



Home Energy Retrofit Energy Transition

Feasibility Study

Prepared for:

The County of Wellington



**WELLINGTON
COUNTY**



Submitted to:



**WELLINGTON
COUNTY**

The County of Wellington

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About Dunsky



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

With deep expertise across the Buildings, Mobility, Industry and Energy sectors, we support our clients in two ways: through rigorous **Analysis** (of technical, economic and market opportunities) and by designing or assessing **Strategies** (plans, programs and policies) to achieve success.

The top section of the graphic features the Dunsky Energy + Climate logo on the left, with the tagline "ACCELERATING THE CLEAN ENERGY TRANSITION". To the right of the logo is a yellow box labeled "ANALYSIS + STRATEGY" containing icons for a bar chart and a circular flow diagram. Further right is a row of four circular icons representing different sectors: Buildings (a house), Mobility (a car and a bicycle), Industry (a factory), and Energy (a sun and solar panels). Below these icons are labels: "BUILDINGS", "MOBILITY", "INDUSTRY", and "ENERGY".

The bottom section of the graphic is a map of North America, including parts of Canada, the United States, and Mexico. The map is populated with numerous logos of client organizations, categorized into three groups: "GOVERNMENTS", "UTILITIES", and "CORPORATE + NON-PROFIT".

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Executive Summary

Wellington County (hereinafter referred to as 'County') introduced the Future Focused Climate Change Mitigation Plan (2022-2030) in February 2021, within which the County committed to reducing its community greenhouse gas emissions (GHG) by 6% by 2030 (from 2017 levels) and by 80% by 2050 towards a net zero emissions goal. Key to this plan is the County's ambitious **goal of retrofitting 20% of homes and businesses (with an efficiency improvement of 40%) by 2030**. Thus, the County (and its local municipalities¹) are interested in assessing if a potential financing program can be an appropriate and impactful approach to support home improvements in the County.

Innovative municipally supported financing programs are increasing energy upgrade activity by reducing the upfront cost barrier for homeowners who are either unwilling or unable to access the needed capital. The Federation of Canadian Municipalities' (FCMs') Community Efficiency Financing initiative (CEF) has supported the launch or recapitalization of multiple municipally led financing programs across Canada. These programs have seen significant interest. For example:

1. Better Homes Ottawa received 600 applications requesting more than \$25M in its first six months,²
2. Better Homes Kingston received over 200 applications in its first month,³ and
3. PACE Atlantic, which is active in four municipalities in Atlantic Canada, signed 430 loan agreements worth \$8M in its first ten months.⁴

In some cases, the energy savings from these improvements reduce energy bills enough to completely offset the loan repayment costs. In other cases, the added comfort and health benefits from an improved home provide the motivation for homeowners to pursue the upgrade.

While the loans can help support the uptake of home upgrades, it is important to recognize that these municipally supported programs also offer complementary strategies, such as marketing (e.g. one-stop web portal to help homeowners understand the process of upgrading a home), active homeowner support (e.g., an energy concierge to support homeowners plan and realize their home upgrades), and other enabling activities (e.g., homeowner financial incentives, contractor training and skills development).

¹ The township of Centre Wellington, township of Guelph/Eramosa, township of Wellington North, town of Erin, township of Mapleton, town of Minto, and township of Puslinch

² City of Ottawa, Finance and Economic Development Committee Report 37, May 11th, 2022. Motion - Recapitalize Better Homes Ottawa Loan Program. Accessed at: <https://pub-ottawa.escribemeetings.com/filestream.ashx?DocumentId=6527>

³ City of Kingston, May 11th, 2022, Notice - City pauses review of Better Homes Kingston applications received after May 13. Accessed at: <https://www.cityofkingston.ca/-/notice-city-pauses-review-of-better-homes-kingston-applications-received-after-may-13>

⁴ Dunsy Energy + Climate Advisors, 2022. Presentation at the 2022 Energy Efficiency Finance Forum: Accelerating Residential Financing: Canada's \$300M Community Efficiency Financing Initiative. Accessed at: <https://drive.google.com/file/d/18dCBOFbNUgPgJE3Anc-iCkqH-cMJtlc/view>

In this context, Dunsky Energy +Climate Advisors ('Dunsky') was retained by the County to assess the **feasibility of a potential residential retrofit financing program- Home Energy Efficiency Transition (HEET)**. To complete this work, we:

- Conducted a detailed background review of the County's documents.
- Assessed the **local homes profile and retrofit potential** through analysis of Municipal Property Assessment Corporation (MPAC) and EnerGuide data.
- Conducted a thorough **landscape assessment of existing industry capacity and supporting policies and programs**.
- Created a **Program Working Group** to solicit feedback from **internal departments of the County and townships, as well as local organization**⁵ during four workshops.
- Facilitated a meeting with **member municipalities Finance and Legal** departments.
- Conducted a **survey of Wellington County homeowners** (over 500 responses) to understand their barriers to conducting home energy retrofits and assess current upgrade opportunities.
- Led an **online public engagement meeting** to gather feedback on feasibility study results.
- Led **four targeted interviews with six major stakeholder groups** to obtain feedback feasibility results and explore partnership opportunities.
- Completed a modelling analysis to **estimate the program uptake and impacts** under three scenarios.

Based on Dunsky's analysis and what we heard from stakeholders, **our study findings confirm the demand for and feasibility of the HEET program**, based on four key justifications:

- 1. There is a potential demand to support the development of a financing program.** Most of the homes in the County are older, owner-occupied single-family dwellings (76%), followed by farm residences (15%), which forms the target market. There is considerable interest (over 40% of survey respondents) to invest in home energy improvements. Of those who are willing to invest, around 68% are willing to invest more than \$10,000. Financing is the most sought support by the homeowners in Wellington County to undergo retrofits. The potential uptake for HEET could range from 40 to 500 projects over the first 4 years, depending on supporting policies and on various aspects of the program design. A long-term plan with a slow start focussing on deeper retrofits would provide the County an opportunity to build staff and industry capacity as well as contribute towards GHG emission goals.
- 2. Local Improvement Charge financing ('LIC') aligns best with the County's goals and local needs.** We explored a range of financing options for HEET, all of which have unique features that can address homeowner barriers and the County's goals. Both Local Improvement Charge (LIC) and third-party financing options are feasible, and LIC appears to meet the needs of the community more fully by offering lower interest rates and longer repayment periods (together identified as preferred features of a loan by more than half of the survey respondents) which is well suited to supporting deep retrofits with extended payback periods. LIC financing could also be designed to support hard-to-reach segments like the seniors/retirees and farmers by linking the charges to the property rather than the homeowner. It is important to note, however, that implementing an LIC requires the dedication of resources from municipalities and the County for

⁵ Organizations included Building Knowledge Canada, Conestoga College, and Centre Wellington Hydro.

program delivery and LIC registration and that some concerns were raised by the concerned departments during the engagement. It will be important to address their concern during the program design stage and allocate appropriate resources for program support.

Third-party financing, delivered in partnership with a local bank and/or credit union, may offer either an alternative option if the internal administrative barriers prevent the LIC option from being adopted, or as a complement to the LIC financing as a streamlined approach for smaller and single-measure retrofits.

- 3. The industry capacity to deliver retrofits in Wellington County is limited, but not enough to hinder HEET's feasibility.** Canadian Home Builders Association (CHBA) directory and Natural Resources Canada's (NRCan's) web search showed that Wellington County has a limited capacity for contractors and service organizations (which provide EnerGuide Assessments). However, the neighbouring areas (ex: the City of Guelph) have a considerable industry capacity that can be accessed by homeowners across the County until further industry capacity is built within the County. In the surveys, homeowners expressed that they need help with finding contractors. Despite the needs expressed by the homeowners and the limited capacity locally, the EnerGuide data showed some steady retrofit activity across the county each year. Considering the relatively limited industry capacity in the area, applying an approach that focuses on smaller volumes of deeper retrofits in the initial years can support steady expansion of the local industry, while minimizing the quality risks associated with rapid expansion. Engagement with education institutions indicated that they can be potential partners to deliver capacity-building support. Overall, we conclude that the industry capacity in Wellington County is limited, and that efforts should be made in the early program stages to expand local industry capacity, but there is sufficient capacity in the region to make the program feasible from the start.
- 4. Despite many existing programs supporting home retrofits, there is still a substantial need for HEET.** We identified seven current programs aiming to support home retrofits through rebates. Additionally, the Canada Greener Homes Loan (CGHL) offers financing for home energy retrofits, through a limited amount of loans across Canada. However, we found that homeowners in the county were largely unaware of these programs and were seeking help to find financing as and support during their retrofit journey. HEET could help homeowners navigate and integrate existing rebates and incentives programs to their home energy retrofit projects and complement the current financing offering by filling many gaps in the CGHL program, offering more comprehensive financing that is better suited to local homeowner needs and integrating the financing with end-to-end retrofit implementation support. Moreover, by establishing a local program that assists homeowners, grows industry capacity and provides financing, the County can hedge against the potentially changeable mix of provincial rebate and national financing programs.

Our study also assessed aspects beyond the feasibility of HEET in the County of Wellington. We identify two main insights to consider at the program design stage:

- 1. To grow retrofit volume in the county, HEET should include three key features in its program design: (a) A One-Stop Window; (b) An Energy Concierge service; (c) A Net-**

Zero Roadmap. Financing programs best support the uptake of retrofit projects and the abatement of GHG emissions when they address multiple barriers simultaneously. The study findings indicate that HEET can best support homeowners to undertake deep home energy retrofit by offering the three above-mentioned enabling program features, and linking these to access to affordable financing either through the program or from other available sources depending on the homeowner’s preference and the retrofit needs. The specifics of these features should be addressed in the program design, and they should be scaled based on the resources available to support the program’s initial setup.

- 2. HEET would benefit from exploring partnerships for program delivery.** A range of promising potential program partners were engaged during the feasibility study. At the program design stage, the County will have to determine what roles are preferably done internally or by member municipalities and which roles could be better filled by external partners. Many existing and emerging municipal retrofit programs rely on partnerships to fulfill various program roles, ranging from capital provision, administrative support, and community engagement, and to deliver the above-mentioned program features. While we engaged potential partners for initial discussions for this feasibility study, further exploration and decision-making are required to identify the program administration approach and to determine which roles could be filled by different program partners.

As a next step, we recommend that the County seek support to develop a program design for HEET. The detailed next steps are explained in Chapter 7 of this feasibility report. Based on these steps, it is feasible for the County to launch a program by late 2025 or early 2026, as outlined in the high-level timeline presented below. The timeline was built based on the steps outlined by the FCM’s CEF program, accounting for the preparation, submittal, and review of the feasibility study findings report, and a program design report.

2023			2024				2025				2026	
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Feasibility Study Complete	Council Approval, FCM Application	FCM review and funding decision, and contracting		Program Design			FCM review and funding decision, and contracting			Program prep and launch		

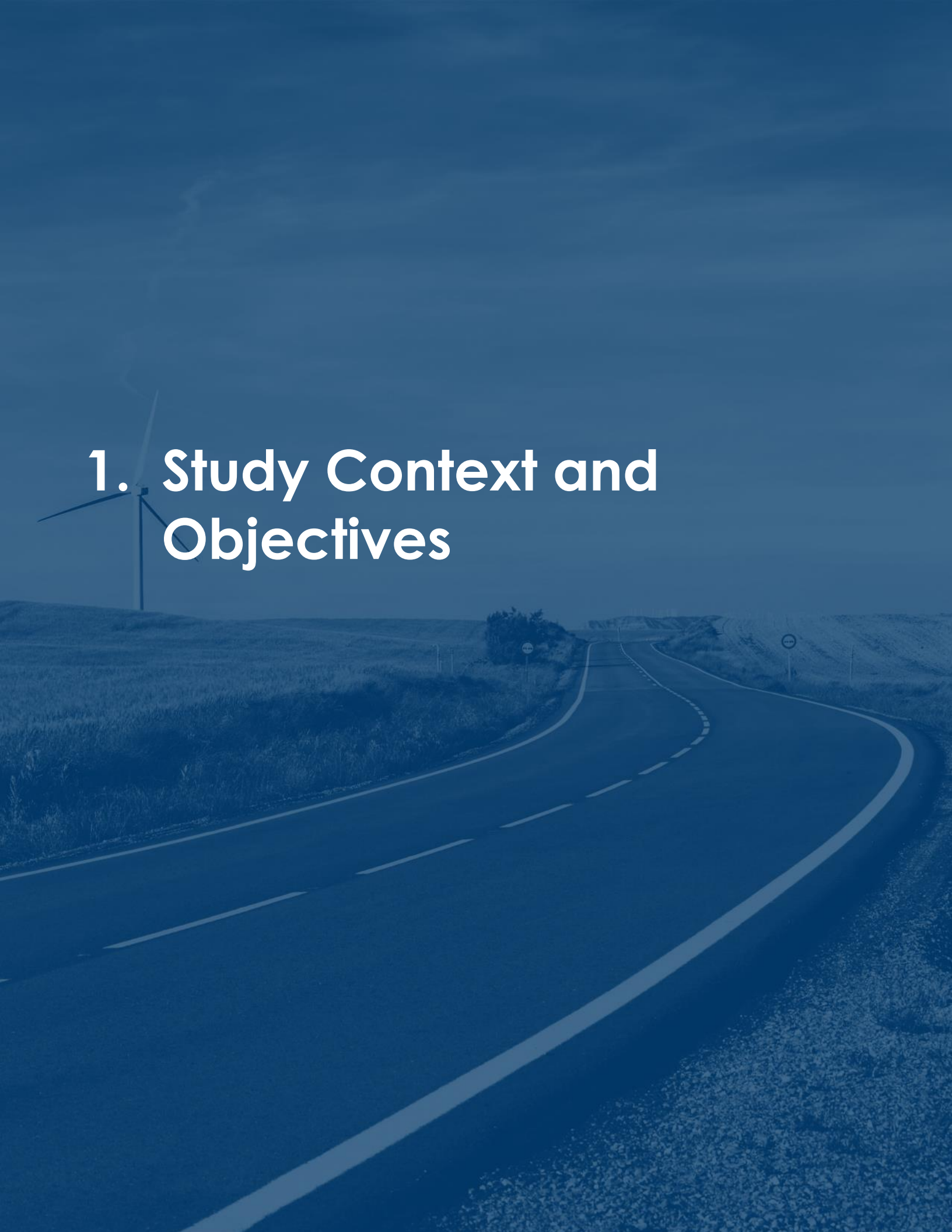
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Glossary

Abbreviation	
CEF	Community Efficiency Financing
CHBA	Canadian Home Builders Association
CIET	Canada Institute for Energy Training
Dunsky	Dunsky Energy + Climate Advisors
ERS	EnerGuide Rating System
FCM	Federation of Canadian Municipalities
GHG	Greenhouse Gas
GJ	Giga Joules
HEET	Home Energy Efficiency Transition
HER	Home Efficiency Rebate
HRAI	Heating Refrigerator and Air Conditioning Institute
HVAC	Heating, Ventilation, and Air Conditioning
LEED	Leadership in Energy and Environment Design
LIC	Local Improvement Charge
LLR	Loan Loss Reserve
NAIMA	North American Insulation Manufacturers Association
NRCan	Natural Resources Canada
OBR	On-bill Repayment
OHBA	Ontario Home Builders Association
QA/QC	Quality Assurance and Quality Control
SO	Service Organizations
tCO₂	Tonnes Carbon Dioxide

A blue-tinted photograph of a winding road in a rural landscape. A wind turbine is visible on the left side of the road in the background. The road curves to the right, and there are some road signs visible on the right side. The overall scene is serene and open.

1. Study Context and Objectives

1. Study Context and Objectives

1.1 Key findings

- Housing sector offers Green House Gas (GHG) emissions reduction opportunities as it accounts for around 12% of GHG emissions⁶.
- The current environment seems favorable for financing to help increase uptake. While financing alone will not drive new demand for decarbonization upgrades, a financing program will support and accelerate all other existing and future decarbonization policies. Moreover, enabling features of a financing program serve to accelerate energy retrofit uptake by lowering common barriers to energy retrofits.
- Reducing GHG emissions from the existing residential building stock in the County is the primary objective of the potential program.

1.2 Context

Wellington County climate goals

Wellington County (hereinafter referred to as 'County'), located in Southwestern Ontario, introduced the Future Focused Climate Change Mitigation Plan (2022-2030) in February 2021. The County aims to reduce community GHG emissions by 6% by 2030 and by 80% by 2050 (from 2017 levels) towards net zero emissions.

Buildings currently account for 30% of the total community emissions. Energy efficiency and electrification will be key to reduce emissions in the residential sector. Home retrofits are essential to achieve the emission reduction goals as **residential dwellings contribute 39% to the total GHG emissions from all the buildings** in the County. Of the homes in the County, **88% are single detached**, which are less efficient than multi-family dwellings. Most of these homes (90%) were built prior to the introduction of energy efficiency requirements in Ontario's building code in 2012, with **40% of homes being built before 1975**⁶. This signifies that deep retrofit⁷ opportunities are likely plentiful.

In addition, most homes (88%) have natural gas as the primary heating energy source, leading it to be the largest source contributor of residential emissions, accounting for 77% of residential emissions. In the areas where natural gas is not available (ex: Town of Erin and portion of other urban areas), other high emission fuels (propane, fuel oil) are used. Thus, reducing fossil fuel consumption for heating via electrification is essential to reduce residential emissions.

⁶ [Future Focused- A climate change mitigation plan for the County of Wellington](#)

⁷ Deep retrofits typically involve a combination of measures including insulation upgrades, cold climate heat pumps to replace furnaces and AC units, and where possible, solar panels. Overall, a deep retrofit package costs likely start at around \$25,000 and can extend up to over \$100,000 for fully comprehensive projects (costs are highly dependent on the measures chosen and the size and condition of the home). Deep retrofit results in approximately 20% energy savings, and substantial GHG savings.

To reduce GHG emissions by improving the existing building stock, the County has an ambitious **goal of retrofitting 20% of homes and businesses (with an efficiency improvement of 40%) by 2030**. This efficiency improvement is expected to result in an annual reduction of 16,350 tCO₂ emissions.

Project context

While the benefits of energy retrofits are great (e.g., bill savings, increased comfort, etc.), there are **numerous barriers that can hinder adoption of energy improvements**. These barriers can include high upfront costs, difficult access to capital, confusion around the multiple incentive programs available, difficulty in finding and managing contractors, lack of awareness and knowledge about which energy retrofits measures to prioritize, lack of knowledge on the cost-effectiveness of measures, and uncertainty around whether savings will materialize. In addition, homeowners often face competing capital priorities, some are limited in their ability to access private capital, have limited time to navigate the application process or implement a project and are fearful of possible disruption experienced in the process.

Innovative financing mechanisms are emerging as a promising tool to support the adoption of energy efficiency and renewable energy technologies. However, it should be recognized that financing alone will not increase the demand for energy retrofits; municipal or county led financing programs should consider including complementary strategies such as incentives to lower the costs to homeowners, along with other marketing and enabling activities.

Thus, the County (and its local municipalities⁸) are interested in assessing if a potential financing program can be an appropriate and impactful approach to support home improvements in the County.

In this context, Dunskey Energy +Climate Advisors ('Dunskey') was contracted by the County to assess the **feasibility of a potential residential retrofit financing program Home Energy Efficiency Transition (HEET)**. While the focus of this study is on financing, we underline the interconnection between financing and other programs and policies needed to achieve the County's climate ambitions.

1.3 Feasibility Study Objectives and Approach

The feasibility study aims to:

1. Determine potential program uptake and resulting emissions reductions;
2. Characterize homeowners by archetypes and identify related barriers and desired incentives / support;
3. Identify local industry gaps and actions to resolve the gaps;
4. Identify possible financial models and recommend a preferred approach; and
5. Summarize the environmental, social, and economic benefits.

Study approach

Dunskey was tasked to assess the feasibility of the potential financing program. To complete this work, we undertook the following activities.

⁸ The township of Centre Wellington, township of Guelph/Eramosa, township of Wellington North, town of Erin, township of Mapleton, town of Minto, and township of Puslinch

1. To ensure alignment on the project goals and County's priorities, Dunsky facilitated a **goal setting workshop** with County's staff on October 28th, 2022. This was a collaborative exercise drawing from the knowledge and experience of our collective teams.
2. We conducted a **landscape assessment**, which involved background research, characterizing Wellington County's housing stock and demographics, and summarizing the capacity of the current energy retrofit ecosystem. The landscape assessment information was leveraged for stakeholder engagement and to assess preferable finance models options.
3. Led multiple stakeholder engagement activities, including:
 - a. **Homeowner phone and online survey** with 500+ responses. The objective was to understand homeowner's perspective on existing barriers and required support for retrofits, assess their awareness, and willingness for potential retrofit program. The surveys were developed by Dunsky. The phone survey was fielded by market research firm, Mainstreet Marketing, and the online survey was fielded by the Wellington County.
 - b. **Targeted interviews** with Conestoga College, Building Knowledge Canada, REEP Green Solutions, Canadian Home Builders Association (CHBA), City of Guelph (for Guelph Greener Homes Program), Kindred Credit Union, finance and legal department of municipalities.
 - c. **Four meetings with the stakeholder working group** to discuss the study findings and receive feedback during the project. The stakeholder group involves staff from the County, Wellington hydro, Conestoga college, Building Knowledge Canada.
 - d. **Public engagement session** was held on 24th April 2023. The key insights heard during public meeting are included in this report.
4. Using **Dunsky's proprietary finance model**, we evaluated finance program options, assessed potential energy efficiency and renewable energy projects uptake (e.g., # of projects and investment required), and estimated local benefits (e.g., energy and GHG savings, costs savings and non-energy benefits) and assessed high-level estimates of program administration costs.

Ultimately, the feasibility study aimed to determine whether the County should proceed with a home energy financing program design, and if so, **recommend a preferred financing model** to pursue.

1.4 Goal setting for the potential program

The County's staff provided critical context of local conditions and internal processes, constraints, and opportunities. Thus, we engaged with County's internal staff in a goal setting workshop to identify County's and local municipality's goals linked to retrofit financing and get deeper understanding of their local market.

The key objectives of the goal setting workshop were to: (a) **Confirm the county's goals** relating to both broader climate action and more specifically home retrofit financing opportunities while sharing our knowledge and experience with innovative financing models. (b) **Align on the project**, financing opportunities, and policy goals, identifying key topics/questions that need further exploration, and understanding the feasibility study's primary target audience. (c) **Confirm the County's expectations regarding public participation**, potential stakeholder groups and method(s) of engagement and outreach to inform the engagement plan.

Based on the outcomes of the workshop, the study team determined that **the primary goal of potential HEET program is to reduce GHG emissions** in the County through existing homes

retrofits. The County also has secondary goals to improve energy efficiency and reduce energy poverty⁹. Home improvements supported by the potential program will benefit the community by increasing comfort in resident's homes and improving the resident's health.

The County also identified community segments like farmers, older people, and low-to-medium income households, which might have specific needs or barriers to proceed with energy retrofit projects. The County identified that it is worth further engaging staff of the different municipalities to assess the tax system capabilities.

The feasibility assessment and the stakeholder engagements during the project took into consideration the outcomes of the goal setting workshop.

1.5 Potential Program Feasibility Indicators

Assessing the feasibility of the potential HEET program (including the possible financing options) for the County of Wellington relies on answering **THREE key questions**:

1. Does the **market potential** justifies developing a financing program?
2. Will there be enough **industry capacity** to deliver the potential program in the future?
3. What **financing options** are feasible, and which one would be a preferred option?

Once the feasibility of the program is established, answering **TWO further questions** helps establish next steps for program development, namely:

4. What **enabling program features** could increase program success?
5. Which actors could potentially act as **program partners** for HEET?

⁹ In Canada, the median Canadian household spends 3% of household income on home energy needs. Using a similar 'reasonable cost threshold' measure, Canadian households spending more than twice the national median (i.e. 6%) of household income on home energy are considered to be in 'energy poverty.' - as per [Efficiency Canada](#)

2. Market Potential



2. Potential market for a residential financing program

2.1 Key findings

Analysis of the market potential in the County provides us with following insights:

- Most of the homes in the County are older, owner-occupied single-family dwellings (76%), followed by farm residences (15%), which forms the target market.
- We defined three housing archetypes that represent the housing stock in the County, with each presenting various retrofit and GHG reduction opportunities. Natural gas homes typically emit 6.5 tCO₂ emissions and represent 88% of the market, fuel oil homes emit 12.9 tCO₂ emissions and represent 3% of the market and electric homes (emitting around 0.9 tCO₂ emissions) represent 9% of the market.
- There is considerable interest (by over 40% of survey respondents) to invest in home energy improvements. Of those who are willing to invest, around 68% are willing to invest more than \$10,000.
- The potential uptake can range from 40 to 500 by year 4 but depends on various aspects of program design. A long-term plan with a slow-mid start focussing on deeper retrofits will provide the County an opportunity to build staff and industry capacity as well as contribute towards GHG emission goals.

Therefore, we conclude that the County's potential market justifies the development of a financing program.

2.2 Homeowner's interest in a financing program

We fielded a phone and web survey between 16th November 2022 and 16th December 2022 to inquire about homeowner's knowledge, preferences, and inclinations regarding home energy retrofits. With a total of 500+ responses (a statistical representation of the total housing stock in the County), the survey provided valuable insights into homeowner willingness and priorities for home energy retrofits.

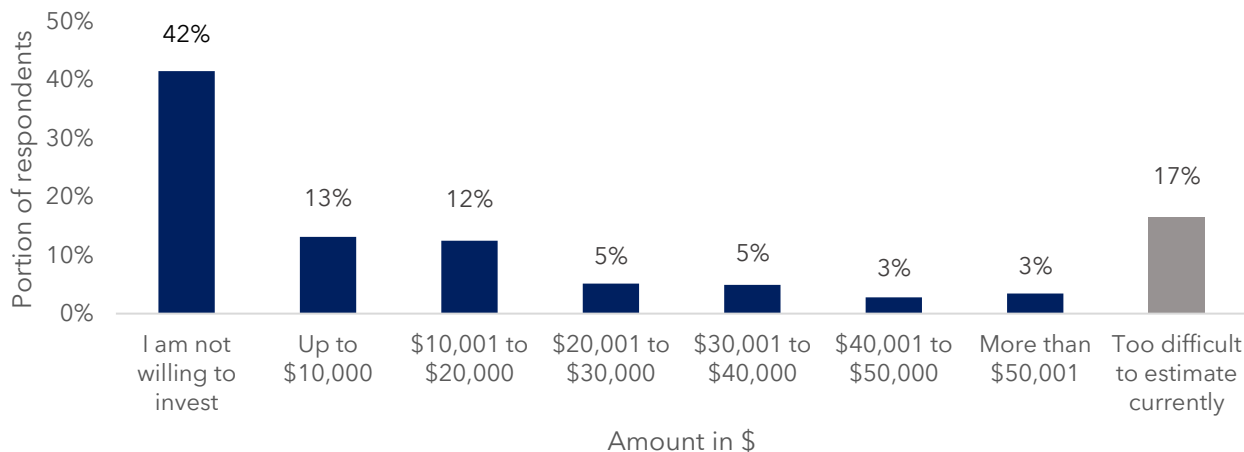
Approximately **66% of the respondents showed interest to participate** in a County supported retrofit program, with only 16% saying they would not be interested (and the remainder said they did not know).

Over 40% of respondents indicated a willingness to invest in home energy improvements.

17% of the respondents find it difficult to estimate the amount they can invest and remaining (42%) are not willing to invest (see Figure 2-1.)

Of the respondents who are ready to invest in home energy improvements, that majority (68%) reported being willing to invest more than \$10,000. Amounts reported for home energy investments would most probably be made in addition to current available incentives such as Canada Greener Home Grant, now integrated within Enbridge's Home Efficiency Rebate+ (HER+) program (details on available incentives are reported in Section 2.3.

Figure 2-1. Homeowners willingness to invest in home energy improvements



Furthermore, over 60% of the respondents expressed their willingness to consider additional upgrades or switching their energy source to reduce GHG emissions, given varying degrees of return on their investment.

2.3 Current GHG and efficiency landscape

To achieve County of Wellington’s ambitious climate and retrofit goals, a broad suite of energy efficiency and renewable energy policies and program levers are necessary. There are several market interventions in place including rebates, direct install programs, and building codes. These programs and policies can be complemented by financing to overcome barriers not addressed by other interventions.

This section offers an overview of the different policies, programs, and features (e.g., eligibility, measures covered, program requirements, etc.), discusses the different finance options and the regulatory framework in place in Ontario, presents findings about the contractor capacity, and highlights available funding and capacity building support.

Current planned policies and program

This section describes the barriers preventing homeowners from undertaking upgrades, existing and planned policies and programs that make up the current energy efficiency landscape, and their respective strengths and gaps.

Barriers to home energy retrofits

While the benefits of energy efficiency (EE) and renewable energy (RE) are significant (e.g., energy and utility bill savings, GHG emissions reductions, increased comfort and health, increased property values) there are several barriers that prevent or slow adoption of EE and RE improvements. They are detailed in Table 2-1 below and their prevalence in the County is detailed in Section 6.2.

Table 2-1: Barriers to home energy retrofits

BARRIERS	Description
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 are a barrier to financing new projects.
INFORMATION	Projects have risks, including: 1) actual savings may not meet the estimated benefits; 2) potential budget and/or timeline overruns; and 3) an uncertainty in the value the property gains from improvements. Homeowners need credible information and advice to help prioritize energy upgrades and properly value energy efficiency.
COMPLEXITY	Energy efficiency (EE) and renewable energy (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.

Existing and planned policies and programs

There are several existing housing retrofit programs available to County of Wellington homeowners. Each has strengths and gaps. They are detailed in Table 2-2. Other planned policies, programs and initiatives that can support the County of Wellington's energy and emissions reduction goals are outlined in Figure 2-2.

Table 2-2: Current existing housing retrofit programs and offerings

Program	Description	Energy end use targeted	Measures covered	EnerGuide Evaluation Required	Strengths and Gaps
 ENBRIDGE Home Efficiency Rebate + Program  Canada Greener Home Grant	Joined programs now delivered by Enbridge Up to \$10,000 in grants for eligible measures for Enbridge clients and up to \$5,000 for non-Enbridge clients \$600 for EnerGuide evaluation Minimum of 1 eligible upgrades.	Natural Gas All fuels	Energy Star® Furnace / Boiler Insulation and draft proofing Energy Star® water heating Energy Star® windows and doors Energy Star® smart thermostat Insulation and draft proofing Heat pumps Heat pump water heaters Renewable energy	Yes	Strengths: Reduce costs of higher efficiency equipment. EE and RE measures eligible. Gaps: Natural gas only for Enbridge client portion; Limited measures due to cost effectiveness rules for Enbridge client portion. Limited grants available across Canada for CGHG portion.
 ENBRIDGE Winterproofing Program	Income eligible homeowners receive a home energy assessment and energy efficient measures at no cost	Natural Gas	Insulation and draft proofing Smart thermostat	Yes	Strengths: Benefits low-income households Gaps: Limited to income eligible homes, limited measures.
 ENBRIDGE Enbridge Sustain	Energy-as-a-service solution offering turn-key installation of select clean energy solutions, for which customers are billed monthly after installation.	All fuels	Geothermal Hybrid heating (air-source heat pump and natural gas furnace) Solar PV EV Charging	No	Strengths: Offers turn-key solutions at no upfront-cost. Gaps: Limited measures. Program newly launched.
 SAVE ON ENERGY Energy Affordability program	Depending on the homeowner's situation, different energy-saving products and services available. Some participants qualify for a free EnerGuide evaluation and replacement of inefficient appliances and installation of insulation and draft-proofing.	Electric	Inefficient appliances Insulation and draft-proofing Energy savings kits: LEDs, timers, faucet aerators and/or clothesline.	Yes	Strengths: Benefits low-income households Gaps: Limited measures; moderate income households ineligible

Program	Description	Energy end use targeted	Measures covered	EnerGuide Evaluation Required	Strengths and Gaps
	Others may qualify for free energy saving kits.				
 Oil to Heat Pump Affordability Program	Up to \$10,000 in incentives to install a cold climate air source heat pump (Includes \$5,000 from the Canada Greener Home Grant Program)	Oil	Cold climate air source heat pump Required mechanical and electrical upgrade Removal of oil tank Back-up electrical system Hot water heater (if previously oil-heated)	No	Strengths: Simple process for oil-heated homes (no EnerGuide Assessment needed), upfront payment Gaps: Limited grants available across Canada, available to households with median income or less
 Canada Greener Homes Loans	Interest free loans of \$5,000 to \$40,000 for energy efficiency home retrofits Loan term 10 years Requires good credit	All fuels	Insulation and draft proofing Heat pumps Heat pump water heaters Renewable energy Windows and doors	Yes	Strengths: Interest free loans, EE and RE measures eligible Gaps: Limited loans available across Canada, short repayment term, low proportion of the loan available upfront

Figure 2-2: Other policies and program

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 home retrofits
- 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.
- Fifty projects (studies, pilots and capital projects) totaling almost \$127M have been announced since the program launched March 2020.

Clean Air Partnership

- Clean Air Partnership developed a Local Improvement Charge Financing for Retrofits Toolkit to help municipalities design residential energy efficiency retrofit local improvement charge (LIC) financing.
- Conducting a feasibility study to develop locally-tailored home energy retrofit financing programs in partnership with multiple municipalities.

HEET could supplement the Canada Greener Homes Loan

The Canada Greener Homes Loan (CGHL), launched in June 2022, offers up to \$40,000 per property and homeowner in the form of a 10-year interest free unsecured personal loan. It is currently the only financing program available to County's homeowners. While the CGHL's interest rate is likely lower than that that ultimately offered by HEET, HEET could provide additional benefits:

- 1. More robust upfront payment support:** CGHL only provides up to 15% of the loan upfront, whereas contractors typically request closer to 45% as a down payment. This limits the CGHL to homeowners who have greater access to upfront funds or can secure bridge financing as they wait for the loan to be provided. HEET could allow a larger proportion of the loan to be provided upfront, covering all requested contractor cost and eliminating the upfront cost barrier at this stage, assuring access to financing to households who don't have access to bridge financing or cashflow.
- 2. More flexibility to cover project cost-increases:** For the CGHL, if the actual retrofit costs are higher than the initial cost estimate, the loan amount will not increase to cover the discrepancy (i.e., the homeowner will be responsible for paying the difference). HEET could allow for cost overruns to be incorporated into the final loan amount.
- 3. Longer loan term favouring deeper retrofits:** CGHL limits the maximum term length to 10 years, while many measures have longer effective useful lives. It is beneficial to extend loan term to match savings over the lifetime of devices so that monthly costs and savings are more aligned. This can allow for greater likelihood of immediate monthly savings (i.e., utility bill savings are greater than the loan repayment). HEET could offer longer terms of repayment, which would in turn favour the adoption of deeper retrofits. 20 years is in line with the effective useful life of many measures.
- 4. Wider applicant eligibility.** For CGHL, the applicant must be the homeowner and the home must be their primary residence: CGHL will not permit landlords to take advantage of the offer to support upgrades to homes with renters. HEET could allow landlords to apply.
- 5. Robust homeowner support:** With CGHL, other than the financing, there's no additional support to guide homeowners through their home upgrade journey. An energy concierge can play an important role in guiding homeowners through the (often difficult) process of retrofitting their home. HEET could offer energy concierge services.
- 6. Ability to grow:** The CGHL is estimated to provide 175,000 loans across Canada. With roughly 10 million homes nationwide, this represents less than 2% of homes; far fewer than needed to meet climate goals. HEET could allow the initiative to grow over time.

2.4 Housing sector GHG reduction opportunities

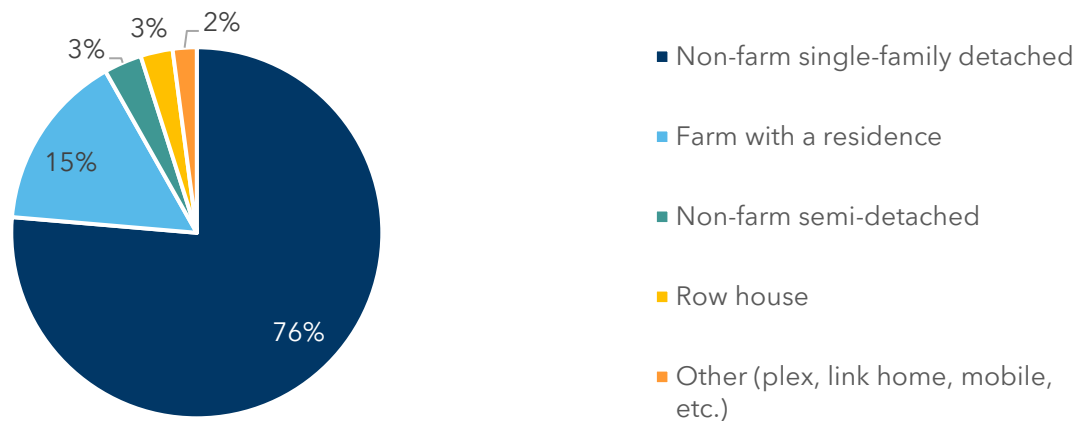
The technical potential for GHG emissions savings and energy savings was determined by characterizing the housing stock in the County. Segmenting the housing market into groups with similar characteristics (e.g., age, type, size, and space and water heating/cooling) helps identify which measures and building archetypes offer the greatest potential for GHG emissions savings and energy efficiency improvements. The available demographic data was then used to determine which households are most likely to participate in a potential financing program.

Older, owner-occupied single detached dwellings are prominent in the County

There is a total of 33,314 residential dwellings in the County. However, not every household is expected to participate in a potential finance program as not everyone will be interested, eligible, or able to undertake an energy retrofit.

Of the total of 33,314 dwellings, the County's housing stock consist of 30,382 private dwellings (excluding units in apartment buildings), **76% of which are single-family (non-farm) detached homes and 15% are farm residences**, see Figure 2-3. Based on the census data¹⁰, 78.4% of these dwellings are owner-occupied, yielding a potential market of approximately 23,820 owner-occupied eligible residential dwellings in the County (see Figure 2-7).¹¹

Figure 2-3. Wellington County Dwelling Type



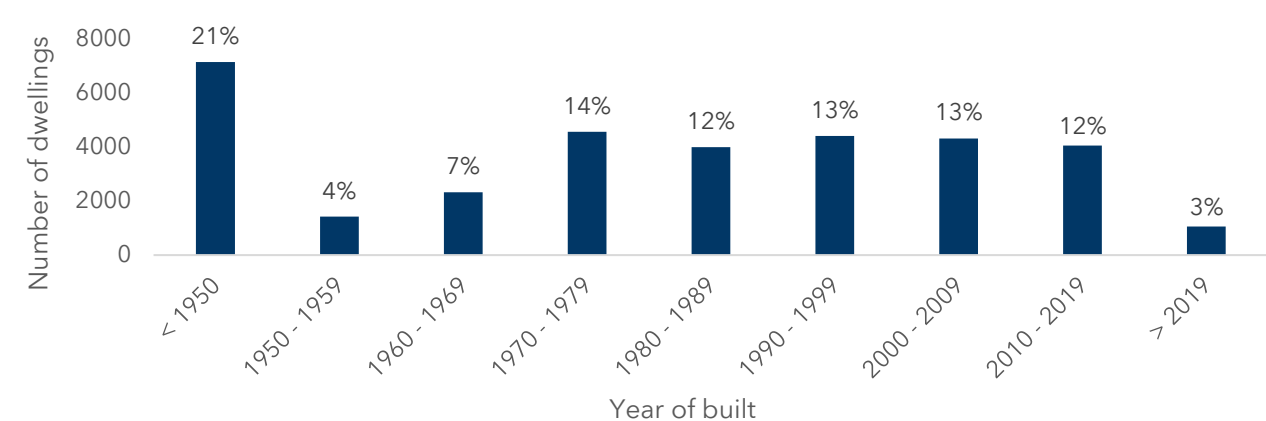
Most of the County's housing stock is over 30 years old, showing a potential indicator for important home energy improvements. 58% of dwellings in County were constructed before 1990 (of which 21% were constructed before 1950). Older homes that are less energy efficient present better opportunities for highly cost-effective energy retrofits, however, newer homes can also offer interesting GHG reduction potential and savings when including fuel switching and renewable energy.

¹⁰ Statistics Canada, 2021 Census of Population

¹¹ While a program could allow for owners that rent their properties to use the financing to renovate their properties, dwellings that are rented out prove typically more difficult to reach with a financing program because of the *split incentives* barrier: the retrofits return on investment consists of bill savings that would in most cases be beneficial to the renter, while the retrofit investment would come from the owner. Some measures can be considered to address that specific market, but we nonetheless remove the rented dwellings from our estimated potential market.

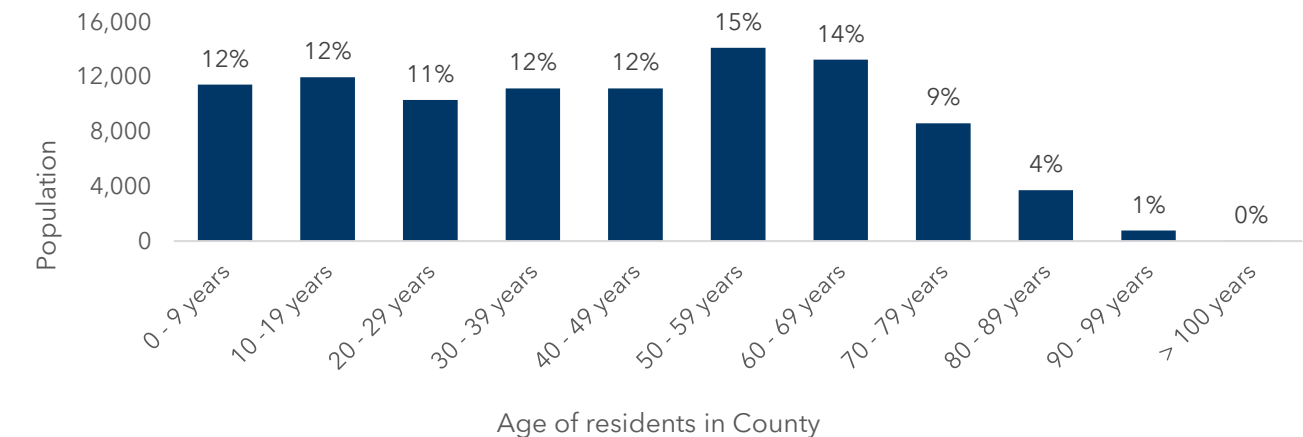
Moreover, a Statistics Canada sample of 25% of the overall housing stock shows that nearly 4.7% of dwellings need major repairs, which indicates that some energy retrofits projects might require conducting other repairs at the same time.

Figure 2-4. Dwellings by year of construction



Retirees and seniors, along with farmers form a sizable portion of the overall population. The County's total population is 96,665 with an average age of 41.9 years old. This is consistent with the average Canadian age (41.7 years old)¹². As shown in Figure 2-5, 56% percent (~54,000) are in the working age bracket of 20 to 64 years old - which can be a prime target market for home energy retrofits. However, the County has a significant representation of the retirees (27% of the survey respondents) and older people (38% of the survey respondents) who might need specific support to opt for the program. These needs can be met through program features (explained in Section 5). For this report, we inquired further into the profile of the Wellington County's population and identified 10 representative personas (such as older people/retirees, farmers, low income, rental properties, etc.) More details about the personas are in Appendices.

Figure 2-5. Wellington County population age brackets

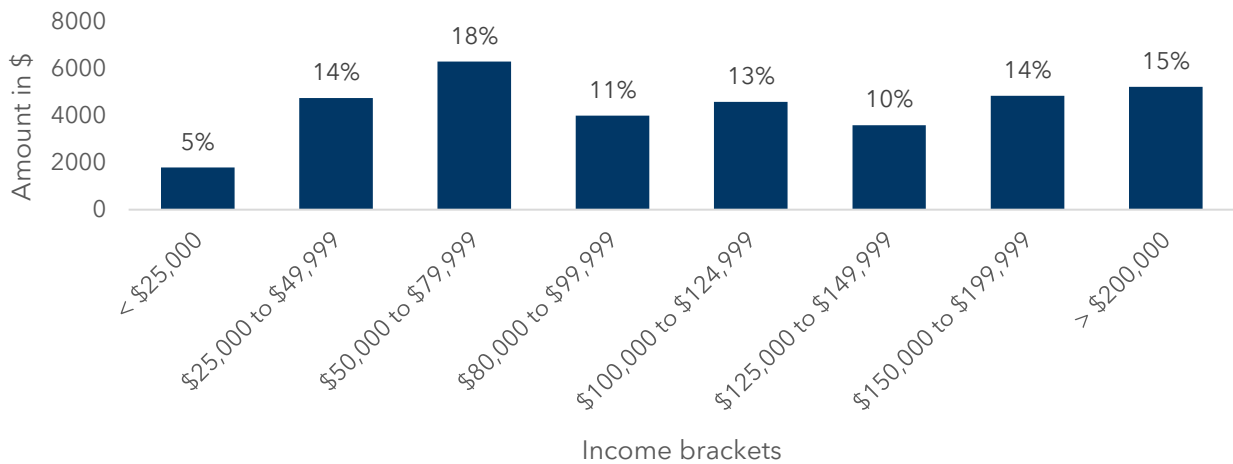


Although the average household income in the County is \$129,875, and the median household income in the County is \$101,836 -higher than the 2020 Canadian median household income at \$84,000. As shown in Figure 2-6 household incomes vary in the County with almost half of

¹² Statistics Canada, Census Profile 2021.

households had an income below \$100,000, and almost 30% of households had an income above \$150,000 in 2020.

Figure 2-6. Household income bracket distribution in the County



Wellington County's Housing Market can be represented by three archetypes

We used Natural Resources Canada (NRCan) EnerGuide data and Municipal Property Assessment Corporation (MPAC) data to represent the typical homes that can be found in the County and assess further their GHG emissions and reduction potential.

- Natural Gas heated homes:** This archetype represents homes that uses natural gas as the main source of energy for space heating. This is the most common house archetype by far, representing around 88% of the housing stock. Propane heated homes are relatively well represented by this archetype. **These homes emit approximately 6.5 tonnes of CO₂eq per year.** Cost-effective home energy retrofits modelled for this exercise could abate between 4% to 80% of their GHG emissions (0.3 to 5 tCO₂eq) and offer between \$1,100 and \$4,300 in energy savings yearly.
- Fuel Oil heated homes:** This archetype represents homes using fuel oil as their main source of energy for space heating. While this home archetype is way less prevalent in the County (around 3% of the eligible housing stock), they use a large amount of energy and emit considerable amounts of GHG annually. Thus, we represent this archetype to show that these homes present important opportunities for GHG emission reduction, and very cost-effective retrofits. **These homes emit approximately 13 tonnes of CO₂eq per year** - almost double the GHG emissions of a natural gas heated home. Cost-effective home energy retrofits modelled for this house archetype could abate close to 90% of these homes GHG emissions and offer considerable yearly energy savings annually (\$4,600 to \$6,200).
- Electrically heated homes:** This archetype represents homes that are heated with electricity. This type of home represents approximately 9% of the eligible housing stock. While the GHG emissions of these homes are considerably lower than the fossil-fuel heated homes with an **average of 1 tCO₂eq**, our modeled energy retrofits underlines that they still present cost-effective opportunities for energy and GHG reduction that could bring over \$3,000 in yearly energy savings and bring those homes very close to net-zero emissions.

This categorisation (see Table 2-3) of typical home archetype has been confirmed through multiple engagement opportunities, with stakeholders, homeowners, and contractors.

Table 2-3: Wellington County home archetypes

			
	Natural Gas	Fuel Oil	Electricity
Type	Single family home	Single family home	Single family home
Market share %	88%	3%	9%
Stories and area	1-1.5 stories 246 m ²	1-1.5 stories 261 m ²	1-1.5 stories 282 m ²
Space heating source	Natural gas	Fuel oil	Electricity
Water heating source	Natural gas	Electricity	Electricity
Annual energy consumption (% for space heating)	150 GJ (74%)	210 GJ (85%)	110 GJ (63%)
Annual GHG emissions	6.5 tCO₂eq	13 tCO₂eq	1 tCO₂eq
Annual estimated bill savings from cost-effective upgrades	\$1,100- \$4,300	\$4,600- \$6,200	\$1,250- \$3,300
Estimated annual GHG emissions reduction from cost-effective upgrades	0.3-5 tCO₂eq	11.5- 12 tCO₂eq	0.3 - 0.7 tCO₂eq

2.5 Estimated market uptake

Our market uptake estimates for a financing program shows that **a potential program could support between 40 and 500 home retrofit projects over the first 4 years.** We estimate uptake over the first 4 years only as this aligns with current program support from the Federation of Canadian Municipalities' (FCM's) Community Efficiency Financing (CEF) program, however, a program could be established for a longer period than 4 years.

To assess potential participation, we first apply a market funnel to apply a more realistic assumption of homeowners most likely to participate. The market funnel considers the target market - existing single-family homes (including duplexes, row/townhouse, etc.), homes that are owner occupied, based on primary home heating fuel. While rental property owners may be eligible for the program, there are unique barriers that may slow participation for these segments of the population. Additional program design features can reduce these barriers; however, this segment is excluded from current market potential assessment.

Figure 2-7. Market funnel to estimate homeowners who are likely to participate



Using Dunsky’s proprietary finance model and considering experience in other jurisdictions with similar financing programs, we model three uptake scenarios: Low, Medium, and High based on empirical participation data gathered from other residential financing programs. From this, we estimate that a financing program in the County could **support 40 - 500 participants over the first four years**. This represents 0.2% - 2% of the total eligible market size (23,820 homes) by the fourth year. These estimates do not include homeowners that could be influenced by the program features (i.e., energy concierge) but may choose to finance their home energy retrofit projects through other means, which would expand the overall impact of the program.

Table 2-4: Estimated annual market uptake from the potential financing program

Uptake Scenario	First 4-year annual average	Cumulative over 4 years
LOW	10	40
MEDIUM	65	260
HIGH	125	500

By establishing a potential financing program with modest uptake in the initial years, the County of Wellington will be well placed to develop an understanding of the market, put in place other policies that can drive more volume in future, and explore options to merge with neighbouring programs, if applicable. The gradual start will also allow the County to address the barriers of the community such as awareness about the programs or benefits of retrofits. The moderately paced start can also provide the County an opportunity to build staff and industry capacity required to deliver a successful program.

A long-term plan with a moderately paced start that focusses on deep retrofits will provide the County an opportunity to build staff and industry capacity as well as contribute towards GHG emission goals. The program can demonstrate the business case for financing in the County and for retrofits and put in place a mechanism that can complement future building decarbonization policies, such as home energy reporting, gas moratoriums, or retrofit energy codes. The potential program also intends to address the needs of equity groups (low-medium income households) who may not have the means to undertake deep retrofits otherwise.

Overall, we conclude that the County’s potential market justifies the development of a financing program.

3. Industry Capacity



3. Industry capacity

3.1 Key findings

We investigated the current industry capacity to deliver retrofits at the rate a financing program could support them in Wellington County, as the home renovation ecosystem is key for the success of a potential financing program. Industry capacity refers to capacity of existing contractors and energy advisors that are already working in the area, and additional capacity required to support retrofits. Our analysis provides the following insights:

- **Homeowners need support with finding contractors.** A list of qualified contractors by the County as part of program design can help homeowners overcome this barrier.
- CHBA directory and Natural Resources Canada's (NRCan's) web search showed that Wellington **County has limited capacity** of contractors and accredited service organisations who can provide EnerGuide ratings. However, the neighbouring cities and regions (e.g. Guelph) has considerable capacity that can be leveraged within the County.
- With **upcoming programs in the City of Guelph**, there will be higher demand from homeowners for contractor's services, so it is expected that the capacity will build over time.
- The intended eligibility approach to **focus on fewer projects but with more depth of retrofits** will allow for a more gradual increase in the needs for building professionals.
- Engagement with **external agencies indicated no serious concerns around contractor capacity** building. These agencies (such as educational institute) can be potential partners to deliver capacity building support.

We conclude that the industry capacity in Wellington County is limited. The limits point to the need for specific considerations in the program design phase regarding the industry capacity but are not severe enough to suggest that it hinders the program's feasibility.

3.2 Current capacity assessment yields limited results

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

Contractors

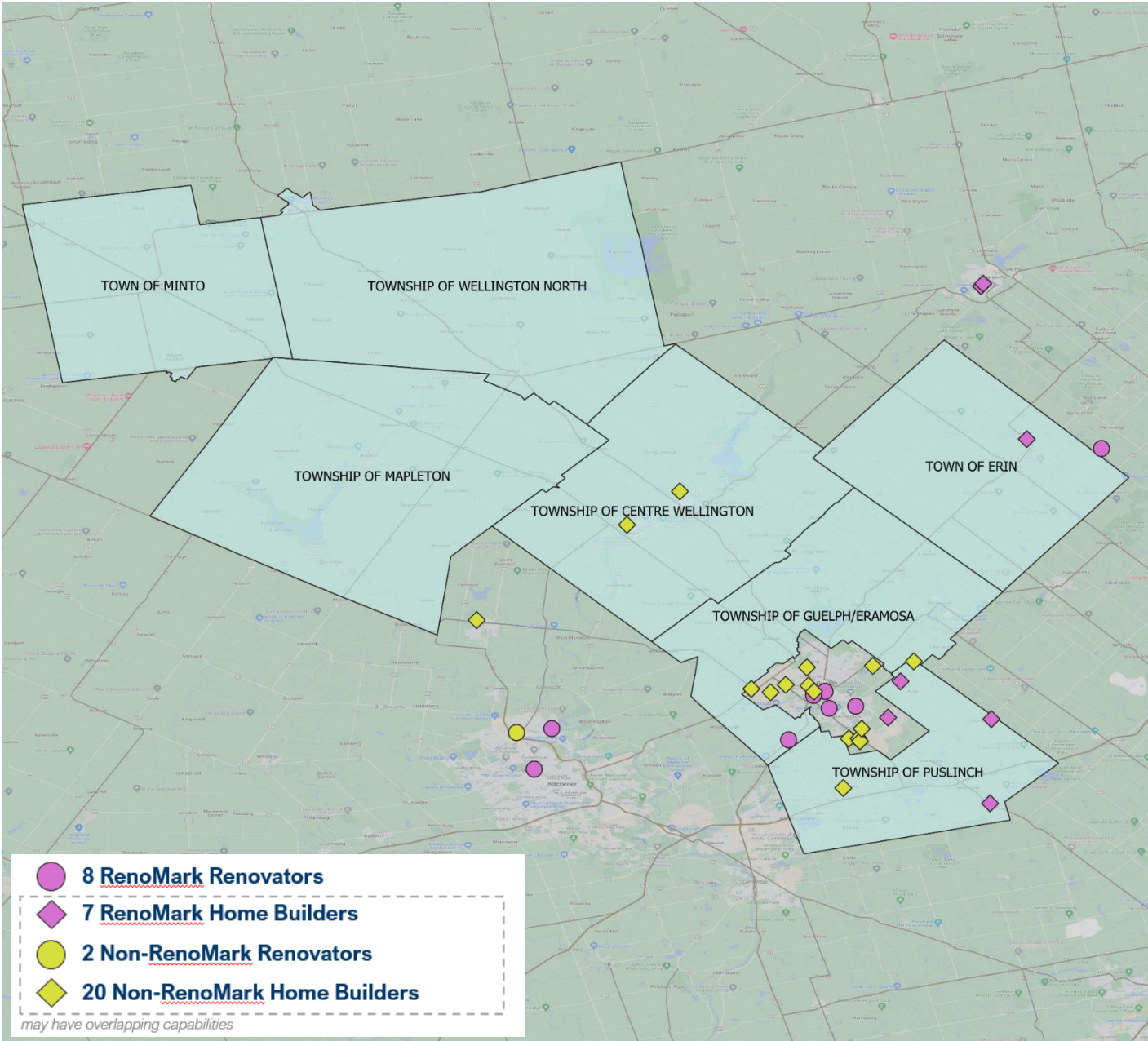
A November 2022 search of the CHBA members directory¹³ for buildings professionals in Wellington County yielded limited results with:

- 1 Renomark renovator in Town of Erin
- 1 Renomark builder in Town of Erin
- 2 Renomark builders in Town of Puslinch
- 2 Non-Renomark home builders in Fergus (Center Wellington)

¹³ [CHBA members directory](#)

The search was **expanded to include the City of Guelph** and nearby municipalities, and the results showed a total of 23 various Professional Service Providers within the City of Guelph. These are outlined in Figure 3-1.

Figure 3-1: CHBA members near Wellington County



As an industry-led initiative, the RenoMark program is designed to distinguish professionalism and integrity in the renovation industry. RenoMark can be leveraged by the County and local municipalities as a resource for homeowners to find qualified renovators that are able to help them with their home's renovation projects. Using an industry-led contractor directory instead of the County/ municipality preferred vendor lists can help minimize liability risk for the the County or the municipality.

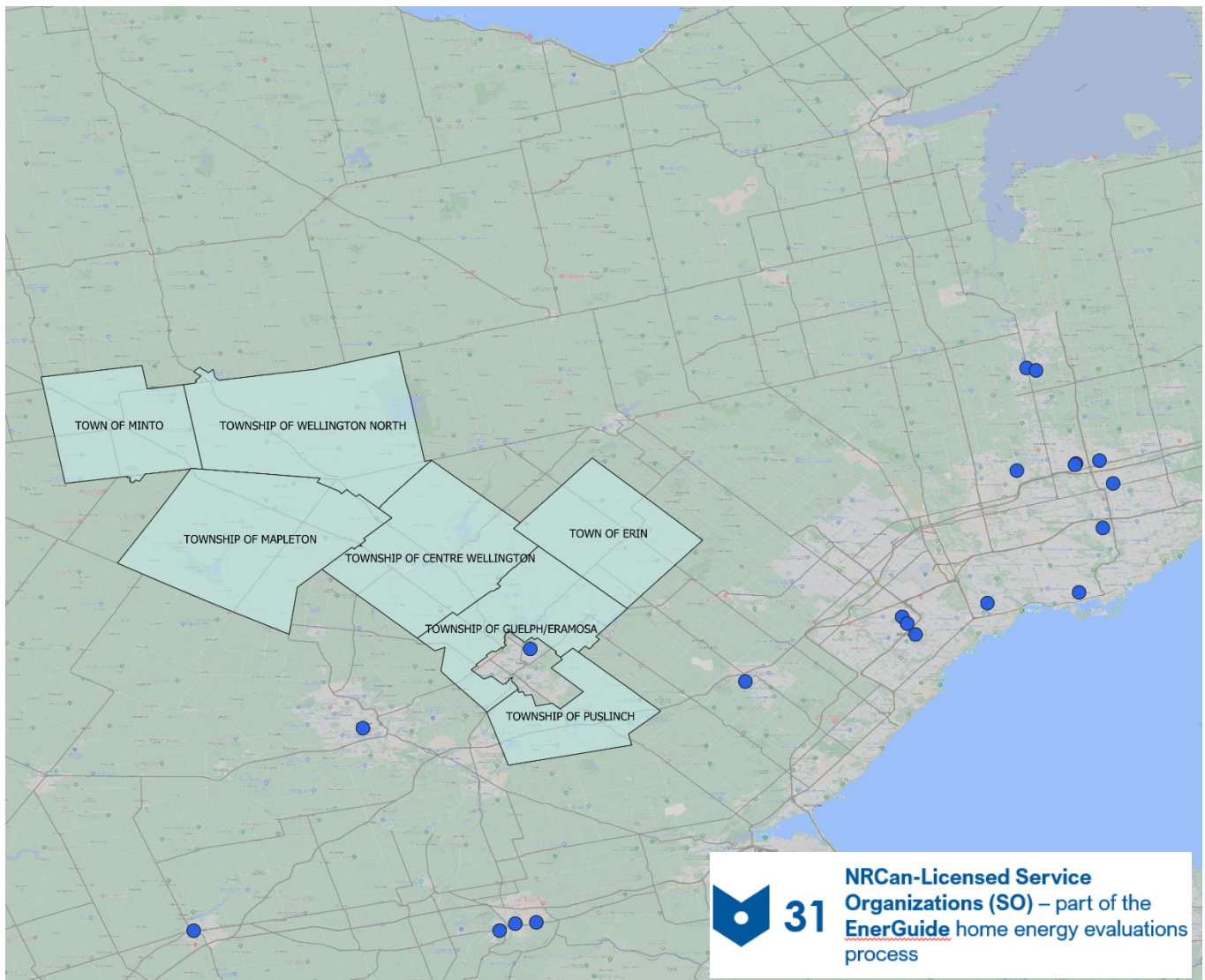
Energy Advisors

A November 2022 search of NRCan's *Find a service provider for existing homes*¹⁴ for energy efficiency service providers showed none is in Wellington County. The research was expanded to include the city of Guelph and neighboring areas. We found one service organisation located within the City of Guelph. Furthermore, we learned through a stakeholder interview with REEP Green Solutions that a new service organisation named *Emerge Guelph* is under development in Guelph.

However, an extended search including results within a 100km radius showed that a total of 31 service organisations exists around the county of Wellington (see Figure 3-2). While service organisations located directly within the County would be preferable, these results show that homeowners might have access to energy advisors within a reasonable distance.

¹⁴ [NRCan's Find a service provider for existing homes](#)

Figure 3-2. NRCan-Licensed Service Organisations near Wellington County (100km radius)



3.3 Past experience indicates that there is some capacity to undertake retrofits

Though there seems to be a limited contractor capacity in the County, our analysis of EnerGuide data shows that some home retrofits were performed in the recent past, relying therefore on the existing contractor capacity. Some facts give insights into the recent capacity situation in the County:

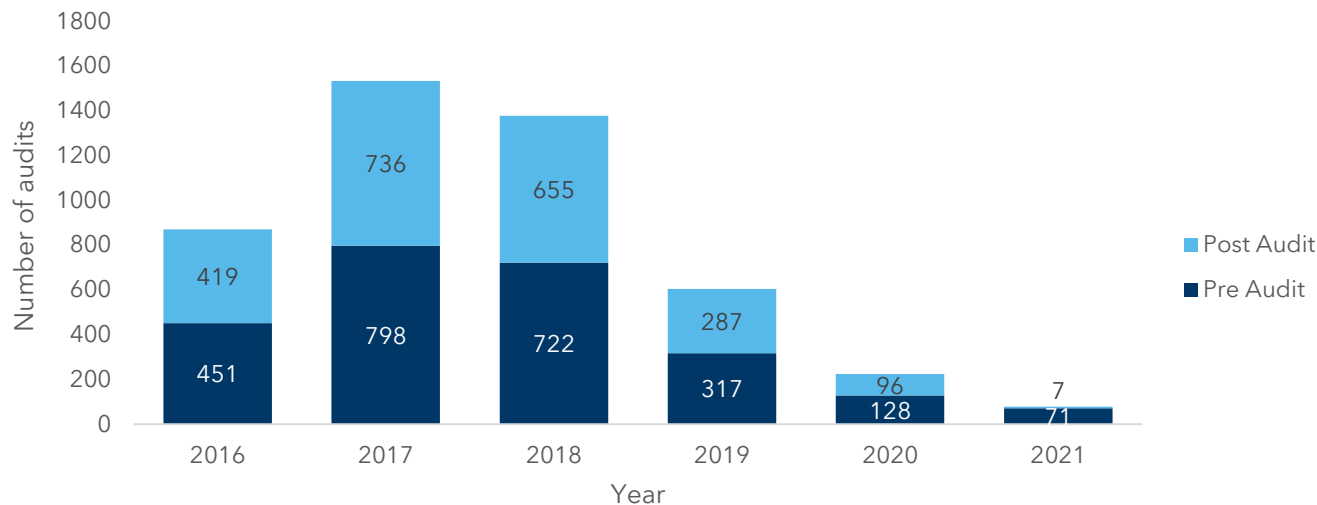
1. At least 2,200 retrofits were performed in the County between 2016 and 2021, for an average of 366 retrofits per year;
2. Most of the audits were done in 2017 and 2018, with 736 and 655 completed retrofits respectively;
3. Most of the retrofits were a combination of 1, 2 or 3 measures (34%, 36% and 18% respectively).

These insights suggest that despite very few contractors and energy advisors identified within the County through the CHBA and NRCan databases, homeowners were able to undergo retrofits in the region recently, for which they found building professionals as well as energy advisors.

EnerGuide Evaluations

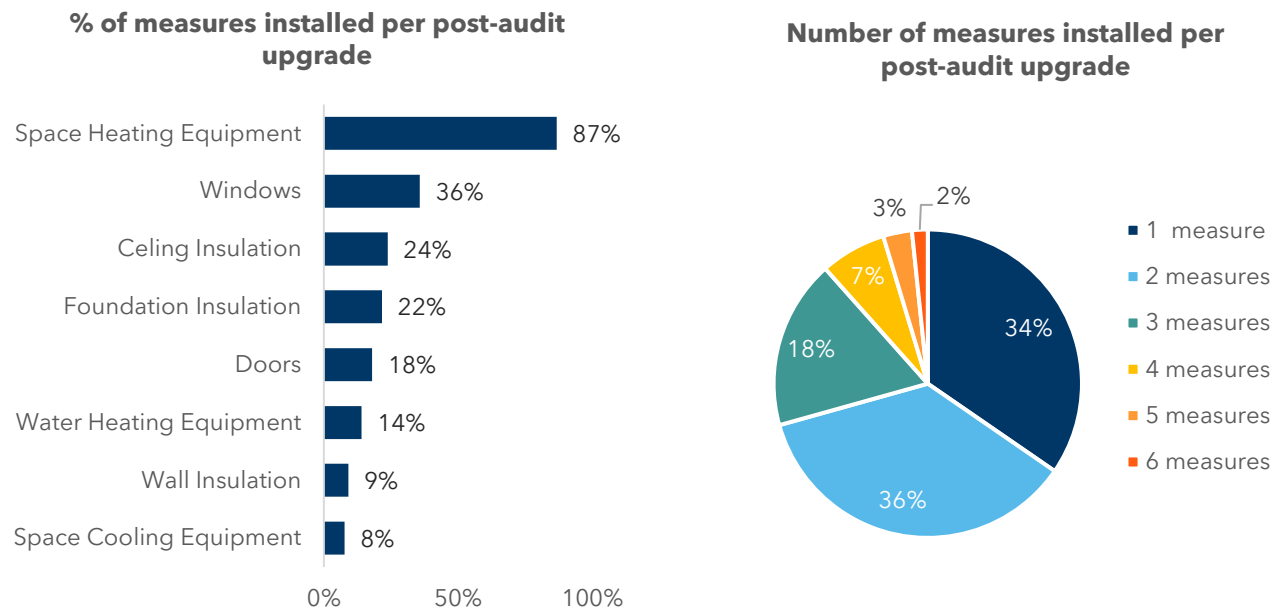
A total of 4,687 EnerGuide evaluations (2,487 pre-audits and 2,200 post-audits) have been performed in the County since 2016. The conversion rate from pre-retrofit to post-retrofit audits in the County is higher (around 88%) than other jurisdictions in Canada (~80%), see Figure 3-3. We analyzed 2,200 post-retrofit audits for the breakdown of the types of measures installed and their energy savings. 88% of the projects included between 1 and 3 measures per dwelling, for a total of 4,770 measures installed.

Figure 3-3. EnerGuide Audits and Conversion Rate in the County since 2016



The most common measure was space heating equipment upgrades (87%), followed by energy efficient windows (36%). The third most common measure was ceiling insulation (24%) (See Figure 3-4). Other installed measures included foundation insulation, energy efficient doors, water heating equipment, wall insulation, and space cooling equipment.

Figure 3-4. EnerGuide Audits and Conversion Rate in the County since 2016



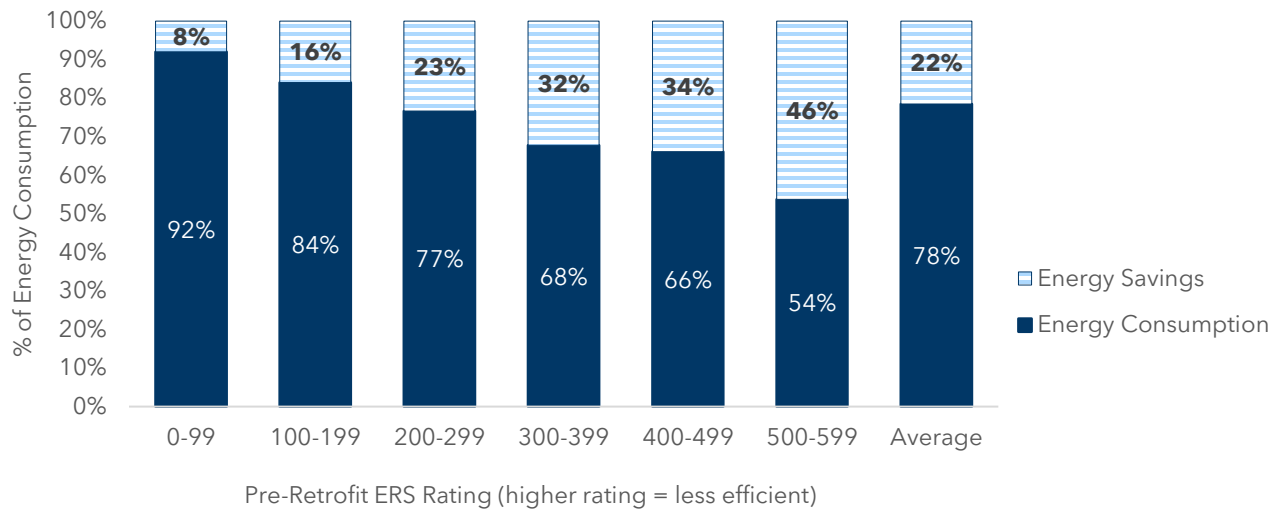
The top 3 combinations of measures in retrofit projects included:

1. Space heating equipment
2. Ceiling/ basement insulation
3. Doors/windows

These combinations make up most of the projects (1461 homes i.e., 66% of projects).

On average, homeowners achieved 22% energy savings by installing these measures, (see Figure 3-5). Less efficient homes (i.e., higher EnerGuide rating value) typically have more opportunities to reduce their energy consumption and thus able to achieve greater savings.

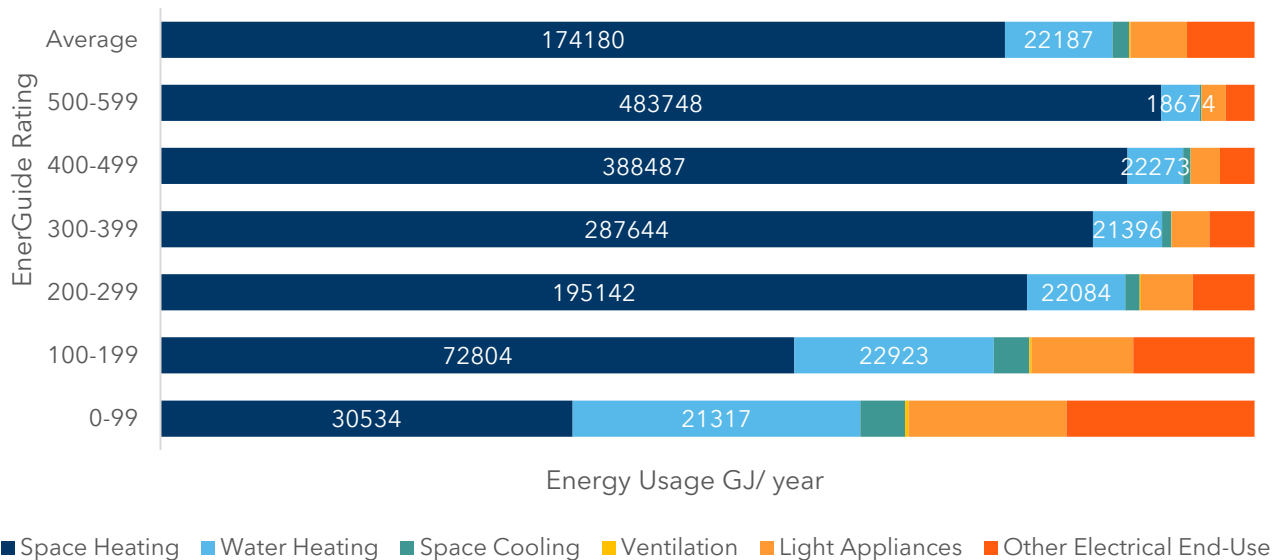
Figure 3-5. Depth of energy savings by County's Homeowners, by Pre-Retrofit ERS rating¹⁵



Space heating has been the primary target of retrofits

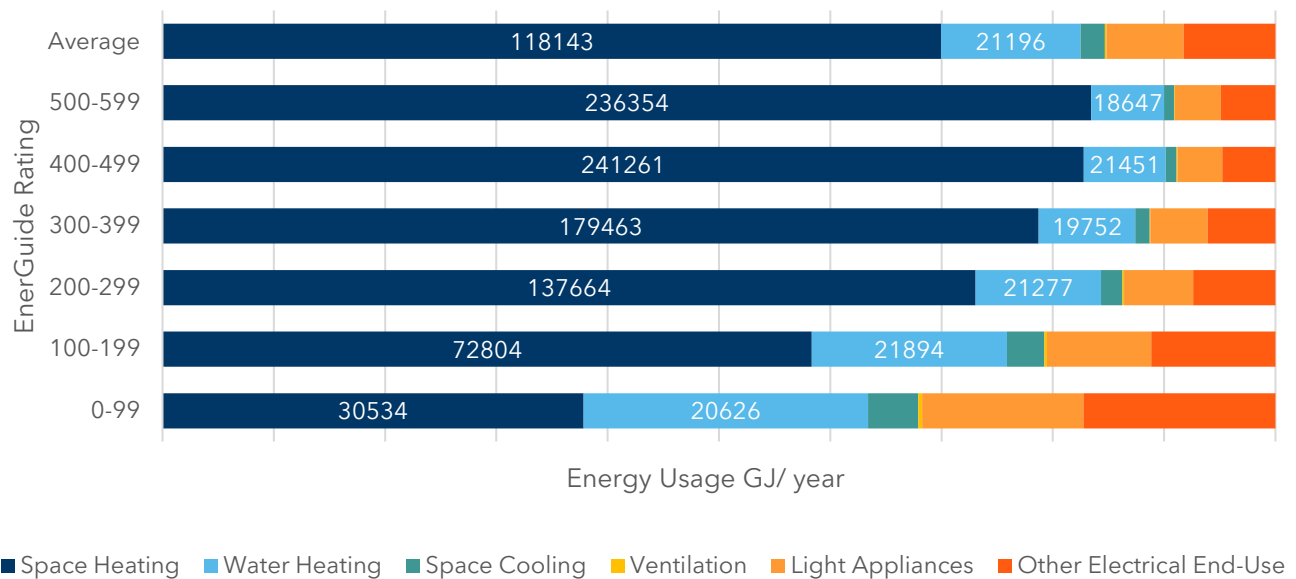
Dwellings for which EnerGuide audits were performed spent an average of 174,180 GJ/year of energy on space heating which reduces to 118,143 GJ/ year post-upgrades. Less efficient buildings, i.e., those with higher EnerGuide ratings, used as much as 483,748 GJ/ year pre-upgrades for space heating purposes which reduces by almost half after upgrades, see Figure 3-6 and Figure 3-7.

Figure 3-6. Energy end-use by EnerGuide ratings pre-upgrades



¹⁵ ERS stands for EnerGuide Rating System, a consumption-based rating system measured in GJ/year used in EnerGuide evaluations; lower numbers are better.

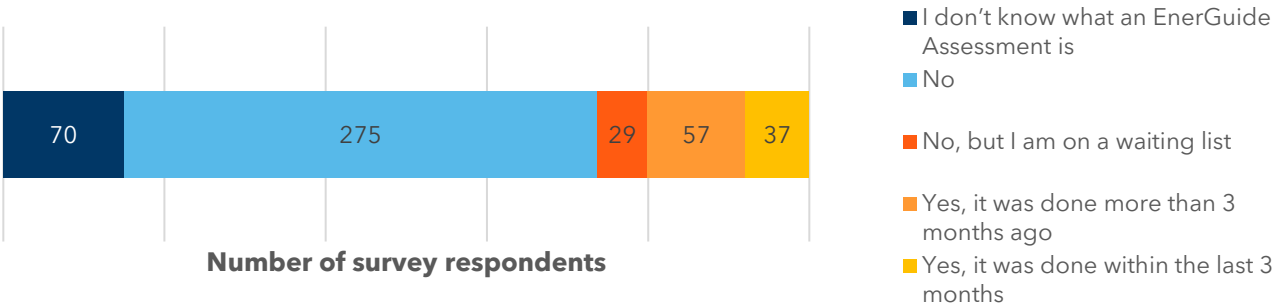
Figure 3-7. Energy end-use by EnerGuide ratings post-upgrades



3.4 Survey results suggest energy advisor capacity challenges

Most of the respondents to the survey (80%) have not undertaken EnerGuide assessment for their homes (see Figure 3-8). Of this, around 6% of the respondents (29 respondents) have declared being on a waiting list to get an EnerGuide Assessment, which could point to the current capacity of energy advisors being insufficient for the current needs. 20% of the homeowners have already undertaken Energy assessments in the past, while 15% (i.e. 70 respondents) are unaware of what an EnerGuide assessment is.

Figure 3-8. Respondents with their EnerGuide Assessment status



3.5 Other insights on capacity and needs from stakeholder engagement

Through different stakeholder engagement activities (phone and online homeowner survey, interviews and workshops, and a public meeting about the program), we gathered additional insights on what is required from the local capacity to meet the potential future program goals and help homeowners proceed with home energy retrofits. Insights in this section should be considered specifically during the program design phase.

Building professionals need a range of skills and capabilities

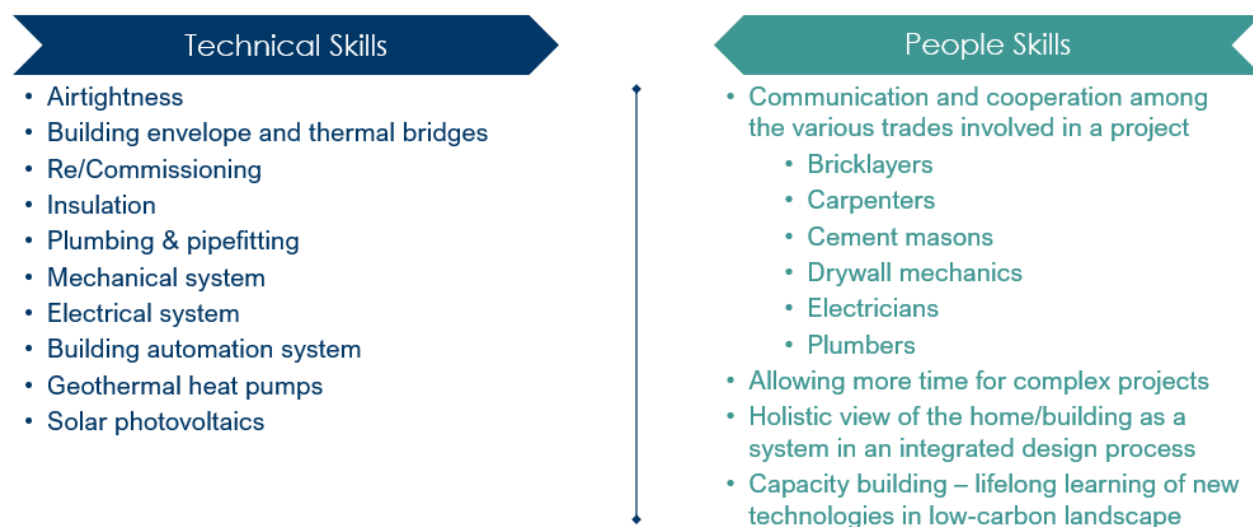
Contractors and trades need a range of skill set, outlined in Figure 3-9, to meet homeowners' demands and to ensure the success of low-carbon renovation projects. This requires them to not only understand the technical and craftsmanship aspect of the work, but also understand the broader construction ecosystem and market infrastructure which influences the way high-performing homes and buildings are designed. For homeowner satisfaction with their home energy upgrade projects and to ensure efficient collaboration, people skills are also required.

During a contractor workshop, we heard about the importance to support existing contractors to increase their abilities to fully support homeowners through their projects in a professional manner.

«Existing capacity includes a lot of small operations. They require support to scale their business acumen, customer service, and understanding of the homes as whole systems, namely to consider issues of air tightness and moisture.»

Heard during a contractor workshop

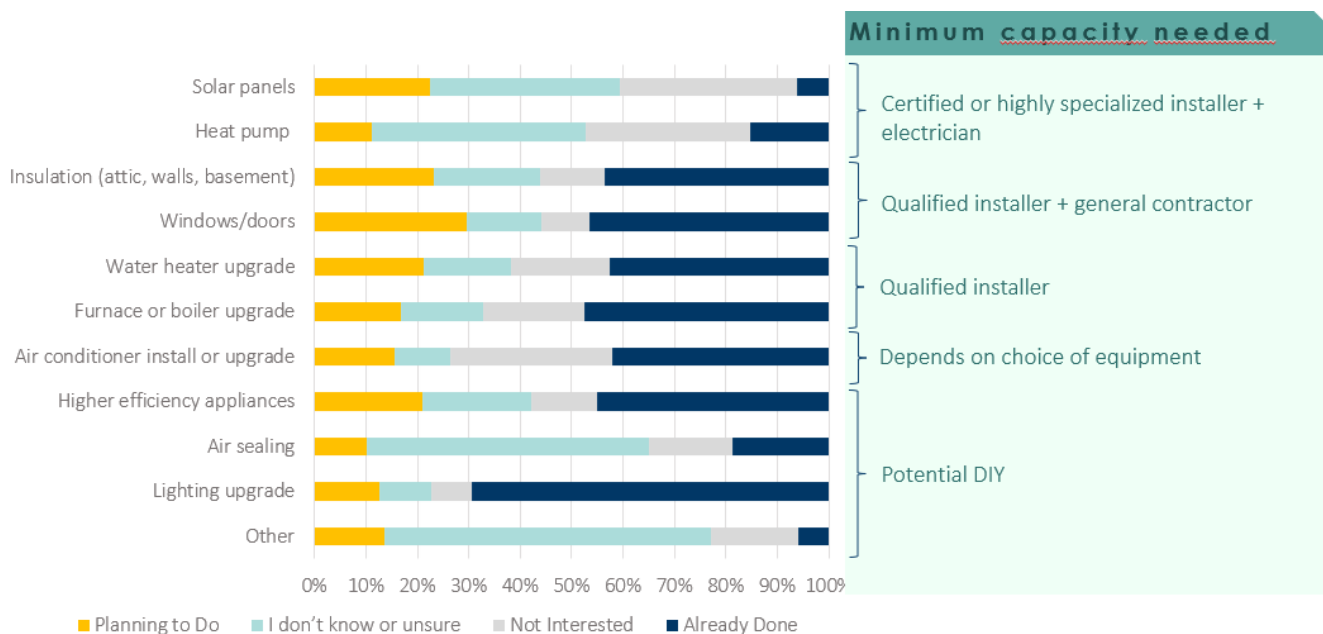
Figure 3-9: Key contractor capacity skill set



Specific types of workers required for the retrofits depends on the types of measures and depth of retrofits that will be undertaken by the homeowners. Figure 3-10 shows the upgrades installed or planned to be installed by the homeowners as reported in the survey and the typical type of building professionals required to deliver those retrofits.

From the survey responses, it can be noted that there is relatively low interest for heat pumps despite retrofits including them being cost-effective. Since heating electrification is a crucial measure to implement to align with the program's GHG reduction objectives, the program design phase should include measures to increase the interest of homeowners towards heat pumps (investigate what causes the relatively low interest towards heat pump and propose solutions), and the capacity required for installing heat pumps should be anticipated accordingly.

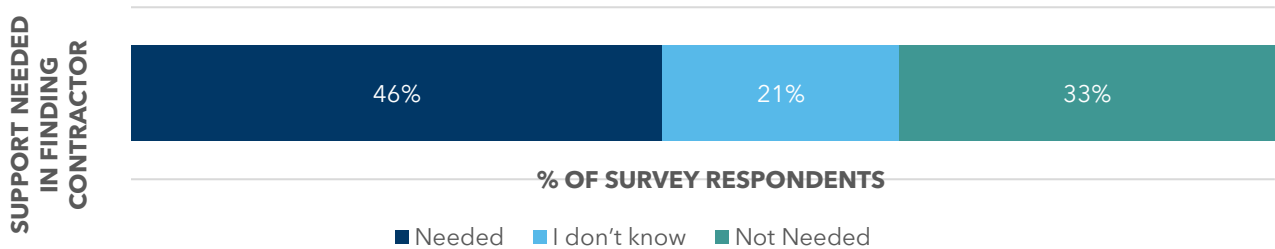
Figure 3-10. Upgrades installed or planned to be installed by the homeowners



Homeowners require help to find and select contractors

Homeowners are typically faced with several challenges (including help in finding contractors capacities) when looking for energy improvements in their homes. One of the leading barriers that was identified by homeowners was for them to find building professionals to realize their projects: around 54% of the survey respondents identified that they either do not know or are not sure about how to find a contractor. **46% of the homeowners expressed that they need help with finding contractors**, see Figure 3-11.

Figure 3-11. % of respondents who needs support in finding contractors



Organisations and initiatives are already in place to support an increase in capacity and in skills

Some local initiatives or organisations will influence the evolution of capacity over the next few years. The County should follow and monitor those initiatives to assess the evolution of capacity.

- REEP Green Solutions has enough Energy Advisors for Waterloo and services the surrounding area. They can also service all the way to Wellington North.

- Guelph Green Homes Program (to be launched in spring 2023) could have a two-way effect on capacity: initially, the program might solicit all existing capacity and make it even harder for homeowners to find contractors in the Wellington County, however, it might also send a market signal leading to an increase in capacity in the region which could later be leveraged for retrofits in the Wellington County.
- Conestoga College offers multiple programs relevant to build capacity for home energy retrofits and is well connected with the industry to assess upcoming industry needs, through an industry committee. The College has flexibility to scale their offering to larger cohorts of students depending on enrolment. The college could provide more detailed numbers on the upcoming capacity from their programs to help assess capacity further.

The County will 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. The County can leverage existing initiatives or organisations, such as those listed below, to promote capacity building.

Service Organisations/Energy Advisors: NRCan Licensed Service Organizations and registered Energy Advisors play a critical role in conducting EnerGuide home assessments, energy modelling, labelling, QA/QC (Quality Assurance and Quality Control) and file submission to NRCan. Examples of NRCan Energy Advisor exam preparatory courses:

- Blue House Energy¹⁶
- Canada Institute for Energy Training¹⁷

Colleges: Colleges address the need for low-carbon design skills and training, renewable energy technologies, building design and renovation, and heating, refrigeration and air conditioning techniques.

- **Conestoga College** offers techniques and apprenticeships in a lot of skilled trades, as well as continuing education and corporate training.

Other organizations:

Building Knowledge Canada specializes in Energy Efficiency that offers training and Energy Efficiency solutions (i.e. Energy Star, Leadership in Energy and Environment Design (LEED), EnerGuide, Energy Modelling, etc.)

Industry and training organizations provide support – either through advocacy, training, education, or other enabling strategies. These cover a broad range of subjects such as Heating, Ventilation, and Air Conditioning (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)

¹⁶ [Blue House Energy, Online Construction Courses & Energy Advisor Courses](#)

¹⁷ <https://cietcanada.com/>

- Heating Refrigerator and Air Conditioning Institute (HRAI)
- North American Insulation Manufacturers Association (NAIMA)
- Ontario Home Builders Association (OHBA)
- Passive House Canada

Program offering can help foster local capacity

- Increase in local capacity is linked to the predictability and stability of program offering. New capacity will emerge more easily when programs that support their workload are predictable and stable. Long term programs are preferable to pilot programs.
- Programs could support local capacity by attempting to lower seasonal fluctuations. Currently, end of summer and right after winter holidays are slower for the industry, which are opportunities to use existing capacity better.
- Motivating students to choose paths into home energy retrofits career paths could be facilitated by providing more opportunities for students to engage with the programs and network. Participation of programs such as HEET to the student's industry night and communication of program engagement activities through the Conestoga College would help.
- Engaging with local contractors and building professionals can prove challenging when the capacity is fully utilized in the market. Compensating professionals for their presence to engagement activities helps to obtain their participation in engagement activities. Early morning engagement is best for building professionals.

4. Financing Mechanism



4. Feasibility of financing mechanisms

4.1 Key findings

We explored a range of financing options for financing programs. Options have unique features that can address homeowner barriers and the County's goals. While exploring different options, the different engagement activities underlined that:

- **Financing is the most sought support** by the homeowners in the Wellington County.
- Both Local Improvement Charge (LIC) and third-party financing options are feasible, and **LIC appears to meet needs of the community** by offering lower interest rates and longer repayment period (together preferred by more than half of the respondents). LIC also appears to be a good fit to attract hard to reach segments like older population/ retirees and farmers by linking the charges to the property.
- It will be important to **engage with the municipalities to address their concerns** (especially related to their program delivery and LIC registration capacities) during the program design stage.
- **Third-party financing, delivered in partnership with a local bank and/or credit union, may offer an alternative option** if the internal administrative barriers prevent the LIC option, or as a complement to the LIC financing, thereby offering a streamlined approach for lighter single-measure retrofits.

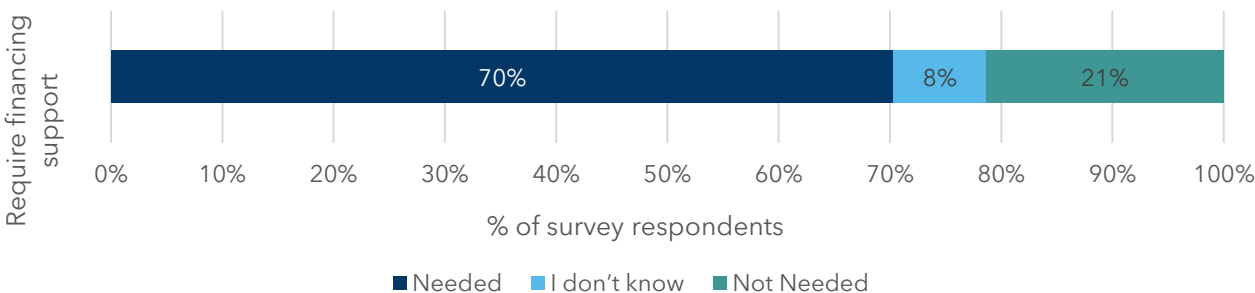
Therefore, we conclude that an LIC mechanism is the financing mechanism that aligns best with the County's goals and local reality. However, third-party financing is also feasible and could be considered as an alternative option to an LIC mechanism.

4.2 Community needs financing support

The community has expressed a need for financial support to undertake home energy upgrades.

Finding money (financing and rebates) is the most sought support by 70% of the survey respondents, see Figure 4-1.

Figure 4-1. % of survey respondents who seek financing support



4.3 Possible financing mechanisms

Dunsky assessed the three possible finance models (see Figure 4-2) – Local Improvement Charge (LIC), On-bill Repayment (OBR) and Third-party Loans to identify a preferred financing mechanism. We conducted a detailed background review; assessed the current landscape; engaged the public, and key stakeholder groups; assessed local readiness; and completed preliminary modelling analysis. Local information was used to assess each potential financing model and the community's readiness level to design, launch, and deliver a financing program.

Figure 4-2. Financing options considered

PACE LIC	On-Bill Repayment	Third party
 Homeowner repays their local municipality through tax bill line item	 Homeowner repays the utility through energy bills	 Homeowner repays financial institution through a loan agreement
Requires strong collaboration and alignment with the municipality's Corporate and Legislative Services (billing, finance) 	Requires strong collaboration and alignment with the utility or utilities 	Requires strong collaboration and alignment with a financial institution 
 Loan default and recovery through lien on the property; local municipality's responsibility	 Loan default and recovery through utility bill; utility's responsibility	 Loan default and recovery through loan agreement; financial institution's responsibility

Efficiency finance options and regulatory framework

As mentioned, the County of Wellington considered the feasibility of three finance options.

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

- Homeowners **access long-term financing** with a fixed interest rate
- Financing is secured by a **special assessment on the property** (vs. owner)
- The loan is repaid through the **municipal property tax bill**
- **Energy savings** can help offset monthly financing costs.

LIC requires enabling legislation. Ontario currently have enabling legislation in place (O. Reg. 586/06).

2. **On-Bill Repayment (OBR) financing**, where the repayment is done through the utility:

- **On-Bill Financing (OBF)** – refers to loan or lease programs where the utility is the source of capital (e.g., utility or ratepayer funds) and administers the program. Underwriting is typically based on the customer's payment history.
- **On-Bill Repayment (OBR)** – refers to programs where a third-party lender (e.g., private or public) provides the capital and underwrites the financing. The utility is the repayment conduit

for the third-party capital provider and may opt to use its own funds to offer administrative support or credit enhancements.

Ontario's regulation governing on-bill financing (O. Reg. 131/15) restricts utilities from using ratepayer funds for OBF. To use an on-bill repayment mechanism, capital must be provided by a third party, hence only OBR can be pursued.

3. Third-party consumer loan, where a third-party financial institution provides loans, repaid through an agreement with the institution. Third party consumer loans can be coupled with a credit enhancement tool like a **Loan Loss Reserve**, under which:

- A reserve fund is established to cover a portion of losses incurred to private lenders due to borrower default.
- A sum in proportion of the overall loan value is placed in an escrow fund and held until the loan is paid by the homeowner.
- In case of default, lenders can apply to the LLR fund to be made whole for a portion of their demonstrable losses.
- Risk is mitigated, encouraging lenders to improve terms (e.g., reduced interest rates, longer terms, consider higher risk borrowers).

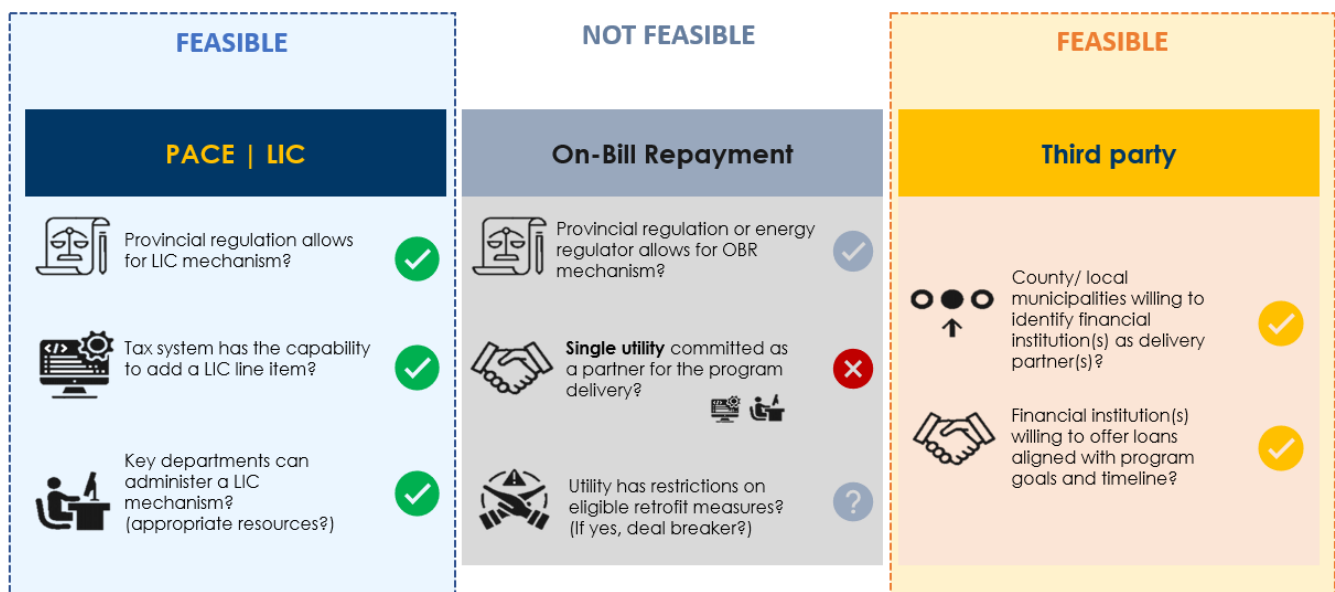
Regular financial regulation applies to third-party consumer loans and no specific regulation governs their use for a home retrofit financing program.

Feasible options

Based on this research, **we found LIC and Third-Party financing options to be feasible** (as shown in Figure 4-3), while **on-bill repayment is not feasible**.

On-Bill repayment is not a feasible option for Wellington County. The County of Wellington is serviced by five Local Distribution Companies (Wellington North Power, Westario Power, Centre Wellington Hydro, Alectra, Hydro One) and not all utilities are able to facilitate an OBR program. This would result in inconsistent offer across the County and collaboration between utilities to deliver a common program would be challenging and costly. Thus, OBR was not considered as a feasible choice.

Figure 4-3. Feasibility assessment of financing options



LIC repayment mechanism is feasible based on the following:

- The **provincial regulation (O. Reg 586/06) enabled the use of LIC financing** for voluntary energy improvements conducted on a single residential property in Ontario.
- Through engagement with the finance and legal team of the member municipalities and the County, member municipalities confirmed that the **tax system has the capability** to add an LIC line item to property tax bills across the County.
- Member municipalities' staff expressed cautious optimism about the feasibility of the program while highlighting concerns about their capacity to deliver the potential program with the existing resources. FCM CEF's support¹⁸ and a program design approach that includes measures to either reduce the administrative burden or provide ample runway to adapt to the program load will be necessary to address the member municipalities concerns.

Third-party repayment mechanism is also feasible based on the following:

- The County and member municipalities are not opposed at this stage to identifying financial institution(s) as program delivery partners.
- Initial discussions have been held with Kindred Credit Union, who would be interested in pursuing further discussions.
- A third-party option could be offered as an alternative to the LIC program, or as a complementary financing option for smaller (lighter) projects such as single measure retrofits (i.e. heat pump installations) or emergency retrofits that need quick turnaround.

¹⁸ The Federation of Canadian Municipalities' (FCM's) Community Efficiency Financing (CEF) program has two different offers for municipalities or municipal government to offer financing programs. In both offers, municipalities can receive up to \$5M in grants to cover program start-up costs for the first 4 program years.

LIC more fully meets the market needs

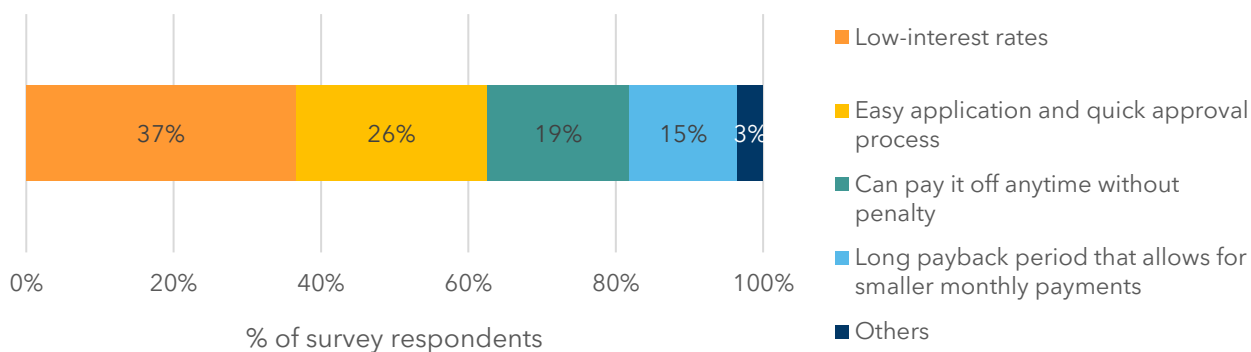
The LIC repayment mechanism is secured by a special assessment on the property (as opposed to the owner) and the borrower repays through their property tax bill, while third-party financing is an unsecured loan offered by a third-party financial institution.

Between LIC and third-party financing options, LIC more fully meet the market needs based on the following reasons:

- **Lower interest rate and longer pay back periods are the preferred financing features by the community.** More than half (52%) of the total respondents identified either lower interest rate or longer payback period (with smaller monthly) as the most sought feature of a potential financing program offering.

LIC repayment mechanism, as a secured loan, is typically more suitable to offer lower interest rates than third-party financing. LIC financing can leverage low-cost capital that can be available to municipalities through the FCM and other capital providers who specialize in municipal financing. In addition, because LIC financing is secured with a priority lien on the property (similar to property taxes) it is an extremely low-risk proposition for the lender. This allows municipalities to establish long repayment terms that are well suited to the steady, long-lived energy savings associated with many retrofit measures (i.e. insulation, heat pumps etc.)

Figure 4-4. Respondents preference towards lower interest rate and longer paybacks



- **The County has identified that they would prefer pursuing a program that focusses on deep retrofits, at least for the initial years of the program.**

Deep retrofits include measures that are relatively more expensive (than single measure light retrofits) and require secured loan that can offer longer repayment options. Dunskey developed nine retrofit packages (see Appendices) to illustrate different energy and GHG reducing measures applicable to the home archetypes in Wellington County. Deep retrofits payback period can go up to 15 years.

- Loans attached to the property are particularly **interesting for some of the relevant segments of population: farm residences and seniors/retirees** who might be interested to invest more in their homes if the loan is tied to the property rather than to themselves.

- **Experience from jurisdictions across North America and neighbouring areas (City of Guelph) with similar LIC programs can be leveraged** to apply best practice and lessons learned. Given the LIC programs in the neighbouring areas, the County can explore opportunities to collaborate in future as well.

Alternate Finance Model – Third-Party

Working with a local bank or credit union can allow the County to piggyback on existing products and services and reduce funding costs, however, the low volume expected at the outset may not be attractive to private financial institutions and the underwriting may not be as flexible. A partnership with a private financial institution may be an alternative finance model to consider if the County decides not to pursue an LIC program. Third-party option can reduce the administrative burden on municipal staff. Alternatively, a third-party financing option could be developed later in the program delivery cycle as a complement to the LIC financing, with the third-party option offering homeowners a streamlined solution for small projects that require quick turn arounds.

For such a program, a Loan Loss Reserve (LLR) can help attract private capital providers and encourage them to offer lower interest rates and expand access (i.e. lower underwriting thresholds). Based on the discussion with the finance department of the County, LLR in the context of Third-Party financing seems feasible.

Based on initial discussions, **Kindred Credit Union showed interest** to collaborate with Wellington County to offer unsecured loans for the potential program. Kindred intends to undertake meaningful actions toward the environment, and social and economic changes. Kindred Credit Union already offers discounted loans to their mortgage holders to invest in solar energy systems and geothermal heating/cooling, as well as home upgrades prescribed as part of an eco-energy audit.

Although initial interest has been stated from Kindred Credit Union, additional engagements will be needed to assess further interest and identify willing partner(s) at the program design stage.

5. Potential program features



5. Program features for program success

5.1 Key findings

While offering homeowners financing is the most prominent way in which a home retrofit financing program supports potential uptake, financing programs can also be designed with other features that help to lower the barriers homeowners face in their home retrofit projects.

The information we gathered about Wellington County's homeowners specific needs for support shows that a financing program could best support homeowners to undertake deep home energy retrofit by offering some of those enabling program features. Specifically, the program would best be aligned with the County's goals and could best support homeowners if it included:

- A One-Stop Window;
- An Energy Concierge service;
- A Net-Zero Roadmap;

The specific design of these features should be addressed in the program design phase and their inclusion features in the program design could depend on the availability of resources and support to the program initial set-up. In the following chapter, we explain what is required to establish the enabling features and how they could reinforce the program's success.

5.2 Survey insights about homeowners and home energy retrofits

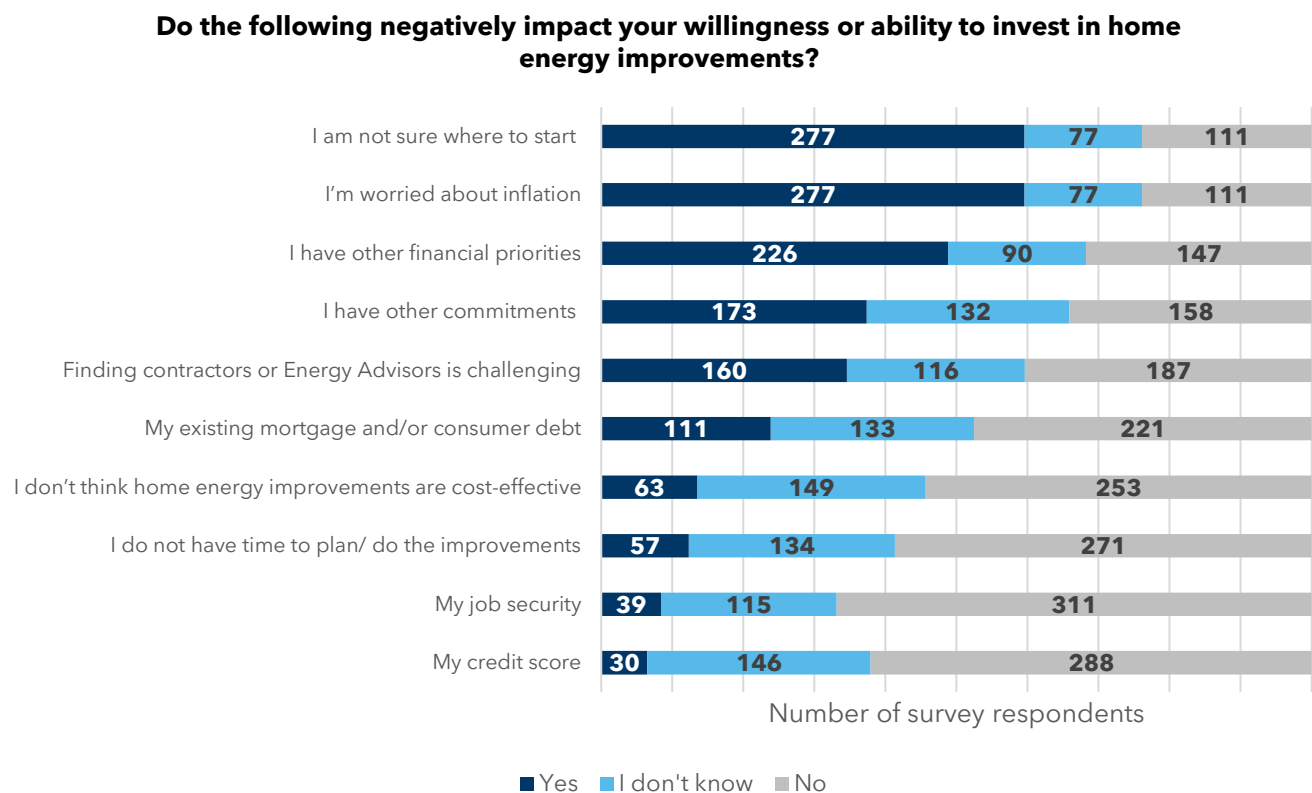
The homeowner survey results provide insights into barriers preventing homeowners to undergo home energy improvement, and what help they may require during their home improvement projects and their general knowledge about the existing programs.

Homeowner barriers to undergo retrofit (as shown in Figure 5-1 include some factors that program enabling features can affect, notably:

- **The lack of information or knowledge**, with over 60% of respondents indicating that they would not know where to start , and many think that home energy improvements are not cost-effective (14%);
- **Difficulties finding building professionals** such as contractors and energy advisors (35%); and
- **Lack of time to plan or carryout the improvements** (12%)

Other barriers such as competing priorities, worries about economic volatility, and people's personal financial situation not lending itself to taking on more debt were also notable, but are not typically addressed through enabling program features.

Figure 5-1: Homeowners barriers to invest in home energy retrofits

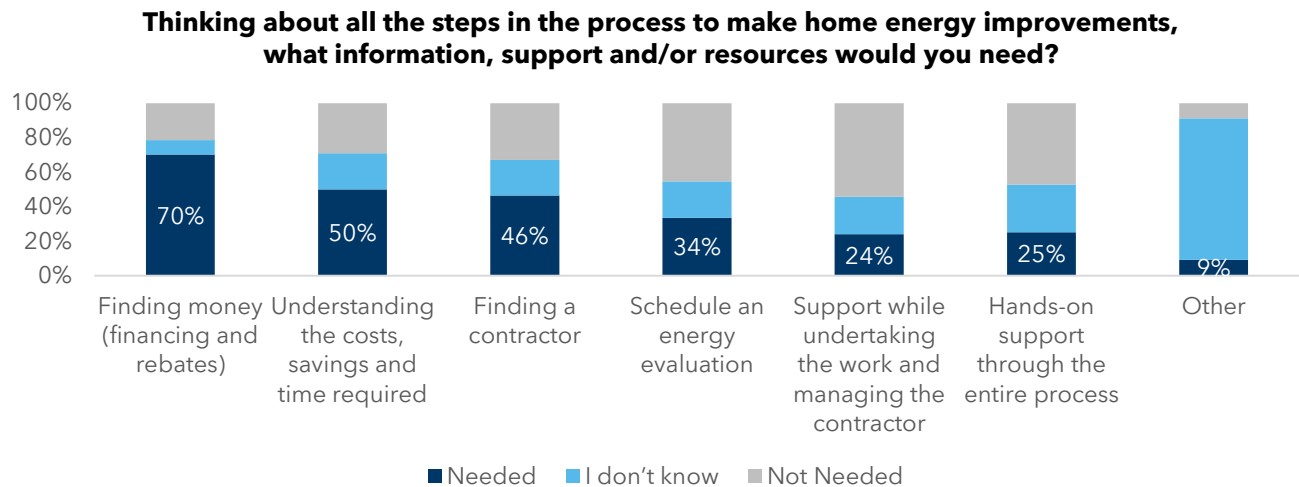


We also asked the survey respondents to identify what type of help they anticipated requiring while undergoing home energy retrofits (shown in Figure 5-2).

- Most respondents (70%) identified a need for **help to find the money for their projects**.
- Half of respondents identified a **need for more information** to better understand the implications of a retrofit projects.

Smaller but significant number of respondents also declared needing help to find building professionals, or more support during the retrofits themselves.

Figure 5-2: Help required by homeowners to undergo home energy improvements



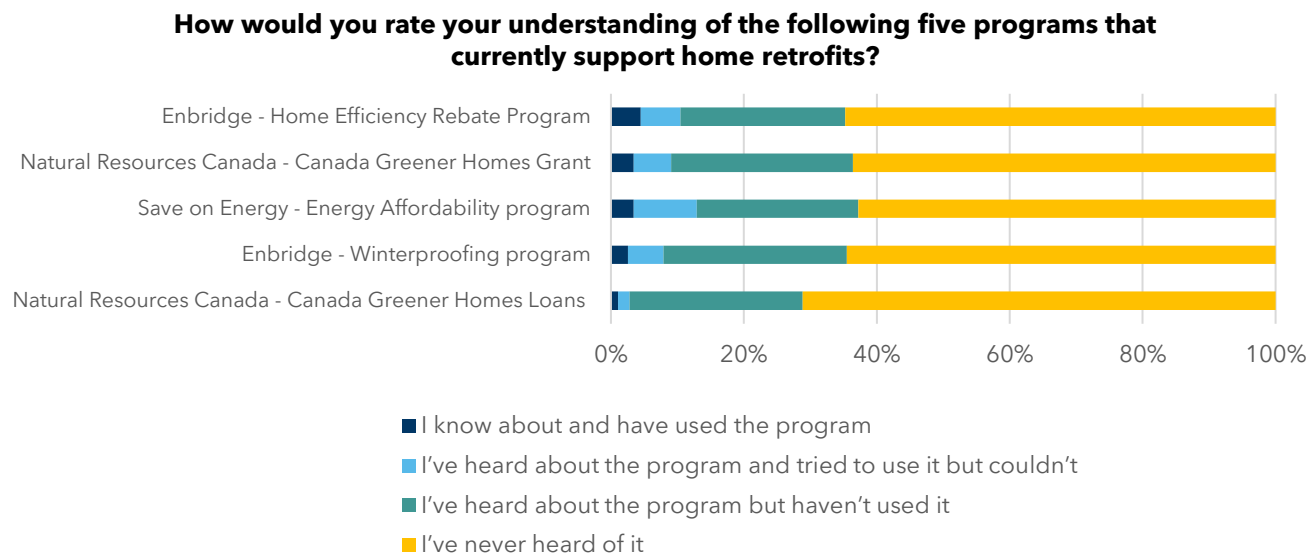
Help with selecting contractors

During the public meeting, a participant mentioned that help to understand how to select a contractor after they received contractor quotes would be useful. During their own retrofit process, they reported being presented with different contractor quotes that very importantly varied in price and they found it challenging to assess the value offered by contractors. They would have benefited from help to select and screen contractors and understand their offering.

We also asked survey respondents to about their understanding of programs that currently support home retrofits from utilities and other levels over government. The results showed that Wellington County homeowners' awareness of existing programs is very low with between 63% to 71% of respondents declaring that they had never heard of the currently available programs.

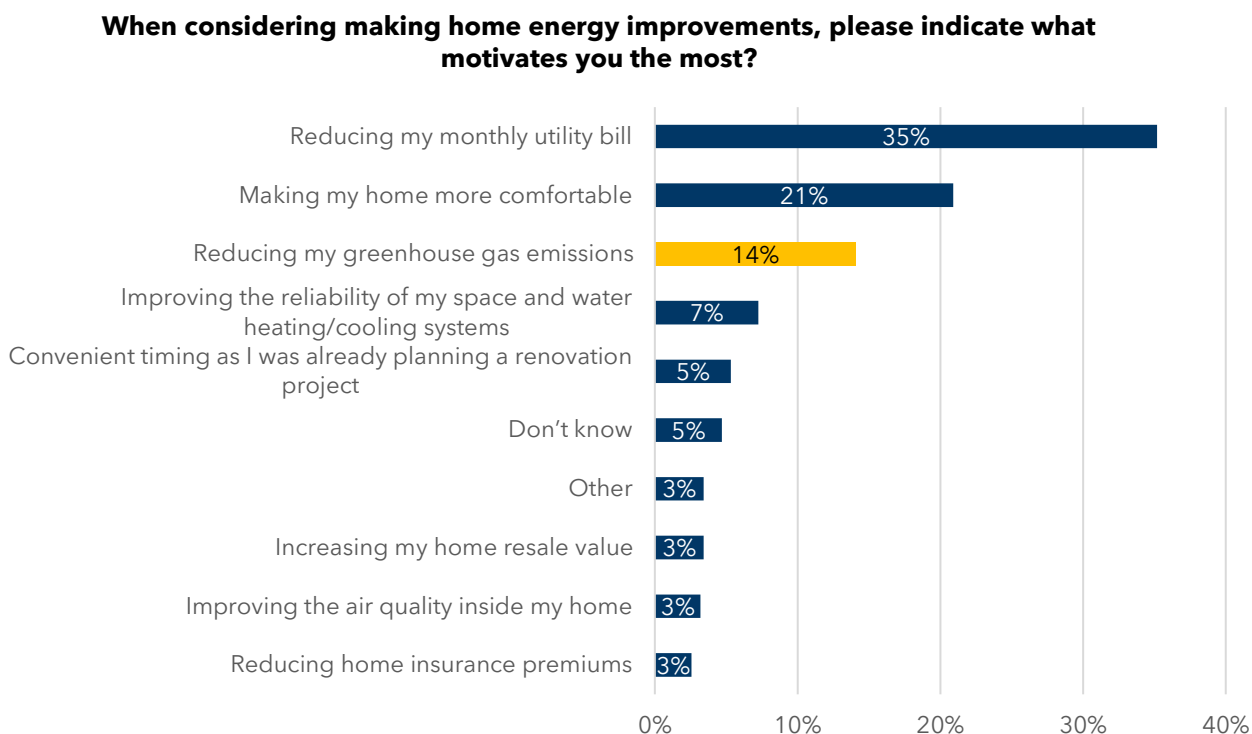
While the lack of awareness of newer programs such as the Canada Greener Homes Grants and Loans are comparable to other municipalities where we have conducted barrier surveys, Wellington County respondents are particularly unaware of longer-lived programs such as the Enbridge Home Efficiency Rebate program, which is typically recognized by at least 50% of respondents. Participation rates to the programs are also very low, and some respondents have unsuccessfully tried to use the programs.

Figure 5-3: Respondents self-reported knowledge about existing home retrofit programs



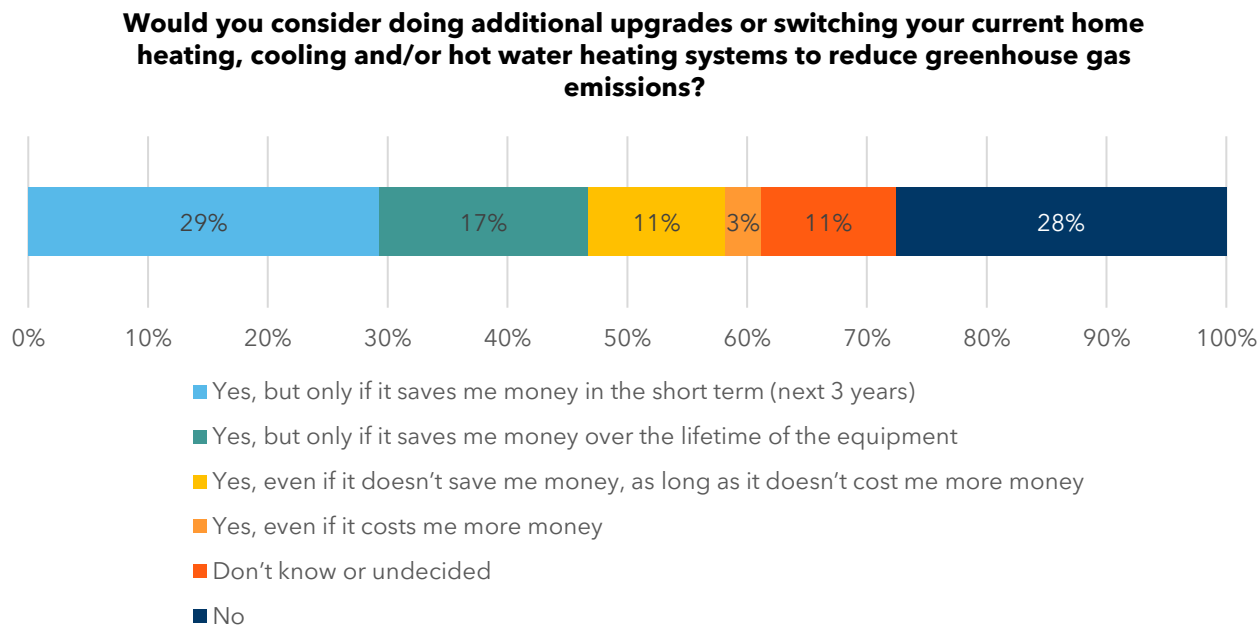
Reducing GHG is one of the top three main motivations for homeowners. Around 14% of the survey respondents rated GHG emission reduction as their top motivation to undertake home retrofits. It suggests that climate change action is a strong motivation for some homeowners to make changes to their homes, however this represents just 1 on 7 homeowners. Reducing energy bills and improving costs appear to be stronger motivators currently across the County's homeowners. Collectively, these results suggest that program messaging should provide information not just on energy costs savings, but also on the home comfort and GHG reduction benefits of key measures and upgrades.

Figure 5-4. Key motivators for homeowners to undertake home retrofits



Further, when they were asked about their willingness to undergo additional upgrades or switching their home systems to reduce GHG emissions, over 60% of homeowners expressed some willingness, as shown in Figure 5-5.

Figure 5-5. Homeowners willingness to make additional upgrades to reduce GHG emissions

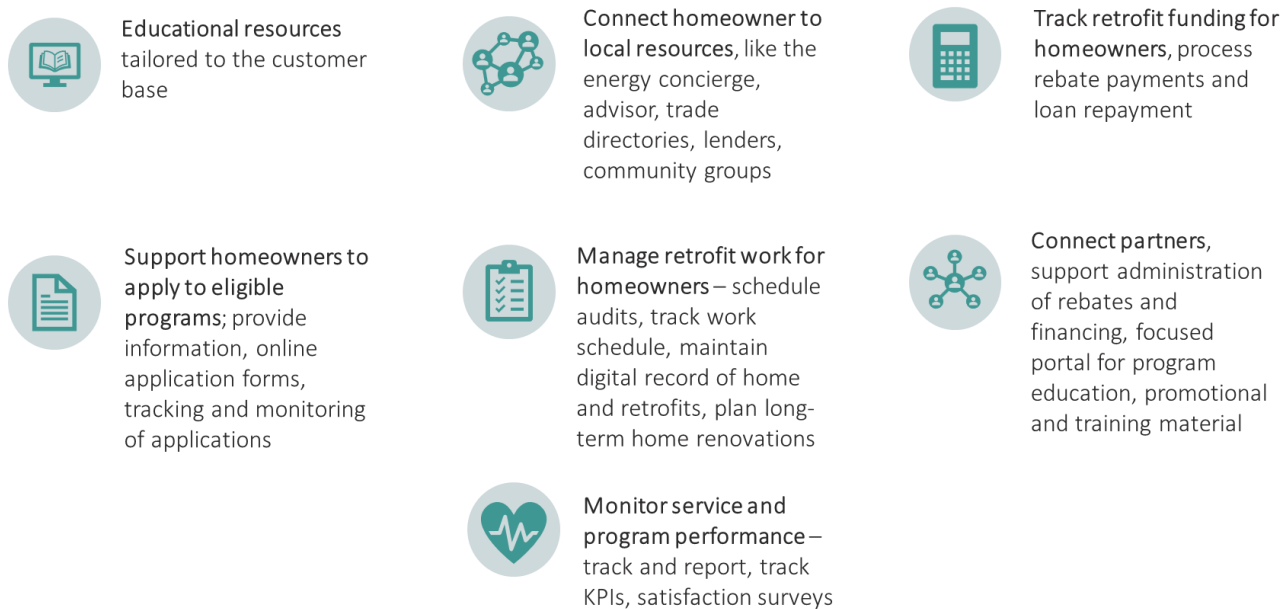


5.3 Recommended program features

One-stop window

A One-stop window is an online platform that centralizes all the information and processes needed to complete home energy retrofits. It provides all relevant information to homeowners about home energy retrofit projects, as well as instructions on how to enroll in the program and details pertaining to other retrofit programs. It can also serve as a means to coordinate with energy advisors and contractors, and to facilitate their communications with the homeowners. Figure 5-6 describes some of the possible features of one-stop window.

Figure 5-6: Possible features of a one-stop window



How it supports program success

A one-stop window aims to reduce the complexity of the retrofit journey for the homeowner and provide clarity on all relevant information. It aims to help homeowners who have an interest in home energy retrofits but who have a knowledge gap, experience a lack of trust, or are intimidated by the process. It can also help the home retrofit industry to learn about or promote the program offers by clarifying the requirements of the program.

Rationale for including a one-stop window in HEET

Survey results outlined above support the recommendation of including a one-stop window to the program. Results showed that homeowners lack information and knowledge about the retrofit process and want help to find the money they need to conduct a retrofit. And the majority of homeowners are unaware of existing rebate and support programs.

Moreover, a one-stop window that includes information about the program offering and can send market signals to building professionals to increase their capacity and help them in supporting their clients access the program.

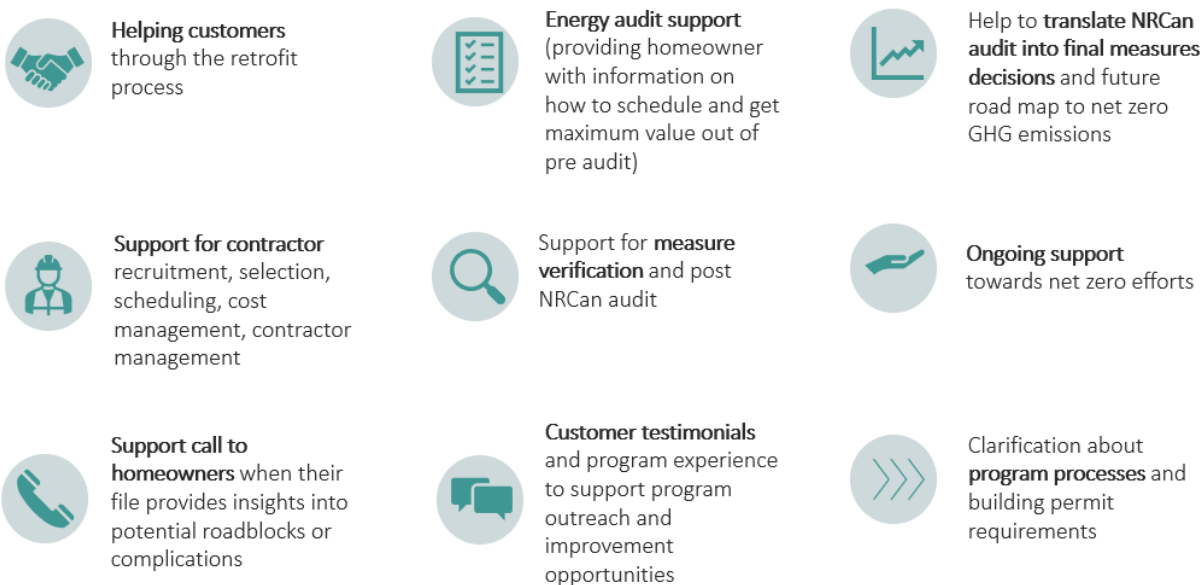
A one-stop window can also be used to raise awareness on the benefits of cold-climate heat-pumps, a cost-effective measure for which the relative interest is low in the County, despite its known advantages.

Finally, a one-stop window could help reduce the administrative burden of the program by providing prospective participants with all the required information for their participation in the same place.

Energy Concierge service

An Energy Concierge service is a dedicated specialist who is available over the phone that helps, supports, and educates homeowners in their journey through a retrofit program and keeps the process simple for homeowners to complete home energy retrofits through one-on-one interactions (phone service). The specialists can support potential applicants at many different stages of their retrofit journey, as shown in Figure 5-7 below, and help can be tailored to specific needs in the community.

Figure 5-7: Possible support offered by an Energy Concierge service



How it supports program success

The Energy Concierge provides technical support to help homeowners identify, plan, and implement energy efficiency projects, and navigate and access applicable programs. The Energy Concierge, as required, can facilitate introductions to homeowners and help them understand the contractors quotes and specifications. How to connect with the Energy Concierge can be identified clearly in the One-stop Window.

By offering tailored support, an Energy Concierge service **can drive better overall quality and deeper retrofits**. It aims to reduce the complexity and delays for the homeowner and provide more confidence to homeowners that are intimidated by one of another aspect of a retrofit project. The service helps applicants that have knowledge gaps or that experience a lack of trust and supports them when they experience challenges in their journey. The Energy Concierge service may also help applicants to identify, and avoid, contractor proposals that may not meet their home's needs in terms of quality and/or technical requirements.

Rationale for including an Energy Concierge in HEET

Homeowners in Wellington County anticipate requiring varying level of support during their home energy improvements: to find money (financing and rebates), for tailored help to understand costs, savings and time required for the retrofits; to find contractors and schedule energy evaluation; as well as support during the retrofits (as shown in Figure 5-2 The Energy Concierge service can offer tailored support to homeowners where and when required, provide advice for their retrofit journey and help applicants navigate the different rebate programs and their requirements. The County has a considerable representation of retirees, who might require more tailored support to undertake home retrofits.

Moreover, an Energy Concierge service can help direct residents interested in retrofits but who are not the best target for financing towards the appropriate resources. For example, an Energy Concierge can redirect low-income homeowners towards low-income specific programs or direct homeowners that don't require financing for their project towards information that can help them to pursue the retrofits outside of the program.

An Energy Concierge service has a privileged position to identify opportunities and needs in the community. For example, their interaction with prospective residents could help develop expertise and targeted advice for farm residences, which represent an important proportion of the homes in the County. That knowledge can help adjust the program, further tailor the support offered or identify other initiatives needed to support GHG reduction in the residential sector.

Net Zero Roadmap

A Net-Zero roadmap is an tailored report developed for each homeowner that outlines the steps that can be taken toward achieving net-zero GHG emissions in their home. It identifies opportunities to phase upgrades over the coming years, taking advantage of key trigger points (i.e. installing solar panels after the next planned roof replacement), and offering the convenience of having all their home energy retrofit information in one simplified document.

Some of the key features of the Net Zero Roadmap can be:

1. **A visual, simple approach** to varying depths of home energy upgrades avoiding jargon and providing simple visuals and providing options to allow for a stepped approach to home energy upgrades.
2. Information on the key metrics (such as monthly bill savings, GHG emission reductions, etc.) can be focussed and presented on the first page of the report, in a **compelling, intuitive** to understand way.
3. **Provides homeowners with definitions, education** on the technical terms used and mentions non-energy benefits typically linked with the measures.

How it supports program success

Net Zero roadmap aims to encourage homeowners to pursue deeper retrofits with more important GHG impacts over time. It provides information to guide homeowners in their decision making and allow them to think about their home upgrades as a journey towards net zero rather than a one-time project. This has the potential benefits of tailoring the retrofit phases to the homeowner's financial capacities over time, and taking advantage of natural replacement cycles to upgrade equipment to energy efficient and/or non-emitting alternatives.

Further, Net Zero Roadmap provides an overview of all the measures necessary to get a home to net zero emissions, regardless of the initial intentions of the homeowner.

The roadmap will educate homeowners on potential bill savings from different upgrades. This will help homeowners in making decisions to pursue home energy upgrades investments that matches current incentives and rebates, their own budget.

Rationale for including a Net Zero Roadmap in a Wellington County financing program

Most homeowners' top motivations to undertake energy retrofits are bill savings, home comfort and reduction of their GHG emissions. The Net Zero Roadmap can help guide homeowners towards informed choices and support them to view their retrofit journey as a possible staged approach, the end goal being a net zero GHG home, in alignment with the County goal towards net zero community emissions.

Some homeowners being willing to choose additional measures for their retrofits to reduce GHG emissions depending on the cost-effectiveness of those measures also shows the relevance of them having access to a document that shows them both the impact of their measures choices and the associated potential bill savings.

Roadmaps associated with the homes, if they are accessible to the next owners, can also provide an opportunity for different owners of the same residence to make successive retrofits that are coherent on the path to net zero emissions.

6. Potential program partners



6. Potential Program Partners

6.1 Key findings

At the program design stage, the County will have to determine what roles are preferably done internally and which roles could be better filled by potential program partners. While the feasibility assessment included initial discussions with potential programs partners, further exploration and decision making are required to identify the program administration approach and to determine which roles could be filled by different program partners.

Some of the potential options are mentioned in this section.

6.2 Potential program partners

The implementation of the HEET program could involve multiple partners to perform various roles. To facilitate the next steps, some of the key roles and potential partners are summarized below, assuming an LIC program including recommended program features is pursued.

Table 6-1: Program deliver roles for further consideration during program design

Roles	Responsibilities	Potential options
Program Lead	• Oversees program • Applies to FCM & for additional capital (as required) • Provides FCM capital and other capital to loans lead • Manages capital repayments to FCM and other capital providers • Evaluates & monitors program performance & reports to program funders	 County
LIC Registration	• Verifies property tax bill history • Registers LIC for successful applicants	 Municipalities
Community Engagement Lead	• Leads program marketing and outreach activities • Oversees delivery of One-Stop Window • Coordinates with all outreach partners	 County  Third party program admin
Loans Lead	• Manages capital, originates homeowner loans • Collects repayments, informs Participant files lead / Program lead about loan status and manages delinquencies and defaults	 Municipalities  Third party program admin

Roles	Responsibilities	Potential options
Energy Concierge	- Delivers Energy Concierge Service - Prepares Net Zero Roadmap for Homeowners	 County  Third party program admin
Participant file lead	- Manages participant files (e.g., application pre-approval, approval, workplan review, participation database, reporting) - Align rebates and financing - Coordinates with bill repayment lead (verify payment history, monitor loan status)	 County  Third party program admin

In addition HEET may also include some of the following roles and responsibilities, as needed.

Table 6-2: Additional roles for further consideration during program design

Role	Role / Responsibilities	Options to consider
Capital Provider	Provide loan capital	- FCM CEF (with addition of grants for program start-up) - Municipal or County reserves - Other financial institutions (County or Municipal borrowing)
Advisory Groups	- Ambassadors to promote the program widely, refer participants - Validate and inform program design to ensure equitable service - Participate in regular touch points to trouble shoot issues, evaluate the market response, provide guidance on program design adjustments	- Hydro utilities - Enbridge - Municipalities - Environmental groups - Community groups representing participants (farmers, retirees, low income, etc.) - Organization representing program actors or interest groups (Economic Development, Contractor Associations, Educational Institutions, etc.)
Training and capacity building	- Capacity building/training for retrofit capacity and energy advisors - Promote program	- Conestoga College - Building Knowledge Canada - Industry groups - NRCan (for Energy Advisors)

7. Next Steps



7. Recommended next steps

The study findings demonstrate that there is a demand and potential need for financing to support home energy improvements in Wellington County.

A residential energy retrofit financing program aligns with the County goals, provides needed help to County residents, and builds a foundation to support homeowners for other GHG reduction initiatives aimed at or influencing the residential sector coming from all levels of governments. There is a range of other programs currently available to homeowners that offer financial support to conduct retrofits. However, these do not offer the comprehensive support that this study identified as being needed in Wellington County, specifically considering the range of measures, planning and implementation assistance, and the overall size of loans.

Thus, we recommend the County proceed with the next steps to design a retrofit financing and concierge program that can meet the needs expressed by Wellington County homeowners. The County can play a key role through the concierge service, and through enacting other complementary home energy performance policies to encourage the uptake GHG reducing home improvements. And by offering LIC financing, the County can provide end-to-end support through a single window, that is tuned to the needs of deep home energy retrofits. However, opportunities may arise during the development of the program to leverage another existing financing mechanisms (i.e. join Guelph’s LIC program, or leverage a combination of the CGHL and Enbridge programs such that comprehensive retrofits can be supported), and in this case the County should assess whether it is more advantageous to stand up its own financing offer, or to integrate existing financing offers within the HEET delivery model.

7.1 Recommended next steps

There are several key elements required before the County can move to the design phase, and ultimately, implement a program. Dunsky has prepared a check list of key program elements and questions that the County will need to address. See Table 7-1. A ✓ and bold blue text indicates what is confirmed. More elements will need to be addressed and/or developed for the County to move to the design phase and eventual program launch. Elements critical to move to the design phase are presented in bold green text. The remaining elements are needed for program implementation.

Table 7-1: Program check list

Program Elements	Key Questions to address
Buy-in and approvals from Council ✓ Commitment/Plan to improve residential building stock efficiency and reduce GHG emissions ☐ Feasibility Study Findings ☐ Program Design Funding ☐ Budget and capital sourcing application(s) or partnerships ☐ Program Launch	• What level of approval has the Council given? • What are their key concerns that need to be addressed? • What information does Council need to approve funds (and applications for support) for the next steps: Program Design, Program Set-up and Administration, Program Capital.
Funding and Capital Sources	• What is the capital, and funding needs of the program by year?

Program Elements	Key Questions to address
☐ A source for a dedicated pool of capital or capital provided “as-needed” from a capital partner ☐ Program set-up and administration funds ☐ Funds for associated credit enhancements and/or rebates	- How could the program funding needs vary by uptake, and what financial risk mitigation strategies can be employed? - What potential sources of capital have been identified?
Program Administration Model ☐ Assign a dedicated resource to lead and coordinate ☐ Decide between County-led program, working with a 3rd party program administrator or splitting functions between the two. ☐ Marketing and outreach team ☐ Quality control and consumer protection	- Has the County assigned a dedicated resource to lead and coordinate program design? - Is the County and member municipalities willing to either hire new staff and train them or reduce existing staff workload for them to take on program responsibilities? - Are there external partners who could administer all or part of the program on behalf of the County? - What functions would the municipalities and County prefer to outsource if possible?
Energy upgrade landscape ☒ Identified need for financing to support energy upgrades ☐ Expand Energy Advisors capacity ☐ Support contractor capacity ☐ Enable other complementary policies or programs	- Has a clear need for financing to support energy upgrades been identified? - What other enabling capacities can the County support, such as Energy Advisors or contractor capacity? - Is the County considering, or advocating to the Province to consider, other policies or strategies that could increase the need for financing, including existing building retrofit codes, home energy labelling and disclosure, rebates building performance standards, etc.

There are additional items for pursuing LIC financing option, see Table 7-2.

Table 7-2: Additional check list items to pursue LIC financing

Program Elements	Key Questions to address
LIC Legislation/By-Law ☒ Provincial enabling legislation ☐ Draft by-law that adheres to relevant provincial acts and check County and municipality by-laws	- Has a review of the Provincial regulation been conducted? - Has a municipal by-law been drafted that adheres to the relevant Provincial legislation?
Underwriting and Repayment ☒ Billing system can register LIC ☐ Repayment recourse established ☐ Underwriting responsibility established	- Has the finance and/or accounting departments of the County and member municipalities signed off on these functions? - Are the municipalities willing to keep the LIC repayments on their books for up to 15 years or longer? - Will the program require mortgage lender sign-off? - What recourse is the County and member municipalities willing to apply in the event of a default?

Since, third-party is also a feasible option, we included additional check-list items to pursue Third-party financing option, see Table 7-3.

Table 7-3: Additional check list items to pursue third-party financing

Program Elements	Key Questions to address
Local financial institutions ✓ Preliminary interest from credit union ☐ Identify interested local financial institution(s) like local credit unions, banks, or specialized financing entities (e.g., Kindred Credit Union) ☐ Establish terms and conditions with the third-party to partner on the program	• Are local financial institutions interested in partnering with the County? • What can be the impact of third-party financing option on uptake, types of upgrades, etc. and overall program outcome.

Based on this assessment, we have provided a high-level HEET program development timeline, including a description of five key steps the County will need to take to move to the program design phase. While these steps are geared towards developing the financing program, there are actions that will build capacity across the County and support homeowners wishing to undertake retrofits – regardless of the ultimate financing offer provided (i.e. a new offer from the County, or by leveraging existing financing offers).

1

Secure Commitment to Proceed to the Program Design Phase and Apply for FCM Support.

It will be important to obtain approval for the Feasibility Study findings and direction to proceed to the program design phase. This should include a request for County funding for the matching contribution required for the FCM funding application. FCM offers a grant for up to 80% of eligible costs to a maximum of \$175,000 for program design. The County must commit to the remaining 20%. However, FCM funding is a competitive process; and 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, evidence of consultation with the Provincial Government, provide a budget workplan and identify all sources of funding. The County should also consider a contingency plan if FCM funding is not available. Finally, while member municipalities indicated that they have the capability to deliver LICs, they also raised concerns. The program design should therefore be done in consultation with key staff and member municipalities to secure support.

2

Consider a Turnkey Financing Approach with Enabling Features. Homeowners indicated that in addition to financing, support is needed to schedule a home energy evaluation, access information about upgrades including the total cost and monthly utility bill savings, navigate programs and find contractors. A complete package of services that includes a financing option may help expand participation and increase the overall GHG savings by assisting homeowners who face barriers other than access to capital constraints. A turnkey service could include the program enabling features discussed in the Section 5 of this report such as one-stop window, energy concierge service and net zero roadmap. It could also include a defined eligible measures list with clearly articulated benefits, subsidized energy assessments, subsidies for specific eligible measures and/or contractor directories.

3

Continue to Build Energy Literacy and a Supporting Ecosystem. Efforts are needed to increase energy literacy and improve homeowners general understanding of the role energy plays in their daily lives, how they consume energy, and to make informed decisions to reduce their energy consumption. Homeowners are particularly unaware of existing programs that support home energy retrofits, and there is an important opportunity to raise their awareness of existing opportunities as the financing program is being developed. The County should also continue to engage key partners (e.g., Conestoga College, Hydroelectric Utilities, Contractors, Emerge Guelph, Kindred Credit Union and Guelph City) to strengthen relationships, test the recommended finance offer, explore partnerships, and other capital sources.

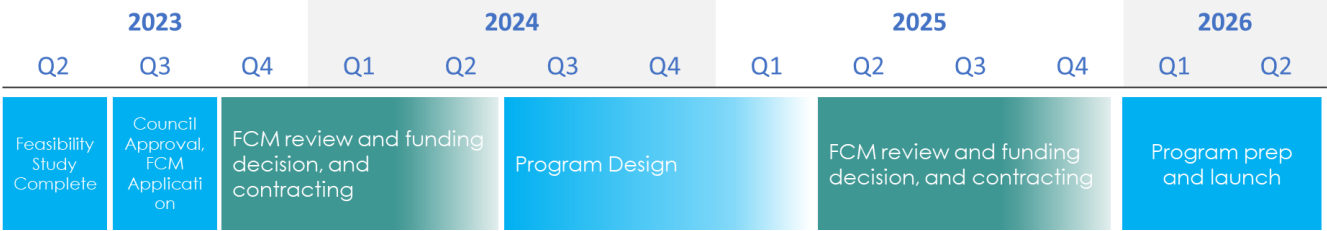
4

Monitor the Evolving Landscape. Other municipalities across Canada are actively exploring and/or delivering financing programs. There are several innovative delivery models. For example, Clean Foundation in Nova Scotia offers a third-party turnkey model on behalf of participating municipalities, wherein it delivers all program components (e.g., marketing and outreach, application intake, coordinates incentive programs) limiting the role of the municipality to registering the LIC and collecting payment. Others are looking at similar municipal partnerships and third-party administrator models (City of Peterborough, Region of Durham, Region of Waterloo, Peel region municipalities). Moreover, the City of Guelph is planning to launch its own municipally delivered LIC program during the spring of 2023. The County can stay atop of these developments by actively engaging peers and participating in FCM's community of practice network to share knowledge, learnings, and best practices. The County can also seize the potential increase in interest about a financing program that might stem from the Guelph City program launch to create a mailing list of homeowners interested to be supported by a municipal financing program on their territory.

5

Communicate the Urgency. The County has set ambitious targets to reduce community greenhouse gas emissions (GHG) by 6% by 2030 (from 2017 levels) and by 80% by 2050 towards net zero emissions and to retrofit 20% of homes and businesses (with an efficiency improvement of 40%) by 2030. Following the feasibility study, it will take time to secure Council support, funding, design a program, and set up the necessary infrastructure, and realistically, a program will not launch until early 2026 or later, contributing to County goals for 2030 for only four years. An illustrative project timeline from feasibility study to program launch is shown in Figure 7-1. Note that we assume 6-9 months for FCM application review, approval and contracting and 9 months for program design. The project timeline could be accelerated if the FCM application and program design timeframes are reduced. Moreover, by establishing and piloting the financing program as early as possible, the County will put in place a critical tool that can work in conjunction with other aspects of the emerging energy and GHG policy landscape, offering a solution that can assist all County of Wellington homeowners to adhere to forthcoming requirements and opportunities to reduce their GHG emissions.

Figure 7-1: Illustrative timeline from feasibility to program launch



8. Appendices

8. Appendices

Appendix A - Personas

Based on the survey responses, we developed a set of 10 personas that represent archetypal residents in the County of Wellington. The primary purpose of the persona set is to inform the design of energy retrofit program and policies. Personas could be used for developing tailored engagement and communication strategies for the design and deployment of future financing program but could also inform the design of the financing program itself, be identified as a reference for the energy concierge, or help with developing other supporting policies.

Key findings

- The most common consumer profile in the County is families with two to four members (which represent 73% of the households). Big families (with household size of 5 people or more) and single occupants has almost equal representation of 13-14% of the households.
- Wellington County has significant representation of retirees which is the second most common type of consumer segment represented by 27% of the total survey sample.
- Farm residences represent 14% of the housing stock. This represents considerable representation of farmers in the county. The survey sample showed that 7% of the total respondents were farmers.
- Reducing energy bills is the primary motivator for every persona, followed by interest in making the home more comfortable.
- All personas expressed the need for information required to start the retrofit process.
- Retirees, low-income earners, unemployed and recent immigrants are concerned about income and inflation.
- Many farmers, recent immigrants, and unemployed residents are not sure if home retrofits are cost-effective.

Personas

The personas include:

- **Basic information** about the personas: age, marital status, income.¹⁹
- **Housing information:** age of home, owner or renter, average household size.
- **Motivations** of personas related to making home improvements.

The 10 personas are as follows with their approximate representation in the survey sample²⁰.

- Retiree (27%)

¹⁹ The personal/ basic details in the personas relates to the survey respondent and are not a representation of other members living in the house.

²⁰ Some of the respondents fall into more than one category. For example- a single occupant can also be a retiree. This explains why the proportions listed add up to more than 100%.

- Farmers (7%)
- Renters (6%)
- Mid size families of 2-4 occupants (73%)
- Single Occupants (13%)
- Recent Immigrants (2%)
- Low-income earner (3%)
- Big-extended families (14%)
- Young professional/student (10%)
- Unemployed (2%)

The key information and most common characteristics of each of these personas is presented below:



RETIREE

Age: Older (55+ years)

Marital Status: Married

Housing: Older Homes (20+ years)

Owners/Renters: Owners

Income: 30,000 to 90,000 CAD

Avg household size: 2 people

Motivators: Reducing GHG emissions; Reducing monthly utility bill



FARMER

Age: 25-34; 45+

Marital Status: Married, Separated/ Divorced

Housing: Older Homes (20+ years)

Owners/Renters: Owners

Income: 30,000 to 150,000+ CAD

Avg household size: 2-3 people

Motivators: Reducing monthly utility bill



LOW-INCOME EARNER

Age: Older (55+ years)

Marital Status: Married, Widowed

Housing: Older Homes (20+ years)

Owners/Renters: Owners

Income: Less than 30,000 CAD

Avg household size: 1 person

Motivators: Reducing monthly utility bill, Improving the reliability of my space and water heating/cooling systems



SINGLE OCCUPANT

Age: Older (55+ years)

Marital Status: Widowed/ Single

Housing: Older Homes (20+ years)

Owners/Renters: Owners

Income: 30,000 to 150,000+ CAD

Avg household size: 1 person

Motivators: Reducing GHG emissions; Reducing monthly utility bills, making the home comfortable to stay



RENTER

Age: 25-34; 55+

Marital Status: Married/ Common Law

Housing: Older Homes (20+ years)

Owners/Renters: Owners (rent the property)

Income: 60,000 to 90,000 CAD

Avg household size: 2; or 5+ people

Motivators: Reducing monthly utility bill, making the home comfortable to stay



RECENT IMMIGRANT

Age: 25-34; or 55+ years

Marital Status: Married

Housing: Newer Homes (3-5 years)

Owners/Renters: Owners/ Tenants

Income: 30,000 to 90,000 CAD

Avg household size: 2-3 people

Motivators: Reducing monthly utility bills, reducing GHG emissions



YOUNG PROFESSIONAL/ STUDENT

Age: 18-24 years

Marital Status: Married, Divorced, Single

Housing: 3-5 years

Owners/Renters: Owners/ Tenants

Income: 30,000 to 150,000+ CAD

Avg household size: 2-3 people

Motivators: Reducing monthly utility bills, making home comfortable to stay



UNEMPLOYED

Age: Older (55+ years)

Marital Status: Married, Common law

Housing: 11- 20 years

Owners/Renters: Owners/ Tenants

Income: No income

Avg household size: 2 people

Motivators: Reducing monthly utility bill, making the home comfortable



BIG/ EXTENDED FAMILY

Age: 25-34; and 45-54 years

Marital Status: Married

Housing: 3 to 20+ years

Owners/Renters: Owners

Income: 30,000 to 150,000+ CAD

Avg household size: 5 or more people

Motivators: Reducing monthly utility bills, making the home comfortable to stay



MID SIZE FAMILY

Age: 45+ years

Marital Status: Married/ Living common-law

Housing: 20+ years

Owners/Renters: Owners/ Tenants

Income: 60,000 to 110,000 CAD

Avg household size: 3 people

Motivators: Reducing monthly utility bills, making the home comfortable to stay

Appendix B - GIS Mapping

We mapped the above-mentioned personas on across the following townships in the County of Wellington:

- Town of Erin
- Town of Minto
- Township of Center Wellington
- Township of Guelph/Eramosa
- Township of Mapleton
- Township of Puslinch
- Township of Wellington North

The primary objective of GIS mapping is to understand the distribution of specific segments of consumers across townships. This will provide a broader idea to target specific townships for targeted messaging²¹.

For example, the concentration of farmers (% of farmers as a percentage of survey responses) is higher in town of Mapleton and town of Minto (as shown in Figure 8-1). As is it anticipated that farmhouses (typically older constructions) can offer more energy savings from retrofits, HEET could use messaging targeting farmhouses specifically in the town of Mapleton and the town of Minto.

Similarly, a high proportion of the town of Erin's population is represented by the 'Low Income' persona. If the program design includes specific offering or messaging for low-income homeowners, the targeted services or messaging can be deployed in priority in the town of Erin, the town of Wellington North and the town of Minto. A consolidated mapping of each persona is shown in the Figure 8-2.

²¹ These maps are based on survey responses. It is recommended to collect detailed information during later stages of program design or roll-out for detailed and accurate results.

Figure 8-1. Percent of respondents who are farmers (of total responses from each township)

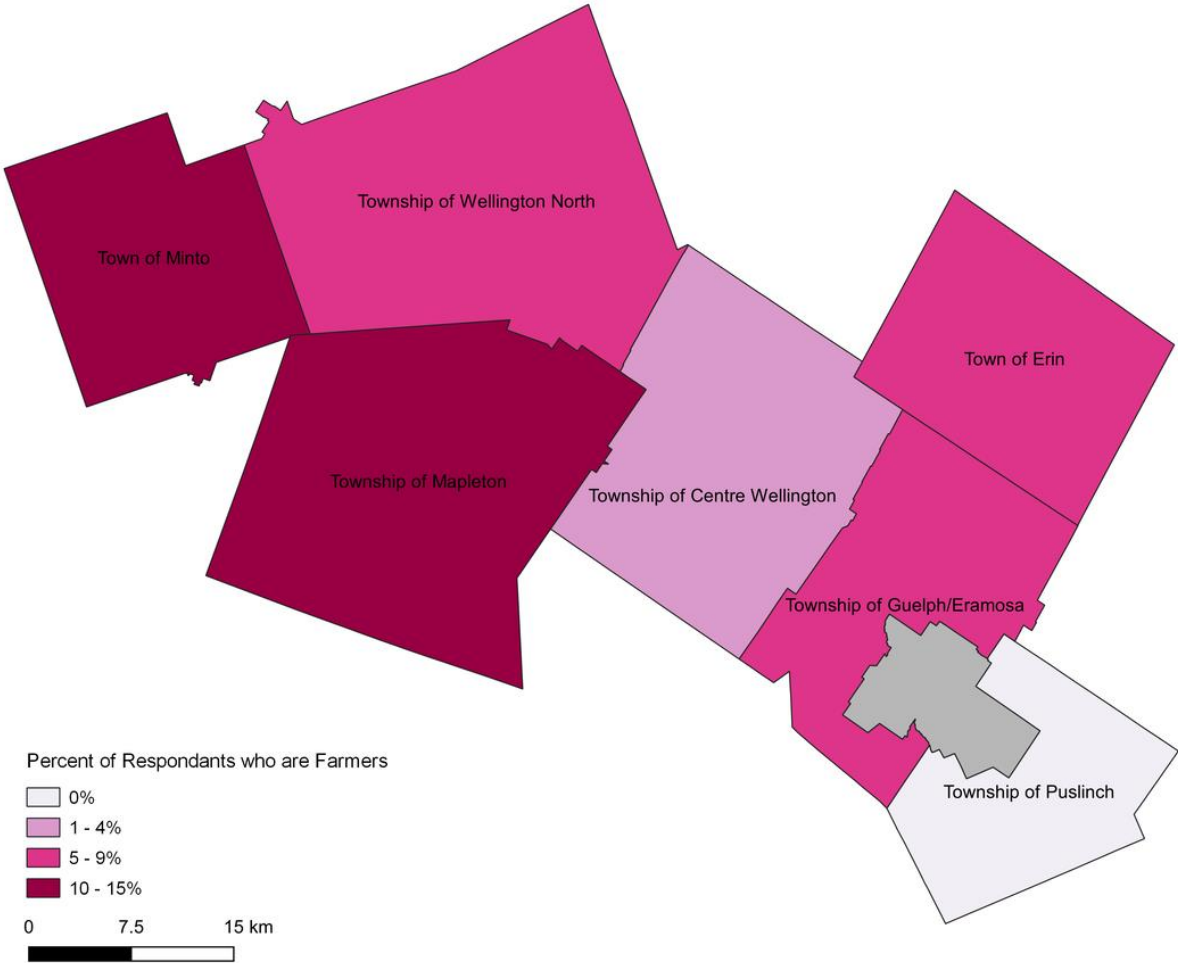
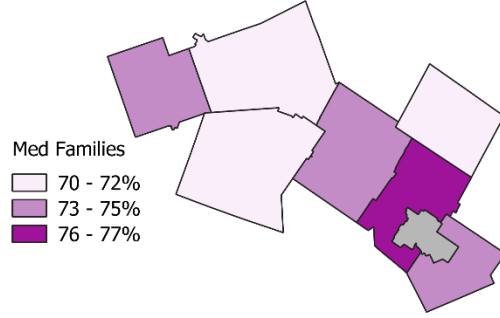
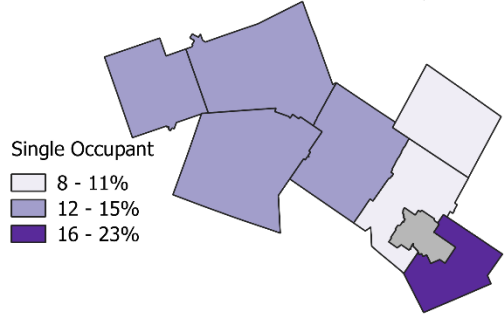
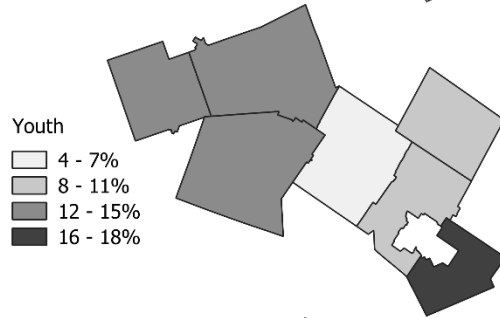
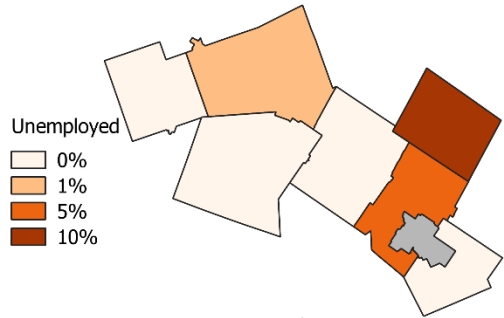
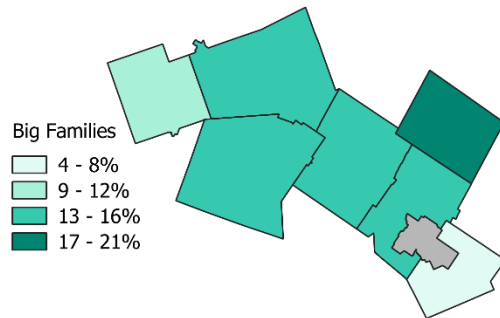
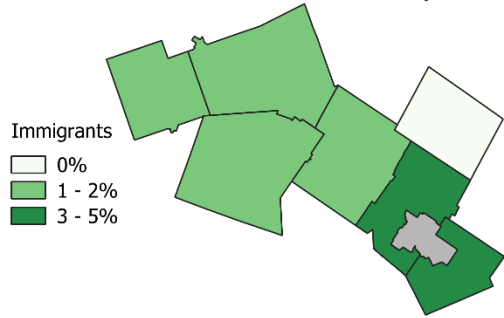
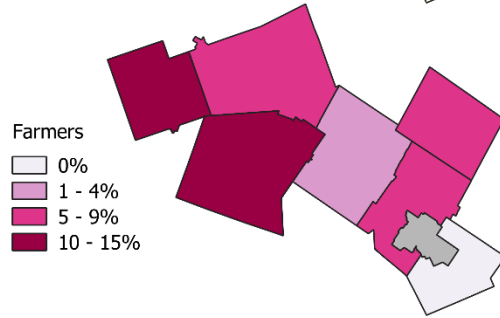
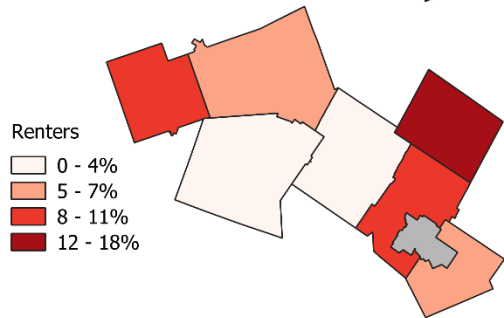
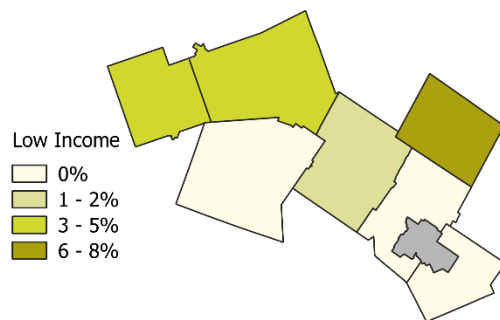
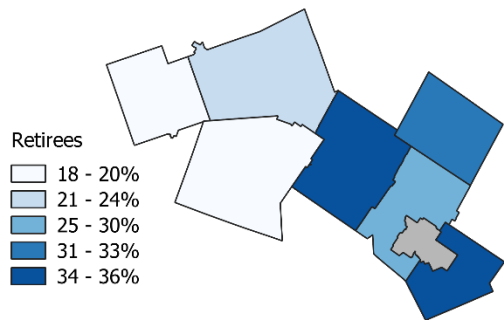


Figure 8-2. Mapping of personas by townships



Appendix C - Retrofit packages and program impacts

There is a total of 30,382 low density residential dwellings in the Wellington County. However, not every household is expected to participate in a finance program; not everyone will be interested, or able, to undertake an energy retrofit and take on financing.

As described in Section 2, we applied a market funnel to estimate uptake to apply a more realistic assumption of homeowners most likely to participate. The market funnel considers the target market – eligible single-family homes as described, homes that are owner-occupied, and primary home heating fuel.

Along with program uptake estimates also shown in Section 2, we provide the retrofit packages used for the modelling as well as program impacts below.

Estimated Uptake

Using Dunsky's proprietary finance model and considering experience in other jurisdictions with similar finance programs, we modelled three uptake scenarios: Low, Medium, and High. Based on this, a financing program in the County of Wellington is estimated to support **40 - 500 participants over the first four years** (see Table 8-1). This represents 0.2% - 2% of the 23,820 eligible households by year 4. It should be noted that this does not include homeowners that may be influenced by the program but choose to finance their home energy retrofit projects through other means nor does it differentiate uptake between general- and lower-income households.

Table 8-1: Estimated financing program uptake

Uptake Scenario	First 4-year average	Cumulative adoption year 4 ²²
Low	10	40
Medium	65	260
High	130	500

Modelled Retrofit Packages

Considering the goals of HEET, County of Wellington's building stock characteristics and energy use as well as results from the online and phone homeowner survey, Dunsky developed nine retrofit packages that include energy and GHG reducing measures that are likely to be considered. These include four retrofit packages for homes with natural gas space and water heating systems, two retrofit packages for oil-heated homes, and three retrofit packages for electrically heated homes. The space and water heating reflect the County of Wellington's existing housing stock, which is predominantly heated with natural gas.

Retrofit packages include a mix of energy efficiency and renewable energy 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 the survey results. Additionally, the total project cost ranges

²² Totals may not match due to rounding.

from \$13,000 - \$67,000 (before rebates and incentives). Recent studies conducted by Dunsky showed that the proportion of homeowners willing to spend more than \$40,000 is very small (4%-10%), which is coherent with the homeowner survey results, in which only 6% declared they would be willing to spend \$40,000 or more. The retrofit packages are shown in Table 8-2 and Table 8-3.

Dunsky's proprietary finance model and modelled retrofit packages

Dunsky's proprietary finance model estimates useful information for program design, such as:

- Potential program uptake
- Program impacts estimates (energy, GHG)
- 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 criteria of eligibility and feasibility.

Modelled retrofit packages are chosen by Dunsky's analysis team, based on past retrofits (identified through EnerGuide data), survey results when available (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 and rebates. In the program, homeowners should choose their projects based on their preferences, their EnerGuide Assessment and Net-Zero roadmap results, and advice from the Energy Coach.

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

Table 8-2: Example retrofit packages modelled for natural gas and oil-heated homes

Retrofit Package	1	2	3	4	5	6
Space heating	Natural gas				Oil	
Water heating	Natural gas				Oil	
Heat pump ²³	√ h	√h	√ f		√	√
Efficient water heater	√	√	√		√	√
Insulation (ceiling/attic, basement wall)		√	√		√	√
Efficient windows			√			√
Solar PV array			√	√		√
Estimated costs	\$13,000	\$21,500	\$64,500	\$22,000	\$26,500	\$67,000
Available incentives^{24,25}	\$5,000	\$7,800	\$10,000	\$5,000	\$5,000 ²⁶	\$5,000
Estimated annual bills savings²⁷	\$2,900	\$3,010	\$4,350	\$1,090	\$4,620	\$6,190
Estimated annual energy savings (GJ)²⁸	69.3	72.5	110.3	38.4	99.8	144.3
Estimated annual GHG savings (tCO₂e)	4.8	4.8	5.2	0.3	11.4	11.7

²³ Partial electrification is modelled for some natural gas heated homes, represented by ^h (hybrid solution where a new electric heat pump is installed to work alongside existing home heating systems). This distinction compared to complete electrification is driven by relatively inexpensive natural gas in ON, driving down heat pump cost effectiveness in natural gas-heated homes. Full electrification is represented by ^f.

²⁴ Enbridge's Home Efficiency Rebate program, capped at \$5,000 per home. (Now delivered in conjunction with the Canada Greener Homes Grant under the HER+ Program).

²⁵ Canada Greener Homes Grant initiative is capped at \$5,000 per home, plus \$600 for required EnerGuide energy audits. (Now delivered by Enbridge through the HER+ Program).

²⁶ For income eligible applicant (median income or below), the newly launched Canada Greener Homes' Oil to Heat Pump Program can raise the total available incentives to \$10,000.

²⁷ Estimated average annual bills savings over assumed measure lifetime. Assumed 2% annual energy rate increase and a flat rate throughout the year, i.e., no Time-of-Use or other adjustments. Carbon price is assumed to increase by \$15/tCO₂e annually to \$170/tCO₂e by 2030 and stays at \$170/tCO₂e afterwards. Average bills savings are tied to estimated annual energy savings.

²⁸ We created one house archetype for each primary space heating fuels (i.e., three archetypes) with the same averaged floor area for all archetypes based on EnerGuide data. The estimated annual energy savings were calculated based on measures sized for these archetypes.

Table 8-3: Example retrofit packages modelled for electric-heated homes

Retrofit Package	7	8	9
Space heating	Electric		
Water heating	Electric		
Heat pump ²⁹		√	
Efficient water heater		√	
Insulation (ceiling/attic, basement wall)	√	√	
Efficient windows		√	
Solar PV array		√	√
Estimated costs	\$19,000	\$65,000	\$24,500
Available incentives^{30,31}	\$5,000	\$5,000	\$5,000
Estimated annual bills savings³²	\$1,500	\$3,260	\$1,250
Estimated annual energy savings (GJ)³³	42.0	92.1	44.1
Estimated annual GHG savings (tCO₂e)	0.3	0.7	0.3

Note that the retrofit packages are illustrative to model estimated economic, energy and GHG impacts. In a designed program, homeowners should be able to choose the energy measures that are tailored to their home and preferences. There may be many permutations and the resulting energy, GHG, and bills savings will vary for each homeowner.

Energy Savings

The estimated energy savings across the three uptake scenarios are shown in Table 8-4.

³¹ Canada Greener Homes Grant initiative is capped at \$5,000 per home, plus \$600 for required EnerGuide energy audits. (Now delivered by Enbridge through the HER+ Program).

³² Estimated average annual bills savings over assumed measure lifetime. Assumed 2% annual energy rate increase and a flat rate throughout the year, i.e., no Time-of-Use or other adjustments. Carbon price is assumed to increase by \$15/tCO₂e annually to \$170/tCO₂e by 2030 and stays at \$170/tCO₂e afterwards. Average bills savings are tied to estimated annual energy savings.

³³ We created one house archetype for each primary space heating fuels (i.e., three archetypes) with the same averaged floor area for all archetypes based on EnerGuide data. The estimated annual energy savings were calculated based on measures sized for these archetypes.

Table 8-4: Estimated energy savings (GJ) resulting from financing program uptake³⁴.

Uptake Scenario	First 4-year average	First 10-year average	Cumulative year 4	Cumulative year 10 ³⁵
Low	2 075	4550	8 300	45650
Medium	13 700	30150	54 800	301400
High	26 075	57350	104 275	573525

Additional Benefits

GHG Savings

The estimated GHG emissions reductions across the three uptake scenarios are shown in Table 8-5.

Table 8-5: Estimated GHG savings (tCO₂e) resulting from financing program uptake.

Uptake Scenario	First 4-year average	First 10-year average	Cumulative year 4	Cumulative year 10
Low	110	250	450	2460
Medium	520	1140	2 080	11440
High	990	2180	3 970	21830

These volumes appear low compared to the retrofit activity needed to fully meet the County's GHG targets. However, in Ontario's 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.



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 like increasing carbon pricing, existing building energy codes, building labeling, 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 County to build and test the program infrastructure needed to meet demand as it grows.

Job Creation

³⁴ This reflects estimated energy savings resulting from all participants' enrollment in the program.

³⁵ Energy savings and GHG savings are quantified for the first 10 years; however, it is to be noted that these projections are subject to changing market dynamics (ex: new policies, technology changes, etc.)

Home energy upgrades have local economic benefits such as job creation. The need for products (ex: heat pumps, solar panel, etc.) and services (ex: installation, renovation, etc.) related to home energy upgrades results in employment opportunities.

Approximately 16-30 new jobs are created for every million Dollar of investment in energy upgrades³⁶. As mentioned in Table 8-2 and Table 8-3, the cost of retrofit packages ranges between \$13,000 and \$67,000. Considering, the average home energy upgrade cost of \$40,000 per home and estimated uptake, HEET program can result in 26 to 600 new jobs cumulative over 4-year period.

The estimated job creation across the three uptake scenarios is shown in Table 8-6.

Table 8-6: Estimated new jobs resulting from financing program uptake (expressed in job-years)

Uptake Scenario	Annual average	Cumulative (4-year program)
Low	6 to 12	26 to 48
Medium	42 to 78	166 to 312
High	83 to 156	320 to 600

Other non-energy benefits

While not quantified, the financing 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, 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, nature-based solutions)
- Improved home values
- Increased affordability of housing by promoting the development of secondary suites

These further benefits can play a key role in encouraging homeowners to undertake energy efficiency improvement. While they vary from home to home and are complex to quantify directly, they should feature prominently in program communications, because for many homeowners’ improvements in home comfort, safety and quality can be a larger motivator than the energy bill savings themselves.

³⁶ [Report on 'Assess the potential for a home energy upgrade program in your community' - A Program of FCM](#)



"NO DISCLAIMERS" POLICY

This report was prepared by Dunsky Energy + Climate Advisors, an independent firm focused on the clean energy transition and committed to quality, integrity and unbiased analysis and counsel. Our findings and recommendations are based on the best information available at the time the work was conducted as well as our experts' professional judgment. **Dunsky is proud to stand by our work.**