covers housing costs and any other debts (principle + interest, taxes, heat, and other debt obligations).

- A lower TDSR means a borrower has more income than debt and is thus better able to pay their debts and still have money left over for other things (e.g., utility bills, savings, entertainment). And they are more likely to be able to absorb more debt in the future.
- A higher TDSR means borrowers' debts make up a significant amount of their income, making them less likely to have money for other expenses or the ability to take on more debt. An important consideration in assessing TDS will be the types of debt each borrower carries (e.g., a high-interest debt like credit cards, and lower-interest lines of credit).

A healthy TDSR is generally below 45%. For example, CMHC has a TDSR limit of 44%.

The City is encouraged to discuss with potential lenders to consider energy savings when calculating the heating and utility costs portion of the TDSR. The City can leverage EnerGuide assessment results and/or deemed savings for select measures to provide this information to Lender.

4.3.2 Role of the LIC to Reduce Lender Risk

The LIC or special assessment is a form of security to mitigate lender risk. In exchange, the City will negotiate better loan terms (e.g., lower interest rates or extended terms) and/or expanded access (e.g., to those who have a high TDSR, or poor credit).

The LIC will be registered on the property when the project is complete, approved, and the full loan amount has been disbursed. The lender collects repayment directly from the homeowner—not via the property tax bill.

The LIC can be used to collect loan payments if delinquencies occur. The partner lender(s) must demonstrate that all reasonable efforts have been made to get a homeowner up to date on loan payments before the LIC is used. A commentary report on PACE Program delinquency rates shows

strong performance with low delinquency rates of around 2% to 4% at the peak (typically in the first few instalments) and declining to less than 1% within 12 months.[14]

If a homeowner is delinquent for a substantial period (recommend 180 days minimum, to be determined in collaboration with the lender) the City would send a letter informing the homeowner and the potential consequences of not paying to give a further 30 days to settle outstanding payments. If payments remain in arrears, the total remaining loan amount is secured as municipal debt and the LIC repayment on the property tax would be engaged. The homeowner will start to receive outstanding payments on the property tax bills.

Once the loan is repaid in full. The LIC registration will be removed from the property.

4.3.3 Enabling Strategies

Financing alone does not drive demand. To be successful, financing must be combined with enabling strategies to help homeowners find qualified service providers, identify priority upgrades, support their retrofit journey, and navigate all funding programs and services. The turnkey model includes the following strategies:

- **Energy Concierge**. To address homeowner complexity and uncertainty, an energy concierge will be available to Program participants. The energy concierge is a free service that helps to improve the homeowner experience by supporting homeowners through all stages of the home renovation journey. The energy concierge provides hands-on support to help homeowners overcome known barriers to making home energy improvements (e.g., scheduling a home energy assessment, prioritizing energy efficiency measures, navigating the home improvement process, and accessing all available financing and incentive programs). The energy concierge service is delivered through the City and is available by phone or email to answer questions at all stages of a homeowner's energy improvement project.
- **One-stop window**. To simplify the process and reduce complexity for homeowners, the City will develop a program-specific website that will act as a hub for information on the benefits of energy efficiency and financing, access to all application forms, contact information, and links to the Energy Concierge, AEA's contractor directory, and other programs and services. The City should coordinate with partners like GNWT, AEA and Canada Greener Homes to streamline processes and access to financing and other incentive programs.
- **Support to schedule a home energy assessment**. To address the backlog and ensure timely access to pre- and post-energy assessments, the City will coordinate home energy assessments on behalf of homeowners. Once there are enough homes enrolled in the Program (e.g., 10), the City will coordinate an EA blitz. In the near-term, we expect that this may require bringing in external expertise (e.g., NRCan registered EA from Yukon) to conduct home energy assessments on enrolled homes over a 1–2-week period. Once work is complete, the City will conduct a second blitz to complete the post-assessments and verify savings. AEA successfully piloted something similar with NRCan in mid-2022.

[14] Mezzanotte, C., Wellamann, C., Gutierrez, L. 2018. *Residential PACE Delinquency Trends*. DBRS Inc.

The City will cover all costs (e.g., travel, accommodations, meals, incidentals). The City should coordinate with AEA as the local NRCan licensed service provider, in which all EnerGuide house files must be submitted. And there may be opportunities for cost-sharing if AEA wants to do something similar territory-wide.

- **Contractor directories**. To address homeowner challenges with finding qualified contractors, the City will direct homeowners to AEA's NWT vendor directory.[15] Homeowners will not be required to use these contractors to participate in the Program, but this is a resource to find local contractors that provide energy-efficient or renewable energy products and/or services.

  The City will not guarantee work or negotiate costs, as this relationship ultimately remains between the homeowner and the contractor. However, the Program is expected to have multiple benefits:

  - Generate homeowner demand to attract contractors
  - Help homeowners find qualified contractors that can complete the work
  - Build local capacity and experience with energy-efficient and renewable energy technologies and practices.

- **Build Capacity.** To ensure long-term sustainability, meet increasing demand and develop local skills and capabilities, the City will advocate for, support and/or fund training and certifications for local Registered Energy Advisors and skilled trades. Yellowknife should collaborate with key partners, including the GNWT, NT & NU Construction Association (NNCA) and the Northwest Territories Association of Communities to develop capacity-building actions.

4.4 Program Eligibility

This section outlines general eligibility, home energy assessment requirements and measures eligibility. The eligibility requirements are aligned with other municipal-supported financing programs, complementary incentive programs, FCM funding requirements and the City's goals.

4.4.1 Participant Eligibility

Participants must meet the following criteria:

- The dwelling must be in the city of Yellowknife
- The dwelling must be a Part 9 building as defined in the building code; a low-rise residential property (e.g., detached, semi-detached, row/town house) three storeys or less on a permanent foundation with a space heating system and all windows and doors in place to be eligible for an EnerGuide assessment.[16]

[15] AEA maintains a list of participating NWT vendors on their website by the community. Accessed at: https://aea.nt.ca/participating-nwt-vendors/#
[16] Natural Resources Canada. *EnerGuide energy efficiency home evaluations*.

- The applicant must be the owner of the dwelling in which energy improvements are made. Owner occupants and landlords are eligible. Note: A large portion of Yellowknife's housing stock are rental properties, thus allowing for tenant-occupied properties will increase the number of eligible homes.[17]
- The HEF Program is for existing dwellings only; new construction projects are not eligible. Program
- The dwelling's municipal property tax bill account must be in good standing.
- Applicants must provide information on income and debt (e.g., mortgage principle + interest, taxes, heat, and other debt obligations minus expected energy savings) to support the Program's underwriting assessment. This information is used to assess the maximum a property owner could be eligible for, which will help inform what upgrades they can pursue after they get their EnerGuide assessment. The applicant must meet the underwriting criteria listed in Section 4.3.1 Financing Terms and Conditions and any other criteria determined by the lender. This is to ensure property owners can pay, and that debt is manageable. There is no minimum or maximum income level requirement.
- The City must pre-approve the application before any work is started.
- Upgrades must be made to the recommended levels (e.g., equipment performance standards, envelope upgrade levels, etc.) outlined in the EnerGuide Assessment and meet or exceed the City's Building By-law. Applicants must complete at least one recommended upgrade of their choosing but are not required to complete all the recommended upgrades.

4.4.2 EnerGuide Assessments

A pre- and post-evaluation conducted by an NRCan-Registered Energy Advisor is required for each project. This is an FCM requirement that EnerGuide assessments be conducted as a condition of funding, and City staff felt that it was important to have an EnerGuide assessment for each project to verify the measures installed and savings achieved. EnerGuide is a nationally recognized rating system managed by the federal government and is a requirement under the City's building code for major renovations.

Evaluation fees are an eligible expense to be covered by the loan and recouped through incentive programs. EnerGuide evaluations during the first four-year period will be conducted in blitzes organized by the City. Over time, the City will support and invest in training and registering local EAs to complete assessments for eligible applicants.

[17] Rental properties are not eligible for Canada Greener Homes Program. Yellowknife should consult with CMHC about the high number of rental properties in the subarctic to advocate for change and expanding eligibility to this group.

Guided virtual audits may be a possible solution to alleviate the Energy Advisor bottleneck

Only two NRCan-registered Energy Advisors are serving existing homes in Northwest Territories leading to long wait times for home energy evaluations (up to 24 months). Guided virtual audits have become more common because of the pandemic and they offer other potential benefits; including real-time expert advice from a distance, enhanced customer involvement, more flexibility to serve the North, on-demand capability, and lower delivery costs. Further discussions with NRCan and FCM would be needed to determine whether virtual audits could be an acceptable alternative and/or near-term solution to address backlogs.

The Alberta Ecotrust Foundation recently announced a pilot project to conduct digital home energy labelling in Edmonton and Calgary and the U.S. Building Performance Institute has also published guidelines for remote audits. [18,19]

4.4.3 Measure Eligibility

Eligible measures were selected based on Yellowknife's housing stock characteristics, local context and technology availability, energy and GHG reduction opportunities and guiding principles. Measures will focus on building envelope (insulation and air sealing), biomass heating and solar photovoltaic systems (solar PV). A list of eligible measures is provided in Table 6.

It is estimated that 20% of non-industrial heating needs in the NWT are met by biomass such as cord wood or pellets.[20] The use of biomass as an energy source also has historical and cultural importance in the community. The GNWT's 2030 Energy Strategy aims to increase the share of renewable energy used for community heat to 40% by 2030 focusing on biomass-based heating systems.[20] This includes the expansion of a wood-pellet supply chain to include local production, supporting the early adoption of wood-pellet boilers in communities, providing incentives to switch to wood fuel for heat, and leveraging & continue support to existing programs. In alignment with the Territory's goals and the cultural importance of biomass in the community, biomass-based heating systems are included as eligible Program measures.

[18] Alberta Ecotrust Foundation. 2021. *Calgary and Edmonton Homes to get Digital Home Energy Labels*.
[19] Building Performance Institute. *Guidelines for Remote Audits Available*.
[20] Government of Northwest Territories. 2018. *2030 Energy Strategy – A Path to More Affordable, Secure and Sustainable Energy in the Northwest Territories*.

Table 6: List of eligible measures* †

Energy Efficiency	Renewable Energy	Non-Energy Improvements (up to 30% of loan)[21]
• Insulation • Air sealing	• Solar PV panels & inverters • Biomass-based heating systems, including stoves, furnaces, and boilers	Measures needed before eligible energy efficiency and renewable energy measures can be installed. Could include health & safety measures (e.g., electrical wiring, service upgrades & fuel tank removal).

***** The final measure list may be revised by the City based on equipment availability, homeowner interest, as new technologies emerge, or to meet other City priorities. Other measures could include but are not limited to, efficient water heaters, heat pumps, LED lighting & controls, HVAC & controls, and Energy Star® appliances.
† To meet the City's GHG abatement goals, fossil-based (heating oil, propane) equipment such as furnaces, boilers, water heaters and appliances are not included as eligible measures in this Program.

Non-energy improvements: Non-energy improvements can be valuable or even essential for homeowners to pursue energy retrofits. Applicants who choose to pursue non-energy improvements should discuss with the Energy Concierge to clarify whether these measures will reduce total utility bill savings potential. Dunsky recommends not overly defining or limiting non-energy improvement measures. This helps provide maximum flexibility to the homeowner, increase Program attractiveness, and minimize the risk of precluding participants. Each home is unique with different needs; thus, we recommend having the homeowner use the non-energy improvement portion of the loan for any items that fall within the allowable FCM categories listed in the Community Efficiency Financing Application Guide.[21]

4.5 Ensuring Long-term Sustainability of Program

An evaluation period is expected to occur at the end of the four-year Program. It is recommended that the Program continue while the pilot evaluation is performed due to the cost and complexity of setting up a new financing initiative and the high levels of commitment required from all stakeholders. Moreover, this will minimize market confusion.

Current projections estimate 40–220 participants will go through the Program during the four-year period; however, this demand for financing is not solely driven by financing and rather by the overall energy efficiency ecosystem. Various internal factors (e.g., favourable interest rates, effective delivery

[21] In alignment with FCM CEF categories of qualifying non-energy improvements and 30% cost cap based on total retrofit cost. See: Federation of Canadian of Municipalities. *Community Efficiency Financing – Application Guide*. pp. 10.

of enabling strategies) or external (e.g., available rebates, building retrofits code, carbon pricing, fossil-fuel equipment bans) contribute to homeowner interest and Program uptake.

The City should recognize that financing will not drive demand for retrofits—it supports retrofits when homeowners are ready to act. While the Program is designed to work with and complement the overall energy efficiency ecosystem, the City must continue efforts that promote energy efficiency and renewable energy. During the Program, the City should consider the following:

1. **Engage third-party support to administer the Program**. While third-party administrators exist (e.g., AEA, PACE Atlantic, Summerhill, among others) and can fulfil the administrative role from Program launch, the modest Program participation under the low scenario may not be attractive. The four-year Program will allow the City to clarify administrative needs and actual volume before entering a contract with a third party. During the Program, the City should explore the transition of specific roles and activities to a third party. Early engagement with potential partners to define capabilities and negotiate contracts will ensure a smooth transition. Having a third party administer some or all the Program components could help reduce risks associated with administrative costs and resourcing.
2. **Negotiate better lending terms**. The Program is designed to help homeowners leverage other financing (e.g., Canada Greener Homes Zero Interest Loan and local third-party loans). And the LIC is intended to mitigate private lender risk in exchange for better rates and terms. However, private lenders may not be willing to offer significant changes until loan performance is demonstrated. During the first four years, the City should monitor the loan performance (e.g., size of loans, delinquency rate, early repayments) to demonstrate risk is minimal and to negotiate better rates and terms over time.
3. **Streamline the process.** As community interest in energy efficiency and renewable energy increases, it will be important to simplify homeowner access to educational & financial resources and help them to navigate multiple programs, eligibility criteria and processes. The City could explore and coordinate with key stakeholders like the GNWT, AEA and solution providers (e.g., EnergyX, Lightspark, Simptek) the feasibility of creating a shared one-stop-shop online platform that centralizes resources, and simplifies, automates, and aligns Program processes.
4. **Continue to build local capacity.** In the near term, the City will likely need to rely on external resources (i.e., EAs and contractors outside Yellowknife) to ensure timely home energy assessments and upgrades. The City is expected to explore partnerships with the GNWT and NNCA to support and/or fund training, skills development, and certifications to build local capacity. The Program can provide an opportunity to test approaches and identify actions to continue to build local capacity.

5. Program set-up

5.1 Timeline

The Program is estimated to begin in Q1 2025 and run for four years[22]. An illustrative project timeline from stakeholder engagement to Program launch is shown in Figure 4. However, the Program launch timing will depend on the timeline for Council to approve the Program design, the City of Yellowknife and the partners' timeline to submit the FCM application, mobilize the funds and commitments, complete FCM's review of their application and ultimate approval, and solicit expertise to administer the Program and contract with all project partners.

Figure 4: Illustrative Project Timeline

<table>
<tr><th colspan="2">2021</th><th colspan="4">2022</th><th colspan="4">2023</th><th colspan="4">2024</th><th>2025</th></tr>
<tr><td>Q4</td><td>Q1</td><td>Q2</td><td>Q3</td><td>Q4</td><td>Q1</td><td>Q2</td><td>Q3</td><td>Q4</td><td>Q1</td><td>Q2</td><td>Q3</td><td>Q4</td><td>Q1</td></tr>
<tr><td colspan="9">Landscape assessment, stakeholder engagement and final Program design and implementation plan.</td><td>Council approval, apply for FCM grant</td><td>FCM review, approval and contracting</td><td>Program set up</td><td>Program launch</td></tr>
<tr><td colspan="5"></td><td colspan="9">Steps can be taken while awaiting FCM approval:
• Continue stakeholder engagement to test and refine the Program offers
• Consult with legal/procurement
• Develop enabling strategies, incl., website, Energy Concierge, capacity building
• Coordinate with internal and external partners (AEA, GNWT) and develop processes, agreements/forms
• Confirm funding from third-party lenders</td></tr>
</table>

Before the Program launch, several activities must be completed. We provide a high-level overview of important set-up activities in the following sections.

[22] The Program was expected to start in 2024, however, due to municipal operational delays and extreme weather events, the design could not be finalized until Q1 2024. This pushed out the start date to Q1 2025.

5.2 Council Commitment and Assign Administrative Structure

Necessary approvals, funding, and resources are needed to operationalize the Program, including:

1. Secure City Council approval of Program design and funding commitment
2. Council approval for this design is required to proceed with Program implementation. This should include a request for City funding contribution required for the FCM grant funding application. Yellowknife could apply for one of two funding streams:
    - A pilot grant to cover up to 50% of eligible costs to a maximum of $500,000
    - Capital grant and credit enhancement. A grant up to $5M (up to 50% of eligible project costs and not to exceed total start up and operating costs) and a credit enhancement of up to $2M.
3. Yellowknife must commit and/or identify the remaining funds required. FCM funding is a competitive process; it is not guaranteed. To increase the chances of success, FCM requires applicants to demonstrate that this initiative is a priority and that it aligns with existing plans, provide evidence of consultation with the territorial government, provide a budget and work plan, and identify all sources of funding. The City should also consider a contingency plan if FCM funding is not approved.
4. A dedicated resource is needed to lead and coordinate activities, including the FCM funding application, coordinating/managing Program partners, and Program set-up, delivery, and evaluation. The City of Yellowknife will lead the FCM application process. Potential Program partners (e.g., GNWT, local lenders, AEA, NNCA) should support the application, with letters of commitment or support, financial commitments, and other details as required or applicable.
5. While awaiting FCM approval, additional activities can be undertaken to ensure that the Program is prepared to launch when funding is received. Activities include:
    - Coordinate with project partners (e.g., Financial Institution[s], NRCan, AEA, Contractors, NNCA, Northwest Territories Association of Communities) to confirm partners' roles and responsibilities in collaboration with all parties and develop formal agreements as required.
    - Coordinate with relevant departments (e.g., Planning and Development, Billing and Taxation, Legal) to obtain legal counsel, financial advice and input for planned activities, agreements/contracts and to internal processes.
    - Draft requests for proposals for anticipated services (e.g., financial institutions, software providers/website developers, third-party Program administrators, etc.).
    - Develop job descriptions and departments responsible for Program staff (e.g., Program Manager/Energy Concierge)
    - Alternate Program funding or design considerations if FCM funding is not granted.

5.3 Legal and Regulatory Review

A legal review was undertaken by Field Law, a local law firm in Yellowknife to confirm that the current design complies with the Act. It is the view of Field Law that "the Act allows for the Program to be implemented as it is currently designed and intended." Dunsky summarizes the outcome of the legal review below. The full legal review is in Appendix E.

- The program design, including eligibility criteria, proposed measures, processes and use of LIC are acceptable under the Act.
- The program design describes administration, including forms that must be developed (e.g., funding agreement between the City, property owner(s) and lender) specifying all terms and conditions. The funding agreement will include at minimum all requirements outlined in the Act (See Section 5.6 and Appendix A).
- The City can use a financial institution to finance eligible projects in the program and costs can be recovered through a partner financial institution.
- The City has discretion to use an LIC as a backstop in the event of default. In the case of default, the City can register the LIC on the property as security. There is precedent in other jurisdictions (PEI).

5.4 Financial/Procurement Review

A legal, financial and/or procurement expert review should also be considered for the following:

- **Procurement with Program partners**. The City will be entering into agreements with local financial institutions, Energy Advisors, and potentially third-party administrators. City staff should seek counsel and establish a process to select and contract with partners, and structure of agreements (e.g., terms and conditions, roles and responsibilities, expectations, and quality assurance).
    - **Lenders**. The City should start with a request for information to solicit feedback from lenders. This will identify interest, experience, and qualifications, and potential offering (e.g., loan products, interest rates, terms, underwriting guidelines, using the LIC as security to share risk and expand homeowner access to financing). Based on responses, the City could move into deeper negotiations with a preferred candidate(s) to develop a Program agreement detailing all terms and conditions for loan products and the LIC, workflows, processes and roles and responsibilities.

Loan terms and interest rates

Yellowknife will need to ensure that the loan terms and interest rates outlined in this design are appropriate for its internal parameters and what lenders are able to provide. Loan terms should allow for manageable payments for homeowners and should not exceed the average estimated useful life of eligible measures. Preferably, interest rates will be below market rates given the loans are secured with a LIC. Recommendations have been made herein (see Section 4.3.1) based on experience in other jurisdictions, but Yellowknife will need to consult with internal and external experts and Program partners.

    - **Energy Advisors.** The City should work with AEA, GNWT and NRCan to determine the best approach to conducting EA blitzes, sharing data, and reporting EnergGuide house files. This will include contracting with external EAs and setting terms and conditions, data sharing and reporting requirements between the City, AEA and NRCan, and potential cost sharing.
- **Financial accounting and reporting requirements.** City of Yellowknife and financial institutions will need to assess financial accounting processes required for each organization and the external reporting required to ensure alignment on capital flow reporting (including loan disbursement and repayment). The City will also need to understand and adhere to FCM reporting requirements as a condition of grant funding.

5.5 Develop Required Processes and Infrastructure

The following infrastructure is needed to effectively set up and deliver the Program:

General (all partners)

- Secure customer database (forms, file storage, update capability, tracking capability, reporting).
- Secure file transfer process & infrastructure to and from relevant partners

Website

- Website-related processes & infrastructure (e.g., allow participants to upload files from the website, server, etc.)
- Website content (processes, loan terms, loan repayment, impact in case of non-payment, etc.)

Program Administration

- Program capital processes & infrastructure to apply for and receive funding from FCM and other sources and tracking/reporting capabilities.
- Procure and manage contracted services (e.g., lenders, external EAs, AEA/NRCan).
- Collaborate with key partners, and track activities and outcomes. For example, the City will need to engage AEA and NRCan to organize EA blitzes in the near-term and support training local EAs in the long-term and streamline financing and rebates. The City should collaborate with GNWT and NNCA about building wood/pellet supply to meet demand and to support and/or fund training and certifications to build local contractor capacity. Lastly, the City should keep the NT Association of Communities informed to advocate and promote the Program.
- Develop processes & infrastructure for the following:
    - Review and manage Program applications that will be needed to support Program administration and evaluation. The City may have a customer relations management system but should also consider how to securely capture, store, and track key information (e.g., applications and customer information, approved and actual project costs, projects financed, rebates received, Program agreements, project status, supporting documentation, etc.).
    - Set up for loan approval, communicating with Program partners, and processes for collecting explicit homeowner permissions, including:

- Approve loans, collect, and share data, and notify homeowner and Program partners (e.g., lenders, AEA, EAs)
- Access other Program rebates on behalf of eligible homeowners
- Notify lender to disburse funds (advances, partial and full loan disbursements)
- To recoup costs through the LIC in the event of delinquencies or default

Lenders/Financial Institutions

- Lender staff roles & responsibilities, Program process flow
- Efficient process and timeline to underwrite, approve, and determine scheduled payments for homeowners (incorporating amount borrowed, interest rate, and term) and communicate information to the City and participants.
- Process & infrastructure for the following:
  - Disburse loans to homeowners or contractors upon approval from City
  - Service loans and collect repayment
  - Address delinquencies, partial payments, or defaults

Contractors

- Processes to upload relevant documents (for initial quotes and after work is completed)

5.6 Develop Required Forms

The following forms must be developed for this Program:

- **Service and privacy agreement:** A form that would be signed off by each party (e.g., City of Yellowknife, financial institutions) outlining all Program terms and conditions, roles and responsibilities, and ability to share customer information and data. This agreement will enable the lender to enter into loan agreements with Program participants, without having to re-enter agreements with the other parties for each individual application.
- **Pre-qualification form:** This should be a simple one-page document to confirm applicant eligibility and authorization to verify TDSR, conduct a soft-credit check (does not affect homeowners' credit), property tax bill payments and history (for TDSR calculation and ensure taxes are in good standing). The following should be collected.
  - Applicant details (name, address, contact information)
  - Age of home
  - Type of home (single family detached, attached, duplex, row/townhome)
  - Home heating type
  - Proof of home ownership
  - Confirmation of whether the home is owner-occupied or rented

    - Confirmation of whether the project includes building a secondary suite
    - Type of work homeowner is interested in
    - Income statements, heating costs and other debt obligations
    - Authorization to share data with the financial institution(s) and conduct a soft credit check.
- **Pre-qualification notice to proceed**: Includes a Program reference number, information on Program terms, prequalified funding amount, and next steps (e.g., City to schedule a home energy assessment, information on approved contractors).
- **Funding Request Form:** A work plan including a list of planned improvements, a copy of the homeowner's EnerGuide Report, estimated costs based on contractors quotes, and any payment details as required. Applicants will also indicate whether they will exercise the option of receiving an initial disbursement of funds prior to completing their project to pay for materials or secure a contractor (i.e., security deposit), and what percentage of the total they require, based on contractors quotes. Up to 50% of the total estimated funding amount is available after signing the Program Agreement and before completing the project.
- **Authorization to apply for other rebate programs:** If a homeowner wishes to receive rebates offered through other programs, they could indicate their authorization on the Funding Request Form such that the City could submit the application on their behalf.
- **Project completion form:** This form details the list of actual improvements, final costs, contractor invoices, and final EnerGuide label & report.
- **Funding agreement:** The Funding Agreement is between the City, property owner(s) and lender specifying all terms and conditions. The agreement should include at a minimum:
    - The homeowner's contact information (name, phone, email)
    - The property information (address, assessment roll number)
    - The estimated cost and lifetime of the work
    - The description of the project (with a list of measures)
    - Process fees and interest rates
    - Payment terms and schedule
    - Conditions for full repayment of the remaining balance (without penalty)
    - Amount of loan advanced, how interest rates are calculated on the advance vs rest of the loan
    - Notification that a LIC will be registered on the property upon final loan disbursements; delinquent payment, partial payments, and default processes and risks (lien)
    - The way a cost overrun, or underrun, is to be dealt with if the actual cost of work differs from the estimated cost of the work.
    - Delays allowed for work completion and process if work is not completed within delay (extension, recollection)
    - Process in the event the property is sold prior to the loan being fully repaid

    - For rental property owners, a signed statement of declaration that they will not renovict tenants after work is complete.
- **Work Completion Form:** This form details the list of actual improvements, final costs and supporting documentation, including contractor invoices, and final EnerGuide rating.
- **Loan Schedule:** The Lender will create a loan schedule to calculate the amount of each reoccurring payment based on the approved funding request and LIC terms and conditions.

5.7 Risk Management

Financing Programs can have potential implementation risks, which must be identified to develop appropriate mitigation strategies. Mitigation strategies have been incorporated into the Program design. These are expected to be further fleshed out with Program partners and as part of operating contracts as the Program proceeds from launch to implementation. Appendix D: Risks and Mitigation outlines potential risks associated with LIC and third-party financing, and financing programs more broadly.

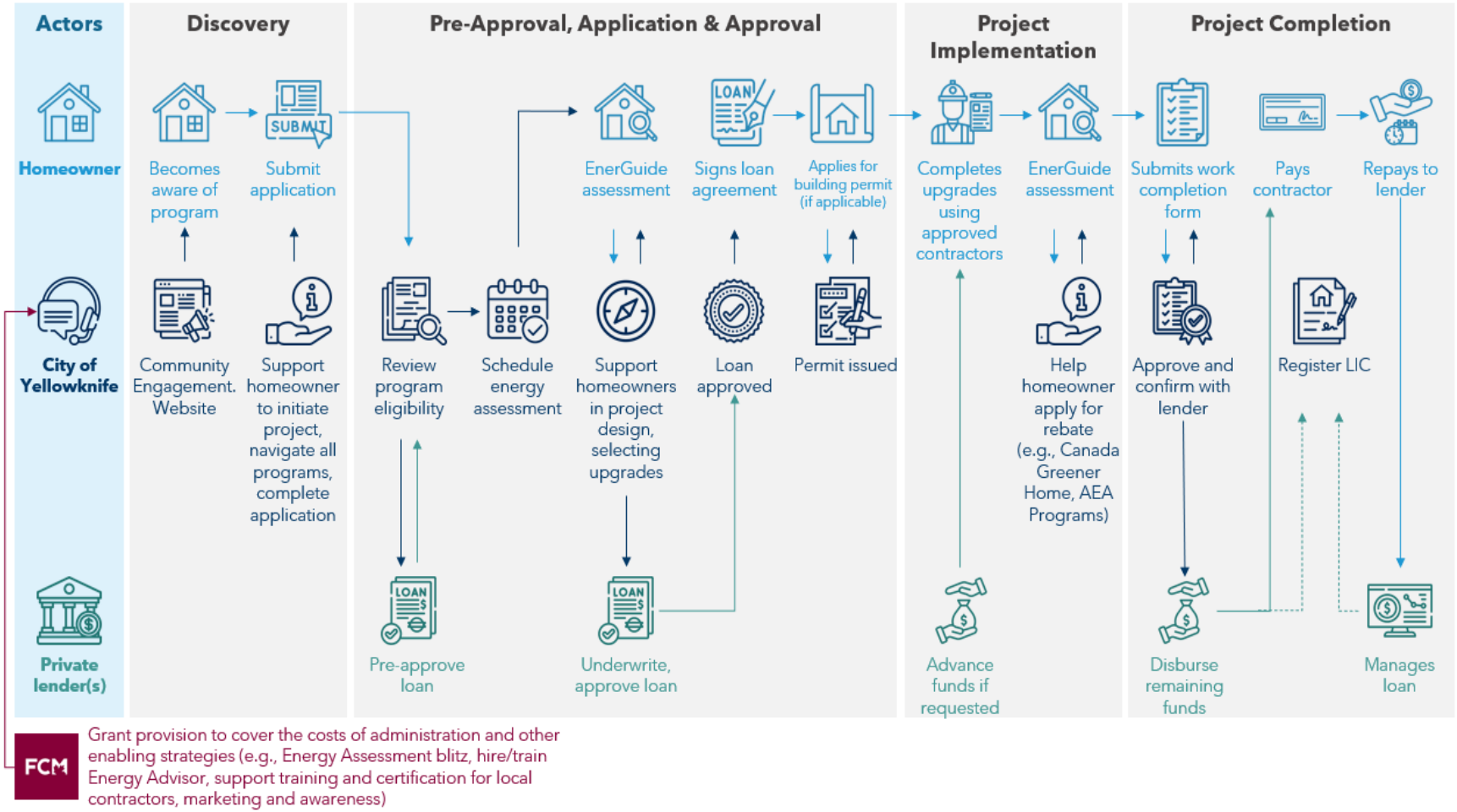
6. Program Delivery

The HEF Program will be delivered via collaboration among key partners, each playing a critical role in the process to engage with homeowners, assessing the energy improvement opportunities, approving financing, delivering funds, conducting the work, and collecting repayments. The homeowner lies at the centre of the process, and a detailed customer journey is provided in this chapter to demonstrate the various steps and the role of each Program partner along the way. The key partners delivering the Program includes the City, lenders, and service providers.

6.1 Customer Journey

The customer journey, along with the roles of homeowners, Yellowknife, local lenders and FCM are outlined in Figure 5.

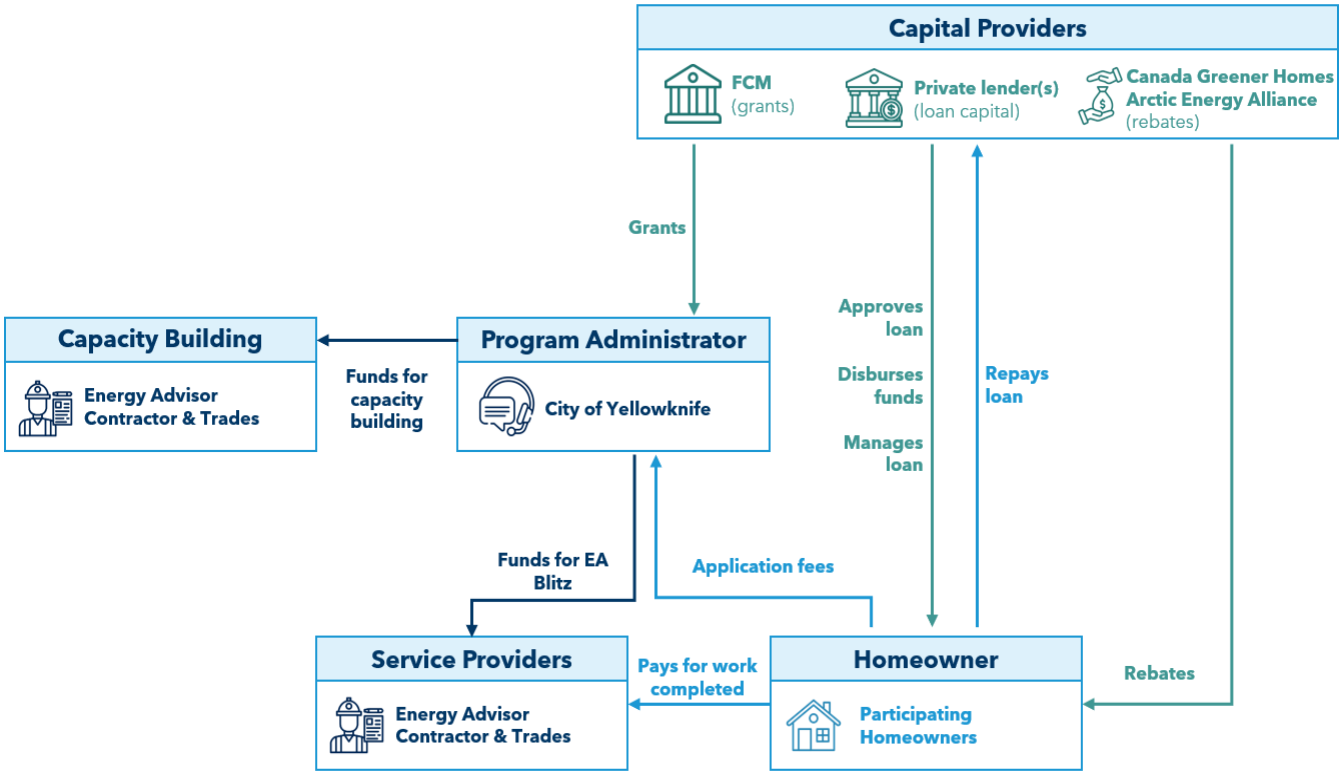
Figure 5. Customer journey stages and key actor interactions



6.2 Flow of Funds

Figure 6 details how capital could flow between actors. This would need to be confirmed as part of the Program set-up and in collaboration with all parties and the contracted third-party Program administrators once selected.

Figure 6. Potential capital flow and actors



6.3 Program Process Flow

This section details the Program customer journey and main activities.

Stage 1: Discovery

The **discovery phase** focuses on informing eligible homeowners about the Program and encouraging them to visit the website and/or engage other supports (e.g., Energy Concierge) to learn more.

The discovery phase is supported by a community engagement strategy (see section 6.5) designed to target and mobilize key industry and community groups and high-priority homeowners. While all eligible homeowners can and will be encouraged to participate, the market strategy aims to focus on the largest segment of eligible homes, homeowners that are most likely to participate, and/or housing archetypes that offer significant GHG reduction potential.

The discovery phase and community engagement strategy will be led by the City, who will deliver the strategy, or contract all or specific components to a marketing agency. This could include developing the website, the Community Engagement Strategy or implementing specific actions in the strategy. The Community Engagement Strategy will also rely on Program partners to provide accessible and unified messaging to the public and potentially support and/or deliver key components.

Stage 2: Pre-Approval, Application, Approval

This stage involves three main steps:

1. Pre-Approval

Once a homeowner decides to pursue a retrofit and wishes to access financing, they will complete a preapproval application and submit it to the City (through the website or email). All forms should be available in other formats (e.g., paper-based by mail) for participants who prefer those modes.

The City verifies that the homeowner meets the minimum eligibility criteria (see section 4.4.1). This step is designed to verify the homeowner's eligibility and address any Program details/questions with the homeowner. The partner lender will estimate the maximum potential loan that could be available to the homeowner. To protect vulnerable renters, applications will be used to identify whether applicants rent the home through a quick check box on the application form.

Once preapproval is confirmed, the City notifies the homeowner and provides a unique Program registration number along with information on the next steps. If refused, the City provides a reason why the application was denied.

Turnaround time for preapproval notification will be within 5 business days.

The City updates the homeowner record in the Program tracking system.

2. EnerGuide Assessment, Contractor Quotes

EnerGuide Assessment

Once pre-approval has been granted, and a pool of homes have enrolled (e.g., 10), the City will schedule the initial EnerGuide assessments. The Program will also accept an EnerGuide assessment that has been conducted within the past 24 months provided no renovations requested to be financed have been undertaken.

Contractor Quotes

After receiving the EnerGuide report and selecting the upgrades to pursue, the homeowner will obtain quotes from contractors of their choice. The homeowner then submits the funding application and all required documentation. If prepayment is required by the contractors, exact amounts should be identified in the quotes.

Encouraged Energy Concierge Support

Homeowners are encouraged to consult the Energy Concierge at this step to help review their EnerGuide report and receive guidance on how to prioritize and stage upgrades and/or to review and understand contractor quotes. If the applicant includes fuel switching or non-energy measures, the Energy Concierge will discuss the impacts on the overall costs and bill savings.

3. Funding Application & Approval

The homeowner completes and submits a funding application form to the City via the website, email, or mail.

The Energy Concierge is the point of contact for the homeowner for all Program questions and document submissions. The Energy Concierge also helps the homeowner navigate financing and other rebate Program applications, and the broader home energy retrofits process.

The Energy Concierge reviews the application form and supporting documents for accuracy and completeness, confirms participants and measures eligibility, that contractor costs are reasonable, and that the work was completed by an approved contractor.

Once work is approved, the City submits all financing documents to the lender. The lender underwrites the loan. The lender provides the approval decision to the homeowner and notifies the City to update the Program tracking system. If denied, the City offers information on other relevant Programs and the Lender offers an explanation and possible next steps to meet eligibility.

Energy Concierge Support

The Energy Concierge should discuss with other rebates program providers, such as Canada Greener Homes and Arctic Energy Alliance, to understand eligibility criteria and the possibility of stacking rebates to guide homeowners in maximizing the value of rebates they can obtain from their retrofit projects.

Building Permit Application (where applicable)

For projects that require a building permit, homeowners (or contractors on the homeowner's behalf) submit their permit application after the funding application is approved.

The City Building Department reviews the application and provides the homeowner with the building permit within the required timelines or seeks additional information/clarifications if required.

Stage 3: Project Implementation

Once the loan is approved, the homeowner and lender will execute the Loan Agreement. If requested, the lender can advance a portion of the total loan amount to cover initial costs (e.g., contractor security deposit, and equipment purchases).

Once the loan is executed the homeowner proceeds with the work through their selected contractor(s). Homeowners and their selected contractor(s) will be given 24 months to complete the work. It is important to note, however, that other programs have different timeframes in which homeowners need to start and/or complete their projects. For example, AEA's Alternative Energy Technologies Program requires homeowners to begin installing the upgrade system within 3 months of receiving preapproval.[23]

Optional Energy Concierge Support

The Energy Concierge can help homeowners navigate the process and understand any changes proposed from the initial work plan. The homeowner is responsible for overseeing the retrofit project, but the Energy Concierge can provide independent support.

Stage 4: Project Completion and Repayment

This stage involves four main steps:

1. Submit Project Completion Form

After the work is complete, the homeowner submits the project completion form and supporting documentation (e.g., contractor receipts) electronically or by mail.

The City will schedule the final EnerGuide assessment once work is complete to verify the energy and GHG emissions savings. Another EA blitz may be required to conduct the final home energy assessments and homeowners are likely to complete their projects at different times. Thus, the City should allow the lender to disburse funds before the final EnerGuide can be done if all other forms and supporting documentation has been provided.

The City verifies that all forms and documents have been received and are complete and accurate. Once confirmed, the City notifies the lender. The lender updates the Loan Agreement with the final project costs and disburses the final loan amount to the homeowner or contractor.

The City updates the project status in the Program tracking system throughout the project journey (e.g., approved, denied, estimated total funding, advanced disbursements—if applicable, in-progress, final EnerGuide assessment, project complete).

[23] Arctic Energy Alliance. 2022. *Renewable Energy Application Guidelines*.

2. Apply LIC to Homeowner Account and Collect Funds

The lender notifies the City when the final loan disbursement is made. The City registers the loan amount to the property's account, and the lender begins collecting payments.

The lender will provide homeowners with a monthly payment schedule that includes both the principal and interest fees, as well as the term to repay the loan. The lender collects payments and provides regular updates on the loan totals, including early or delinquent payments to the City.

3. Repayment

The lender will issue bills for progressive repayment to the homeowner (the payment frequency is to be determined by the lender and homeowner). Moreover, the homeowner can choose to make additional top-up payments or repay the loan in full at any time without penalty. Early repayments greater than the scheduled amount due will be automatically applied to the principal. There will be no penalty for early repayment. A variety of financial implications and models can be applied and should be negotiated with the lender but in any case, the homeowner should save themselves interest with early payments. Any program should anticipate acceleration to some degree. Other financing Programs have experienced up to 30% of participants pay off their loans early.[24]

The lender will be responsible for managing outstanding payments, partial payments and/or defaults, working with homeowners to get them back on track. However, the City can play a supporting role (see text box below). The lender will report to the City annually on the outstanding loan balance and the LIC will be adjusted accordingly to reflect the remaining loan principal.

When the loan is fully repaid, the lender issues a pay-off statement to the homeowner confirming that the loan has been fully repaid and closed. The lender notifies the City to update the project tracking database, and to remove the lien from the property.

Repayment Delinquencies, Deferrals and Defaults

All parties wish to avoid delinquencies and defaults and, therefore, the Program is designed to provide clear guidance on the process to address these activities along with any resulting penalties. The Program design offers flexibility to participants to minimize risks.

- **Delinquencies.** The Energy Concierge will play a key role in participant outreach. If participants become delinquent in their payments, the City will provide prompt and clear guidance on the payment requirements and penalties for non-payment. It is recommended that the City only get involved when repayment delinquencies exceed 180 days; the actual timing of the City triggering the LIC repayments to cover a delinquent account is to be determined in collaboration with the lenders.

  The City will notify participants of the current loan status, clarify payment requirements, potential penalties, and risks of non-payment. The lender could be authorized, in consultation with the City, to develop a revised payment plan with a deferral (e.g., loan extension). The deferral could extend the loan period to reduce monthly payments, add

[24] Canadian Financing Program Administrator. pers., com, Nov 25, 2022.

the missed payment(s) to the end of the loan term, or to set a period of lower payments after which the monthly payments would return to the regular payment amount.

- **Defaults**. In the case of a default, and after exercising all options to recoup funds, the lender may request the City recoup funds through the LIC mechanism. The City may choose to contact homeowners to assess their situation, before applying the LIC. If the City deems that the lender has exhausted all options, the City will use the FCM credit enhancement to reimburse the lender for the portion of the loan in default and the LIC will take affect to collect funds.

Yellowknife is not at risk of loss due to delinquencies or defaults. The loan capital comes from the lender, the lien on the home provides additional security to the lender and the FCM credit enhancement mitigates municipal risk. The City will support and work with a homeowner to establish an LIC repayment plan. However, the City must be comfortable with any potential tax sale that could result in nonpayment of the LIC.

4. Reporting

The City will annually report on the status of LIC accounts. The City will also prepare and deliver, with the collaboration and input from the lender, an annual report on Program progress, which may include information on the number of homeowners engaged, number of homes that participated, loan volume, loan status, outstanding loan values, energy and GHG savings. The report will conform to guidelines and requirements from within Council and FCM funding parameters.

Participant Re-entry

Participants can be allowed to re-enter the Program to obtain another loan for further retrofit measures, except in cases where they 1) have outstanding loans that are delinquent or are not in good standing with the lenders, 2) exceed the acceptable TDSR, or 3) are not approved by the participating lenders.

Once a homeowner has paid off a certain percentage of their loan, the system will trigger the Energy Concierge to re-engage with participants to notify them of their eligibility and discuss potential options to continue their home energy retrofits journey. The Energy Concierge will work with the participant to revisit their EnerGuide assessment and prioritize the remaining retrofit measures for the next phase of the work. This process encourages the homeowner to consider home energy retrofits as a long-term journey, not a one-off project.

6.4 Roles and Responsibilities of Program Partners

Table 7: Roles and Responsibilities of Program Partners (L = Lead; S = Support)

Program Team/Partners	Role/Responsibilities	Program Delivery Stage				
		Discovery	Application & Approval	Implement Projects	Project Completion	Program Evaluation
City of Yellowknife	• Program lead • Applies for FCM funding • Reports to Council, Program funders • Procures Program partners (EAs, lenders) • Manages all Program components (e.g., marketing and outreach, website, Energy Concierge, application preapproval, approval, work plan review, participation database, reporting and evaluation).	L	L	S	L	L
Community Engagement	• Leads Program marketing and outreach activities (City staff or Marketing Agency)	L	S	S	S	S
Contractors	• Complete eligible measures	S	S	L	S	S
Third-party Lender	• Originates and services loans (underwriting, disbursements, repayments) • Collects repayments directly from homeowners and informs Program Administrator • Reports to the City of Yellowknife	S	S	S	S	S
Arctic Energy Alliance	• Coordinate with City to align Programs • Perform EnerGuide evaluations, QA/QC, issue EnerGuide report, submit to NRCan • Promote Programs to homeowners	S	S	S	S	S
FCM	• Grant funding	S	S	S	S	S
NRCan	• EnerGuide Rating System (ERS) • Manages EnerGuide house files and data transfer	-	S	-	S	S
NT & NU Contractor Association	• Collaborate on capacity building/training • Promote Program	S	S	S	S	-
NT Assoc. of Communities	• Inform Program design • Promote the Program and refer participants	S	-	-	-	S

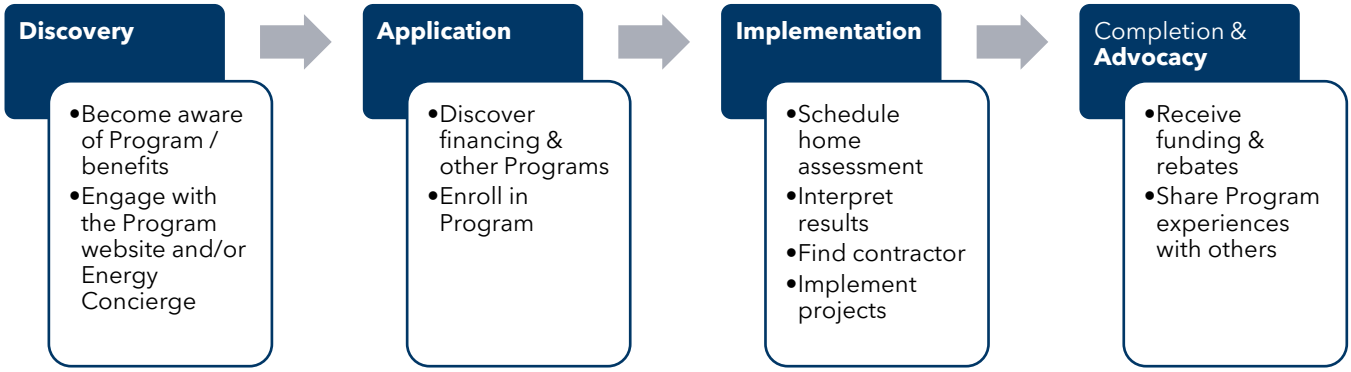
6.5 High-level Marketing and Communications Strategy

The marking and communications strategy have three main goals, including:

- Raise awareness about the benefits of energy efficiency and renewable energy improvements
- Inform homeowners about the City-supported financing Program and other Programs and services to make those improvements a reality
- Drive homeowners to the Program website and Energy Concierge to participate.

Marketing and communications should include a mix of in-person, traditional and digital marketing, and engagement tactics along the participant journey from discovery through to completion and advocacy. See Figure 7.

Figure 7: Program Participant Journey



The marketing strategy includes four high-level engagement campaigns that would be deployed over the four-year Program period and support various stages of the participant journey.

Table 8: Proposed Marketing Campaigns and How the Support the Customer Journey

Campaign	Discovery	Application	Implementation	Advocacy
Program Launch	●	●		
Broad Awareness	●	●	●	●
Program Partners	●	●	●	●
Target Participants	●	●		●

Note that this is a high-level strategy. During the implementation phase, a detailed engagement plan will need to be developed by the City or a marketing agency. The plan should outline specific tactics, channels, budget, schedule and a monitoring and evaluation plan to assess the effectiveness and value of the different tactics, approaches, and delivery methods. Specific elements of the engagement plan can be delivered and/or supported by the City, a contracted marketing agency and Program partners (e.g., GNWT, AEA, NT & NU Construction Association, NT Association of Communities, Contractors).

The table below outlines a high-level schedule of activities.

Engagement Strategy/Campaign	2024	2025	2026	2027
Detailed Engagement Plan				
Broad Awareness				
Engage industry and community groups				
Program launch				
Targeted markets with key opportunities				
Evaluation				

Below, we describe the objectives of each campaign, the target audience, key messages, activities, and schedule.

6.5.1 Broad Awareness

A broad awareness campaign can help to lay the groundwork prior to the Program launch. Homeowners may not understand the role energy plays in their daily lives, how they consume energy, and how to reduce their consumption. The broad awareness campaign can help improve homeowners' understanding of their energy use and the benefits of undertaking energy efficiency and renewable retrofits. It can be used to promote existing programs and support and generate excitement and interest in the new Program. This step can also provide an opportunity for additional research about the financing offer, the target market and the marketing strategies and the channels best suitable to reach them,

Objective: Engage the community, improve energy literacy, and provide information on the benefits of energy efficiency, and existing programs.

Target Audience	Yellowknife homeowners

Key Messages:

- Energy efficiency and renewable energy home improvements can lower your heating bills, make your home healthier and more comfortable and reduce your climate impact.
- There are existing programs and services to help you improve your home, including AEA Programs and Canada Greener Homes rebates and zero interest financing.
- The City will launch a financing program soon to further support homeowners.

Call to Action: Visit the City's website to find out more.

Activities:

Activities	Channel
Information Sessions	• Community events • Trade/home shows, Conferences • Municipal/AEA/GNWT events
Bill inserts	• Municipal property tax/utility bills • Municipal newsletters • Utility bills
Marketing campaigns	• Website • Social media • Traditional media (print & radio) • Information brochures

Schedule: This campaign can begin before the financing Program launches and run for the Program duration.

6.5.2 Engage Industry & Community Groups

Partnerships with key stakeholders are critical to Program success. Contractors are often the first point of contact with homeowners considering home retrofits. Their awareness of the Program and willingness to promote it to their clients can reach targeted homeowners and extend the Program marketing reach. A second key stakeholder groups are industry and community associations that can help champion the Program. Training, educating, and supporting Program partners/industry will ensure that they are aware of, and can communicate, Program details, major changes, and updates to their clients.

Objectives:

- Inform industry stakeholders about the City-supported financing and turnkey service and the benefits to homeowners and industry

  Ensure that partners know where to send homeowners seeking information or support

Target Audience	• AEA and Energy Advisors • NWT vendors offering energy efficiency and renewable energy products and services • NT & NU Construction Association • NT Association of Communities

Key Messages:

- Contractors:
  - The City is offering a turnkey service and preferred financing to create demand and help your clients with retrofits.
  - Leverage Program resources to promote your services to clients

Call to Action: Leverage the Program to better support your clients

Activities:

Activities	Channel
Program-specific training via webinars, workshops, or in-person	• Online • Contractor association meetings and events • Industry trade shows, events, and conferences • Local Hardware stores • Community association meetings • AEA meetings and events
Program reference content (e.g., pamphlet)	• Program website • Brochures to contractors, community groups, etc.

Schedule: Prior to Program launch

6.5.3 Program Launch Campaign

Having a program is one thing; everyone needs to know about it! The Program launch campaign is designed to introduce the Program, generate interest among eligible homeowners and Program partners, and persuade homeowners to participate.

Objective: Raise awareness about the new financing program and services available to homeowners and partners, generate interest and identify who is eligible and how to participate.

Target Audience	• Yellowknife single family existing homeowners, including rental property owners • NWT vendors that offer energy efficiency and/or renewable products and services

Key Messages:

- The City has launched a new financing Program and services to help homeowners undertake home energy and renewable energy improvements.

Call to Action: Visit the Program website to find out more and how to participate.

Activities:

Activities	Channel
Launch event promotion	• Press releases and media invitation • Social media • TV, radio, print media • Invite local community groups and industry stakeholders, including NT & NU Construction Association, NT Association of Communities, among others
Launch event	• In-person, leveraging an existing well-attended community event with prominent community members (e.g., Mayor, lender, GNWT, AEA, Contractors, Program Partners) in a prominent, location (e.g., City Hall, AEA offices)
Marketing campaigns	• Email notifications • Social media channels • Community events • Information brochures available in prominent locations (e.g., City Hall, lender branch, AEA)

Schedule: At Program launch

6.5.4 Targeted Markets With High Energy and GHG Reduction Opportunities

While the Program will be open to all Yellowknife homeowners, Yellowknife should focus on market segments most likely to participate and with the largest potential emission reductions.

Objectives: Provide tailored messages to targeted markets to encourage retrofits and Program participation.

Key Messages: Messages should be tailored to different audiences and their motivators and barriers—which can be investigated further through research into the target community.

We reviewed the total number and type of single-family dwellings in Yellowknife and applied a market funnel to narrow down the homes that could be eligible for the financing Program (e.g., homes that are eligible for an EnerGuide assessment). The market is further funnelled by the age, heating system, and other qualities of the home to develop the most relevant retrofit measures that will align with homeowner interests and the City's goals.

Moreover, understanding household demographics allow the City to segment the market and develop a messaging style (i.e., owner occupants require a different message than landlords), and it ensures that the household meets other criteria (e.g., the applicant is a resident of Yellowknife). Additional information on housing stock characteristics and household demographics are in the Landscape Scan in Appendix C: Landscape Assessment.

The homeowner messages focus on relevant retrofit measure(s). Homeowner profiles and links to the opportunities that preferred financing provides. All messages should be relevant and personal to the homeowner using vivid language and a persuasive offer.

Considering the housing stock characteristics, community demographics and program modelling, we identified key target audiences.

Home Characteristics	Homeowner Profile
Single-family homes: Most of Yellowknife's housing is single family homes, including detached, attached, row houses and mobile homes. And this aligns with FCM funding criteria.	**Moderate to High-income Homeowners**: Higher income households age 20-64 are more able and willing to invest in their home. Financing can improve access and reach to homeowners that fall just above low-income thresholds and may not have access to other programs, services and support.
Homes constructed on or before 1990: Most Yellowknife housing is older and there appears to have been little renovation activity since 2015.	**Rental Property Owners**: Almost half of eligible dwellings are rental properties, indicating a targeted campaign is needed to demonstrate the economic benefits to rental property owners (e.g., if tenants save money on energy bills, they are more able to pay rent, increase property value and higher tenant satisfaction).
Homes heated with oil: Heating oil is the most used heating fuel. These homes offer huge GHG reduction potential and align with the City's focus on heating, diversifying the energy profile and long-term adaptability.	**Homebuyers**: Existing home sales reached a high in 2020. Home sales can be an important trigger for home renovations.

Moderate to high-income homeowners of older oil-heated homes

Approximately 75% of dwellings in Yellowknife were constructed between the 1960s and 1990s and 4% were constructed before the 1960s. Almost 70% of homes are heated with oil. We suggest targeting moderate to high-income homeowners of older oil-heated homes for insulation and biomass systems.

Older homes heated by oil are more likely to have a leaky envelope, leading to higher home heating bills and resident discomfort. Moreover, homes heated with oil have high heating costs. Improving the envelope can provide cost-effective improvements to the house and improved comfort is likely the primary driver of air-sealing and insulation measures. Fuel switching from an oil to a biomass system is cost-effective and offers significant GHG reduction potential. Focusing on envelope and heating systems will reduce the overall home heating load and the upfront cost of mechanical installations. Since insulation will help to decrease heating loads, the capacity of the heating equipment may also be reduced. Smaller equipment not only has a lower price tag but also reduced operating and maintenance costs.

Key Messages: Insulation and biomass systems offer significant cost savings. Other benefits include reduced climate impacts, enhanced reliability, reduced maintenance (e.g., no oil tank refills), and cultural significance of heating with wood.

Moderate to High-Income Homeowners of Newer Homes

While most of Yellowknife's housing stock is older, newer homes (at least 6 months from the date of occupancy) could reduce their electricity bill costs by installing solar PV panels. Electricity prices in the NT are significantly higher than in the rest of Canada. In 2016, NT households paid more than 30 cents per kilowatt hour (kWh) for electricity whereas the Canadian average electricity price was 13 cents per kWh. [25] Newer homes typically do not need envelope upgrades because they are built to a newer, more stringent building code from the start. However, newer homeowners have shown high interest in solar PV in other financing programs.

Key Messages: Generate your own electricity at home with solar PV to reduce your electricity bills. Yellowknife's new financing Program offers preferred rates and terms to cover 100% of the upfront costs and homeowners are expected to be cashflow positive in year 1.

Rental Property Owners

Almost half of eligible dwellings in Yellowknife are rental properties.[26] This could be due to several factors, including the high cost of living and the transient nature of the community. According to the 2016 Census, over 24% of the population aged 5 and older living in Yellowknife in 2016 did not live in the community 5 years previous. Between 2015 and 2019, in an average year, the region lost over 200 people (net) to interprovincial migration. This was offset by positive net intraprovincial migration and by immigration, which averaged 206 per year over the 5-year period.[27]

Key Messages: Improved efficiency offers rental property owners economic benefits. Increase your property value, improve tenant satisfaction, and reduce risk—as tenants save money on energy bills, they are more able to pay rent.

Home Buyers

Home sales can be a trigger for renovation activity as most home renovations occur within the first three years of buying a home.[28] Total resales were up by 12% in 2020 compared to 2019 and this trend continued into Q1-Q2 2021. The seasonally adjusted sales-to-listing ratio rose over 100% in Q2 2021, an indication of the seller's market condition.[29] While this level of new listings is not sustainable as interest rates increase and credit conditions restrict, homebuyers remain a key target audience.

Key Messages: Consider energy efficiency along with other planned home renovations to improve your home's performance, reduce energy and utility costs, and increase your property value. Yellowknife's home energy financing Program allows up to 30% of non-energy upgrades to be included.

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[25] Canada Energy Regulator Market Snapshot: Explaining the high cost of power in northern Canada.
[26] Statistics Canada, 2016 Census of Population.
[27] Immigration Matters. Economic Profile Series: Yellowknife, Northwest Territories Spring 2020
[28] CMHC, Canadian Housing Observer 2010. Accessed at http://www.normfisher.com/pdfreports/cmhc_housing_observer_2010.pdf
[29] Housing Market Information, Northern Housing Report 2021. CMHC

7. Impacts and Costs

There is a total of 7,515 residential dwellings in the City of Yellowknife.[30] However, not every household is eligible or expected to participate in a finance program, i.e., not everyone will be interested, or able, to undertake energy retrofits and take on financing.

We apply a market funnel to assess the Program's applicable market, by quantifying the number of homes that are eligible and most likely to participate, from which we can then develop a realistic estimate of Program uptake. Applying the market funnel resulted in ~4,700 eligible single-family homes, from which we provide estimates on Program uptake, impacts, and costs below.[31]

7.1 Estimated Uptake

By establishing a financing program, Yellowknife will be well placed for growing demand as new energy policies and requirements emerge. The four-year HEF Program aligns with the growing momentum of local, territorial, and federal policies, as well as FCM funding. Emerging policies and programs could substantially increase home energy upgrades and financing uptake, such as increasing carbon pricing on home heating fuels (reaching $170/t CO_2e by 2030), territorial efforts to encourage biomass heating, federal incentives for fuel switching to electric heat pumps, a national model energy retrofit code, and Yellowknife's Building Code requiring new construction and major renovations to achieve a minimum rating in the EnerGuide scale. By the time these policies are enacted, HEF will be well placed to support Yellowknife residents to adhere to new energy policies and requirements, which could lead to expanded uptake in future years.

Financing Can Be a Catalyst for Action

Financing can't do it alone; it must be part of a complementary package of policies and Programs. Policies such as increasing carbon pricing, existing building energy codes, building labelling, building performance standards and/or fuel-based equipment bans, could increase energy upgrade activity and homeowners' need for financial assistance.

Establishing a finance program will allow the City to build and test the Program infrastructure needed to meet growing demand.

The projected Program uptake in this section allows Program partners to build the internal capacity necessary to expand and mature a financing Program to meet future demand.

Using Dunsky's proprietary finance model that applies empirical evidence from other jurisdictions with similar finance programs, we modelled three uptake scenarios: low, medium, and high. Based on this, a financing Program in Yellowknife could attract 40–220 participants over the first four years (see Table 9). It should be noted that this does not include homeowners that may be influenced by

[30] Statistics Canada. 2022. *2021 Census of Population*.
[31] Market funnel excludes apartment buildings (30% of the market) and a quarter of rented properties (11% of the market).

the Program but choose to finance their home energy retrofit projects through other means nor does it differentiate uptake between higher–and lower-income households.

Table 9: Estimated Finance Program Participation[32]

Uptake Scenario	Annual average for the first 4-year	Cumulative adoption by year 4	Percent market penetration by year 4
Low	10	40	0.8%
Moderate	30	120	2.5%
High	55	220	4.7%

These volumes appear low compared to the retrofit activity needed to meet the CCEAP's targets to have 1,250 homes adopting a LIC-based retrofit financing.[33] However, in Northwest Territories' evolving energy policy context, it is likely that other complementary policies could increase energy upgrade activity and homeowners' need for financial assistance. Financing can lay the foundation to support these other policies and programs.

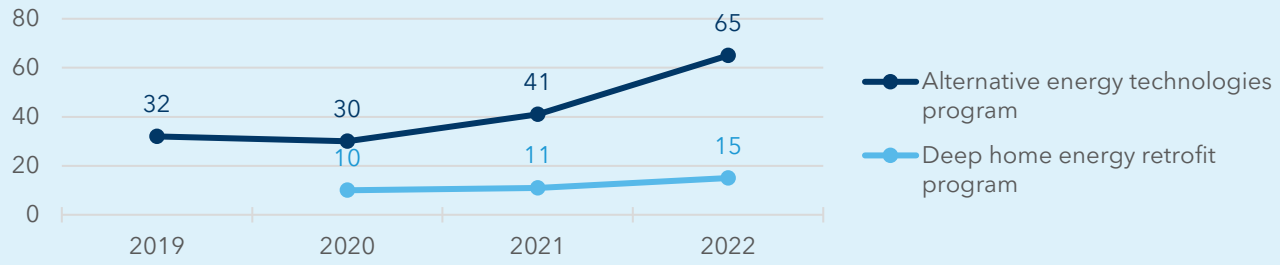
Dunsky's proprietary finance model and modelled retrofit packages

Dunsky's finance model estimates useful information for Program design, including:

- Potential Program uptake
- Program impacts estimates (energy, GHG reductions)
- Associated Program administration costs (fixed, variable) and required resources
- Required loan capital and capital flows

Uptake scenarios are based on a market assessment that funnels all local dwellings through a range of eligibility and feasibility criteria. Projections also considered Arctic Energy Alliance's Programs' uptake, which show a general upwards trend in retrofit volume activity in the Territory. Additionally, biomass-based heating systems are relatively cheaper to operate compared to heating-oil-based heating systems and are not subject to fluctuating fossil fuel prices; homeowners switching to biomass for long-term cost savings could unlock further uptake potential.

Figure 8: Completed projects in NWT under Arctic Energy Alliance's select programs in the last four years.[34]



[32] Totals may not match due to rounding.
[33] City of Yellowknife. 2015. *Corporate and Community Energy Action Plan 2015-2025*.
[34] Number of completed projects are taken from Arctic Energy Alliance's publicly available annual reports.

7.2 Modelled Retrofit Packages

Considering the Program goals, Yellowknife's housing stock characteristics and energy use, as well as results from the homeowner survey, Dunsky developed ten retrofit packages that include relevant, affordable, and viable energy and GHG-reducing measures. These include:

- Four retrofit packages for single-family homes with heating oil space and water heating systems
- Four retrofit packages for single-family homes with heating oil space and electric water heating systems
- Two retrofit packages for manufactured mobile homes with heating oil space and electric water heating systems

The space and water heating combinations reflect the city of Yellowknife's existing housing stock, which is predominantly heated with heating oil and a mix of single family detached, attached and mobile homes.

Retrofit packages include a mix of energy efficiency, biomass heating and solar PV projects that offer the greatest GHG emissions savings, are cost-effective, include available rebates, and/or are of interest to homeowners based on our experience and survey results. The total project costs range from $15,000 to $62,000 excluding rebates ($7,000 to $37,000 with rebates). Recent studies conducted by Dunsky showed that the proportion of homeowners willing to spend more than $40,000 is very small (4%-10%). The modelled retrofit packages are shown in Table 10.

Dunsky's Modelled Retrofit Packages

Modelled retrofit packages are defined by Dunsky's analysis team, based on Yellowknife's housing stock characteristics, Program goals, past Yellowknife retrofits (identified through EnerGuide data), survey results (preferred measures, retrofit investment intentions, etc.) and knowledge acquired from other similar programs. Retrofit packages are built to approximate Program impacts and required capital, and do not represent recommendations for specific measures to be installed by homeowners. They are typically cost-effective with current available incentives/rebates and would result in positive cashflow for homeowners through bill savings within the loan term. In the Program, homeowners should choose their projects based on their preferences, their EnerGuide assessment results, and advice from the Energy Concierge.

Retrofit packages should not be presented to homeowners as they are only helpful for Program design estimates.

Table 10: Example Retrofit Packages Modelled

Retrofit Package	1	2	3	4	5	6	7	8	9	10
Archetype										
Dwelling type	Single-family homes								Mobile homes	
Floor area	236 m^2								124 m^2	
Space heating fuel	Heating oil								Heating oil	
Water heating fuel	Heating oil				Electricity				Electricity	
Energy consumption	233 GJ/yr				190 GJ/yr				145 GJ/yr	
Space heating energy	182 GJ/yr				145 GJ/yr				100 GJ/yr	
Measures										
Pellet furnace	✓		✓	✓	✓		✓	✓	✓	✓
Solar PV		✓		✓		✓		✓		✓
Ceiling insulation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wall insulation			✓	✓			✓	✓		
Costs										
Estimated install cost	$15,000	$22,000	$42,000	$62,000	$15,000	$22,000	$43,000	$62,000	$15,000	$31,000
Available rebates	$6,400	$5,100	$19,300	$19,300	$6,400	$5,100	$19,300	$19,300	$6,400	$11,100
Net (cost–rebates)	$8,600	$16,900	$22,700	$42,700	$8,600	$16,900	$23,700	$42,700	$8,600	$19,900
Loan term (years)	10	15	15	15	10	15	15	15	10	15
Cashflow positive[35]	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1
Savings										
First-year bill savings	$3,000	$2,100	$3,200	$5,100	$2,400	$2,100	$2,600	$4,600	$1,600	$3,200
Energy savings	7%	12%	12%	22%	8%	15%	15%	27%	7%	20%
GHG savings	73%	9%	73%	80%	75%	12%	74%	83%	69%	79%

[35] Cashflow positive refers to the period when estimated bills savings is greater than loan repayments, considering rebates and loan interests.

The following list is assumptions made in the modelling of retrofit packages: [36]

- 10-year loan term (up to $15,000 loan) or 15-year term (loans more than $15,000) with a fixed 5.0% interest rate.
- First-year energy rates: $0.31/kWh for electricity and $1.32/L for heating oil. It is unclear whether federal carbon pricing is included in energy rates, so they are excluded
- annual energy rate increase (all fuels) fixed at 2%.
- Annual maintenance cost assumed at 0.5% capital cost excluding rebates
- Electricity GHG savings assume current grid emissions, i.e., do not consider future grid emissions reductions
- Estimated rebates maximize the combination of Canada Greener Home (up to $5,000 per home, plus $600 for required EnerGuide audits) and AEA's Energy Efficiency Incentive, Deep Home Energy Retrofit and Alternative Energy Technology Programs (up to $20,000 per home).

7.3 Energy and GHG Savings

The estimated energy and GHG savings resulting from all participants' enrollment across the three uptake scenarios are shown in Table 11.

Table 11: Estimated Program Energy and GHG Savings[37]

Uptake Scenario	Energy savings (GJ)		GHG savings (t CO_2e)	
	First 4-year average	Cumulative year 4	First 4-year average	Cumulative year 4
Low	700	2,900	200	900
Moderate	2,100	8,600	700	2,900
High	3,900	15,700	1,300	5,200

The estimated cumulative GHG savings over the first four years is equivalent to 61% of CCEAP's target (4,688 t CO_2e). [38]

[36] Note that the retrofit packages are illustrative to model estimated economic, energy and GHG impacts. Homeowners will be able to choose the energy measures that are tailored to their home and preferences. There may be many permutations and the resulting costs, energy, GHG, and bills savings will vary for each homeowner.

[37] Totals may not match due to rounding

[38] City of Yellowknife. 2015. *Corporate and Community Energy Action Plan 2015-2025*.

7.4 Non-Energy Benefits

While not quantified, the finance Program is expected to provide additional non-energy benefits, including:

- Improved homeowner comfort (e.g., homeowners improving the efficiency of their home can expect fewer drafts in winter, and more consistent internal temperatures).
- Improved health and safety (e.g., reduced air pollution from fossil fuels, better air quality, reduced moisture, mould issues)
- Increased resiliency and climate adaptation (e.g., flood mitigation)
- Improved home value
- Increased economic activity (e.g., jobs created, skills developed, renovation activity increased)

7.5 Program Costs and Budget

We estimated the funding required to support the HEF Program for its four years of operation under three scenarios, estimating low, moderate, and high Program participation. Under the moderate scenario, the estimated funding required is $3.5M, of which $1M is for administrative costs and $2.5M is for home retrofit project loan capital.

Loan capital is assumed to be sourced by a third-party lender and administrative costs to be covered by FCM funding and the City's contribution. There are two possible FCM Community Efficiency Financing (CEF) funding pathways: **Pilot Grant** and **Capital Program**.[39]

1. **FCM Pilot Grant**
    - Grant for up to 50% of eligible cost; up to $500K
2. **FCM Capital Program**
    - Grant up to 50% of eligible costs (up to $5M; not to exceed total start-up and operating costs) and credit enhancement up to $2M.

The estimated funding required to support the HEF Program for its four years of operation, along with potential funding sources and rationale for the two options above are outlined in Table 7-12 and Table 7-13. **The City of Yellowknife should discuss with FCM to find the most suitable funding stream option for this Program.**

The following tables are estimated costs based on conservative assumptions derived from published Program reports in other jurisdictions and professional judgment adapted to Yellowknife's context. Actual costs will vary depending on the final Program design, program administrator costs, marketing and outreach activities, program uptake, external factors, economic conditions, etc. The breakdown of estimated administration and loan capital costs for the four-year Program is shown in Table 7-14 and Table 7-15, respectively.

[39] Federation of Canadian Municipalities. 2022. *Community Efficiency Financing Application Guide*; Consult the application guide for detailed explanation of FCM's CEF offerings including definitions of eligible costs.

Option 1: FCM Pilot Grant

Table 7-12. Estimated funding amount and sources, option 1 (in $K).

		Year 1	Year 2	Year 3	Year 4	Total
Estimated Funding						
Admin. Costs		$397	$262	$152	$212	**$1,023**
Loan Capital		$617	$617	$617	$617	**$2,468**
Funding Sources						
FCM (Grant)		$196	$128	$73	$103	**$500**
City	Application Fee	$14	$14	$14	$14	**$54**
	Contribution	$188	$120	$65	$95	**$469**
3rd-party Lender		$617	$617	$617	$617	**$2,468**

Note: The table above shows estimated funding required from the moderate uptake scenario. Totals may not match due to rounding.

Under the **pilot grant** funding, FCM offers a **grant** up to 50% of eligible costs up to a maximum of $500K.

In this option, a third-party lender is assumed to fund 100% of the loan capital, FCM's pilot grant capped at $500K to help cover administrative costs, and the City to secure the remaining $469K to run the Program.

We recommend the City of Yellowknife:

1) request a larger grant under the pilot stream given the higher costs in the Northwest Territories. FCM's Sustainable Affordable Housing (SAH) Program provides higher grants for Northern applicants. [40] There is a case to be made that CEF funding should do the same.

2) discuss with other organizations such as GNWT or third-party administrator to cover all or a portion of the $469K

[40] Federation of Canadian Municipalities. 2021. *Sustainable Affordable Housing Application Guide*

Option 2: FCM Capital Program

Table 7-13. Estimated funding amount and sources, option 2 (in $K).

		Year 1	Year 2	Year 3	Year 4	Total
Estimated Funding						
Admin. Costs		$397	$262	$152	$212	**$1,023**
Loan Capital		$617	$617	$617	$617	**$2,468**
Funding Sources						
FCM (Grant)		$307	$199	$111	$159	**$776**
City	Application Fee	$14	$14	$14	$14	**$54**
	Contribution	$77	$50	$28	$40	**$194**
3rd-party Lender		$617	$617	$617	$617	**$2,468**

Note: The table above shows estimated funding required from the moderate uptake scenario. Totals may not match due to rounding.

Under the **capital program**, FCM offers a **grant** up to 50% of total eligible costs (administrative costs and loan capital) not exceed the total start-up and operating costs and a **credit enhancement** up to $2M. The credit enhancement would be a loan loss reserve to mitigate risk.[41] If a participant became delinquent on a loan, the City could use the loan loss reserve to repay the lender for the delinquent portion of the loan then apply the LIC to the property to recoup costs through the homeowner's property tax bill. This reduces lender risk and ensures that no funds for delinquincies come from the municipal tax base.

In this option, a third-party lender is assumed to fund 100% loan capital and FCM provides $776K (representing 22% of total eligible costs and 80% of administrative cost). Yellowknife could not apply for the full 50% of total eligible costs ($1,745) as that exceeds estimated total start up and operating costs ($1,023).

[41] Federation of Canadian Municipalities. 2022. *Community Efficiency Financing Application Guide*

Table 7-14. Estimated Program administration budget for the first four years (in $K).

Year	Program Set-up and Support	Program Administration	Enabling Strategies			Application Fee Revenue			Total Administrative Cost[17] (cost minus application fees)		
			Low uptake	Moderate uptake	High uptake	Low uptake	Moderate uptake	High uptake	Low uptake	Moderate uptake	High uptake
1	$125	$113	$153	$160	$168	$4.5	$13.5	$26	$386	$384	$380
2	$10	$113	$133	$140	$148	$4.5	$13.5	$25	$251	$245	$245
3	$10	$113	$23	$30	$38	$4.5	$13.5	$25	$141	$139	$135
4	$10	$173	$23	$30	$37	$4.5	$13.5	$24	$201	$199	$196
Total	**$155**	**$510**	**$333**	**$358**	**$391**	**$18**	**$54**	**$100**	**$980**	**$969**	**$956**

Note: Totals may not match due to rounding.

Table 7-15. Estimated loan capital disbursement and total Program costs for the first four years (in $K).

Year	Loan Capital Disbursement[42]			Total Administrative Costs and Loan Capital Disbursement[43]		
	Low uptake	Moderate uptake	High uptake	Low uptake	Moderate uptake	High uptake
1	$209	$617	$1,132	$596	$1,001	$1,512
2	$209	$617	$1,115	$461	$866	$1,361
3	$209	$617	$1,098	$351	$757	$1,235
4	$209	$617	$1,081	$411	$817	$1,279
Total	**$838**	**$2,468**	**$4,426**	**$1,819**	**$3,441**	**$5,388**

Note: Totals may not match due to rounding.

[42] Loan capital disbursements are based on estimated uptakes and costs of retrofit packages.
[43] An additional potential cost which is not included in this table is the cost of loan defaults. The agreement between the City and third-party Lender will outline the impact of a loan payment default. To provide a sense of scale, assuming a default rate of 1% of annual principal loan repayments (i.e., not including loan interest), total defaults would range from $1K (low uptake) to $6K (high uptake) over the four-year period.

7.5.1 Program Costs and Budget Assumptions

The assumptions related to program costs and budget estimations include:

Program set-up and Support: In Year 1, we assume a one-time Program & system set-up cost and legal consultation fees; followed by ongoing program & system administration costs.

Program Administration: This cost reflects 1.0 Full-Time Equivalent (FTE) position. Program administration includes one Energy Concierge and all other staff time (existing staff and additional support) to administer the Program.[44] Additionally, staff will conduct ongoing planning, research, and evaluation to prepare for the eventual transition off FCM funds. This time does not include staff time for the Yellowknife oversight (e.g., Council) or other project partners.

We assume a Program evaluation cost of $60K at the end of year 4. Evaluation costs generally range from 1% to 3% of Program costs. This includes undertaking a Program process and impact evaluation that typically involves surveys, data collection, data analysis, and reporting.

Enabling Strategies: Enabling strategies are intended to drive demand for home energy retrofits, and thus financing. These costs include:

- For the first two years of the Program: Funds dedicated to (1) attracting, training, and retaining Registered Energy Advisors which will then transition into a Full-Time Equivalent and (2) funds dedicated to education, training and certifying local contractors' skills ($100K annually).
- Costs to contract an Energy Advisor to conduct EnerGuide home assessment blitzes, including fees related to transportation, accommodation, and other allowances.
- Marketing and outreach.

Application Fee Revenue: A one-time administration fee of $450 per participating home to partially cover the cost to administer the Program.

Estimated Funding: Third-party funding for the initial four years is expected to come from FCM in the form of a grant and credit enhancement, as well as loan capital from third-party lender(s). After the first four years of the Program, the FCM grant must be replaced to cover administrative costs. Funding could come from:

- City use its reserves, issuing bonds, or borrowing from other sources. Government must minimize impacts on the tax base, debt servicing limits and municipal cashflow.
- Private investment from third-party Program administrators (e.g., PACE Atlantic), who can bring third-party capital (e.g., Van City Investment Bank) and cover 100% of costs through user fees. The City could explore this option at the end of the four-year period or as soon as participation volume reaches the estimated moderate- to high-scenario, whichever comes sooner as it would make a strong business case to attract third-party investment.

[44] Administering the Program includes activities such as, but not limited to, application reviews, enquiries management, participants support, marketing & outreach, engage key stakeholders, and LIC registration.

8. Preliminary Evaluation Plan

8.1 Evaluation Framework

The evaluation must balance an easy process to track energy savings and to access reliable, relevant, and meaningful results with budget, time, and resource constraints. The evaluation is guided by five key principles:

1. **Measurable:** Monitoring and evaluation should clearly define the measurements used to evaluate Program success and follow industry best practices and established processes so that results are credible.
2. **Objective:** Evaluation results should be reliable, unambiguous and consist of an honest and transparent assessment of the Program's contribution to the City's goals and the cost and benefits of taking the Program to scale.
3. **Relevant:** The evaluation objectives and activities should consider all relevant variables and criteria to assess alignment with the overall Program goals and criteria for measuring success.
4. **Valuable:** Evaluations should always be conducted with the objective of creating value for all stakeholders, namely by effectively communicating the results and recommended improvements based on the evaluation's conclusions.
5. **Manageable:** The monitoring and evaluation process should be reasonable and practical given the Program's size, budget, time, and resource constraints while maintaining the appropriate level of rigour.

The evaluation will largely be qualitative given the Program's size and key objectives and measures of success drawing on standard energy efficiency Program evaluation guidelines and practices, including:

- Program design and implementation review (i.e., document and file review)
- In-depth interviews with key Program staff and partners/key market actors
- Surveys with Program participants and non-participants
- Analysis and verification of Program tracking data

A common thread in all evaluations is the importance of identifying Program data needs and establishing robust data collection and tracking mechanisms early on. Effective data collection will facilitate future evaluations—particularly for monitoring and reporting the Program's progress toward objectives, measuring success, and improving the Program (and eventual Program).

8.1.1 Evaluation Objectives, Questions, KPIs and Metrics

The following section outlines the four-year Program objectives and questions that will guide the evaluation to determine how well the Program achieved or is progressing toward objectives. Each question can be answered, in part, by key performance indicators (KPI). The KPIs are assessed through specific metrics from data sources linked to the project. The evaluation questions and KPIs may be refined as the Program evolves by the time it launches after final negotiations with project partners and contracted delivery agents.

1 Test the benefit of financing

Evaluation Question	KPIs	Metrics
Was the Program able to attract private investment (e.g., FCM, private financing, territorial government)?	Amount of private investment secured from each funding source to run the Program (quantitative)	• Total amount of private investment secured by funding sources • Total amount of private investment secured as a percent of total cost of running the Program and by funding sources
Were participating homeowners able to access financing and complete projects they may not have otherwise been able?	Number of completed home energy retrofits in Yellowknife. (quantitative & qualitative)	• Total number of participating homes • Demographics of participants and non-participants • Participants motivations for participating • Barriers preventing non-participants from participating
	Participant and non-participant demographics (quantitative & qualitative)	
	Increase in retrofit size (e.g., higher number of installed measures, measures with higher energy savings) (quantitative)	• Number and types of installed measures and depth of energy savings per home compared to past Program participation (e.g., AEA or Canada Greener Home rebate Programs).
Were participating homeowners capable of making loan payments?	Participating homeowners' capability of making loan payments (quantitative)	• Number and percent of participating homeowners whose monthly loan costs are offset by bills savings • Participant delinquency rate throughout their loan term • Participant default rate • Number of times the LIC used

2 Set up Program infrastructure and optimize processes

Evaluation Question	KPIs	Metrics
Was the Program administered internally with assigned resources, at reasonable effort and cost?	Positive feedback from internal City staff on implementation process effort and clarity of responsibilities (qualitative)	• Partner feedback on process effort
	Reasonable cost per tonne of CO_2e mitigated (quantitative)	• Planned vs. actual costs per tonne of CO_2e mitigated for: • Program administration • LLR (if applicable) • Other Program costs
Has the City effectively engaged/coordinated activities with key partners, including lenders, Approved Contractors, GNWT, and AEA?	Positive feedback from partners on implementation process effort and clarity of responsibilities (qualitative)	• Partner feedback on process effort
Can a future program be administered at a reasonable cost to the City with the aspirational goal of being cost neutral?	Evaluate the proportion of administration cost that is covered by application fee revenue and whether the future scaling of the Program can help attain cost neutrality. (quantitative) As the Act allows for cost recovery mechanisms to be added to the total amount financed to participants, the City should consider whether the flat application fee is sufficient to cover administration costs or a non-linear fee (as a percentage of the loan amount), capped at a certain amount, would be better suited to help cover administration costs and achieve administration cost neutrality. (quantitative)	• Program administration costs vs application fee revenue • Application fee vs as a % of the loan with cap
Should the City or third party administer a future program? If it is a third party, what elements does the City keep?	Consider whether to 1) continue administering the Program, 2) engage a third-party administrator to fully run the Program, or 3) retain some part of the process	• Cost to administer the Program • Municipal staff feedback

	and hand over the rest to a third-party administrator. After running the Program for a few years, the City should have enough experience and be in a better position to evaluate the trade-offs and added value of administering the Program themselves (qualitative), have a better understanding of the costs of administering the Program (quantitative) and have a better view of the potential risks of the three potential pathways (qualitative).	• Documented Program issues/risks and mitigations

3 Test the recommended delivery model

Evaluation Question	KPIs	Metrics
Has the City reduced wait times for EnerGuide assessments?	Total number of EnerGuide assessments organized by the Program and participants' wait times during the Program duration compared to before the Program (quantitative).	• Number of pre- and post-retrofit EnerGuide assessments organized by the Program • Average participant waiting time for pre- and post-retrofit EnerGuide assessments
Were participating homeowners able to find contractors to install measures efficiently and effectively?	Did participants use the AEA contractor directory to find vendor to install eligible measures within the required 24-month project schedule (quantitative).	• Contractors used by participants compared to vendors listed on AEA's directory • Participation satisfaction with the work completed by approved contractor • Difference between actual project schedule and 24-month deadline
	Approved contractors installed eligible measures that achieve estimated energy savings (quantitative)	• Difference between estimated and achieved energy savings (leverage EnerGuide assessments)

Did participants see value in the Energy Concierge service to reduce Program and project complexity?	High homeowner satisfaction with the Energy Concierge service (qualitative)	• Participant satisfaction with support provided • Demographics of homeowners using additional Program support
Were participants satisfied with their experience and are the costs, time, and effort to participate deemed reasonable?	High homeowner satisfaction with their experience throughout the Program (qualitative)	• Participant satisfaction with service and supports provided by the Program • Participation satisfaction with cost, time, and effort to Program participation

4 Improve single-family homes efficiency, increase renewable energy, and reduce GHG emissions

Evaluation Question	KPIs	Metrics
How many homes participated in the Program as a percentage of the target?	Number of completed home energy retrofits through the Program (quantitative)	• Total number of participating homes compared to the target
What upgrades did Program participants complete and what impact was achieved?	Types of installed measures through the Program (quantitative)	• Number and depth (or size) of installed measures for each eligible measure category (e.g., attic insulation, wall insulation, solar PV, biomass heating system) • Number of homes that completed fuel-switching measures (from fossil fuel to biomass/electricity)
	Energy and GHG impacts of installed measures through the Program (quantitative)	• Energy savings per home, by primary home heating fuel type and by type & number of installed measures • GHG savings per home, by primary home heating fuel type and by type & number of installed measures
How much did the Program contribute to the City's energy and GHG reduction goals?	Reduce community energy consumption and GHG emissions (quantitative)	• Total energy and GHG savings as a percentage of the City's energy and GHG reduction goals

What other actions or initiatives are needed to fill the gap between what the Program achieved and the City's goals?	Compare Program results against the City's CCEAP targets and ascertain the role that the Program has had in achieving CCEAP targets. Should there be gaps between achieved results and CCEAP goals, the City should assess the continued impact of the financing Program along with other actions and initiatives that could help the City to bridge the gap and reach its targets.	• Program tracked results as a % of CCEAP targets • Assessments of other actions offered by the City or others that support and/or are supported by financing (e.g., building codes, incentives, building performance standards, etc.).

5 Increase accessibility

Evaluation Question	KPIs	Metrics
Did the LIC allow for flexible underwriting and better terms compared to market rates?	Program offers flexible underwriting criteria compared to market (qualitative)	• Difference between the Program's underwriting criteria (as negotiated with Lenders) with LIC compared to market offers
	Program offers better terms compared to market rates (quantitative)	• Difference between the Program's loan terms and interest rates for the same amount of loan (as negotiated with Lenders) compared to market rates.
Did the Program help to reduce overall time by coordinating EA blitzes and using local contractor directories?	Overall retrofit transaction time with coordinated EA blitz and using contractor directories compared to typical market performance (quantitative)	• Overall time from homeowners submitting Program applications to project completion • Average participant waiting time for pre- and post-retrofit EnerGuide assessments • Average participant waiting time to obtain project quotes from contractors and completing projects

6 Build local capacity

Evaluation Question	KPIs	Metrics
Did the Program contribute to local skills development and job creation?	Local skills development and job creation among City staff and within the region (quantitative)	• Number of City FTE created by the Program • Number of locally trained EAs to serve existing home market in Yellowknife and NWT • Number of local contractors engaged by homeowners to perform home energy retrofits as a percentage of all contractors engaged by participants homeowners • Change in the amount of biomass technology vendors and installers in Yellowknife
Do approved contractors feel more comfortable installing highly efficient technologies?	Increased contractor comfort installing highly efficient technologies compared to before the Program (quantitative and qualitative)	• Number of highly efficient technologies installed by local contractors through the Program • Number of trainings received by local contractors through or arranged by the Program & number of participants in each session • Number of professional certifications received by local contractors to install highly efficient technologies (e.g., heat pumps, solar PV) • Contractor perceptions about City support/activities to develop skills & qualifications

8.1.2 Data Sources

Data is expected to come primarily from the following sources:

- **Natural Resources Canada EnerGuide house files:** data on participant housing type, completed pre- and post-EnerGuide assessments, including baseline performance, installed measures, energy consumption, emission reductions, etc.

- **Program database:** data collected through the participant application, project implementation and completion and re-entry phases, managed by the City.
- **Applicant and participant survey:** participant and non-participant surveys will be developed to collect quantitative and qualitative data and completed during the Program implementation and evaluation process (e.g., surveys at project completion to maximize recall, outreach to applicants, Program evaluation period). This data can be quantitative and qualitative in nature to assess underlying opinions, perceptions, and motivations.
- **Program partner interviews:** interviews with GNWT, Housing NWT, Yellowknife City Council, AEA, third-party lenders and other partners can provide feedback on the process, delivery experience, support provided and opportunities for continuous Program improvements.

Additional data sources may be identified when the Program launches and/or during Program evaluation planning.

8.1.3 Evaluation Timeline

The full Program evaluation will be triggered at the end of the four-year Program. However, we recommend that the City of Yellowknife start evaluation planning while the Program is running given the cost and complexity to develop and implement a financing Program and continue to learn. Additionally, some activities (e.g., customer surveys) should be initiated shortly after participation to ensure effective recall of motivations and experiences.

Evaluation planning should be integrated from Program launch by ensuring the correct data is collected to assess the objectives outlined above. Mid-Program evaluation planning should begin after two years or when 120 homes have enrolled, whichever comes first. Evaluation planning includes engaging an evaluation consultant (if required) and building off the high-level plan herein to develop a detailed evaluation plan. This will ensure that key activities are ready to begin when the 120 projects are completed (or however many are complete after 2 years).

Evaluation activities should be conducted quickly and results available within 2–3 months. For a mid-Program evaluation, this will allow timely adjustment to the implementation process to improve participant and partner experience and results. For the full Program evaluation, this will ensure a timely recommendation to extend the Program and secure the required funding and resources.

8.1.4 Responsibility

The City of Yellowknife will lead evaluation activities, including contracting third-party evaluators (if applicable) to coordinate documents and data sharing/access requirements, and ensuring evaluation timelines are being followed. All Program partners will actively participate in the evaluation (e.g., provide relevant background information and context, and participate in interviews).

A third-party evaluator (if applicable) will develop a detailed evaluation plan (building off the preliminary plan herein) and implement all evaluation activities and report on key findings and recommendations.

8.1.5 Evaluation Dependencies

Several factors can influence an evaluation's efficiency and effectiveness, including:

- **Resources:** Assign appropriate resources (staff and tools) to monitor and track data required for evaluation (at the Program outset in anticipation of future evaluations) and ensure sufficient and experience resources are in place to lead and support evaluation activities.
- **Funding:** The cost of evaluation varies with the frequency, complexity, and scope of data collection and analysis. There are trade-offs between expected evaluation benefits and Program costs/limited resources. Evaluation costs and rigour should be proportionate to the Program scope, savings, and the degree of uncertainty around existing estimates of savings. Evaluation typically costs 1–3% of annual Program budgets.
- **Engaging stakeholders:** The evaluation can be impacted by stakeholders' willingness and ability to participate in the evaluation. This can be mitigated by making evaluation participation a requirement under the Program agreement and/or offering incentives.
- **Data limitations:** Limited access and data sharing and/or gaps in data can create challenges. It will be critical to track and document project results in a centralized location, consistently and accurately from day one.

8.2 Communicating Results

Evaluation results are important, and the conclusions and recommendations will provide credible impact estimates, optimize the Program, and identify direct core decisions about a full-fledged Program. Effective evaluation requires results to be accessible to a broad audience and given quickly to decision makers who will decide whether the Program should end, continue, or become a full-fledged Program. Thus, it is critical that the evaluation is timely and that the report is transparent, concise, understandable, and actionable.

Results will be communicated to four main audiences:

1. **City Staff:** The evaluation and subsequent report will provide clear actionable steps that can be taken to improve the Program design and delivery, and if the Program expands to a full-fledged Program. While the formal evaluation will be conducted when the four-year Program period has been completed, the City of Yellowknife is encouraged to conduct internal evaluations and communicate results (celebrate successes and provide constructive feedback toward continuous improvement) to the team and partners early and often.
2. **FCM:** As a recipient of FCM CEF funding, City of Yellowknife is required to prepare a semiannual report that includes specific details on Program activities and performance. Information will be reported through FCM's standard reporting template.
3. **City Council:** Elected officials will be keen to measure progress toward the City's CCEAP goals and report progress to constituents. The evaluation results will also be used to inform future policy directions and Program funding.
4. **Public:** Participating homeowners will benefit from hearing how their participation contributed to the City's energy and GHG reduction and economic development goals. Sharing success

stories can also persuade non-participants to participate going forward. Program partners and other local industry stakeholders will also be interested to see how the Program has provided economic opportunities, which could generate momentum for greater industry involvement and support.

The City of Yellowknife will communicate evaluation results in several ways, including:

- Making the evaluation report publicly accessible on the website
- Communicating Program impacts to Council, and Program funders (e.g., FCM, GNWT)
- Collecting case studies, stories and data trends that highlight financing successes and communicate them through various media such as the website, AEA, GNWT, newsletters, community events, etc.
- Presenting Program results, lessons learned and best practices through one-on-one interactions, at municipal conferences, trade shows, and industry events, etc.

Appendix A: Regulatory Authority

Local Improvement Charge (LIC) financing, also called Property Assessed Clean Energy (PACE), provides capital to accelerate home energy retrofits. A LIC Program is where:

- Homeowners access long-term financing
- Financing is secured by a special assessment of the property (vs. owner)
- The loan is repaid through the municipal property tax bill (or other mechanisms where a lien is applied to the property)
- Energy savings can help offset monthly financing costs

LIC requires enabling legislation. The Northwest Territories has enacted enabling legislation for LIC Programs, allowing local governments and utilities to offer high-value financing solutions to homeowners through the **Act to Amend the Cities, Towns and Villages Act—Bill 18**.[45]

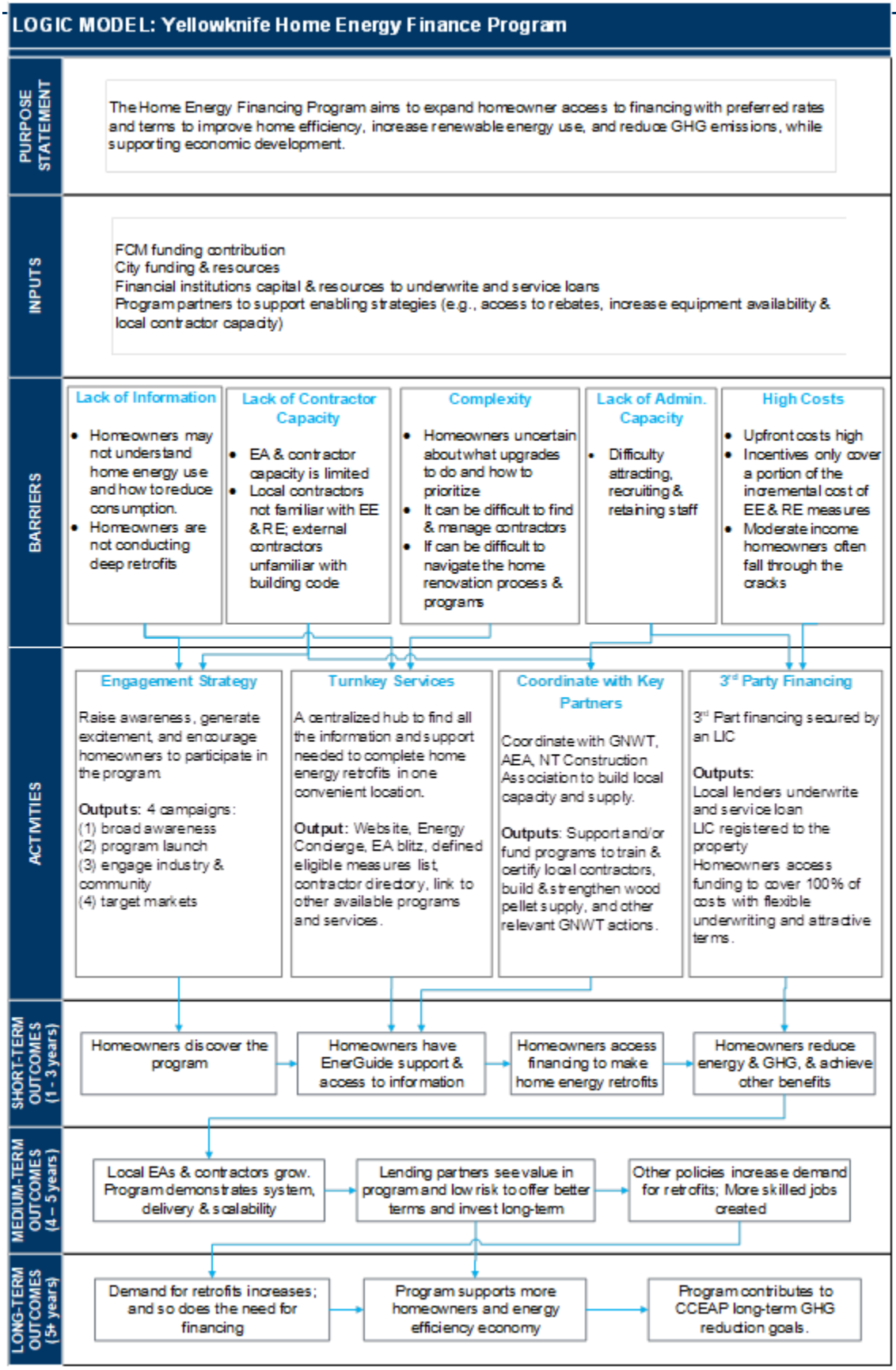
Municipalities can arrange with third-party lenders to establish other Program models not requiring legislation. A 2015 feasibility study showed that there was a need and demand for a LIC Program in Yellowknife.[46]

Act to Amend the Cities, Towns and Villages Act—Bill 18

- Northwest Territories is one of only six provinces that have PACE/LIC enabling legislation[47]
- Bill 18 outlines minimum LIC requirements, agreements, and by-laws as well as the procedures for imposing special charges, including:
- Allows local improvements in private property that are substantively energy efficiency or renewable energy works to be undertaken
- Property owner agreement terms and conditions
- Right for the municipality to impose fees to offset administrative or marketing costs
- By-laws, public notices
- Cost inclusions and cost recovery
- Levy of Local Improvement Charges
- Reporting requirements

[45] Legislative Assembly of the Northwest Territories. 2018. "An Act to Amend the Cities, Towns and Villages Act." *Assembly 18 Session 3 Bill 18.*
[46] Pembina. 2015. *Loans for Heat – Towards a Yellowknife Energy Savings Program*.
[47] The six provinces are Alberta, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Yukon Territory.

Appendix B: Program Theory Logic Model



The Program theory logic model makes several assumptions about existing conditions/actions needed for Program success, including:

- Funding available from FCM and other source capital
- Sufficient internal/external resources to deliver the Program
- That there is a need for financing and other enabling strategies
- Homeowners will use the supports and services available through the Program

There are also external factors/influences that may impact outcomes, including:

- City of Yellowknife's priorities that could change
- Incentives or other Program changes
- Program implementer/partner changes and/or constraints
- Supply chain constraints

Appendix C: Landscape Assessment

The landscape assessment report is attached as a separate document.

CITY OF YELLOWKNIFE

Home Energy Finance Program Design

Landscape Assessment

March 2022

dunsky Energy + Climate

Executive Summary

The City of Yellowknife's Corporate and Community Energy Action Plan (CCEAP) has set ambitious goals to reduce community greenhouse gas (GHG) emissions by 30% by 2025 compared to 2009 and increase the share of renewable energy use from 18% to 30%. Home retrofits are an essential tool for achieving these reduction goals as 69% of the community's energy consumption is from heating buildings alone.

To advance the City's goals, Dunsky Energy + Climate Advisors are supporting the City to design a Home Energy Financing Program via a local improvement charge mechanism to encourage energy efficiency and renewable energy in residential buildings. These actions are guided by four principles:

1. Focus on heating
2. Diversify the energy profile
3. Cost-effective strategies
4. Long-term adaptability

The first project milestone is a landscape scan. The landscape assessment is an important component to understand the baseline, the city's unique context, and the local challenges and opportunities for home retrofit financing. This report characterizes Yellowknife's housing stock and demographics, summarizes the current energy efficiency landscape, reviews local improvement charge financing model options and assesses contractor capacity.

The landscape assessment will support three subsequent milestones: (1) Stakeholder Engagement, (2) Select the Program Approach, and (3) Implementation Plan.

Executive Summary

The landscape assessment revealed five key findings:

1. **There is significant energy and GHG reduction opportunities in Yellowknife**. Single family homes make up the greatest proportion of the housing stock, most are older and heated with oil or propane. There has been little retrofit activity since 2015 and over the past decade, affordability problems doubled in Yellowknife. Energy efficiency can reduce utility bills, improve comfort, safety and affordability.

2. **Time is right for financing via a local improvement charge (LIC) mechanism**: An LIC program can contribute to the City's community GHG reduction and renewable energy goals. A 2015 feasibility study showed a need and demand for financing, which is expected to grow as new policies, programs and building codes drive energy retrofits. The City also wants to capitalize on FCM funding that covers up to 80% of eligible costs for setting-up required infrastructure, operationalizing a program and retrofit capital costs.

3. **There are key audiences to target for a home energy finance program**: Based on the city's homeowner demographics, a preliminary target audience includes moderate-high income households, rental property owners (approximately half of all single-family homes are rented) and homebuyers (home sales are a key renovation trigger).

4. **Contractor capacity is critical to program success**. Efforts will be needed to build Energy Advisors (EA) capacity or guided virtual audits may be needed to reduce backlogs. Additionally, access to skilled contractors is needed to support homeowners who wish to participate in a home energy finance program.

5. **There are key ingredients in place to enable an LIC program, but additional ingredients will need to be addressed to ensure a successful program.** The landscape assessment was used to preliminarily assess the city's readiness level to design and deliver an LIC program. Key ingredients in place include enabling legislation, alignment with municipal goals and there appears to be a need and demand for financing. While challenges are ahead, specifically regarding internal capabilities and energy advisor and contractor capacities, no major stumbling blocks were identified.

Dunsky's preliminary assessment of the City's readiness, including the interest level, opportunities, supporting ecosystem and capacity to deliver is shown in the next two tables. Additional research, analysis and stakeholder engagement will help to validate this assessment, explore solutions and inform program design.

Ingredients for a Successful Financing Program?

A successful home retrofit financing program requires several key ingredients. Some ingredients may not be ready today but could be developed as part of program design and/or by the time the program launches. The factors below are related to the **level of interest** and **opportunity** a program has locally.

Ingredient	Ready in Yellowknife	Possible/Major Challenges
Aligns with municipal goals (e.g., Community Energy Action Plan, GHG reductions, increased solar and accessibility)	☑	
Home retrofit community assessment (e.g., Is there opportunity and ability to generate sufficient loan volume)	☑	
Council/City buy-in (e.g., Council and Staff will need to set goals and approve the final program design)	☑	?
Addresses homeowner barriers (e.g., is cost the main barrier to EE adoption?)	☑	?
Community buy-in (e.g., does the community see the need and value of a borrowing program?)	☑	?
Funding for program design and delivery (e.g., City, Partners (e.g., FCM, Local Credit Unions)	☑	?

Legend: ☑ Ready; ☑ Ready with possible challenges and/or uncertainty; ? Possible (not ready today but could reasonably be ready within 1-2 years); ⃠ Major challenges ahead

Ingredients for a Successful Program? continued…

These factors are related to home retrofit '**ecosystem**' and **capacity** to **deliver** a program.

Ingredient	Who?	Ready in Yellowknife	Possible/Major Challenges
Supportive regulation (e.g., financing enabling legislation)	Province and/or City	☑	
Complementary incentive programs (e.g., rebates and building codes)	Utilities, Province, Federal	☑	
Homeowner educational programs (e.g., homeowner resources, hands-on support)	City and/or Partners	☑	?
Energy Advisor (EA) capacity	Local EA's	☑	?
Contractor capacity	Local contractor industry		?
Capacity to design & deliver a program	City and/or Partners (e.g., 3rd Party Implementers)		?

Legend: ☑ Ready; ☑ Ready with possible challenges and/or uncertainty; ? Possible (not ready today but could reasonably be ready within 1-2 years); ⊘ Major challenges ahead

Table of Contents

1. Housing Stock and Demographics Characterization

- Demographics Characterization
- Housing Stock and Households Characterization
- Home Sales Data Evaluation

Overview

By characterizing the housing stock, we can assess the technical energy and GHG emissions savings potential. Segmenting and considering housing characteristics (e.g., year built, type, size, space and water heating/cooling) helps identify the greatest energy and GHG reduction opportunities and the optimal measures to consider. The demographic data helps to determine which households are most likely to participate in a finance program and those who may benefit from other programs (e.g., income qualified homeowners).

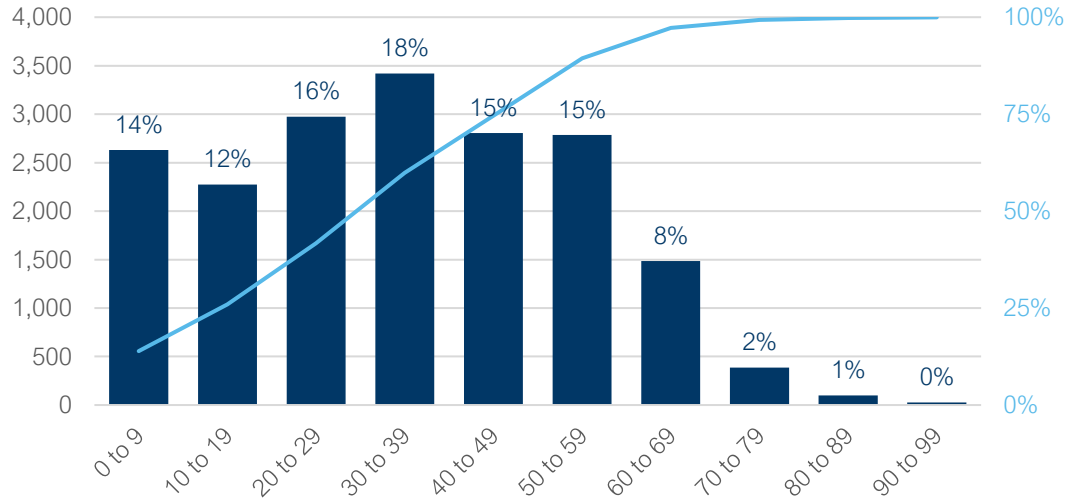
Using Statistics Canada census data and Natural Resources Canada EnergyGuide house evaluation data we characterize the current single family housing stock including:

- Total number of single-family households that could be eligible for a residential finance program.
- Eligible single-family housing types: single family detached, attached, duplex, row/townhouses, mobile homes
- Home age by date of construction
- Home energy end-use, especially space and water heating/cooling
- Home ownership: owner vs renter
- Average household demographics: household size, age, income, and population growth

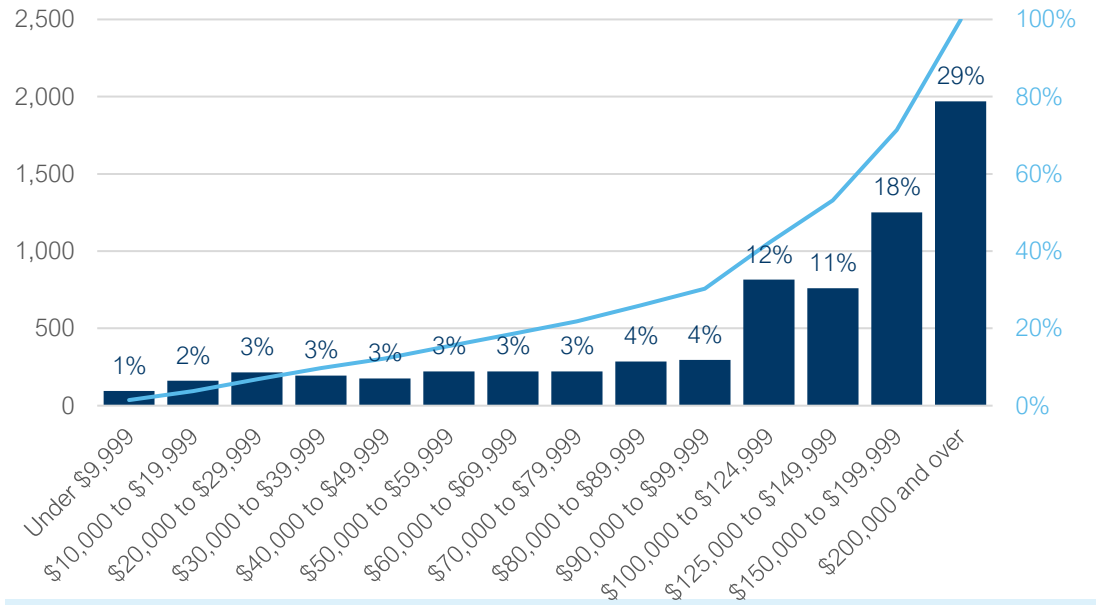
This section summarizes our analysis of City of Yellowknife's housing stock characterization, and household demographics.

Population Age and Pre-Tax Household Income

Population Age*



Pre-Tax Household Income*



Yellowknife's population is relatively young compared to the to the rest of Canada.

Sixty-eight percent of Yellowknife's 20,340 residents are in the working age group of 20 to 64 years old. The average age is 34 years (in Canada it is 41)and 89% of the population is under the age of 60. However, census trends show there is an aging and expanding population in the 65+ category (growing ~5% annually).

*Statistics Canada, Census of Population

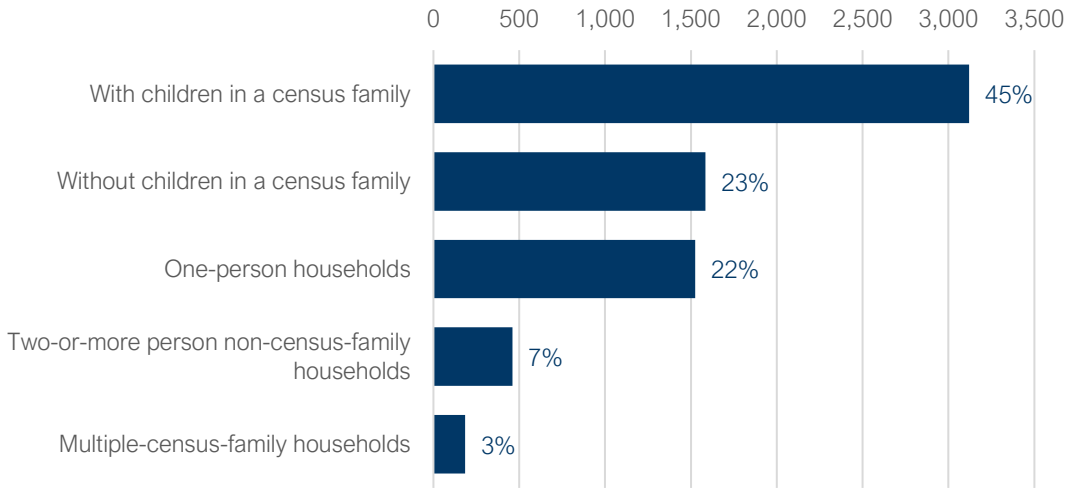
The average median household income in Yellowknife is high but so too is the cost of living.

The median household income in Yellowknife is relatively high at $142,490 compared to the Canadian median household income ($70,335). However, labour and material costs in Northern Communities can be 150% higher than the Canadian average, increasing homeowner barriers to home energy retrofits**.

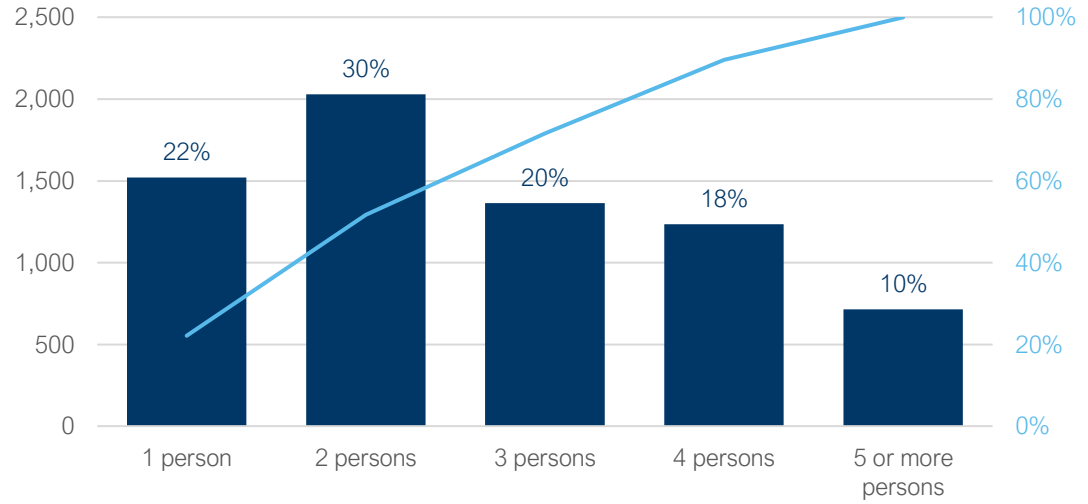
**NAEDB – National Aboriginal Economic Development Board. (2014). Study on addressing the infrastructure needs of northern Aboriginal communities. Retrieved from: http://www.naedb-cndea.com/reports

Household Type and Size

Household Type*



Household Size*



Most households in Yellowknife are multi-occupant households.

68% households in Yellowknife are family households comprised of either couples without children or couples or lone parents with children. With an average household size of 3 people, the largest household type is families with children. Including multiple family households, 78% of dwellings are occupied by more than 1 person. Studies have showed that generally, owners, households with higher income, higher levels of education and those with children are more likely to adopt clean energy technologies.

*Statistics Canada, 2016 Census of Population.

Yellowknife Households Experience Affordability Challenges

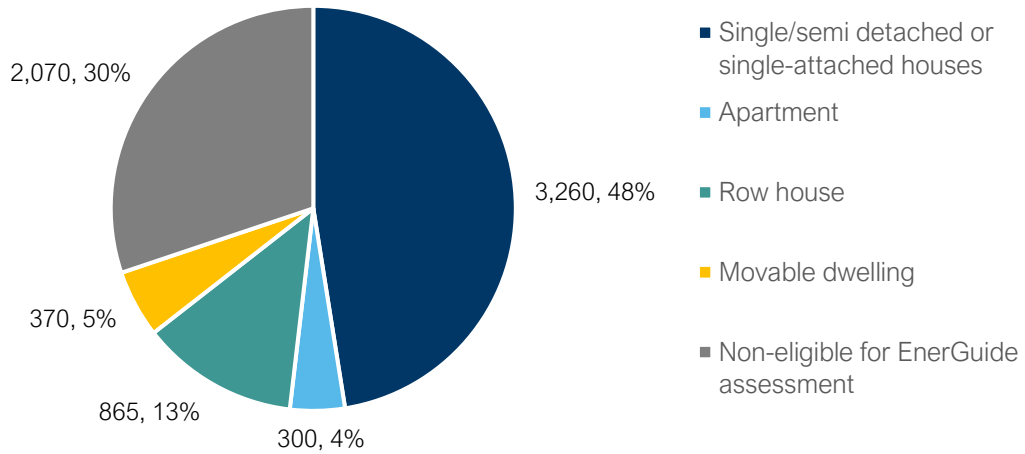
Yellowknife households face growing affordability challenges, high energy costs and major home repairs. Improved efficiency can reduce household energy consumption and utility bills, and make households more comfortable, safe and affordable.

- Over the past decade, **affordability problems doubled in Yellowknife** from 14% to 29%.*
- Approximately **11% of households in Yellowknife require major repairs**.*
- **Fourteen percent of NWT households experienced housing insecurity** in 2019. These households reported that a family member had experienced significant financial difficulties in the previous 12 months due to an increase in rent or mortgage payments. **Renters (63%)** are more likely than homeowners to face housing insecurity.**
- **Electricity prices in the NWT are significantly higher than the rest of Canada**. In 2016, NWT households paid more than 30 cents per kilowatt hour (kWh) for electricity whereas the Canadian average electricity price was 13 cents per kWh.***

*Affordable housing is defined as shelter costs (e.g., rent or mortgage payments, utilities, heat, insurance & property taxes) being less than 30% of household income. NWT Bureau of Statistics NWT Community Survey accessed at https://www.statsnwt.ca/Housing/housing-conditions/
**Alternatives North. Northwest Territories Poverty Report Card, 2020
***Canada Energy Regulator Market Snapshot: Explaining the high cost of power in northern Canada.

Dwellings Structure Type and Age

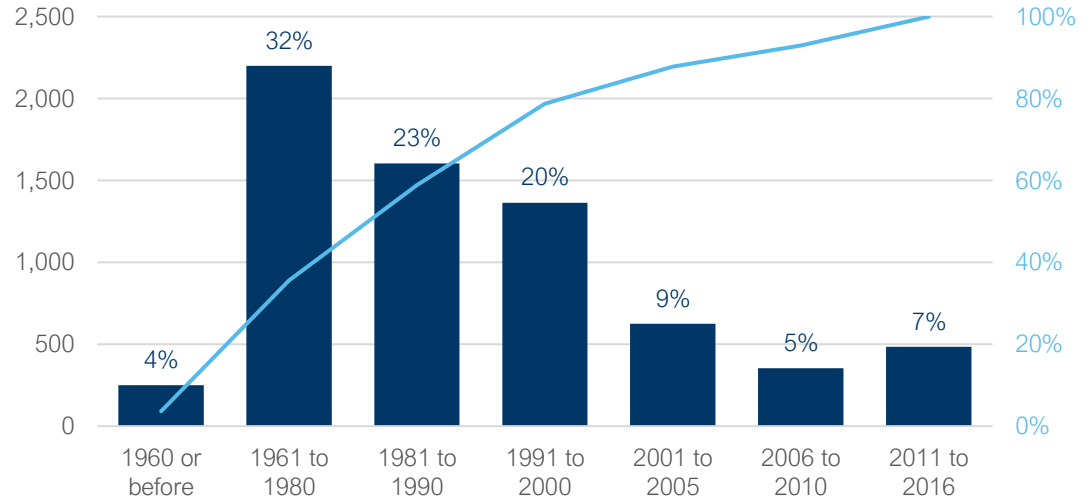
Dwellings Structure Type*



Most homes in Yellowknife are single family homes - the target housing type for a finance program. Almost half of these are rental properties suggesting a need to develop specific strategies to engage rental property owners.

Forty eight percent of the 6,865 private dwellings in Yellowknife are single detached and attached homes. Along with duplexes, row houses and mobile dwellings, they make up 64% of houses that are eligible for EnerGuide assessments. Fifty-six percent of these dwellings are owner-occupied.

Dwellings Age*



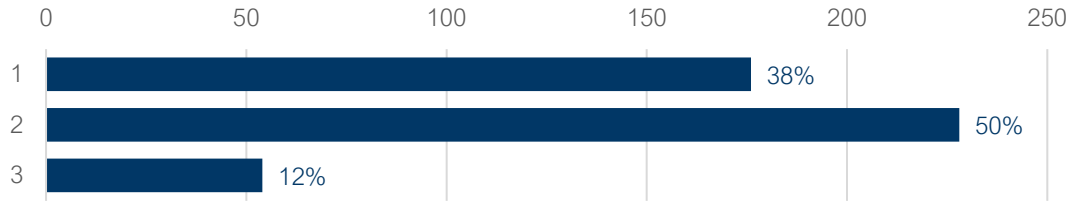
Most of Yellowknife's housing stock is 30+ years old; a potential indicator for home energy improvements.

Without further knowledge of home renovation history, a dwelling's age cannot typically be used to assess the degree at which a dwelling could benefit from home improvements, including energy efficiency retrofits. This being said, 75% of dwellings in Yellowknife were constructed between the 1960s and 1990s and 4% were constructed before the 1960s. These ages are typically the focus for home energy efficiency improvements.

*Statistics Canada, 2016 Census of Population.

Number of Heating Systems and Fuel Type

Number of Heating Systems



NRCan EnerGuide data from 458 pre-audits completed between 2015-2021 shows that 62% of homes in Yellowknife have more than one space heating system. Oil is the most common primary heating system.

The top 10 most common heating system combinations and the top 3 most common three-system combinations are presented in the table to the right.

- Heating oil (69%) and propane (18%) are the most common primary heating fuels.
- Mixed wood (37%), softwood (34%), and propane (14%) are the most common secondary heating fuels.
- Propane (35%), mixed wood (30%), and softwood (14%) are the most common tertiary heating fuels.
- Overall, heating oil (45%) is by far the most used fuel; propane (18%), mixed wood (13%), and softwood (12%) make up for 87% of all heating systems.

Most Common Heating System Combinations

Primary	Secondary	Tertiary	% homes
Oil			25%
Oil	Softwood		12%
Oil	Mixed wood		11%
Propane			6%
Oil	Wood pellets		6%
Propane	Wood pellets		3%
Oil	Propane		3%
Oil	Hardwood		2%
Propane	Softwood		2%
Oil	Mixed wood	Mixed wood	1%
Oil	Wood pellets	Mixed wood	1%
Oil	Softwood	Wood pellets	1%

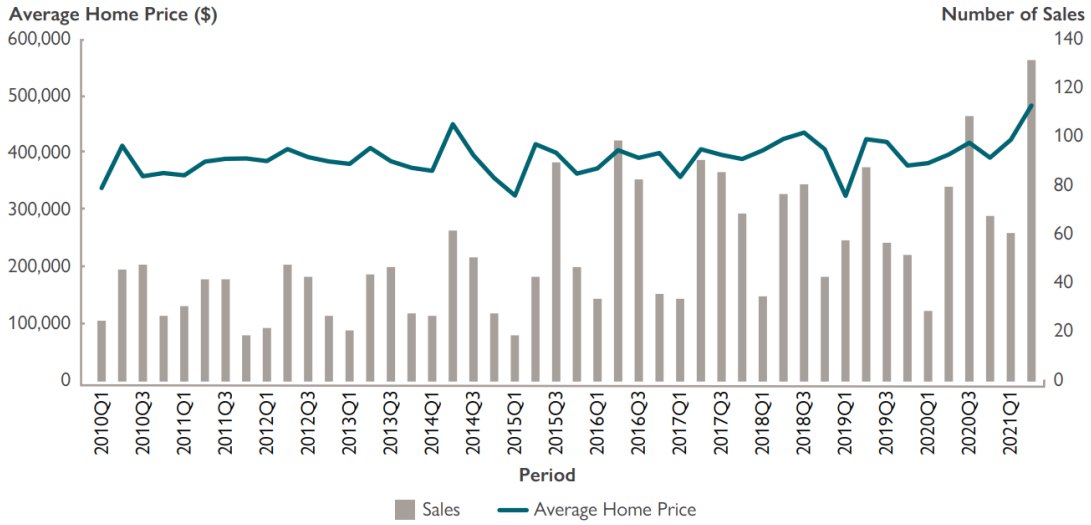
Yellowknife Home Sales Data

Home sales can be an indicator of renovation activity as most home renovations occur within the first three years of buying a home*. Here are key highlights from Yellowknife home sales data:

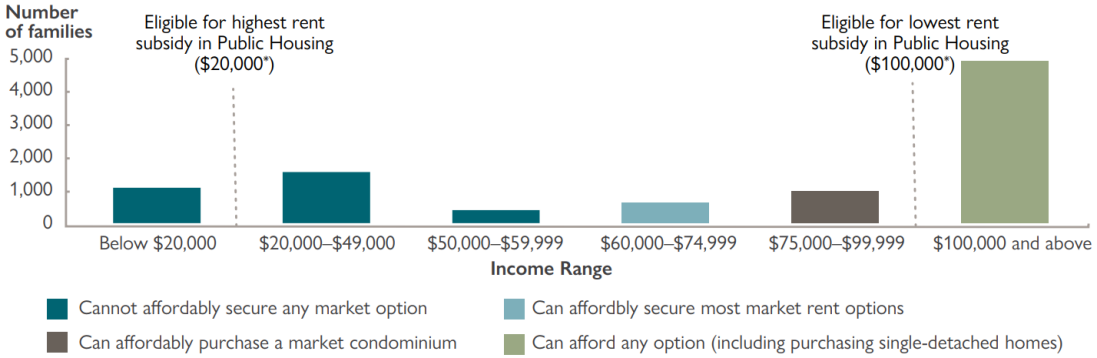
- Despite pandemic-related restrictions, existing home sales reached a year-high in 2020, largely supported by **low mortgage rates** and **easier credit conditions**.
- Total resales are up by 12% in 2020 compared to 2019. This strong trend continued into Q1-Q2 2021 as unemployment rates recovered and mortgage rates remained supportive.
- The seasonally-adjusted sales-to-listing ratio rose over 100% in Q2 2021, an indication of **seller's market condition**. While this level of new listings is not sustainable, it is a sign of short-term supply constraints in the city.
- The average resale price increased in the 1st half of 2021, reaching an all-time high of $486,000. **Year-over-year, the average sales price has increased by 22%, adding to affordability challenges.**
- **The largest group of mortgage holders in Northwest Territories was the population aged 35 to 44**, holding an estimated 31%. This group also holds 36% of outstanding mortgage balance – the highest among other age groups.

*CMHC, Canadian Housing Observer 2010. Accessed at http://www.normfisher.com/pdfreports/cmhc_housing_observer_2010.pdf

Average Home Price and Sales in Yellowknife*



Market Affordability in Yellowknife*



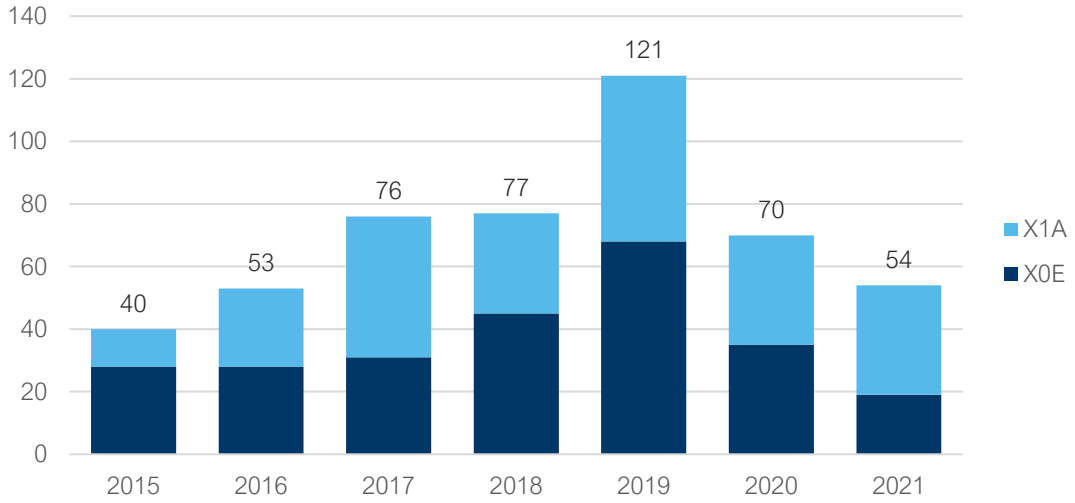
*Housing Market Information, Northern Housing Report 2021. CMHC.

2. Past Energy Efficiency Experience

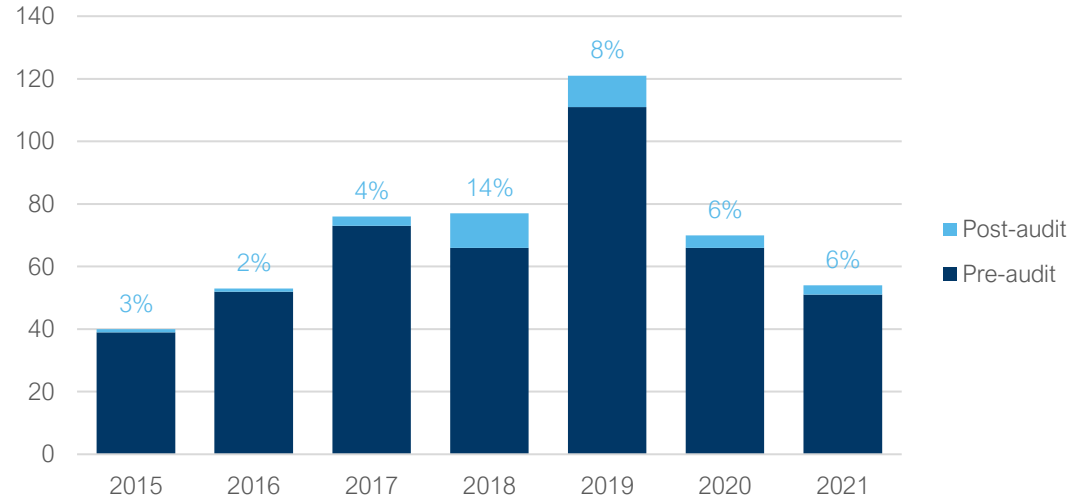
- Numbers of Past EnerGuide Evaluations
- Installed Measures and Depth of Savings
- Most Common Measure Combinations

Numbers of Past EnerGuide Evaluations

Number of EnerGuide Audits in Yellowknife



EnerGuide Audits Conversion Rate in Yellowknife



Yellowknife experiences a very low conversion rate (7%) compared to other jurisdictions in Canada (~ 80%).

A total of **491 EnerGuide evaluations on existing homes** have been performed in Yellowknife area between 2015 and 2021, including 458 pre-audits and 33 post-audits.

Conversion rate: only 7% converted from pre- to post-audits

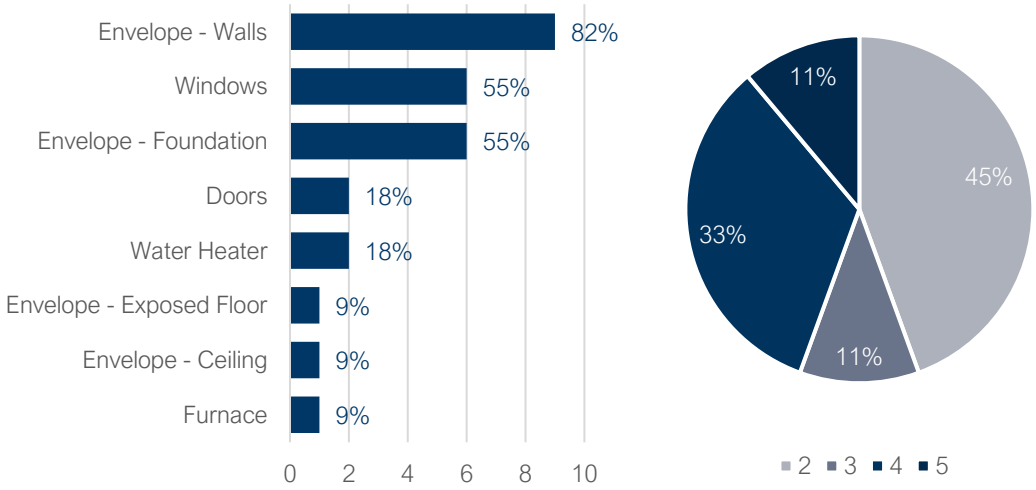
Geographical: Almost equal number of evaluations conducted in FSA code X1A (254, 52%) and X0E (237, 48%).

Conversion rate: Sachs Harbour boasts the highest conversion rate (40%), followed by Jean Marie River (37%) and Yellowknife (7%).

Non-conversion: 149 audits conducted in 11 communities in Forward Sortation Area (FSA) code X0E did not complete post-audits.

Installed Measures and Depth of Savings

Measures Installed



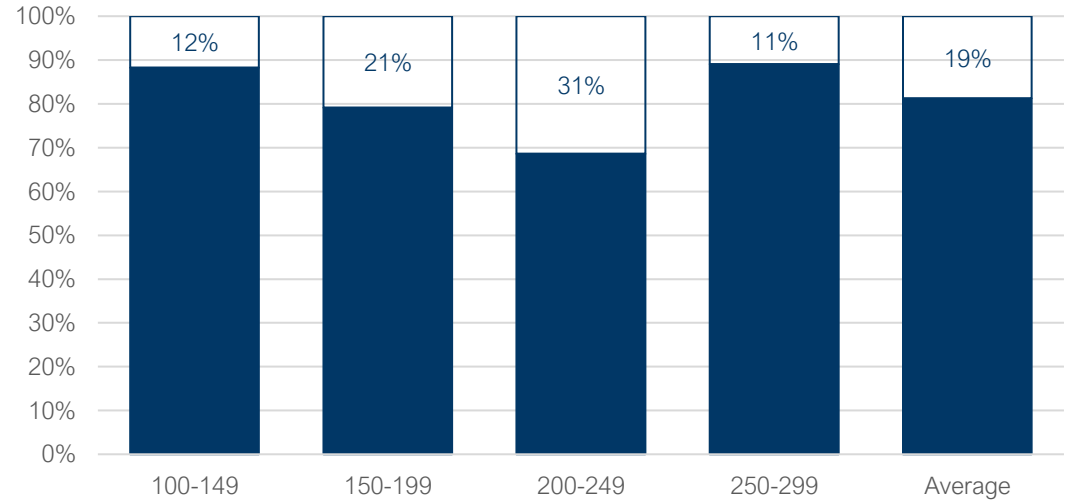
Most homes install multiple measures when undertaking home energy retrofits with building envelope measures being the most common.

Due to data quality issues, only **11 post-audits** were analyzed for the breakdown of installed measures and their energy savings.

From those 11, a total of **28 measures** were installed with an average of **3 measures** installed per home.

The most commonly installed measure is wall insulation, followed by windows and foundation insulation. The most common measure combinations are presented in the next slide.

Savings Depth by Pre-Audit EnerGuide Rating



On average, **homeowners reduced energy consumption by 19%.**

The chart above shows the average post-upgrade energy savings, categorized based on their initial EnerGuide rating.

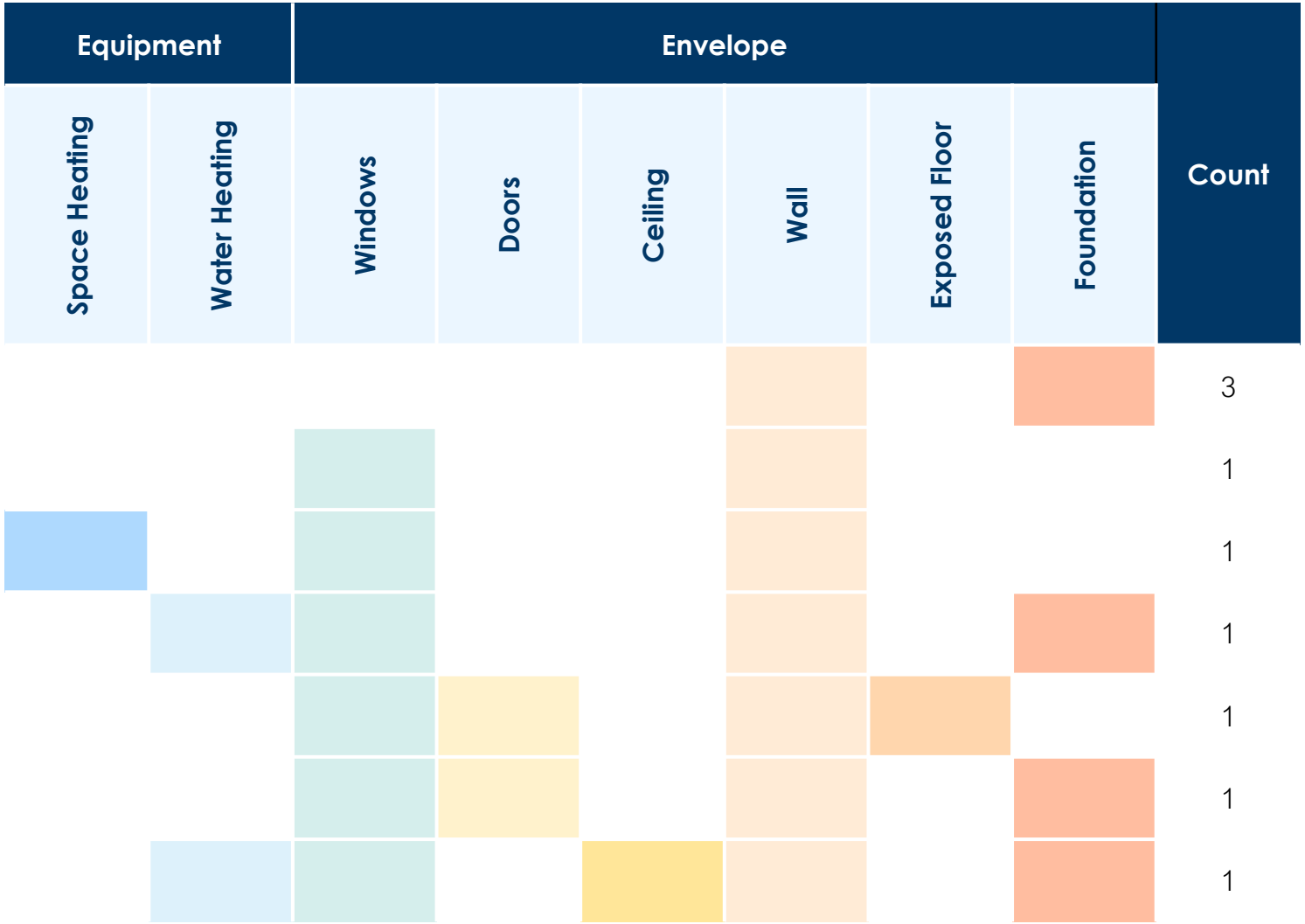
Less efficient homes (i.e. higher EnerGuide rating in Gigajoules (GJ)), typically have more opportunities to reduce their energy consumption and thus able to achieve greater savings.

The 250-299 GJ EnerGuide rating bracket above is comprised of only 1 house that improved their EnerGuide rating from 262 to 233.

Most Common Measure Combinations

The most common measure combinations show that Yellowknife homeowners lean towards measures that reduces heat losses, such as envelope measures, as opposed to upgrading heating equipment.

- Wall insulation, foundation wall insulation, and windows are the most installed measures in Yellowknife.
- This trend, albeit taken from only 11 data points, shows a different approach towards achieving home energy savings compared to other Canadian municipalities. The most installed measures are typically space and water heating equipment followed by insulation measures.
- One possible explanation for this difference is likely due to the extreme climate in Yellowknife.



3. Draft Eligibility Matrix

- Suitable Target Audience
- Preliminary Eligibility Matrix
- Preliminary Eligible Measures

Suitable Target Audience

Based on the target market size, characteristics and demographics, we developed a preliminary program target audience. This will be refined through engagements and analysis.

Home Characteristics

Single-family homes: Most of Yellowknife's housing is single family homes, including detached, attached, row houses and mobile homes. And this aligns with FCM funding criteria.

Homes constructed on or before 1990: Most Yellowknife housing is older and there appears to have been little renovation activity since 2015.

Homes heated with oil: Heating oil is the most used heating fuel. These homes offer huge GHG reduction potential and align with the City's focus on heating, diversifying the energy profile and long-term adaptability. However, GHG reductions may not result in utility bill reductions.

Homeowner Profile

Moderate to High-income Homeowners: Higher income households age 20-64 are more able and willing to invest in their home. Financing can improve access and reach to homeowners that fall just above low-income thresholds and may not have access to other programs, services and support.

Rental Property Owners: Almost half of eligible dwellings are rental properties, indicating a targeted campaign is needed to demonstrate the economic benefits to rental property owners (e.g., if tenants save money on energy bills, they are more able to pay rent, increase property value and higher tenant satisfaction).

Homebuyers: Existing home sales reached a high in 2020. Home sales can be an important trigger for home renovations.

Eligibility Matrix

A preliminary breakdown of key participant eligibility criteria considerations is shown in the table below. These will be explored and refined through the stakeholder engagement and program design process.

Eligibility	Details
Ownership	All property owners on title must consent to participate
Low-Moderate Income Homeowners	A clear definition of low- and middle-income (LMI) households will be needed to properly support this segment of the population. The definition should be aligned with Federal, Territorial, or local definitions, or other income-eligible programs.
Location	City of Yellowknife
Single Family Home*	Residential home 3-storeys or less with a building area less than 600m^2 Detached and Attached (e.g., duplex, semi-detached, town/row house) Mobile home on a permanent foundation
Existing Home	Existing home that is six months or older from date of occupancy
Occupancy*	Occupied year round Owner does not have to live at eligible property
Energy Use	All fuels (electric, oil, propane, wood, other)
Underwriting criteria	LIC programs typically require 12-24 months property tax and/or utility bill history in good standing Some programs require that monthly payments not exceed a homeowner's estimated average monthly energy cost savings, traditional credit checks and specified debt-to-income ratios

*The single-family home, occupancy and existing home criteria are defined by the ability to perform an EnerGuide home evaluation and/or align with available rebate programs.

Possible Eligible Measures

Based on the housing stock characteristics, demographics and program goals, the following measures could be eligible for financing and/or included as part of the offer, including:

- EnerGuide assessments
- Costs to purchase and install eligible measures
- Energy-measures:
  - Building envelope measures (insulation, high efficiency windows and doors)
  - Space and water heating equipment (heat pumps, high-efficiency furnaces (electric and possibly fossil fuel based), biomass heating systems, high efficiency electric water heaters)
  - Renewable energy (solar PV)
- Non-energy measures: To attract participants, some programs allow non-energy related home improvements, including health & safety measures, measures needed before eligible energy measures can be completed, building permit costs (e.g., for fuel switching). Non-energy measures could be based on a project value (e.g., 10-30%) or energy saving threshold (minimum 15% energy savings).
- Energy Coach services

A 'Turnkey' Approach

The Loans for Heat Feasibility Study recommended a 'turnkey approach'. The turnkey approach aims to address multiple barriers, including costs and complexity (discussed in detail in the next section). A turnkey program entails a defined eligible measure list and complete package of services along with financing (e.g., an energy assessment, energy coach service to support the home renovation journey, authorized contractor list).

4. Current and Planned Policies & Programs

- Barriers and Support to Home Energy Retrofits
- Existing Policies & Programs
- Strengths and Limitations

Overview

To achieve Yellowknife's ambitious climate goals, a broad suite of energy efficiency and renewable policies and program levers are required.

There are several market interventions in place in Yellowknife such as rebates and building codes to encourage energy efficiency (EE) and renewable energy (RE) technologies and address barriers. Financing can complement these programs and policies to overcome barriers not addressed by other interventions.

Having a solid understanding of the different policies, programs and features (e.g., eligibility, measures covered, program requirements, etc.) can increase a future finance program's feasibility, impact and chances for success.

The following slides describe the barriers preventing homeowners from undertaking EE and RE, policies and programs that make up the current energy efficiency landscape (and others that can be introduced), their respective strengths and gaps, and how financing can complement these initiatives.

Barriers to Home Energy Retrofits

While energy efficiency (EE) and renewable energy (RE) can offer many benefits (e.g., energy and bill savings, GHG emissions reductions, increased comfort and health and property values) there are several barriers that prevent or slow adoption of EE and RE improvements. These barriers can be overcome through effective policies and programs.

UPFRONT COST	The cost of high-efficiency measures can be higher than less efficient measures.
ACCESS TO CAPITAL	Households can lack access to sufficient or low-cost capital. Short payback periods are often favoured, to the detriment of capital-intensive projects.
POOR CREDIT/ HIGH DEBT-INCOME RATIOS	High levels of existing debt is a barrier to financing new projects.
INFORMATION	Potential risks, include: 1) actual savings may not meet the estimated benefits; 2) budget and/or timeline overruns; and, 3) the value the property gains from improvements. Homeowners need credible information and advice to help prioritize energy upgrades and properly value energy efficiency.
COMPLEXITY	EE and RE programs require time to navigate sometimes complex application processes and finding and coordinating with qualified/trusted contractors. There is also the prospect of having one's home environment disrupted.
NON-ENERGY ISSUES	Homeowners may have to choose between competing projects (e.g., prioritizing cosmetic renovations over efficiency). Older homes can require repairs either in conjunction with or before energy efficiency improvements.
SUPPLY CHAIN CONSTRAINTS	EE and RE technologies are often poorly understood among key market actors (e.g. contractors, engineers, equipment suppliers and retailers). This can lead to higher prices and uncertainty, and residential customers may be discouraged from pursuing a project.

Barriers can be addressed by different supports

Energy retrofit programs aim to address financial and non-financial barriers. Multiple programs and policies can work in concert with financing to address more barriers. Below, we show common programs that offer financial and non-financial support and identify whether they are currently offered in Yellowknife and by who.

Financial supports

Homeowner does not pay

Free energy saving items
(kits or directly installed)

No program currently

Homeowner pays upfront.
Program reduces total costs

Grants/ rebates

ARCTIC ENERGY ALLIANCE

Canada Greener Homes Grant

Homeowner borrows to cover upfront costs.
Program improves terms

Municipal local improvement charges focused on energy retrofits

No program currently

Non-financial supports

Household education & support

ARCTIC ENERGY ALLIANCE

ECOLOGY NORTH

Contractor training and programs

COLLÈGE AURORA COLLEGE

RENOMARK

HRAI

NAIMA CANADA
REPRESENTING MINERAL FIBRE INSULATION MANUFACTURERS

Home energy labelling, codes & standards

ENERGUIDE

CITY OF YELLOWKNIFE BYLAWS

Current Existing Housing Programs

Existing housing retrofit programs are available to Yellowknife homeowners; each have strengths and gaps.

Program	Description	Energy end use targeted	Measures covered	EnerGuide Home Energy Evaluation Required	Strengths and Gaps
ARCTIC ENERGY ALLIANCE Home Improvements Program	• Exterior wall insulation upgrade required • Subsidized EnerGuide evaluations • Double rebate values for eligible measures • Bonus incentive tied to performance	All fuels	• Insulation and draft proofing • Furnaces and boilers • Energy Star® windows	Yes	*Strengths:* Various eligible measures with performance incentives; No cap *Gaps:* Limited grants; Limited eligibility due to required wall insulation upgrade
ARCTIC ENERGY ALLIANCE Energy-Efficient Products Program	• Measure rebates are applied at point of sale • Equipment purchased outside NWT receive 50% less rebates	All fuels	• Energy Star® washers, dryers, dishwashers, fridges, and freezers • LED lighting • Various heating appliances • Various energy-efficient home improvements	No	*Strengths:* Various eligible measures; No rebates cap; Minimal eligibility requirements *Gaps:* Limited grants
ARCTIC ENERGY ALLIANCE Renewable Energy Program	• Up to $20,000 for renewable energy systems	Renewable sources	• Solar PV & solar heating • Wind turbines • In-stream / micro-hydro • Biomass heating systems	No	*Strengths:* Various eligible measures *Gaps:* Limited grants; Limited based on grid electricity source
Canada Greener Homes Grant Canada Greener Homes Grant	• Up to $5,000 for energy efficiency home retrofits • Up to $600 for EnerGuide evaluations	All fuels	• Insulation and draft proofing • Heat pumps • Heat pump water heaters • Renewable energy • Windows and doors	Yes	*Strengths*: EE and RE measures eligible *Gaps*: Limited grants across Canada

Strengths and Limitations of Intervention

Current market interventions address barriers to varying degrees.

Intervention	Programs Available or Planned	Barriers							Strengths and Limitations
		Upfront Cost	Access to capital	Poor Credit History / High Debt-to-Income Ratio	Information	Complexity	Non-energy Issues	Supply Chain Constraints	
Incentive Programs	• Arctic Energy Alliance Home Improvements • Canada Greener Homes Grant	◑	○	○	◑	◑	◑	◑	• Improve costs, but only covers a portion of costs (20-50%) • May cover non-energy related costs • Rebates come and go creating market uncertainty
Direct Install Programs	• No program in Northwest Territories	●	●	●	◑	●	◑	◑	• Requires no financial contribution from participant • Limited in range of measures offered • Costly and complex especially if targeting deep savings measures • Limited to income-eligible households
Building Codes / Equipment Standards	• City By-Law No. 5044 defines min. insulation levels • City By-Law No. 4957 requires EnerGuide evaluations • National model retrofit code • Low-emission, high-efficiency space and water heating equipment and windows	○	○	○	○	●	◑	●	• Building codes/standards improve the efficiency and safety of the building stock and equipment removing much of the decision-making complexity • Typically triggered by voluntary decision to upgrade home • Does not address homeowners' ability to pay for upgrades • Federal and provincial jurisdiction

Legend: ● typically addresses barriers; ◑ sometimes addresses barriers; ○ not applicable

We discuss how financing can complement these interventions in the following section.

5. Efficiency Financing Options & Regulatory Framework Review

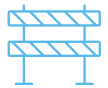
- Key Barriers to Efficiency Financing
- Regulatory Context in Northwest Territories
- Local Improvement Charge (LIC)

Overview

Home retrofit financing is emerging as a promising tool to support the adoption of energy efficiency (EE) and renewable energy (RE) technologies and reduce GHG emissions in the residential sector. Financing can complement existing policies and programs, and helps support other municipal goals, including improving the housing stock, increasing home value, improving homeowner comfort and health, addressing housing affordability, and increasing economic growth.

Financing offers several benefits, including lowering repayment risk, overcoming barriers and complementing existing policies and programs. Municipalities can play an important role in sponsoring or developing these programs.

This section provides a summary of the following:



Key barriers financing addresses

Local improvement charge options available, a comparison of each model's key features, ability to address the city's goals and best practices/lessons learned from other jurisdictions

Northwest Territories' regulatory framework that guides design & implementation of specific finance models

Overcoming Barriers

Financing can overcome barriers not addressed by other interventions.

Innovative financing can address gaps in other market interventions, namely access to capital and consumer credit and debt limits, with flexible underwriting, tying funds to the property – not owner, leveraging existing property tax repayment mechanisms, and mitigating risk. Financing helps homeowners to act by covering the full cost of the project. And it can complement and enable homeowners to comply with other municipal strategies and tools to improve home performance like building codes, standards, and permitting.

Intervention	Upfront Cost	Access to capital	Poor Credit/ High Debt-to Income	Information	Complexity	Non-energy Issues	Supply Chain Constraints
Repayment Tools (LIC)	●	◑	◑	○	◑	◑	◑
Credit Enhancements (LLR, IRB)	●	◑	●	○	◑	◑	◑

Legend: ● typically addresses barriers; ◑ sometimes addresses barriers; ○ not applicable

Home Energy Finance Benefits and Challenges

Financing has many advantages, but it is not without its challenges

These challenges can be overcome through effective mitigation strategies and good program design.

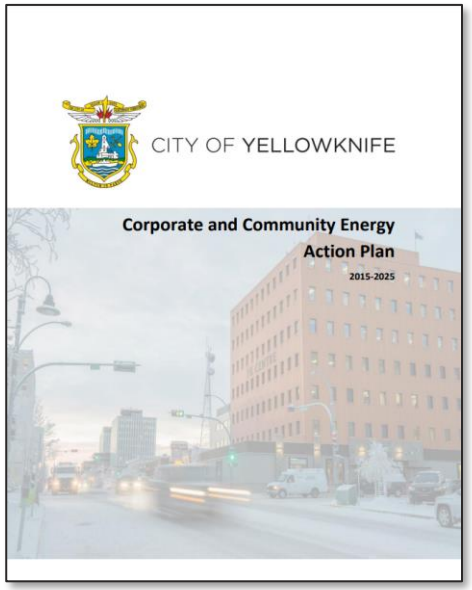
Benefits

- Addresses barriers to undertake deeper home energy improvements
- Complementary to existing federal, provincial and utility policies and programs
- Supports improved housing efficiency, which can reduce utility bills and help meet GHG emissions reductions targets
- Supports multiple municipal goals and co-benefits
- Reduces dependencies on public subsidies

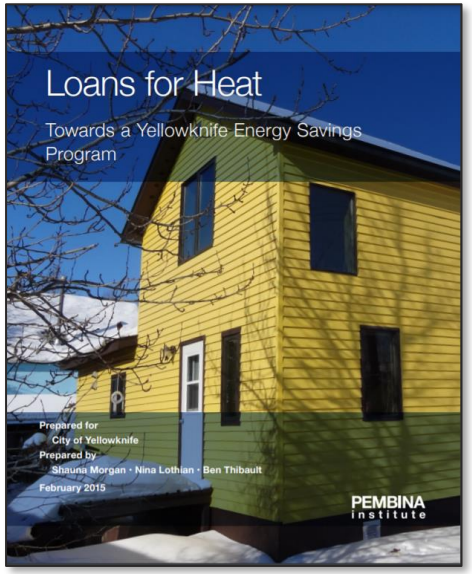
Challenges

- High cost of capital
- Complex to setup infrastructure
- Balancing flexible underwriting with consumer protection to avoid over-leveraging homeowners
- Low uptake can impact administration costs
- Complex applications and restrictive eligibility criteria
- Process disconnects
- Availability of skilled trades to meet demand

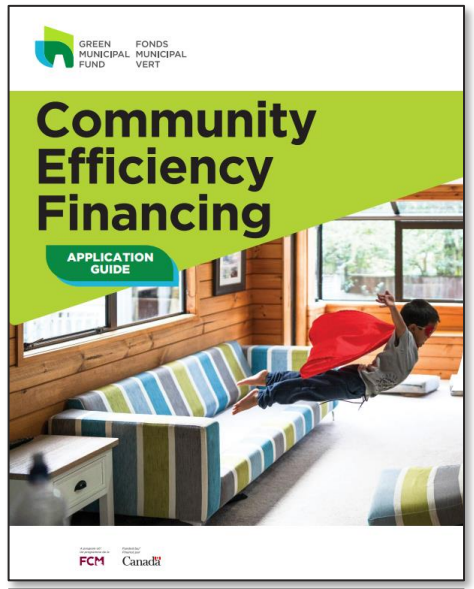
It is the right time to explore home retrofit financing



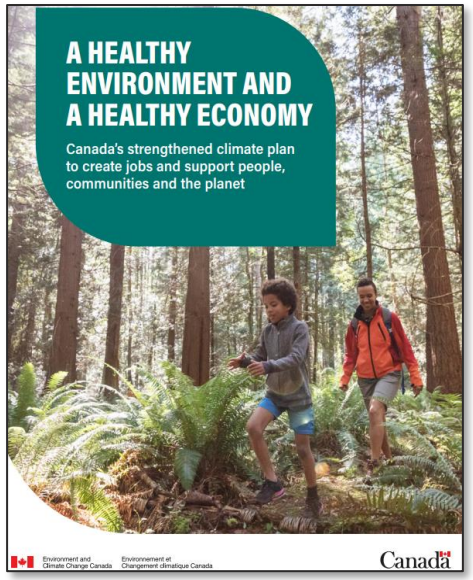
Yellowknife's **commitment** to improve home efficiency and reduce emissions



Feasibility Study showed that there was a **need and demand for an LIC program** in Yellowknife



FCM funding available to support financing programs



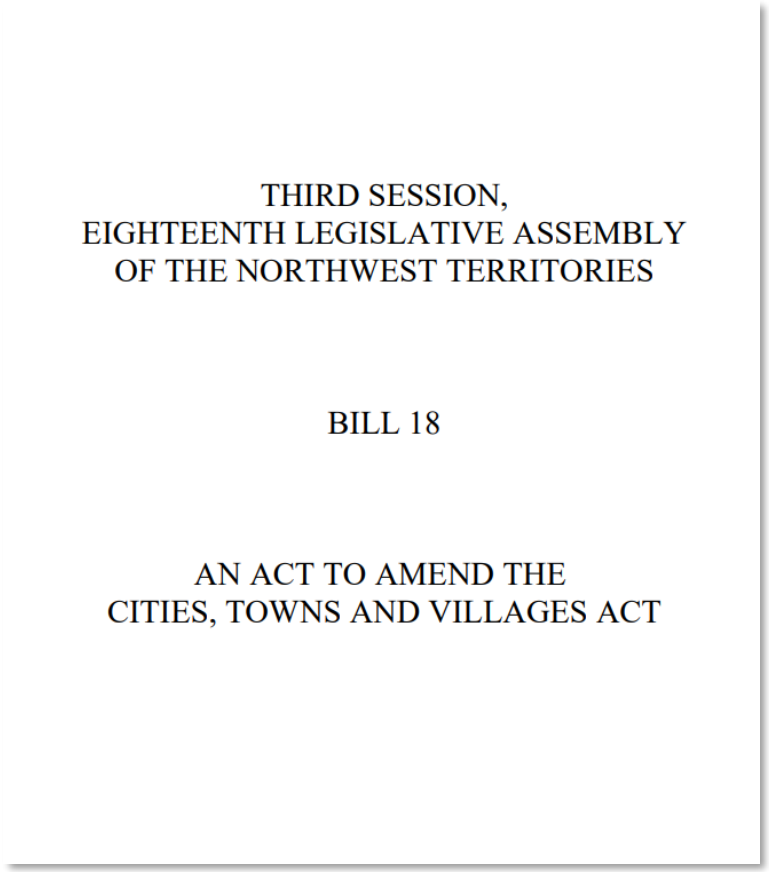
Retrofit building **code** coming by 2030; Increasing **carbon pricing**

Regulatory Context in Northwest Territories

In 2018, the NWT created a favourable environment for finance programs by establishing enabling legislations for private energy efficiency and renewable energy home projects to be included in Local Improvement Charges (LIC)*.

Act to Amend the Cities, Towns and Villages Act – Bill 18

- NWT is one of only five provinces that have PACE/LIC enabling legislation
- Bill 18 outlines minimum LIC requirements, agreements and bylaws as well as the procedures for imposing special charges, including:
  - Allows local improvements in private property that are substantively energy efficiency or renewable energy works to be undertaken
  - Property owner agreement terms and conditions
  - Right for municipality to impose fees to offset administrative or marketing costs
  - Bylaws, public notices
  - Cost inclusions and cost recovery
  - Levy of local improvement charges
  - Reporting requirements



THIRD SESSION,
EIGHTEENTH LEGISLATIVE ASSEMBLY
OF THE NORTHWEST TERRITORIES

BILL 18

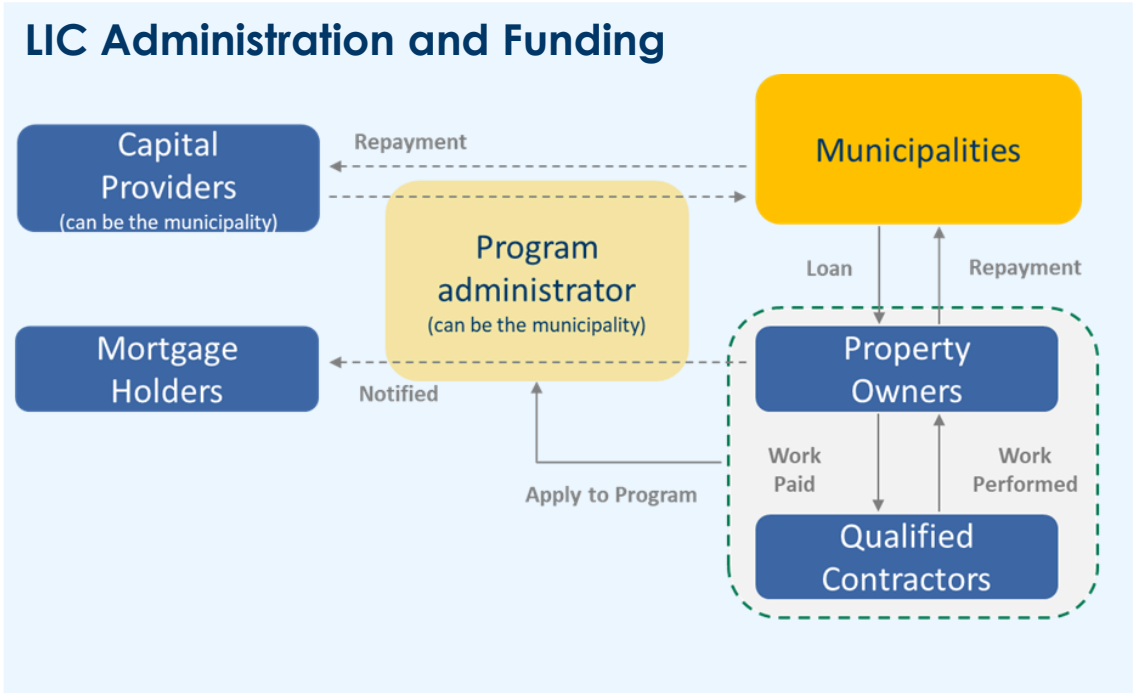
AN ACT TO AMEND THE
CITIES, TOWNS AND VILLAGES ACT

*https://www.ntassembly.ca/sites/assembly/files/bill_18_0.pdf

Local Improvement Charge (LIC)

Local Improvement Charge (LIC) financing (also called Property Assessed Clean Energy or PACE) provides long-term financing at fixed interest rates to accelerate energy retrofits.

- Financing is secured by a special assessment on **the property (vs. owner)**
- Homeowner repays **the City** through tax bill line item
- Energy **savings can help offset monthly financing costs**
- Requires collaboration and alignment with **Corporate Services** (billing, finance, legal)



Key Questions to Proceed

LIC requires several key ingredients to proceed.

Provincial regulation allows for LIC mechanism.

Tax system has the capability to add an LIC line item.

Key departments can administer a LIC mechanism.
(City to devote appropriate resources?)

LIC examples

Five provinces and territories currently have enabling legislation with seven programs operating and many U.S. examples to learn from. More programs are expected to launch with FCM funding.

HOME ENERGY LOAN PROGRAM
HALIFAX
Foundation Clean
PACEAlberta Building the clean energy economy
Efficiency Vermont
efficiency MAINE
SONOMA COUNTY ENERGY INDEPENDENCE PROGRAM
Ygrene WORKS
CSCDA OPEN PACE PROPERTY ASSESSED CLEAN ENERGY

Different administrative LIC models

There can be various ways to administer a program, but the municipality must provide the repayment mechanism.

Municipal Administration

Municipality

- Passes bylaw
- Provides capital (*operating budgets, reserves, bonds, other sources like FCM*)
- Registers the LIC assessment
- Disburses funds and collects repayment
- Delivers all program components(*e.g., marketing, outreach, reviews and approves applicants*)
- Coordinate with other rebate programs

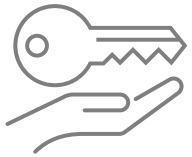
Municipal/3rd Party Administrator

Municipality

- Passes bylaw
- Provides capital
- Manages 3rd-party contract
- Registers the LIC assessment
- Collect repayments

Third-party

- Delivers program components
- Underwrite loans and disburse funds
- Coordinate with other rebate programs



3rd Party Turnkey

Municipality

- Passes bylaw
- Subscribe to the program
- Register the LIC assessment
- Disburses funds and collects repayment

Third-party

- Delivers all program components
- Provide or access capital from other third parties
- Underwrite loans and issue payments
- Coordinate with other rebate programs

6. Contractor and Energy Advisor Capacity

- Contractor Capacity Needs & Considerations
- Contractor Skills & Capacity Building
- Contractor and Energy Advisor Capacity

Overview

The local home renovation ecosystem is key to the success of an energy efficiency financing program

While financing addresses key economic barriers to the uptake of energy efficiency measures, implementing these measures and the subsequent energy savings and GHG reductions, will be led by contractors and trades.

Understanding the current workforce landscape, the needs for a skilled local workforce, their ability to provide homeowner protection, and the different ways that Yellowknife can support capacity building can increase the chance of program success.

This section provides a summary of the following:

- Why a skilled local workforce is needed and the different skills and knowledge required
- Considerations for a skilled local workforce
- Existing Contractors and Energy Advisor capacity in Yellowknife
- Capacity building support available to grow the market to meet future demand

Contractor Capacity Needs

Homeowners are typically faced with several challenges when looking to improve their home's energy efficiency. Registered Energy Advisors and a skilled local renovation workforce can help homeowners address these challenges by providing expert advice, quality work, and protection to homeowners' investments in energy efficiency measures.

Homeowners

- Need help identifying and prioritizing cost-effective home energy upgrades.
- Need help engaging with the right contractors or service providers capable of completing the work.
- Need consumer protection to ensure that energy efficiency investments materialize into savings.

Registered Energy Advisors

Have a holistic view of the home as a system by:

- Measuring the home's current energy performance.
- Assessing the potential impacts of various energy efficiency measures.
- Providing advice to homeowners on a prioritized list of measures tailored to their home and next steps.

Skilled Renovation Contractors

Can meet homeowners renovation demands, both in terms of work volume and in technical capacity. They can provide homeowners with:

- An understanding of the skills and work required to renovate homes to a higher energy performance.
- Confidence that the work is done right and "sell" energy efficiency.

Contractor Skills

Contractors and trades need a range of skills and capabilities to meet homeowners' demands and to ensure the success of low-carbon renovation projects. This requires them to not only understand the work's technical and craftmanship aspect, but also understand the broader construction ecosystem and market infrastructure which influences the way high-performing homes and buildings are designed.

Technical Skills

- Airtightness
- Building envelope and thermal bridges
- Re/Commissioning
- Insulation
- Plumbing & pipefitting
- Mechanical system
- Electrical system
- Building automation system
- Geothermal heat pumps
- Solar photovoltaics

Soft Skills

- Communication and cooperation among the various trades involved in a project
  - Bricklayers
  - Carpenters
  - Cement masons
  - Drywall mechanics
  - Electricians
  - Plumbers
- Allowing more time for complex projects
- Holistic view of the home/building as a system in an integrated design process
- Capacity building – lifelong learning of new technologies in low-carbon landscape

Contractor Capacity Considerations

Contractor capacity is directly tied to the success of a home energy efficiency financing program; it is important for program participants to have a qualified local workforce to meet their renovation demands.

Consumer Protection

- Home energy assessments conducted by NRCan Registered Energy Advisors help homeowners identify and prioritize energy efficient measures tailored to their house.
- Qualified contractors help ensure that the selected measures are installed and commissioned properly for homeowners to achieve energy savings.

Designations such as RenoMark Renovator and NRCan-Registered Energy Advisor are examples of industry- and government-led initiatives that can address consumer protection.

Cost- & Time- Saving

- Locally available qualified workforce can help reduce the cost of home energy assessments and renovations by minimizing travel cost and time.
- Local equipment and materials suppliers also play an important role in the supply-chain of low-carbon solutions.

A scan of RenoMark renovators and NRCan Energy Advisors in the Yellowknife area shows there is limited certified local contractor capacity.

Growing Capacity

- Contractors and tradespeople perform home renovation work. They need to be able to meet today's demand, both in terms of renovation volume and required skills, as well as future demand.
- While a growing demand for home energy efficiency renovations typically leads to local industry following suit and growing their capacity, municipalities can help local industry close the knowledge gap by promoting available training, education, or other enabling strategies.

Contractor Capacity

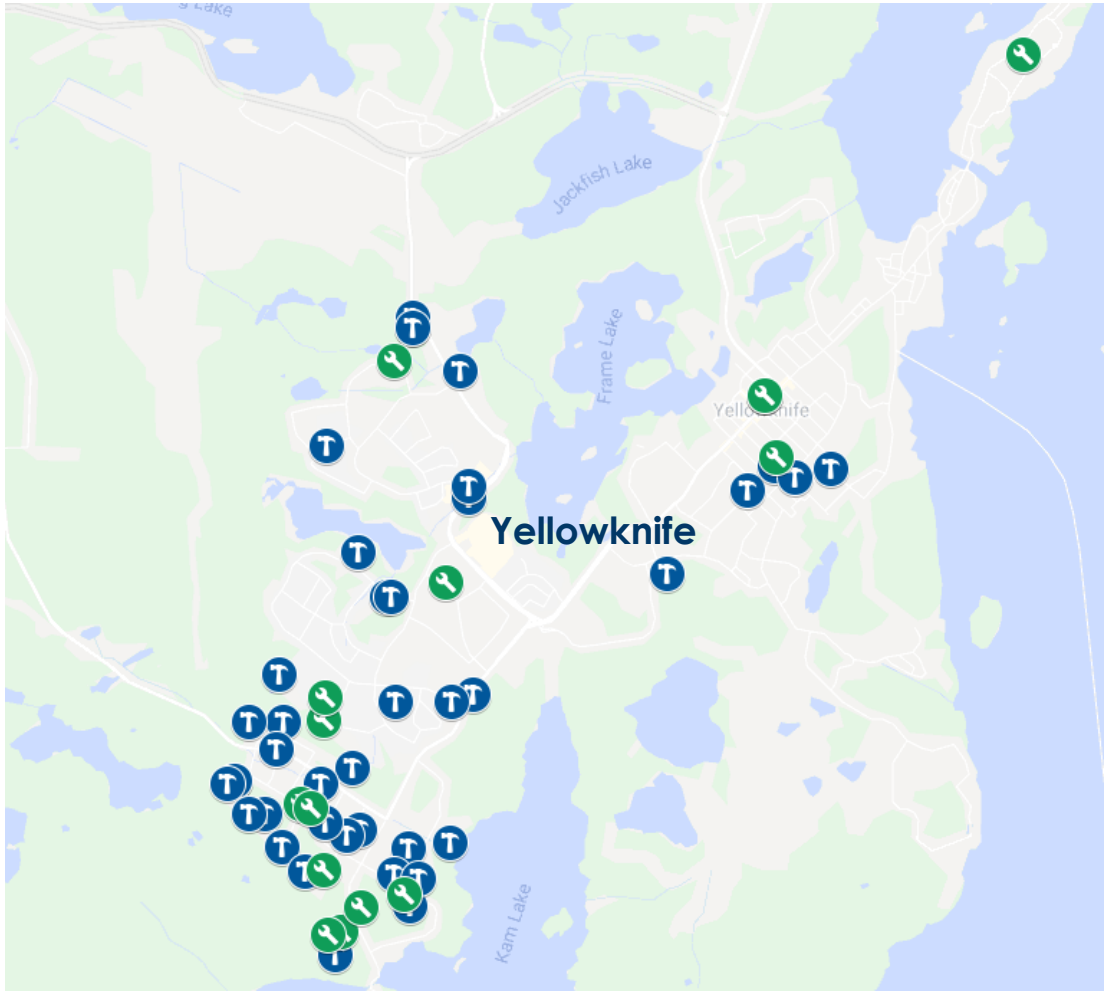
Yellowknife has a list of contractors that includes:

42 General Home Contractors
general, flooring, roofing, tile, and concrete contractors

14 Special Contractor
HVAC, mechanical, electrical, plumbing, solar panels

Building and maintaining housing in the region is challenging due to the arctic environment, short construction season, and limited local resources.

Despite the number of contractors listed above, the short construction season and the part-time nature of construction employment has limited skilled contractor availability.



Energy Advisor Capacity

There are only **four NRCan-registered Energy Advisors serving existing homes in Northwest Territories** leading to long wait times for home energy evaluations (up to 24 months).

Guided virtual audits may be a possible solution to alleviate the Energy Advisor bottle-neck.

The Alberta Ecotrust Foundation recently announced a pilot project to conduct digital home energy labelling in Edmonton and Calgary*. The U.S. Building Performance Institute has also published guidelines for remote audits**.

Guided virtual audits have become more common as a result of the pandemic and they offer other potential benefits. Guided virtual audits offer real-time expert advice from a distance, enhanced customer involvement, more flexibility to serve the North, on-demand capability, engagement now - blower door later, and lower delivery costs. Further discussions with NRCan and FCM must be explored to determine whether virtual audits could be an acceptable alternative and/or near term solution to address backlogs.

*https://albertaecotrust.com/calgary-and-edmonton-homes-to-get-digital-home-energy-labels/
**http://www.bpi.org/news/guidelines-remote-audits-available

Contractor and EA Capacity Building

Municipalities have a role to play in encouraging the local workforce to further expand their capacity in energy-efficient, high-performance homes through training, education, or other enabling strategies. Municipalities can leverage existing programs, such as those listed below, to promote capacity building without necessarily conducting the training themselves.

Service Organizations / Energy Advisors

NRCan Licensed Service Organizations and registered Energy Advisors (EA) play a critical role in conducting EnerGuide home assessments, energy modelling, labelling, QA/QC and file submission to NRCan.

To qualify as a qualified EA, candidates must pass a rigorous competency test, perform their first few assessments with a senior EA, and abide by a code of ethics.

NRCan Energy Advisor exam prep courses, e.g.:

- Blue House Energy
- Canada Institute for Energy Training

The federal government committed $10M to recruit, train and mentor new energy advisors. The first call for proposals to distribute $7M over the next 3 years closed in July 2021. Another call is expected in 2022-23*.

Colleges

Colleges address the need for :

- Low-carbon design skills and training
- Renewable energy technologies
- Building Design and Renovation
- Heating, Refrigeration and Air Conditioning Techniques

While there is a local college, some trade skills may require travel outside of the Territory.

- **Aurora College** Trades, Apprenticeship & Industrial Training
- **Lakeland College (AB)** Sustainable Energy Technology Diploma
- **Northern Alberta Institute of Technology** Various Programs
- **Northern Lights College (BC)** Various Programs

Other Organizations

Industry and training organizations provide support – either through advocacy, training, education, or other enabling strategies.

These cover a broad range of subjects such as HVAC systems, insulation and envelope fundamentals, building controls, passive house design, building re/commissioning, renovation fundamentals, etc.

Examples of organizations that provide training related to home energy efficiency:

- Blue House Energy
- Canadian Home Builders Association (CHBA)
- Canada Institute for Energy Training (CIET)
- Heating Refrigerator and Air Conditioning Institute (HRAI)
- North American Insulation Manufacturers Association (NAIMA)
- Passive House Canada

*https://www.nrcan.gc.ca/science-and-data/funding-partnerships/funding-opportunities/funding-grants-incentives/energy-advisor-recruitment-training-and-mentorship/23675

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APPENDIX

Other Policies and Programs

Other planned policies, programs and initiatives can support Yellowknife's energy and emissions reduction goals.

A Healthy Environment and a Healthy Economy

Canada committed $2.6B over 7 years, starting in 2020-21, to accelerate home energy retrofits, including:

- Greener Homes Grant.
- 1M free EnerGuide assessments.
- Support to recruit and train EnerGuide energy advisors.
- An interest-free loan up to $40,000 for deep retrofits in 200,000 Canadian homes.
- Continue working with and building on low-income retrofit programs.
- Work with provincial and territorial partners and industry to advance technology of low-emission, high-efficiency space and water heating equipment and windows.
- Develop a model code for alterations to existing buildings by 2025.

FCM Community Efficiency Financing Stream

- $300 million available to help municipalities deliver energy financing programs for low-rise residential properties, including Property Assessed Clean Energy (PACE), utility on-bill financing and third-party lending partnerships.
- Grants available for studies and pilot projects.
- Combination of grants and loans or credit enhancement available for capital projects.
- Competitive process to access limited annual funding.
- Thirty-seven projects (studies, pilots and capital projects) totaling almost $72.4M have been announced since the program launched March 2020.

Appendix D: Risks and Mitigation

Table D-1 outlines potential risks associated with LIC and third-party financing, and financing programs more broadly.

Table D-1. Potential financing risks and mitigation strategies

Potential Risks	Description	Mitigation Strategies
Financing-related risks		
Program administration and city capacity to administer Program	There is limited capacity and/or authority in leading organization to act as a Program champion, gain the necessary government approvals, and to manage overall Program oversight.	The Program design suggests one FTE for ongoing program administration. Yellowknife will seek Council support, budget, and staff allocations to lead Program funding applications, set-up, delivery, and evaluation. FCM grants can be used to cover staff remuneration for existing or new employees dedicated the Program Program partners (lenders, AEA) can offset the burden on City resources.
Loss of social capital	Backlash from the public due to rejected applications or delinquency/defaults.	Have clear and transparent guidelines on eligibility, underwriting criteria, and Program processes in the event of delinquencies and defaults. The Energy Concierge will be a single point of contact to provide hands-on support and address concerns.
Low demand	Despite significant analysis and engagement to assess energy retrofits and financing needs and leveraging our extensive financing Program database to project uptake, uncertainty remains around real uptake. True demand could vary based on several factors. And financing is only one piece of a successful program and is not sufficient to drive demand alone. This risk could be caused by many factors, including economic conditions, sun	Build flexibility for higher or lower uptake in terms of City staff and partner allocation. If uptake is higher/lower than expected review Program features, economic conditions, other Program offerings that could be influencing uptake. If demand is lower than expected, consider the following: Review and/or increase education and outreach. Ensure marketing is effective and compelling to educate homeowners about the benefits of energy efficiency and renewables, raise awareness about all

Potential Risks	Description	Mitigation Strategies
	setting of rebate programs and other initiatives.	programs and services, and how to participate. Review Program processes to assess where homeowners may be dropping out and why and adjust accordingly. Revisit loan terms (e.g., interest rates, loan amounts, loan terms) as they could be a barrier to participation. Create a supportive policy landscape: Financing becomes more important where there are more stringent policies or requirements. Home energy labelling and disclosure policies, retrofit building codes, and building performance standards, fossil fuel equipment bans can increase demand for retrofits and, thereby, financing.
High Demand	Recently, municipally supported financing initiatives in other cities have experienced a high number of applications from homeowners at the onset. This may be due to pent-up demand and zero interest offerings. This has resulted in delays or halting new applications until existing applications can be processed.	If uptake is higher than anticipated: **Set expectations:** Communicate proactively with applicants about their anticipated timeline and potential delays. **Send a market signal:** High demand is good news! Communicate the high demand and local benefits broadly to contractors, EAs, NRCan and the public to foster other opportunities. **Plan ahead to scale resources:** Assess risks with every Program partner (finance department, buildings department, financial institution, AEA, contractors) and develop contingency plans and strategies to allow rapid scale if required.
Delinquent payments and defaults	Homeowners may not complete their repayments, for a variety of reasons, which could lead to a default	A clear, transparent process for homeowners to understand the implications of delinquency and default, and repayment options. This process should be available in Program documentation, the website and supported by the Energy Concierge. In the case of default, the LIC (lien) on the property reduces Yellowknife and lender financial risk.

Potential Risks	Description	Mitigation Strategies
Balancing relaxed underwriting with consumer protection	Financing may not be the best solution for lower-income households. The financing Program should ensure that eligible homeowners can afford the payments and do not become over-leveraged. Further, without establishing consumer protection mechanisms, expensive projects/loans can be pushed by aggressive contractors for projects with questionable savings.	Consumer protection must be a cornerstone of any financing program—especially in the residential sector. Impacts on potentially vulnerable participants (e.g., low-income, fixed income, heavily leveraged, underserved communities, seniors) are being considered in all design decisions. Financial literacy and transparency on the implications of investing in upgrades, balanced with the retrofit benefits, should be included in Program resources. The Energy Concierge can help income-eligible homeowners find appropriate programs and services. Establishing eligible measures, selecting approved contractors, and setting contractual guidelines can ensure that projects are relevant and cost-effective.
Potentially more restrictions with third party lenders	Lack of experience with home energy finance programs and understanding of loan performance may increase third party lender's perceived risk. Lenders may not be willing to offer better rates and terms,	providing security with the LIC will reduce lender risk and allow the City to negotiate favourable terms and conditions for homeowners. The City validating that projects meet Program eligibility criteria will also provide lenders with confidence that projects will generate energy and bill savings so that borrowers are more likely to be able to repay the loan further reducing lender risk.
Other Program-related risks		
High software set-up costs	The City will need to update or create software systems to manage the Program (e.g., website, data sharing, Program tracking database, etc.). We have made assumptions herein, but costs will need to be refined based on features and functions selected.	Clearly scope Program software and consider opportunities to simplify to reduce set-up costs. Establish budget contingencies to further mitigate risk. Partnerships with GNWT and AEA could offer opportunities to streamline processes across programs, automate and cost share.
Contractor capacity	Local EA and contractor capacity are significantly constrained. Trade capacity issues (e.g., availability of	Conducting EA blitzes in collaboration with AEA, GNWT and NRCan can address

Potential Risks	Description	Mitigation Strategies
	good contractors) and costs (e.g., trades from larger centres further away increase costs) can be barriers to home energy upgrades. Significant delays or lack of quality work could derail Program success and result in loss of homeowner trust.	backlogs, avoid delays, and help to reduce costs. Selecting preferred contractor(s) through a competitive procurement process is expected to attract contractors, ensure quality work, and potentially reduce homeowner costs. Clear expectations, quality assurance guidelines and disciplinary processes through contracts will mitigate City and homeowner risk. Manage, track, resolve and implement preventative actions in response to homeowner enquiries and complaints.
Industry pushback	The construction industry may push back with the City selecting approved Program contractors.	Develop a communication strategy to supporting evidence for this approach. Messaging should include: • Industry capacity is constrained. • Individual home energy retrofit projects may not attract contractors • Homeowners expressed challenges with finding qualified contractors and concerns over quality. Selecting Program approved contractor(s) is expected to create economy of scale to attract contractors, help homeowners to find qualified contractors capable of installing eligible measures in a timely manner and helps to build local capacity. As the Program scales up, the City can open the Program up to the broader market.

Appendix E: Legal Review

The full legal review and opinion from Field Law is below.

Analysis of Local and Certain Provincial Local Improvement Charge (LIC) and Property Assessed Clean Energy (PACE) Legislation

Dunsky Energy + Climate Advisors

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FIELD LAW

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Introduction

Background and Description of the Program

You have advised us that you are supporting the City of Yellowknife ("**City**") to design a four-year residential financing program to help property owners improve efficiency of their homes and to reduce greenhouse gas emissions, known as the Home Energy Financing Program ("**Program**"). You have further advised that the Program is in response to climate targets set out under the City's Corporate and Community Energy Action Plan.

You prepared the Home Energy Financing Program – Design Report for the City, which sets out the details of the Program ("**Report**").[1]

The Program would be led and operated by the City. Upon the approval of an application by a property owner, a third-party lender ("**Lender**") would provide financing for the Program. In describing the Program in the Report, you state: "the Program offers an integrated turnkey service that includes financing from third party lenders […].[2] An integral part of the Program is to leverage the City's ability to register a local improvement charge ("**LIC**") against the property owner's property in the event of a default by the property owner. The loan would be secured by the LIC.

Under the Program, a property owner would apply for financing to a Lender. If successful, the loan would be directly secured, in part, by the registration of the LIC against the property owner's property. The loan from the Lender would then be used to support payment for the work to conduct the home energy retrofits for the property owner. The property owner would make payments against the loan to the Lender directly. In the event the property owner is significantly delinquent on the loan payments, the City would be directed by the Lender to recover the outstanding payments through the LIC. Once the loan to the Lender is paid in full, the LIC would be discharged from registration on the title of the applicable property.

Legal Issue

You have retained us to provide legal advice on whether the Program or an alternate model complies with legislation in the Northwest Territories, namely pursuant to the *Cities, Towns and Villages Act* ("**Act**").[3] You have also asked us to compare the Act to other jurisdictions with legislation that enables Property Assessed Clean Energy ("**PACE**") financing.

Law Addressed

We are qualified to practice law in the Northwest Territories. Although we are providing you with a comparative analysis of applicable legislation in the jurisdictions of Ontario, Nova Scotia and Prince Edward Island ("**Provincial Laws**"), the opinions expressed below are limited to the laws of the Northwest Territories and the federal laws of Canada applicable therein ("**Applicable Laws**") at the date of this analysis. We performed a case law review in accordance with the Applicable Laws, and no cases to date have considered the Act in the Northwest Territories. Without limiting the generality of the immediately preceding sentences, we express no opinion with respect to

[1] Home Energy Financing Program – Design Report by Dunsky dated March 14, 2024 ("Report").
[2] *Ibid* at PDF page 6.
[3] *Cities, Towns and Villages Act, SNWT 2003*, c 22, Sch B.

the laws of any other jurisdiction, including the Provincial Laws, to the extent that those laws may govern the PACE financing.

Executive Summary

We have reviewed the relevant legislation in the Act in conjunction with the proposed requirements of the Program to determine if this Program can be used as currently proposed in the City of Yellowknife. Upon completing our review, it is our opinion that this Program can be implemented if certain requirements laid out by the Act are completed by the City.

The Act requires that the City and property owner(s) enter into an agreement where the owner(s) consent to their properties being subject to a local improvement charge and also requires the authorization of the work through City bylaw. The bylaw may authorize undertakings of energy efficiency works or renewable energy works which satisfy the requirements of a program of the municipal corporation. The Act is largely silent on the nature and components of the program and it may be tailored to the Program that is currently being proposed.

We note that these requirements would initially add to the administrative burden of the City. However, once the Program has been formally established by the City, and a bylaw is passed to authorize specific energy efficient works or renewable energy works that are part of the Program the administrative burden will be reduced.

The Act does not clearly specify the use of third-party administrators or lenders as your Program has proposed. Currently, the Act neither explicitly allows nor prohibits a Lender from financing local improvements. This decision appears to rest within the discretion of the City's council and may be included as part of the design of the Program.

As part of our analysis, we conducted a jurisdictional review of similar PACE/LIC enabling legislation in other jurisdictions, such as Ontario, Nova Scotia, and Prince Edward Island, to determine if a similar designed program has been implemented there. From this jurisdictional review, some of these jurisdictions do have third-party administrators who have either taken over from the municipality, worked in conjunction with the municipality, or been the administrator of the program from the start. For example, similar to the Act, the PACE enabling legislation in Prince Edward Island is silent on the use of third-party administrators. However, despite the lack of explicit language in the relevant Prince Edward Island legislation, the City of Charlottetown uses a third-party administrator to collect and manage financing payments for their PACE program. As such, despite the lack of specific language in the Act there is sufficient flexibility for the Program to be implemented.

In summary, it is our view that the Act does allow for the implementation of the Program you have proposed despite some administrative requirements which are typically standard across the various jurisdictions in Canada that have implemented similar PACE programs. Furthermore, we believe the broad discretion given in the current form of the Act allows for the Program to be implemented as it is currently designed and intended.

Analysis of Northwest Territories Legislation to the Program

Section 121.1 of the Act is key to the analysis of whether the Program would comply with the Act. It contemplates local improvements that are consistent with the Program, aimed at energy efficiency and renewable energy, as well as the implementation of an LIC to assist with the financing of the works.

Specifically, the Act allows the City's council ("**Council**") to undertake a local improvement on private property on the following three conditions:

> (a) the local improvement is substantively an energy efficiency works or renewable energy works;
>
> (b) the City and the property owners enter into an agreement where the property owners consent to subjecting their properties to an LIC ("**Agreement**"); and
>
> (c) the work is authorized by a bylaw ("**Bylaw**").[4]

A "local improvement" is defined in the Act as a work that has a benefit to the real property in a particular geographic area within the City.[5]

Agreement between Property Owners and the City

The Agreement must be signed by the City and the owners of all the lots, affected by the LIC.[6] The Act does not define what is intended by "owners of all the lots". A plain reading of this requirement suggests to us that the Act intends to require a written agreement signed by the City and each of the property owners, affected by the LIC.

The Agreement must contain the following specific details:

> (a) a description of the nature of the work;
>
> (b) the estimated cost of the work, which should include engineering expenses, reasonable administrative costs such as advertising and providing notice, and the interest on any borrowing;
>
> (c) the estimated lifetime of the work;
>
> (d) a description of the apportionment method and the amount of the LIC to be imposed;
>
> (e) the manner in which a cost overrun or under run is to be dealt with, if the actual cost of work differs from the estimated cost of the work;
>
> (f) the period over which the LIC is to be paid;
>
> (g) the conditions on which the LIC may be paid in a lump sum; and

[4] *Ibid* at s.121.1(1).
[5] *Ibid* at s.1.
[6] *Ibid* at s.121.1(2).

(h) any other prescribed requirements. At the time of this analysis, there are no prescribed requirements.[7]

Bylaws

Once authorized, the Council may begin the process of creating a Bylaw. The Bylaw must either authorize:

(a) the undertaking of a specific or series of energy efficiency works or renewable energy works; or

(b) the undertaking of energy efficiency works or renewable energy works which satisfy the requirements of a program of the City already established for the same purpose.[8]

In our view, the Program would likely fall under the latter and, therefore, in respect of the Program, the City would be required to make a Bylaw to authorize the undertaking of energy efficiency works or renewable energy works which satisfy the requirements of the Program. The language used under s. 121.1(4)(b) is very broad and does not authorize any particular program, specify what the program may be, or how the program may be designed. It simply provides the City the ability to establish a "program" to facilitate the three conditions that must be satisfied under s. 121.1(1).

Before passing such Bylaws, the City must give notice to the public of its intention to do so.[9] This notice of intention must include a description of the Program and the Bylaw must set out a description of the Program.[10]

Cost Recovery

The Act allows for a local improvement to be levied for cost recovery purposes.

It states that after a local improvement undertaken under the Act is complete, Council may, through a Bylaw, establish the method for assessing the amount of the LIC, establish the amount and manner of payment of the LIC, and authorize the levy of the LIC against the applicable property.[11] It would seem that this section applies after the local improvement has been completed, and it is a permissive section. It does not require the Council to take this action.

Further, the Act requires that where the LIC is levied in respect of private property as set out above, the LIC must recover the full cost of the work that is financed through the LIC.[12]

[7] *Ibid* at s.121.1(3).
[8] *Ibid* at s.121.1(4)
[9] *Ibid* at s.121.2(1)
[10] *Ibid* at s.121.2(2)(b) and s. 121.1(6)
[11] *Ibid* at s.121.3(1)
[12] *Ibid* at s.121.3(2)

Reporting

Finally, the City shall report on any local improvements, as described in this memo to the Minister as the Minister may direct from time to time.[13]

Application of the Act to the Program

In our view, it appears that the Act allows for the implementation of the Program.

The Act clearly provides that Council may undertake local improvements under private property for the energy efficiency goals articulated in the Program. It also contemplates the financing of the works. For example, the Agreement must include provisions which sets out the amortization of the LIC, interest on borrowing, lump sum payment of the LIC, as well as the methodology of the portion and amount of the LIC.

The Act is silent on the whether the Program may be financed by a Lender. The Act does, however, address cost recovery whereby the Council has discretion to establish a bylaw to the levy the LIC. The Council may decide by bylaw to establish a methodology for assessing the amount of the LIC, the amount and manner of payment of the LIC and authorise the charge of the LIC against real property. This provision is significant to the analysis for two reasons. First, the provision allows Council, either by a Bylaw or otherwise, to make decisions on how it wants to levy the LIC. The Act neither, explicitly or otherwise, prohibits a Lender from financing the local improvements nor allows a Lender to finance the local improvements. This decision appears to rest within the discretion of the Council. Second, the discretion conferred to the Council includes the ability to make the decision on the scope and nature of the levy. For example, the Council may determine the amount and manner of payment of the LIC. This permission is very broad. It may include the determination that the amount of the LIC would be based on a combination of interest and the principal of the loan. Further the manner of payment may include loan repayments to the Lender or the City. Finally, the authority to charge the LIC against real property allows the registration of security against the property owner's property.

The Act does unequivocally require that where the LIC is levied, the LIC must be based on the full cost recovered for the work that is financed through the Program.

We note that conditions precedent to establish the Program would initially add to the administrative work of the City. These conditions precedent would involve reaching a sufficient agreement with each of the affected lot owners and the City, providing the necessary notice outline above to the public and creating the bylaws to govern the Program.

Once the Program has satisfied the City's requirements and is established, it would follow the lighter administrative process during the roll out of the Program.

In sum, in our view, the Act allows the Program to be implemented as intended.

[13] *Ibid* at s.121.4

Comparative Analysis

Comparison of relevant legislation

Nova Scotia

The Nova Scotia legislation has the least amount of description within the legislation itself with respect to PACE programs and the implementation of the LIC mechanism. The most relevant section is section 81A of the *Municipal Government Act*, SNS 1998, c 18 (the "**Nova Scotia Act**"), which is focused on the bylaws that can be made with respect to local improvement charges for the financing and installation of energy efficient equipment, renewable energy equipment, equipment for the supply, use, storage or conservation of water, and on-site sewage disposal equipment on private property with the consent of the property owner.[14] However, similar to the Act, these bylaws may provide for a variety of items such as the method or plan in which any LIC will be set out. For example, these charges may be set differently for different areas within the same municipality using a set of classes for each charge.[15] Furthermore, these bylaws can be used to set out how the charges will be payable. For example, the charges may be collectable in the same manner as taxes or, at the option of the property owner, be paid in annual installments with the full balance becoming due and payable upon default by the property owner of any installment payment, with interest.[16] These bylaws also allow for the charges to be registered as first liens on the property and can provide for a means of determining when the lien becomes effective or when the charges become due and payable.[17] Sections 168 and 169 of the Nova Scotia Act are also relevant as they are related to the administrative process to create such bylaws.

In comparison with the Act, the Nova Scotia Act does allow for similar aspects of the Program as the Act does. However, it does not have as much detail as the Act with respect to assessing the applicability of such a Program in Nova Scotia. The Nova Scotia Act does mention the bylaws allowing for the creation of a process for collecting when a property owner defaults. However, it is unclear on how this process would work or who would be entitled to collect on this default as the Nova Scotia Act leaves this discretion in the specific bylaws.[18] The Nova Scotia Act does clearly mention the implementation of local improvement charges for energy efficient and renewal energy equipment working with first lien priority registration.[19] Section 81A(d) classifies these LICs as first liens to be collected in the same manner as taxes.[20] Furthermore, section 81A(f) authorises the bylaws to provide for a means of determining when such lien becomes effective.[21] In comparison, although the Act in the Northwest Territories provides for the discretion of an LIC registered against the real property, it is silent on the priority registration status of such levies. The use of priority lien registration status is a key incentive for third party lenders in the current design of the Program as it revolves around the City's ability to register an LIC against the property owner's property in the event of a default by the property owner. Based on a reading of Nova Scotia's legislation, it appears the Nova Scotia Act provides for broad discretion in the City's power to create bylaws, but it is not useful in determining the involvement of a third-party administrator or lender as would be needed for the Program.

[14] *Municipal Government Act*, SNS 1998, c 18, at s. 81A.
[15] *Ibid.*
[16] *Ibid.*
[17] *Ibid.*
[18] *Ibid.*
[19] *Ibid.*
[20] *Ibid.*
[21] *Ibid.*

Ontario

The *Municipal Act*, 2001, SO 2001, c 25 in Ontario (the "**Ontario Act**") refers the power to provide fees and charges relating to local improvements with priority lien status to its regulations.[22] The regulations, as set out in Appendix B, lay out the foundation of how PACE programs using LIC mechanisms work in this jurisdiction. In comparison to the Act, the regulations follow a similar process of requiring a sufficient agreement to be reached between the affected lot owners prior to creating bylaws for such purposes. Additionally, public notice must be given setting out sufficient detail of the proposed bylaws for the program in question, which is also similar to the process under the Act.

Section 400(d) of the Ontario Act states that the Minister may make regulations concerning certain fees or charges which are added to the tax roll under the Act that have priority lien status and designate such charges as a local improvement. *Local Improvement Charges - Priority Lien Status*, O Reg 586/06 (the "**Ontario Regulations**")[23], then set out the details of the PACE/LIC enabling legislation in a similar fashion as the Act. Section 36.1 of the Ontario Regulations states that a municipality may raise the cost of undertaking works as local improvements on private property by imposing special charges on the lots of property owners who consent to such work. Section 36.2 of the Ontario Regulations sets out the requirements for the agreement between the affected property owners and the municipality with respect to what would be considered a "sufficient agreement" similar to the Act. The agreement must include information such as the estimated cost of the work, the estimated lifetime of the work, a description of the method for apportionment of the charges to the specific lots in question, a method for determining cost of the work and how the special charges on the lots will ultimately be paid. These requirements are very similar to the sufficient agreement requirements in section 121.1 of the Act, as discussed above. However, the Ontario Regulations also provide additional details concerning these agreements, such as the clerk of the municipality determining the sufficiency of the agreement and being responsible for the final binding decision on whether the agreement is certified.[24] The Ontario Regulations also provide additional conditions with respect to the signing of the agreement by all owners of a lot if there are two or more persons who own the lot in question, and a condition that once the agreement has been certified the owner cannot withdraw his or her name from the agreement.[25]

The Ontario Regulations then set out the public notice requirements that must be met before the bylaws are created, as set out in Appendix B. However, it is noteworthy that the Ontario Regulations do not distinguish between bylaws for new energy-related works or works that are already established, as is done in the Act. As discussed above, this distinction allows for a less burdensome administrative process once a program has been established. For the most part, the Ontario Regulations are also silent on the use of third-party administrators or lenders. However, there are some instances where the Ontario Regulations make specific references to a municipality undertaking the work as local improvement. For example, section 1(3) of the Regulations specifically states that "if a municipality undertakes a work as a local improvement, a special charge imposed with respect to the work in accordance with this Regulation has priority lien status". One may interpret the legislation to mean that the municipality must be the entity that completes the local improvement in order for the LIC to be registered with priority lien status. If such an interpretation is adopted, the Program would not be able to operate under a legislative framework like Ontario's legislation. The Act does not have provisions expressly stating the same with respect to priority lien registration status in the Northwest Territories.

[22] *Municipal Act*, 2001, SO 2001, c 25 at s.400.
[23] *Local Improvement Charges - Priority Lien Status*, O Reg 586/06
[24] *Ibid* at s. 36.4
[25] *Ibid*

During our review of the Ontario legislation, we also reviewed section 266(d) of the *City of Toronto Act*, 2006, SO 2006, c 11, Sch A and its applicable corresponding regulations. This legislation is substantially similar to the Ontario Act and Ontario Regulations as discussed above and set out in Appendix B. As such, we have not gone into further detail with respect to this legislation.

Prince Edward Island

The relevant legislation in Prince Edward Island is the *Municipal Government Act*, RSPEI 1988, c M-12.1 (the "**PEI Act**")[26]. Section 200 in the PEI Act provides a broader application of the use of local improvement charges as it allows council to the city to undertake any local improvement if it considers it necessary for the benefit of all or part of its municipality.[27] However, the legislation does provide examples of what can be considered "for the benefit of the municipality" such as a local capital project undertaken by the municipality, and connections to real property for sewer, drainage and water mains provided by the municipality.[28] In comparison the legislation in the Northwest Territories, Ontario and Nova Scotia has specific language with respect to the types of works and programs that can utilize the LIC mechanism of the municipality, as mentioned above and in Appendix B. Another difference in the PEI Act in comparison to the others is that the legislation lays out a specific guideline for how public hearings will be held in respect of any bylaws created for these purposes if the municipality receives multiple objections.[29] Pursuant to section 202 of the PEI Act, the chief administrative officer must send a written notice to all the affected property owners who would be paying the cost of a proposed local improvement which has sufficient details of the charge and lays out the procedure to be followed if an owner objects to the local improvement.[30] A notice under this section is deemed to have been received 10 days after the date on which it was sent, and if an affected property owner wishes to object, they must file a written objection within 30 days of receipt of such notice.[31] If one or more objections are made then a public hearing must be held.[32] Section 205 of the PEI Act discusses lien registrations and states that any overdue and unpaid local improvement charges or fees which have been levied pursuant to the Act for these purposes, shall constitute a lien on the real property until the payments, including interest, have been made in full.[33] Furthermore, section 205(2) states that such liens will have priority over every claim, privilege or encumbrance against the property of every person except the Crown. Section 206 of the PEI Act discusses services that a municipal council may authorize if it determines that such services or programs are in the best interests of the municipality.[34] Furthermore, section 207 of the PEI Act states that a council that provides such a product or service may by bylaw offer a program to advance funds or otherwise provide financing to property owners in relation to such product or service.[35] These bylaws may also impose charges as discussed above or provide a means for determining the charges for the product or service provided.[36] Similar to the Act, the Ontario Regulations and the Nova Scotia Act, the PEI Act then discusses various types of bylaws which can be enacted with respect to the such local improvement, products or services, as further set out in Appendix B.[37]

[26] *Municipal Government Act*, RSPEI 1988
[27] *Ibid* at s.200(1).
[28] *Ibid* at s.200(2).
[29] *Ibid* at s.203.
[30] *Ibid* at s.202.
[31] *Ibid.*
[32] *Ibid* at s.203.
[33] *Ibid* at s.205.
[34] *Ibid* at s.206.
[35] *Ibid* at s.207.
[36] *Ibid.*
[37] *Ibid* at s.208.

In comparison to the Ontario Regulations, the language in the PEI Act does not specifically mention lien registrations in the context of a municipality undertaking such work. As such, it does not seem as restrictive as the Ontario Act with respect to the role of third parties in the implementation of such programs. However, the PEI Act is still silent overall on third parties, as is the Act in the Northwest Territories. Despite the PEI Act being silent on third party administrators, Lauren McNutt from your office has indicated in her email dated May 21, 2024 (the "**Email**"), that the PACE programs in the City of Charlottetown in Prince Edward Island are run through a program administrator, SwitchPACE, who collects financing payments and submits such payments to the chief administrative officer. Furthermore, In the event of a default on payments, the outstanding balance is immediately due and payable. Any interest accrued on the amount then due and payable is determined at the same rate which is applied by the municipality for any unpaid utility fees and charges in default. This result aligns with our analysis above that the legislation does not need to specifically address third-party administrators, and a broad interpretation of the Act's language suggests that the Program can be implemented as intended.

Summary of comparative analysis

Upon reviewing the relevant legislation PACE or LIC enabling Provincial Legislation in Appendix B attached hereto, the legislation and process outlined in Ontario appears to be the most similar to the Act in the Northwest Territories. Unlike the Ontario legislation, which has most of the PACE or LIC rules in its applicable regulations as set out in Appendix B, the Northwest Territories rules are found in the Act itself, which is more similar to how the legislation is set up in Nova Scotia and Prince Edward Island. Furthermore, the Act in the Northwest Territories is silent on third party involvement which is similar to the legislation in Nova Scotia and Prince Edward Island as they are less detailed and provide a broader interpretation of the use of the legislation.

Despite these subtle differences, the overarching theme across the Provincial Legislation is that most of the authority and process stems from the bylaws that are created with respect to the LIC. All of the legislation reviewed above, including the Act mainly describe how the municipal corporation is authorised to make bylaws related to LICs and how they will ultimately be governed with respect to structure, payment, and enforcement options. As such, based on the current structure of the Act, the legislation does allow for the application of LICs in a similar fashion as Ontario after a sufficient agreement is reached between the municipality and the affected lot owners and adequate notice is given of the municipality's intention to make bylaws regarding such charges. The overall language in the Act, however, is less restrictive than the Ontario Regulations and provides room for broader interpretation as discussed above.

SUMMARY

In sum, the Applicable Laws allow for the implementation of the Program despite some administrative requirements, which are typically standard across the Provincial Laws that have implemented similar PACE programs. The Act, however, does not specifically address the use of third-party administrators or lenders, who would be an integral part of the Program. Despite this issue, a broad interpretation of the Act would lead us to believe that the Act, neither explicitly nor otherwise, prohibits a Lender from financing the local improvements nor allows a Lender to finance the local improvements. For example, although the PEI Act is also silent on the use of third-party administrators, the City of Charlottetown uses a third-party administrator to collect and manage financing payments for their PACE program as mentioned in the Email. As such, we believe the broad discretion given in the current form of the Act points in the direction of allowing for the Program to be implemented as intended.

APPENDIX A
CITIES, TOWNS AND VILLAGES ACT, SNWT 2003, C 22, SCH B

Approvals

112. (1) Subject to this section, no long-term debt has effect unless the bylaw specifically authorizing it is approved by the voters and the Minister.

Exemptions from voter approval

(2) A bylaw authorizing a long-term debt does not require the approval of the voters if:

(a) the Minister orders that it be exempt from voter approval in accordance with criteria established by the regulations;

(b) the amount of the proposed long-term debt is below the prescribed limit; or

(c) the debt meets the conditions of subsection (4).

Exemption from Ministerial approval

(3) A bylaw authorizing a long-term debt does not require the approval of the Minister if (a) the proposed long-term debt is authorized by the municipal corporation's debt management plan; or (b) the debt meets the conditions of subsection (4).

Refinancing exemption

(4) A bylaw authorizing a long-term debt does not require the approval of either the voters or the Minister if (a) the long-term debt is to be used to refinance an existing long-term debt; and (b) the principal amount to be borrowed does not exceed the principal amount outstanding under the long-term debt being refinanced.

Local Improvements

Undertaking local improvements

117. (1) A municipal corporation may only undertake a local improvement if it is authorized by a bylaw.

Contents of bylaw

(2) A bylaw authorizing a local improvement must set out:

(a) the nature of the local improvement;

(b) which parcels of real property council considers will principally benefit from the local improvement;

(c) the total estimated costs of the local improvement and the nature of those costs;

(d) the proportion of the costs that would be financed by

(i) a local improvement charge levied against the real property principally benefiting from the local improvement,

(ii) general revenue of the municipal corporation, and

(iii) any short-term debt and long-term debt;

(e) the total estimated amount of the local improvement charges to be levied;

(f) the period over which the local improvement charges would be payable; and

(g) the conditions on which the local improvement charges, in respect of a parcel of real property, could be paid in a lump sum.

Public hearing and notice

118. (1) Before second reading of a local improvement bylaw, council shall
(a) hold a public hearing on the local improvement bylaw;
(b) give at least 14 days public notice of the purpose, date, time and place of the hearing; and
(c) ensure that notice of intent to make the local improvement bylaw is sent to every person who would be required to pay any local improvement charges.

Contents of notice

(2) The notice of intent referred to in paragraph (1)(c) must be in writing and must include
(a) a description of the local improvement;
(b) an estimate of the costs of the local improvement;
(c) an estimate of the local improvement charges; and
(d) a description of the options for payment of the local improvement charges.

Consent of affected persons

119. (1) Before third reading of a local improvement bylaw, a municipal corporation must obtain written consent to the making of the local improvement bylaw from at least 60% of the persons who would be required to pay the local improvement charges.

Majority value

(2) For the consent to be sufficient, the persons referred to in subsection (1) must represent at least 50% of the assessed value of all real property in respect of which the local improvement charges will be levied.

Certification of consent

(3) The senior administrative officer shall certify to council whether the consent required by this section has been obtained.

Exemption from voter approval

120. (1) A long-term debt created for the purpose of financing a local improvement does not require approval of the voters if (a) the costs of the long-term debt are completely financed by local improvement charges; and (b) the local improvement bylaw receives the consent of the persons who would be required to pay local improvement charges in accordance with section 119.

Approval of Minister

(2) For greater certainty, a long-term debt created for the purpose of financing a local improvement requires the approval of the Minister, unless otherwise exempt from that approval under section 112.

Levy of local improvement charges

121. (1) After a local improvement is complete, council may, by bylaw,

(a) establish the method for assessing the amount of the local improvement charges;

(b) establish the amount and manner of payment of the local improvement charges; and

(c) authorize the levy of a local improvement charge against the real property that council considers principally benefits from the local improvement.

Use of local improvement charges

(2) A municipal corporation shall use local improvement charges only for the purpose of financing local improvements.

Other sources of financing

(3) A municipal corporation may finance a portion of the costs of a local improvement from the general revenue of the municipal corporation.

Local Improvements - Private Property SNWT 2018, c.14, s.5.

Undertaking local improvements: private property

121.1. (1) Notwithstanding sections 117 to 121, a council may undertake a local improvement on private property if

(a) the local improvement is substantively an energy efficiency works or renewable energy works;

(b) the municipal corporation and the property owners enter into an agreement in which the property owners consent to their properties being subjected to a local improvement charge; and

(c) the work is authorized by a bylaw.

(2) An agreement described in paragraph (1)(b) must be signed by the municipal corporation and the owners of all the lots to be subjected to the local improvement charge.

Signatures

(2) An agreement described in paragraph (1)(b) must be signed by the municipal corporation and the owners of all the lots to be subjected to the local improvement charge.

Contents of agreement

(3) An agreement described in paragraph (1)(b) must include

(a) a description of the nature of the work;

(b) the estimated cost of the work;

(c) the estimated lifetime of the work;

(d) a description of the apportionment method and the amount of local improvement charges to be imposed;

(e) the manner in which a cost overrun or under run is to be dealt with, if the actual cost of work differs from the estimated cost of the work;
(f) the period over which the local improvement charges are to be paid;
(g) the conditions on which the local improvement charges may be paid in a lump sum; and
(h) any other prescribed requirements.

What bylaw may authorize

(4) A bylaw made under paragraph (1)(c) may authorize
(a) the undertaking of a specific or series of energy efficiency works or renewable energy works; or
(b) the undertaking of energy efficiency works or renewable energy works which satisfy the requirements of a program of the municipal corporation.

Specific or series of works bylaw

(5) A bylaw made under paragraph (1)(c) authorizing a specific or series of works described in paragraph (4)(a) must set out
(a) a description of the nature of the work;
(b) the estimated cost of the work;
(c) the estimated lifetime of the work;
(d) a description of the apportionment method and the amount of local improvement charges to be imposed;
(e) the manner in which a cost overrun or under run is to be dealt with, if the actual cost of work differs from the estimated cost of the work;
(f) the period over which the local improvement charges are to be paid;
(g) the conditions on which the local improvement charges may be paid in a lump sum; and
(h) any other prescribed requirements.

Energy efficiency or renewable energy works bylaw

(6) A bylaw made under paragraph (1)(c) authorizing energy efficiency works or renewable energy works described in paragraph (4)(b) must set out a description of the program.

What may be included in cost

(7) The following may be included in the cost of a work undertaken in respect of a local improvement under this section:
(a) engineering expenses;
(b) reasonable administrative costs, including the cost of advertising and of giving notices;
(c) interest on any borrowing.

Advance public notice of bylaw

121.2. (1) Before passing a bylaw to undertake a work as a local improvement under section 121.1, a municipal corporation shall give notice to the public of its intention to pass the bylaw.

What public notice must include

(2) The public notice of the intention to pass the bylaw must include:

(a) a description of the specific or series of energy efficiency works or renewable energy works the municipal corporation intends to undertake; or

(b) a description of the energy efficiency program or renewable energy program that the municipal corporation has or intends to establish.

Levy of local improvement charges

121.3. (1) After a local improvement undertaken under section 121.1 is complete, council may, by bylaw, (a) establish the method for assessing the amount of local improvement charges; (b) establish the amount and manner of payment of the local improvement charges; and (c) authorize the levy of a local improvement charge against the real property.

Cost recovery

(2) A local improvement charge levied under subsection (1) must recover the full cost of the work that is financed through the local improvement charge.

Reporting

121.4. A municipal corporation shall, as directed by the Minister, report on local improvements carried out under sections 121.1 to 121.3.

APPENDIX B
JURISDICTIONAL REVIEW

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
Enabling Legislation	*Cities, Towns and Villages Act*, SNWT 2003, c 22, Sch B	*Municipal Government Act*, SNS 1998, c 18, s. 81A	*Municipal Act*, 2001, SO 2001, c 25, s. 400 (d) *City of Toronto Act*, 2006, SO 2006, c 11, Sch A, s. 266(d)	*Municipal Government Act*, SPEI 2016, c 44, ss. 200-205
Applicable Regulations	N/A	N/A	*Local Improvement Charges - Priority Lien Status*, O Reg 596/06 *Local Improvement Charges - Priority Lien Status*, O Reg 596/06 (City of Toronto Act)	N/A
General Administration	A municipal council may undertake a local improvement on private property if: (a) the local improvement is substantively an energy efficiency works or renewable energy works; (b) the municipal corporation and the property owners enter into an agreement in which the property owners consent to	With respect to the procedure for creating bylaws under this legislation. Section 168 of this Act lays out the following procedure: (1) A by-law shall be read twice. (2) At least fourteen days before a by-law is read for a second time, notice of the	The current legislation allows a municipality to raise the costs of undertaking works as local improvements on private property by imposing special charges on the lots of consenting property owners. However, the legislation also states that the municipality undertaking the work as a local improvement must	The legislation allows council to undertake any local improvement if it considers it necessary for the benefit of all or part of its municipality. The legislation does provide examples for what could be considered a greater benefit to an area such as:

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
	their properties being subjected to a local improvement charge; and (c) the work is authorized by a bylaw. (2) An agreement described in paragraph (1)(b) must be signed by the municipal corporation and the owners of all the lots to be subjected to the local improvement charge. (2) An agreement described in paragraph (1)(b) must be signed by the municipal corporation and the owners of all the lots to be subjected to the local improvement charge. (3) An agreement described in paragraph (1)(b) must include (a) a description of the nature of the work; (b) the estimated cost of the work; (c) the estimated lifetime of the work; (d) a description of the apportionment method	council's intent to consider the by-law shall be published in a newspaper circulating in the municipality or posted on the municipality's website. (2A) A notice published on the municipality's website under sub-section (2) must include the date the notice is posted and remain posted until the by-law has been read a second time. (3) The notice shall state the object of the by-law, the date and time of the meeting at which the council proposes to consider it and the place where the proposed by-law may be inspected. (4) The council may require further advertising, including advertising by radio or television. (5) The council may provide that advertising by radio and television replaces advertising in a newspaper, except in the	enter into a sufficient agreement with the owners of the lots in question. The Agreement must provide for the apportionment of the cost of the work and must be signed by municipality and all the owners of the lots that would be specially charged under the local improvements. Furthermore, the agreement must also include: (a) the estimated cost of the work; (b) the estimated lifetime of the work; (c) a description of the apportionment method and the amount of the special charges for the lots to be specially charged; (d) without limiting clause (c), the manner in which a cost over run or under run	a) a local capital project undertaken by a municipality; and b) connections to real property for sewer, drainage and water mains provided by a municipality. With respect to the Bylaws mentioned below, the Chief Administrative Officer must send a written notice to all the affected property owners who will be liable to pay the cost of the proposed local improvement. The notice must include: (a) a summary of the details of the local improvement including the costs, as specified in the bylaw under clause 201(c) (of the act); and (b) the procedure to be followed to object to the local improvement.

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
	and the amount of local improvement charges to be imposed; (e) the manner in which a cost overrun or under run is to be dealt with, if the actual cost of work differs from the estimated cost of the work; (f) the period over which the local improvement charges are to be paid; (g) the conditions on which the local improvement charges may be paid in a lump sum; and (h) any other prescribed requirements.[38] **121.2. (1)** Before passing a bylaw to undertake a work as a local improvement under section 121.1, a municipal corporation shall give notice to the public of its intention to pass the bylaw.	case of advertising required pursuant to Parts VIII and IX. (6) The council may, by policy, further determine the procedure to be followed and the notice to be given with respect to the introduction and passing of by-laws.[40] With respect to publication, section 169 states as follows: (1) A by-law has the force of law upon publication. (2) A by-law is published when (a) it is passed by the council in the manner provided in this Act; (b) it is approved by a minister of the Crown whose approval is required; and (c) a notice is published in a newspaper circulating in the	is to be dealt with, if the actual cost of work differs from the estimated cost of the work; and (e) when the special charges for the lots are to be paid. With respect to the cost of the work this may include: 1. Engineering expenses. 2. Reasonable administrative costs, including the cost of advertising and of giving notices. 3. Interest on short and long-term borrowing. 4. Compensation for lands taken for the purposes of the work or injuriously affected by it and the expenses incurred by the municipality in connection	A notice sent for these purposes is deemed to have been received ten days after the date on which it was sent. An affected property owner who wishes to object to the local improvement may file a written objection with the chief administrative officer within 30 days of deemed receipt of such notice. At the end of the 30-day period, the chief administrative officer shall count any objections received. Where the municipality receives one or more objections to a proposed local improvement within the time period, the council shall set a time for a public hearing regarding the proposed local

[38] *Supra*, note 3 at s.121.1.
[40] *Supra*, note 14 at s. 168.

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
	(2) The public notice of the intention to pass the bylaw must include: (a) a description of the specific or series of energy efficiency works or renewable energy works the municipal corporation intends to undertake; or (b) a description of the energy efficiency program or renewable energy program that the municipal corporation has or intends to establish.[39]	municipality, stating the object of the by-law and the place where it may be read. (3) When a by-law is published, the clerk shall file a certified copy of the by-law with the Minister. (4) Failure to file with the Minister a copy of a by-law that is not subject to the approval of the Minister does not invalidate the by-law.[41]	with determining the compensation. 5. The estimated cost of incurring long-term debt, including any discount allowed to the purchasers of the debt. The clerk of the municipality determines whether the agreement is sufficient for these purposes.[42]	improvement and provide written notice to the affected property owners of the proposed local improvement in the manner decided by council. After a council completes a public hearing, the council may (a) proceed with the local improvement as proposed or with modifications; or (b) rescind the bylaw made under section 201 and not proceed with the proposed local improvement.[43] Furthermore, Where a council is authorized to provide a service in the municipality, the council may, if it determines that it is in the best interests of the municipality to do so, make available to the

[39] *Supra*, note 3 at s.121.2.
[41] *Supra*, note 14 at s. 169.
[42] *Supra*, note 23 at s.36.1-36.14.
[43] *Supra*, note 16 at s.200-205.

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
				residents of the municipality a product which is ancillary to or compatible with the service provided.[44] Council may authorize the municipality to charge a fee for a product that it has directed or authorized the municipality to provide with respect to the above services.[45] A council that provides a service or product that is ancillary to or compatible with a service provided to property owners in the municipality may by bylaw: (a) offer a program to advance funds to property owners in relation to the product or service; and (b) impose charges, and fix or provide a means for determining the charges,

[44] *Supra*, note 26 at s.206(2).
[45] *Supra*, note 26 at s.206(3).

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
				for the product or service provided.
Ability to Set Rules and Requirements	The current legislation allows for a municipal corporation may only undertake a local improvement if it is authorized by a bylaw. S.117(2) A bylaw authorizing a local improvement must set out: (a) the nature of the local improvement; (b) which parcels of real property council considers will principally benefit from the local improvement; (c) the total estimated costs of the local improvement and the nature of those costs; (d) the proportion of the costs that would be financed by (i) a local improvement charge levied against the real property principally benefiting from the local improvement,	The current legislation allows for council to make bylaws imposing, fixing and providing methods to enforce payments on charges related to the financing and installation of energy efficient equipment, renewable energy equipment, equipment for the supply, use, storage or conservation of water, and on-site sewage disposal equipment on private property with the consent of the property owner. The bylaws may provide for: (a) that the charges fixed by, or determined pursuant to, the by-law may be chargeable according to a plan or method set out in the by-law; (b) that the charges may be different for different classes of development and may be different in different areas of the municipality;	The current legislation allows the municipality to pass bylaws to undertake the necessary work as a local improvement if the authority outlined above is obtained. These bylaws may include a bylaw to authorize the undertaking of specific work for which the municipality has given notice. However, before passing such a bylaw, the Municipality is required to give notice to the public of its intention to pass the bylaw and must include the following information: (a) a description of a specific work the municipality intends to undertake; or (b) a description of a program that the municipality has or intends to establish to undertake	With respect to the local improvements, a council can make bylaws to: (a) authorize a local improvement; (b) identify which parcels of land will benefit from a local improvement; (c) specify how to determine (i) the total cost of a local improvement, including associated operating and maintenance costs, and (ii) the total cost or a proportion of that cost that is to be levied against each parcel of land that will benefit from the local improvement; (d) establish the local improvement charge or fee to be charged against

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
	(ii) general revenue of the municipal corporation, and (iii) any short-term debt and long-term debt; (e) the total estimated amount of the local improvement charges to be levied; (f) the period over which the local improvement charges would be payable; and (g) the conditions on which the local improvement charges, in respect of a parcel of real property, could be paid in a lump sum.[46]	(c) when the charges are payable; (d) that the charges are first liens on the real property and may be collected in the same manner as other taxes; (e) that the charges be collectable in the same manner as taxes and, at the option of the treasurer, be collectable at the same time, and by the same proceedings, as taxes; (f) a means of determining when the lien becomes effective or when the charges become due and payable; (g) that the amount payable may, at the option of the owner of the property, be paid in the number of annual instalments set out in the by-law and, upon default of payment of any instalment,	the types of works set out in the notice.[48]	each parcel of land that will benefit over the probable life of the local improvement; (e) levy the total cost or a proportion of the cost of a local improvement against the parcels of land that will benefit from the local improvement and provide the means for assessment, collection and payment of the cost; and (f) authorize carrying out the local improvement.[49] With respect to the services mentioned above, the bylaws may provide: (a) that only an improved property owned by a taxpayer is eligible; (b) that the charges fixed by, or determined

[46] *Supra*, note 3 at s. 121.1.
[48] *Supra*, at note 23 at s.36.1-36.14.
[49] *Supra*, note 26 at s.200-205.

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
		the balance becomes due and payable; and (h) that interest is payable annually on the entire amount outstanding and unpaid, whether or not the owner has elected to pay by instalments, at a rate and beginning on a date fixed by the by-law.[47]		pursuant to, the bylaw may be chargeable according to a plan or method set out in the bylaw; (c) that the charges may be different for different classes of development and in different areas of the municipality; (d) when the charges are due and payable; (e) that the amount borrowed by a taxpayer in respect of each property shall not exceed 25 per cent of the assessed value of the property as determined in accordance with the Real Property Assessment Act, less any local improvement charge or fee payable by the taxpayer in respect of the property;

[47] *Supra*, note 14 at s.81A.

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
				(f) that the charges are liens on the real property in accordance with subsection 162(4) and may be collected in the same manner as other municipal charges and levies; (g) a means of determining when the lien becomes effective or when the charges become due and payable; (h) that the amount payable may, pursuant to a written agreement between the owner of the real property and the municipality, be paid in the number of instalments specified in the bylaw and that, on default in payment of any instalment, the balance immediately becomes due and payable; and (i) that interest is payable on the entire amount outstanding, whether or not the owner has elected

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
				to pay by instalments pursuant to the agreement referred to in clause (h), at the rate and beginning on the date specified in the bylaw.[50]
Enablement of Third-Party Financing	N/A	Majority of the current PACE programs are run by a non-profit third-party administrator, Clean Foundation. Their program offers upgrade financing for up to 10 years. However, the maximum amount of the loan and interest can vary depending on the municipality/district.[51]	Third parties like charities, community groups and non-profit organizations are permitted to administer these programs on behalf of the municipalities. However, all the programs require mortgage lender approval before any priority liens are imposed.[52]	N/A
Registration of Lien	A levy of a local improvement charge may be made against property.	The charges are first liens on the real property and may be collected in the same manner as other taxes.[53]	Pursuant to the legislation if a municipality undertakes a work as a local improvement, any special charges which are imposed with respect to	Local improvement charges or fees levied pursuant to a bylaw made under section 201 that are overdue and unpaid, and any interest accrued, shall constitute a lien on the real property on which

[50] *Supra*, note 26 at s.207.
[51] *https://cleanenergyfinancing.ca/.*
[52] *Supra*, note 23.
[53] *Ibid.*

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
			this work have priority lien status.[54]	they are levied until payment in full is made. Such liens have priority over every claim, privilege or encumbrance against the property of every person, except the Crown.[55]
Payment Options	The bylaws which are created for these Local Improvements should address the payment options.	The bylaws which are created for these Local Improvements should address the payment options.	Prior to a special charge being imposed the treasurer of the municipality prepares a local improvement roll which includes the following information: (a) the cost of the work; (b) every lot to be specially charged and the name of the owner of each lot;	The bylaws which are created for these Local Improvements should address the payment options.[57]

[54] *Ibid.*
[55] *Supra*, note 26 at s.200-205.
[57] *Supra*, note 26 at s.200-205.

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
			(c) the special charges with which each lot is to be specially charged; (d) when the special charges are to be paid; and (e) the lifetime of the work. Once this has been completed and certified, the municipality can provide by bylaw: (a) the amount specially charged on each lot set out in the roll is sufficient to raise that lot's share of the cost by a specified number of annual payments; and (b) a special charge is imposed in each year on each lot equal to the amount of the payment payable in that year.[56]	

[56] *Supra*, at note 23 at s.36.1-36.14.

Relevant Sections	Northwest Territories	Nova Scotia	Ontario	Prince Edward Island
Enforcement of Payment	**121.3.** (1) After a local improvement undertaken under section 121.1 is complete, council may, by bylaw, (a) establish the method for assessing the amount of local improvement charges; (b) establish the amount and manner of payment of the local improvement charges; and (c) authorize the levy of a local improvement charge against the real property. (2) A local improvement charge levied under subsection (1) must recover the full cost of the work that is financed through the local improvement charge.	The Act states that interest is payable at the same rate as for other outstanding taxes.[58]	The bylaws which are created for these Local Improvements should address the payment enforcement options.	The bylaws which are created for these Local Improvements should address the payment enforcement options.

[58] *Supra*, note 14 at s.82.