Stakeholder Advisory Group
Final Report to Town Council

Newmarket Energy Efficiency Retrofit Business Case

September 30, 2019

Table of Contents

Acknowledgements

The **Stakeholder Advisory Group** would like to acknowledge the leadership of the Town of Newmarket for initiating the development of the Newmarket Energy Efficiency Retrofit Business Case as a potential implementing strategy to achieve the energy efficiency and greenhouse gas reduction targets identified in the Town's 2016 Community Energy Plan. The members of the Stakeholder Advisory Group are:

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The Newmarket Energy Efficiency Retrofit Business Case was developed with the oversight of a **Project Working Team** consisting of members from Town staff and the consulting partnerships under the leadership of Garforth International llc.

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The **Stakeholder Advisory Group** would like to acknowledge the effort of various stakeholders who gave their time and shared their expertise in providing meaningful feedback to the development of this Business Case including members of the local contractor community and dozens of Newmarket residents and homeowners, along with individuals from the investment community.

The preparation of this study was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

Executive Summary

Background and Context

In 2016, the Town of Newmarket approved a Community Energy Plan (CEP) with a community-wide goal to reduce energy consumption and GHG emissions by 40% per capita from 2013 levels. Increasing residential energy efficiency was one of the strategies identified to achieve this goal. The CEP set a target to deep-retrofit 80% of existing homes by 2041 to achieve a 30 to 50% increase in energy efficiency depending on the age and type of home. The CEP strategy to achieve this target proposed:

- the creation of an Entity to deliver retrofits standardized by home age and type;
- to team with local contractors, material suppliers and investors to transform the energy retrofit market;
- to use LIC financing and standardized pricing approaches to create scale.

In 2018, Town Council approved the development of a Newmarket Energy Efficiency Retrofit (NEER) Business Case to investigate the feasibility of the CEP home retrofit strategy. With the support of a Project Working Team (PWT), a Stakeholder Advisory Group (SAG) was tasked to oversee the project, engage stakeholders and report back with recommendations.

The purpose of this project was to investigate the feasibility (or "Business Case") of establishing an Entity to deliver high quality, standardized residential energy efficiency retrofit packages to most Newmarket homes.

The purpose of the Business Case is to answer the question - *under a credible set of assumptions, can a business case be made for the Town of Newmarket Community Energy Plan (CEP) home energy retrofit strategy that meets reasonable community, market and economic goals?* If the answer is yes, then the next step would be to identify/establish a program administrator and provide them with reasonable resources to complete the due diligence – including supplemental market testing and risk assessment – for the development of a final business plan.

SAG members identified several issues to be further explored during the development of the Business Plan which are documented in this report. In particular, the SAG members felt strongly that the final program design should ensure retrofits are accessible to Newmarket seniors and residents on low and/or fixed incomes, so they too would benefit from reduced energy bills.

Program Administrator

The SAG recommends the Town proceed to establish an Entity, as a Municipal Services Corporation (MSC), to administer the program for the following reasons:

- this administrative model enables a more flexible financing approach that will minimize municipal liability and better leverage private sector investment;
- an MSC would be better positioned to enter into partnerships with the private sector than the municipality (e.g., contractors, material suppliers and investors);
- program delivery risks rest with the MSC and not the Town;
- borrowing is placed on the MSC's balance sheet;
- the MSC is not limited to working within municipal boundaries and can enter into beneficial partnerships with other municipalities in York Region or beyond; and
- the MSC should responsible for the final NEER Business Plan as program administrator.

Seed funding of approximately $300,000 would be required to establish the Entity and provide it with adequate resources to finalize the Business Plan which would include the hiring of a General Manager. The SAG recommends the Town apply for funding from the FCM Community

EcoEfficiency Accelerator Program to assist with these start-up costs. While FCM funding may cover all the start-up costs, the Town would need to find alternative funding, if this was not the case. These start-up costs are at risk should the Entity be unsuccessful in finalizing the Business Plan.

The long-term working capital requirements for the Entity to fully launch the business, whether sought from the Town and/or private investors, would be contingent upon the Business Plan.

Standardized Deep Energy Retrofit Packages

The current energy efficiency retrofit market for homeowners and contractors is relatively unattractive. From the perspective of the contractor, the effort to prepare customized proposals is high and the closing rate is low. Low volumes and the fact that every project is specific to each household means that material costs are expensive and performance guarantees are risky. From the homeowner's perspective, obtaining understandable bids from various contractors is burdensome. They are responsible for finding their own sources of funding based on their individual credit rating. Finally, the low volumes result in retrofit costs that typically exceed the value of the energy saving, even over many years.

The NEER product solution to address this market problem is to offer standardized energy retrofits to homeowners at high volumes. Contractors benefit from increased project predictability, improved margins and vastly higher project volumes. Homeowners benefit from a simplified transaction, guaranteed pricing, lower cost pre-financed retrofits and a simple billing and payment mechanism.

Standardized retrofit packages would be designed by the Entity to deliver annual energy savings of 30 to 50%, and 20% water saving to homeowners. Modelling for the NEER Business Case demonstrated these savings could be achieved with existing technologies. The package cost would be dependent on home size, age and type. Using pricing based on a fixed index per specific area ($ per m^2) depending on home category minimizes transaction costs and complexity.

Concerns were expressed during the engagements from some stakeholders as to whether enough homeowners would be interested in a standardized retrofit valued at $25,000 to $30,000. Additionally, many Newmarket residents have already completed partial retrofits through previous government and utility programs and may not be eligible for the full program. These concerns must be addressed during the final Business Plan, along with considering any "go-to-market" strategies that would mitigate prevailing market conditions.

The delivery of standardized retrofits at high volumes to Newmarket homeowners is an essential feature of the Business Case and has been designed to drive market transformation. The business model reduces the cost of the average retrofit by 33%. This is achieved through efficiencies in:

- Reduced selling costs through standardized offerings and pricing
- Elimination of contractors' costs to promote and prepare customized proposals
- Increased contractor labour productivity
- Volume pricing for key material categories
- Lower cost financing through consolidation

LIC Financing

Property-assessed financing has the distinct advantage of tying the efficiency investment to the property, mitigating the risk of the homeowner that their payback period is longer than the time they remain (or intend to remain) in the home. Attractive interest rates and borrowing terms can be achieved for homeowners while reducing or eliminating their up-front capital costs. It is proposed that the Town would collect LIC payments on behalf of the Entity from homeowners

participating in the retrofit program by passing an LIC By-law and entering into an agreement with the MSC. A robust municipal risk assessment was completed through collaboration with the City of Vaughan. A concern regarding mortgage lender consent was raised during the engagements and was considered extensively during the development of the Municipal LIC Risk Assessment. The final rating of this risk was low, given identified mitigation strategies and ongoing monitoring by the Entity.

Conclusions

Based on the analytical findings and stakeholder engagement, the SAG concludes there are reasonable grounds to proceed to implement the CEP Home Energy Retrofit Strategy. This conclusion is made with the understanding that the Entity established to administer the program would need to complete a Business Plan to implement the Business Case. However, without establishing an Entity with a mandate to deliver high quality, standardized residential energy efficiency retrofit packages to most Newmarket homes, the Town's energy and efficiency goals, as approved in the CEP, are unlikely to be realized.

Recommendations:

The SAG recommends that Town Council:

1. Endorse the Final Report of the Stakeholder Advisory Group: Newmarket Energy Efficiency Retrofit (NEER) Business Case.
2. Incorporates a Municipal Services Corporation to serve as the Program Administrator with a mandate to develop a NEER Business Plan.
3. Applies for FCM Community EcoEfficiency Accelerator program funding to support program set-up and launch, including the development of a final NEER Business Plan.
4. At the appropriate time, enacts an LIC By-law and enters into an agreement with the Municipal Services Corporation, with appropriate terms and conditions, to make optional LIC financing available to homeowners participating in the program.
5. Encourage the Municipal Services Corporation to consider program accessibility during final program design and the potential to leverage retained earnings over time to address the needs of low-income residents and/or seniors on fixed incomes.

1. Project Overview

1.1 Project Purpose

The purpose of this project was to investigate the feasibility (the "Business Case") of establishing an entity to deliver high quality, standardized residential energy efficiency retrofit packages to most Newmarket homes.

The purpose of developing a Business Case is to answer the question - *under a credible set of assumptions, can a case be made for the Town of Newmarket Community Energy Plan (CEP) home energy retrofit strategy that meets reasonable community, market and economic goals?*

If the answer to this question is yes, then the next step for the Town would be to identify/establish a Program Administrator and provide them with reasonable resources to conduct additional marketing testing and program risk assessment to develop a final Business Plan.

1.2 Strategic Alignment with Council Priorities

The project aligns with Council's strategic priorities. By introducing the initiative to Newmarket, the Town will showcase its pledge to the following strategic priorities:

1. Long-term Financial Sustainability:
    - Through establishing a self-sustaining entity which collaborates with the community while retaining financial stability.
    - By providing an affordable finance method for homeowners to better integrate smart and energy-efficient solutions which can result in significant energy/water savings.
2. Economic Leadership and Job Creation:
    - With long-term, predictable work for local retrofit contractors.
3. Environmental Stewardship:
    - Implement the Community Energy Plan (CEP) - The initiative is the first phase of the first strategy outlined in the approved CEP.
    - By supporting Newmarket's contribution to aiding the country in its commitments to the Paris Agreement.

1.3 Planning and Decision-making Process

The Final Report of the Stakeholder Advisory Group (SAG) is organized to reflect a planning and decision-making process comprised of three phases (see Figure 1 on next page):

- Phase 1 - Program Enablement
- Phase 2 - Program Design
- Phase 3 - Program Launch

The Town of Newmarket is in the *Program Enablement* phase. A Program Administrator would normally lead Phases 2 and 3. The development of a Business Case was advanced for two primary reasons: 1) to build the rationale for investing in establishing a Program Administrator (the Entity); and 2) the CEP proposes to transform the energy retrofit market to achieve the community's energy and emissions reduction goals.

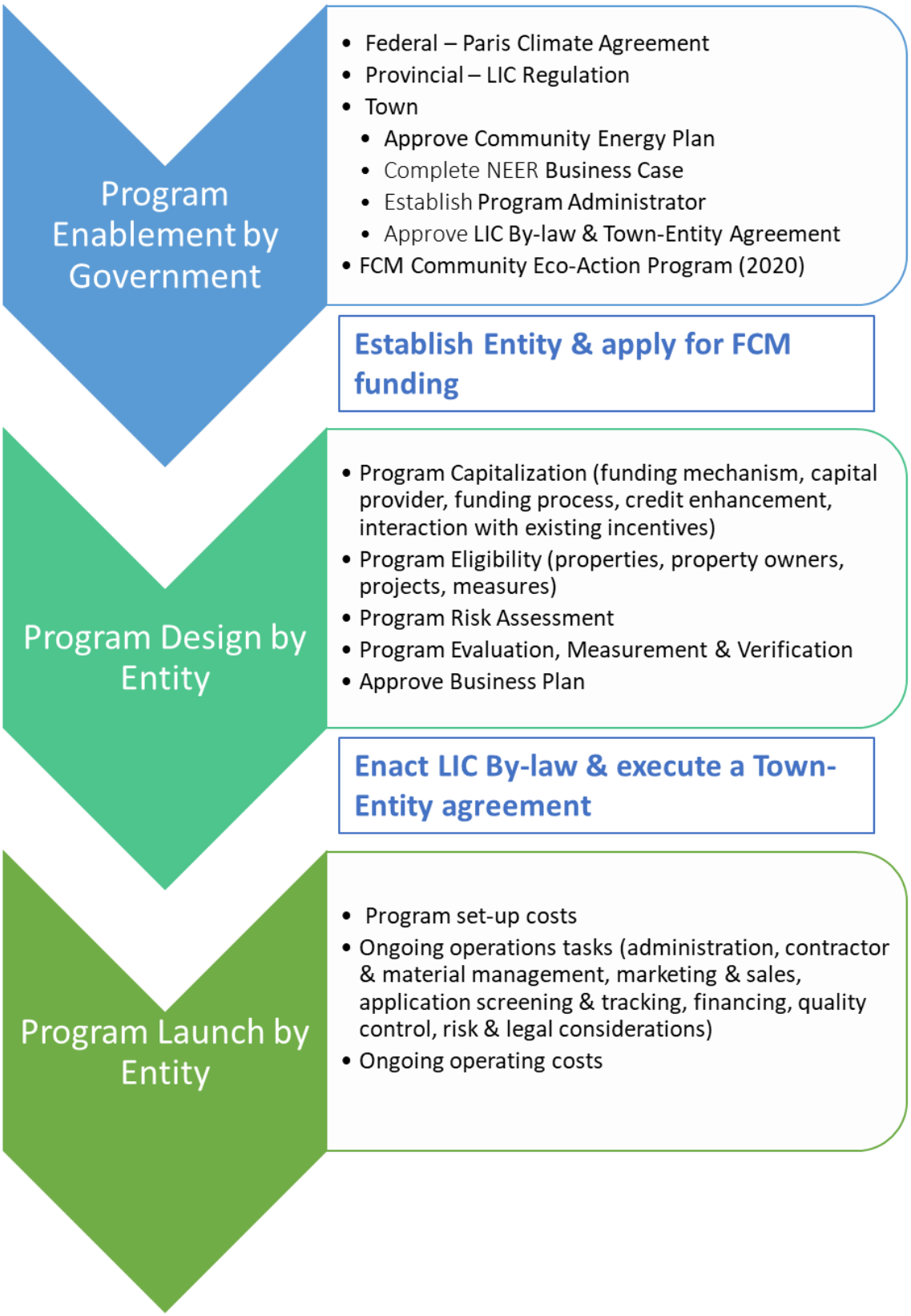


Figure 1: Residential NEER Planning & Decision-Making Process

2. Program Enablement

In addition to summarizing the findings of the Newmarket Energy Efficiency Retrofit (NEER) Business Case, this section summarizes 1) existing enabling legislation, policies and programs and 2) the additional enabling steps required to support the development of a program to deliver high quality, standardized residential energy efficiency retrofit packages to most Newmarket homes.

The opportunity for a municipal government to enable the uptake of home energy retrofits has never been better. Despite the cost advantages of energy efficiency, there are substantial barriers to achieving the technical potential for the residential sector, a challenge well-recognized by Ontario's utilities.

"The current market for the retrofit of existing homes is constricted by a number of barriers that limit the ability of achieving the scale of activity needed to meaningfully reduce greenhouse gases and improve the energy efficiency of the residential sector. Newmarket's Energy Efficiency Retrofit (NEER) project has the potential to change the existing market and scale up home retrofit activity"

Brent Kopperson, Windfall Ecology Centre, Stakeholder Advisory Group Member

2.1 Climate Change and the Paris Agreement

As a signatory to the Paris Climate Agreement, Canada has committed to reducing greenhouse gas (GHG) emissions. The built environment is the third largest emitting sector in Canada and most existing buildings will still be in operation in 30 years. Consequently, the Pan-Canadian Framework on Clean Growth and Climate has identified energy retrofits of existing buildings as a priority. The 2019 Federal budget included funding for municipal-led energy retrofit programs; the funding will be administered by the Federation of Canadian Municipalities (FCM).

2.2 Provincial Policy and LIC Legislation

Climate and energy policies continue to be "mainstreamed" into provincial legislation, policies and programs. Provincial Local Improvement Charges (LIC) regulations have been amended to enable voluntary energy and water efficiency upgrades of private homes and buildings, allowing Ontario municipalities to provide long-term, low-cost financing for residential, commercial and industrial building energy and water conservation retrofits.

Property-assessed financing has the distinct advantage of tying the efficiency investment to the property, mitigating the risk of the homeowner that their payback period is longer than the time they remain (or intend to remain) in the home. Attractive interest rates and borrowing terms can be achieved for homeowners while reducing or eliminating their up-front capital costs.

"It's an easy 'sell' if the product is good, the price is good, the interest rate is good and the payment plan is good...the price is "free", that's the feature."

Comments from participant in the Homeowner Focus Group

2.3 Town Leadership

"I asked myself, "why should Newmarket be the community to lead the transformation of the energy retrofit market?" My answer? "Why not!"

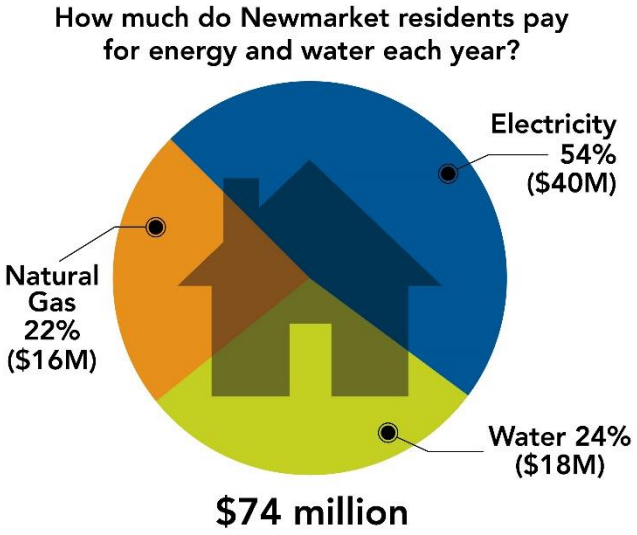
Josh Campbell, Stakeholder Advisory Group Chair

2.3.1 Newmarket Community Energy Plan (CEP)

In 2016, the Town of Newmarket approved a CEP with a community-wide goal to reduce energy consumption and GHG emissions by 40% per capita from 2013 levels. Increasing residential energy efficiency was one of the strategies identified to achieve this goal.

2.3.1.1 Newmarket Energy Efficiency Retrofit (NEER)

Newmarket residences consume approximately a third of the community's energy use to heat and power their homes. The residential sector contributes 28% of the community's GHG emissions. In total, homeowners and tenants paid $74 million for the energy and water they needed in 2017. Over the next two decades, these energy and water costs are expected to more than double or even triple, with most of these energy dollars leaving the community (see *Appendix A – Newmarket Residential Energy and Emissions Profile*)[1].



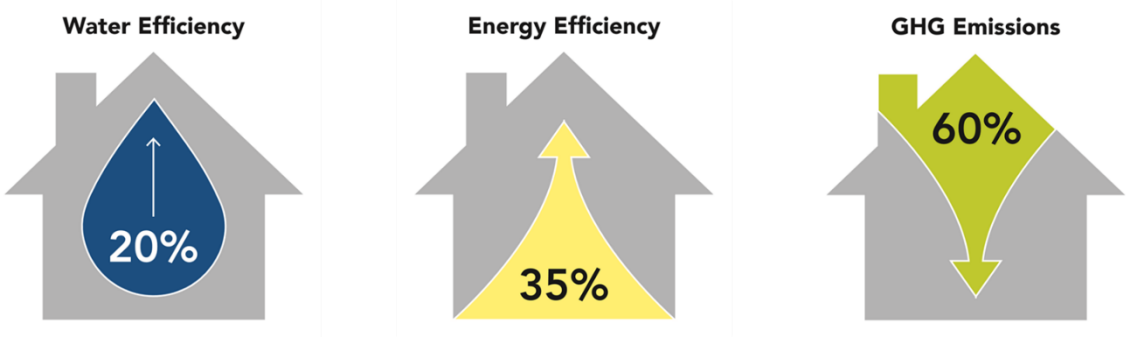
The energy efficiency of the Newmarket residential sector is approximately half that of global best practice. Consequently, the CEP set a target to deep-retrofit 80% of existing homes by 2041 to achieve a 30 to 50% increase in energy efficiency depending on the age and type of home. The CEP strategy to achieve this target proposes:

- the creation of an Entity to deliver retrofits standardized by home age and type;
- to team with local contractors, material suppliers and investors to transform the energy retrofit market;

[1] Baseline pricing is from Provincial sources and Newmarket Tay Power. The electricity increase is based on the previous two Ontario Long Term Energy Plans (OLTEP) with extrapolation for out years beyond the OLTEP horizon. The baseline price for natural gas is from Enbridge. The natural gas outlook is based on North American predictions from both US and Canadian sources for the lower range with consultant estimates for the upper range factoring in possible major increases in LNG exports. The carbon pricing is based on the lower and higher experiences of comparable markets from their inception and experience. The current political uncertainty in Ontario makes it unclear in the short term what form this will take in terms of a carbon tax, cap & trade or some other regulatory penalty. The rationale is described in more details in Appendix G – Full Business Case.

- to use LIC financing and standardized pricing approaches to create scale.

If a business case can be made for the CEP home retrofit strategy, the development of such a program would help Newmarket residents keep more of their energy dollars in their own pocket and reduce the impact of rising energy costs on household budgets, while making a significant contribution to fighting climate change.



2.3.2 NEER Business Case

In 2018, Town Council approved the development of a Newmarket Energy Efficiency Retrofit (NEER) Business Case to investigate the feasibility of the CEP home retrofit strategy. With the support of a Project Working Team (PWT), a Stakeholder Advisory Group (SAG) was tasked to oversee the project, engage stakeholders and report back with recommendations. Additional information about the SAG, PWT and their work can be found in the following appendices:

- *Appendix B – Stakeholder Advisory Group (SAG) Membership*
- *Appendix C – Stakeholder Advisory Group (SAG) Charter*
- *Appendix D – Project Working Team*
- *Appendix E – Stakeholder Engagement Summary*

2.3.2.1 Assumptions

As noted earlier in this report, several assumptions related to *Program Design* (Phase 2) and *Program Launch* (Phase 3) were necessary to build the NEER Business Case. Should the project proceed, these design parameters would be further tested during the development of a NEER Business Plan by the Program Administrator. A summary of these key assumptions is found in *Appendix F*. Additional detail is also provided in *Appendix G - Full Business Case*. The SAG also identified several considerations for the development of a Business Plan, and these are summarized in Section 4.1 Business Plan.

In additional to technical assumptions, the NEER Business Case makes three programmatic assumptions: 1) a Municipal Services Corporation (MSC) would be established to serve as the Program Administrator (see *Section 2.3.3 Program Administrator* for more details); 2) standardized deep energy retrofit packages would be delivered to homeowners (see *Section 3.2.3.1 Standardized Deep Retrofits* for more details) and 3) the Town would make available LIC financing available to homeowners (*see Section 2.3.4 – LIC By-law*)

2.3.2.2 Findings

With the assumptions established for the NEER Business Case, the analysis demonstrated the feasibility of the CEP home retrofit strategy. Key findings are summarized below. Additional detail is provided in *Appendix G – Full Business Case*.

MSC Profitability

The MSC would operate at breakeven by the end of 2022, rising to an average of approximately $2M per year through to 2041. The total potential retained earnings by 2041 would exceed $37M and would continue to rise as the LIC payments servicing the later retrofits flow in. This assumes no diversification of business lines, subsidy programs or dividend payments to the Town. The retained earnings could be potentially assigned to pay dividends to the Town, or be allocated to other social goals, or both. The MSC Board would establish the acceptable level of profit (or loss) consistent with its social mission. The SAG recommends that the Entity address program accessibility during final program design and the potential to leverage retained earnings to meet the needs of low-income residents and/or seniors on fixed incomes.

Net Borrowing Requirements

The need for loans from the private sector is driven by retrofit orders, i.e., the success of the MSC. The MSC would have net borrowing requirements of about $5M by the end of year 1, rising to $15M in year 2, to $25M in year 3, and $40M by year 4. Year 4 is when the MSC achieves its targeted retrofit delivery rate. Maximum net borrowing increases at about $20M for the following few years. The annual increase declines over time due to the accumulated effect of the incoming LIC payments. The maximum net borrowing requirement for the MSC is approximately $265M in year 2041 and falls to zero by 2062.

Homeowner Perspective

Utility annual savings would outpace homeowner's payments under both the low-case and high-case utility price scenarios. This is in addition to immediate comfort benefits and a potential increase in property value. The average cost of the retrofit is approximately $25,000 to $30,000.

Residential sector emissions and source energy

The program would achieve the NEER energy goal and exceed the NEER emissions goal while placing the community on the path to achieving its CEP goals and contributing to Canada's commitment to the Paris Climate Agreement targets.

Program savings versus costs

Annual utility cost savings for all NEER customers would surpass the total annual retrofit payments for these customers within 10-15 years of the first retrofit. Individual customers would see savings and payments balance out almost immediately after the retrofit.

2.3.2.3 Stress Testing

The NEER Business Model proposes to transform the energy retrofit market by offering standardized retrofits at high volume to the community. As such, there are no market equivalents to inform two key assumptions: 1) market penetration and 2) market penetration rate. Consequently, the SAG and other stakeholders asked the PWT to stress test these two assumptions.

Market penetration

The Newmarket CEP established a target to retrofit 80% of all homes existing in 2017 by 2042. The SAG wanted to understand Business Case implications, if this target was reduced to 60% of all homes. Stress testing of the NEER Business Case revealed the NEER energy goal would be missed, the NEER emissions goal would be just missed and results would be far off the trajectory needed to achieve the Paris Climate Agreement targets. While not fully aligned with Newmarket's strategic goals, the business model remains financially viable. For strategic consistency with the CEP, the 80% target is recommended to be retained. See *Appendix F – Summary of Business Case Assumptions* for details.

Market penetration rate

The preliminary NEER Business Case assumed the MSC would achieve 100% of its targeted annual penetration rates in 2020. The SAG wanted to understand the NEER Business Case implications of a more conservative penetration rate during the first five years of operation, combined with the first retrofits flowing into the market in 2021. While this results in higher initial working capital requirements, the business model remains financially viable. The operational ramp-up starting in 2021 was considered more realistic and the SAG guidance is reflected in this report. *Appendix H – Stress Testing Results* for details.

2.3.3 Program Administrator

The NEER Business Case assumed the Entity would be owned by the Town of Newmarket. An existing Third-Party Entity is also a possibility to serve as the Program Administrator, as is a partnership with other municipalities in the formation of joint municipal-owned Entity.

The SAG recommends the Town proceed to establish an Entity, as a Municipal Services Corporation (MSC)[2], to administer the program for the following reasons:

- this administrative model enables a more flexible financing approach that will minimize municipal liability and better leverage private sector investment;
- an MSC would be better positioned to enter into partnerships with the private sector than the municipality (e.g., contractors, material suppliers and investors);
- program delivery risks rest with the MSC and not the Town;
- borrowing is placed on the MSC's balance sheet;
- the MSC is not limited to working within municipal boundaries and can enter into beneficial partnerships with other municipalities in York Region or beyond; and
- the MSC should be responsible for the final NEER Business Plan as the Program Administrator.

Seed funding of approximately $300,000 would be required to establish the Entity and provide it with adequate resources to finalize the Business Plan which would include the hiring of a General Manager. The SAG recommends the Town apply for funding from the FCM Community EcoEfficiency Accelerator Program to assist with these start-up costs. While FCM funding may cover all the start-up costs, the Town would need to find alternative funding, if this was not the case. These start-up costs are at risk should the Entity be unsuccessful in finalizing the Business Plan.

The long-term working capital requirements for the Entity to fully launch the business (see Section 3.1.2.1), whether sought from the Town and/or private investors, would be contingent upon the Business Plan.

2.3.3.1 Town-Entity Partnership Agreement

The *Municipal Risk Assessment for an LIC Energy Retrofit Loan Program* (see *Appendix I)* identified a potential reputational risk for the Town should the Entity fail to effectively deliver the retrofit program. Robust due diligence in establishing an agreement between the municipality and the Entity would help mitigate this risk (*e.g.,* performance standards). The agreement would outline the terms and conditions for the municipality making an LIC financing available to

[2] O.Reg. 599/06 allows Ontario municipalities to establish a Municipal Services Corporation (MSC). An MSC is a corporation whose shares are owned by a municipality, or a municipality and one or more other public-sector entities. An MSC can only provide a system, service or thing that the municipality could provide.

homeowners participating in the retrofit program administered by the Entity. The SAG recommends aiming to have the agreement executed in 2021, assuming Council proceeds with the next phase of the project.

2.3.4 LIC By-law

The SAG recommends the Town would make LIC financing available to homeowners under the terms and conditions of a Town-Entity Partnership Agreement. The potential municipal risks associated with an LIC financing program are summarized in *Appendix I – Municipal LIC Risk Assessment*. The assessment of potential risks concluded the risks are low and/or can be mitigated. Notably, the establishment of an Entity to serve as the program administrator transfers program-related risk from the municipality to the Entity, including debt management. A special charges By-law would need to be enacted by the Town to enable an LIC program. Proposed enactment of the LIC By-law would be in 2021 and inform the execution of the Town-Entity Partnership Agreement.

Mortgage Lender Consent

A concern regarding mortgage lender consent was raised during the engagements and was considered extensively during the development of the Municipal LIC Risk Assessment. The final rating of this risk was low, given identified mitigation strategies and ongoing monitoring by the Entity.

The following is an extract from the Municipal LIC Risk Assessment (see Appendix I for the full document:

> *The Canadian Bankers Association has raised a concern that the LIC could put homeowners/borrowers in an unexpected default position under most lenders' standard charge term for residential mortgages. Almost all lenders obtain covenants from their borrowers with respect to additional borrowing that could result in charges against the property or that might impair priority of the lender's charge.*
>
> *The City of Toronto has addressed this risk by requiring homeowners to seek the consent of their mortgage lender which limited participation. However, there has been limited appetite of traditional mortgage providers to agree to new senior covenants for retrofit loans tied to property tax.*
>
> *Currently, mortgages insured by the Canadian Mortgage and Housing Corporation (7% of mortgages in Ontario) would not be approved for LIC financing, regardless of the business case.*
>
> *The Clean Energy Financing program in Nova Scotia has addressed this risk by recommending homeowners notify their mortgage lender about their participation in program. During the initial program design process, mortgage lenders were consulted, and an internal legal discussion was conducted to address lender concerns. To date, the Clean Foundation has not encountered any bank putting their customer in a default position and it has not impacted program uptake.*
>
> *Loan Loss Reserves (LLR) have been successful in other jurisdictions to manage mortgage lender concerns. The announcement for the FCM Community EcoAction program noted the potential to establish an LLR for a retrofit program.*
>
> *The retrofit cost relative to the value of the asset is low. The risk of a mortgage lender not renewing a mortgage, if the homeowner is current with both their mortgage and property tax payments, is considered low.*

In the recent Final Report of the Expert Panel on Sustainable Finance *it is recommended that in the case of municipality-sponsored PACE programs, CMHC could provide guarantees for Local Improvement Charge (LIC) financing programming.*

2.4 FCM Community EcoEfficiency Acceleration program

The SAG recommends the Town apply for FCM Community EcoEfficiency Acceleration Program funding to secure some or all the resources for the Entity to complete its due diligence and to develop a final NEER Business Plan.

3. Program Design

The NEER Business Case made several assumptions about program design which are summarized in this section. Notwithstanding the considerable work done to complete the NEER Business Case, the Entity would also need to conduct its own supplemental due diligence to ensure a successful entry into the market. Final program design would be the responsibility of the Program Administrator (i.e., the Entity).

3.1. Program Capitalization

3.1.1 Financing and Fund Flows

The NEER Business Case's proposed financial model was designed to be flexible. Over time it could be adapted to include additional lenders, contractors, and third-party public or private investors. These investors could include private commercial entities and even other municipalities and other public entities. The model was designed such that the Town would only be responsible for collection of the LIC payments and their transfer to the Entity. The Town's administrative costs were also proposed to be recovered in the retrofit price. All borrowing would be on the balance sheet of the Entity.

Notably, the debt of an MSC is not attributed to the owner municipality. See *Appendix I – Municipal LIC Risk Assessment* for more details.

Funding sources would include:

- Loans from Lender Partners
- Customer payments via property taxes
- Interest on unused loans
- Initial working capital to form Entity
- Government and utility incentives (assumed to be zero in the Business Case analysis)

These funds would be used for:

- Lender interest payments
- Lender capital repayments
- Contractor payments
- Entity operational expenses
- Community Group sponsorship

The business case assumed a 4.25% return. This will need to be tested and refined during the development of the NEER Business Plan based on prevailing interest rates. The NEER Business Plan would also be stress tested to consider fluctuations in interest rates moving forward.

"A 4.25% return is probably too low or borderline for our regulated insurance company entities, if the debt is unrated, but it is close right now with rates being where they are. It is probably better to think about it in terms of a spread over government bonds with a similar duration."
Impact Investor interview

3.1.2 Capital Provider

3.1.2.1 Start-up and Working Capital

The MSC would require start-up funding to develop a final NEER Business Plan and working capital to set-up for program launch. Start-up and working capital would be recovered once the business is launched and could be supplied by the Town, the Town's holding company and/or grant funding (see Section 4.1.1 for additional commentary).

3.1.2.1 Ongoing Capital

Ongoing capital to fund the program would be sourced from impact investors, insurance companies, pension funds and other sources of patient capital.

"The program design addresses the disaggregation of returns in the energy retrofit market which has traditionally been a barrier to larger scale investment. Assembling retrofit investments is both helpful and necessary. Grouping multiple communities might even be better."
Impact Investor Interview

3.1.3 Funding Process

The funding process is illustrated in Figure 2.

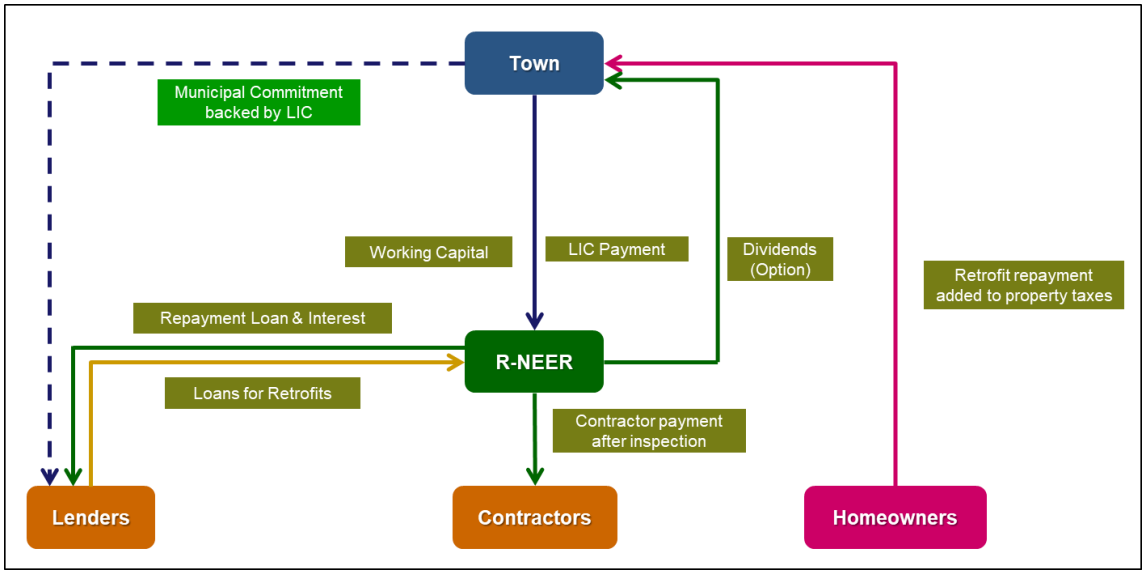


Figure 2: NEER Funding Process

3.1.4 Credit Enhancement

Loan Loss Reserves (LLR) have been successful in other jurisdictions to manage mortgage lender and investor concerns regarding homeowner default on the LIC payment. During the announcement of the FCM Community EcoEfficiency Acceleration program, the potential to support a municipality to establish an LLR for a retrofit program was noted.

3.1.5 Existing Incentives

"The R-NEER initiative will be a great platform to scale up the delivery and implementation of Enbridge's energy conservation programs, especially if other communities follow suit…"
Erika Lontoc, Stakeholder Advisory Group Member

The NEER Business Case did not include public incentives and/or grants (except for a rebate for thermostats) for two primary reasons: 1) to demonstrate the viability of the market-based business model; and 2) these programs come and go. It would make sense for the Entity to promote any available government and utility programs to homeowners and, where appropriate, integrate them into the standardized retrofit package to offer one-stop-shopping for homeowners, as well as a more attractive retrofit price and return on investment.

The SAG encourages the Entity to address the accessibility of the program for harder to serve segments of the residential sector (e.g. seniors on fixed incomes) as part of the final Program

Design. This could include using retained earnings to offer a subsidy to low income/fixed income homeowners.

3.2 Program Scope

3.2.1 Property Eligibility

3.2.1.1 Sector

The NEER Business Case assumed the program would be developed for residential properties aligned with the first strategy proposed in the CEP (Strategy 1a). A commercial and institutional offering aligned with second CEP strategy (Strategy 1b) could be contemplated in the future. The PWT recognised this possibility and ensured the Entity structure was capable of expansion.

3.2.1.2 Housing Type

The NEER Business Case assumed standardized retrofit packages would be offered to single-detached, semi-detached and townhouses; packages for multi-unit properties would be introduced after the second year of operation; primarily homes 20 years or older would be targeted. The rationale for this "go-to-market" strategy includes:

- Optimizing achieving the CEP goals for energy and emissions reduction in this sector
- Newmarket's residential sector is comprised of 85% single-detached, semi-detached and townhouses, approximately 27,000 homes from a total of 29,150.
- Single-detached, semi-detached and townhouses over 20 years old account for 70% of the sector's energy costs, emissions and use.
    - This target market is considerable at approximately 15,000 homes and is half as energy efficient than global best practice, so it has the greatest potential for cost-effective and environmentally impactful energy efficiency retrofits.
- Each year, an additional portion of the current housing stock reaches an age (i.e., 20 years) where reinvestments are required to maintain or improve serviceability. Such renewal work provides an excellent opportunity to cost-effectively build in energy efficiency improvement in the work undertaken.
- The retrofit of multi-unit buildings is more complex and better tackled once the Entity's business systems are functioning smoothly.

However, even though a potential customer may not fall under the scheduled market penetration, the Entity would not be expected to refuse to accept an order, if it can be effectively fulfilled.

3.2.2 Homeowner Eligibility

Participation would be voluntary, and owner initiated. All registered owners of the property would have to consent to participate. Prudent homeowner eligibility requirements would be established by the program administrator during final program design to balance risk with accessibility. Provision of utility data to support measurement, evaluation and verification would also be required (see Section 3.3.2).

3.2.2.1 CMHC-Insured Mortgages

Currently, mortgages insured by the Canadian Mortgage and Housing Corporation (CMHC) would not be eligible for LIC financing, regardless of the strength of the business case to reduce the operating costs of the home. In the 2019 Final Report of the Expert Panel on Sustainable Finance it is recommended that in the case of municipality-sponsored PACE programs, CMHC could provide guarantees for Local Improvement Charge (LIC) financing programming.[3] It should be

[3] Source: https://www.canada.ca/en/environment-climate-change/services/climate-change/expert-panel-sustainable-finance.html

noted the number of homeowners with CMHC mortgage insurance in Newmarket is low and only represents 7% of mortgages in Ontario. More detail on this matter is found in *Appendix I – Municipal LIC Risk Assessment*.

3.2.3 Project Eligibility

3.2.3.1 Standardized Deep Retrofits

Standardized retrofit packages would be designed by the Entity to deliver annual energy savings of 30 to 50%, and 20% water saving to homeowners. Modelling for the NEER Business Case demonstrated these savings would be achieved with existing technologies. The package cost would be dependent on home size, age and type. Using pricing based on a fixed index per specific area ($ per m^2) depending on home category minimizes transaction costs and complexity.

"I believe that the business case is a very interesting concept and it will be nice to see this program unfold... I am interested to understand the background more fully. "
Contractor Interview

The delivery of standardized retrofits at high volumes to Newmarket homeowners is an essential feature of the Business Case and has been designed to drive market transformation. The business model reduces the cost of the average retrofit by 33%. This is achieved through efficiencies in:

- Reduced selling costs through standardized offerings and pricing
- Elimination of contractors' costs to promote and prepare customized proposals
- Increased contractor labour productivity
- Volume pricing for key material categories
- Lower cost financing through consolidation

As the market transforms and the experience of the program administrator grows, it is anticipated that greater program flexibility may be possible without undermining the core business model. In the beginning, certain exemptions may be tolerated by the business model. For example, if the homeowner has recently replaced their furnace with one that meets the energy performance standards of the program, this investment could be recognized as a credit to the standard retrofit price.

3.2.3.2 Market Analysis

One of the more challenging features of this business model is understanding the market for a fixed offering rather than a more traditional "a-la-carte" retrofit approach. To begin to understand the market, the SAG explored several marketing approaches:

- Mapping of homes by type and age (*Appendix G*)
- Mapping of residential energy consumption, emissions, cost and demographics (e.g., household income) by energy planning district (EPD) (*Appendix G*)
- Home energy modelling by type and age (*Appendix G*)
- Homeowner personas (*Appendix J)*
- Homeowner surveys (*Appendix K)*
- Homeowner focus group (*Appendix L*)

A more rigorous market analysis, using this data and additional primary (e.g., additional surveys and focus groups) and secondary research (e.g., sources of existing market data), would be conducted by the Entity to support the development of the Business Plan and a successful program launch.

3.2.4 Project Measures

The NEER Business Case assumed that the Entity's early offering would be comprised of energy and water efficiency measures. A review of the measures assumed in the Business Case would minimize any impact on Building Department workflows (*Appendix M – Energy Efficiency Retrofits & the Ontario Building Code*). Over time, and in consultation with municipal stakeholders, it is expected the Entity would consider offering other energy retrofit measures (e.g., solar power, solar hot water, vehicle charging stations, air and ground source heat pumps). It is recognized that the NEER Entity could serve as an effective platform from which to promote other CEP strategies (e.g., the promotion of solar PV) as well as other complementary government, regulator and utility programs.

3.3. Program Impact

3.3.1 Estimating Impact

The NEER Business Case estimated significant electricity, gas and water savings and GHG reduction are achieved (*Appendix G*). In 2041, annual total residential cost savings are estimated to be between $43M to $79M.

Estimates of job creation are approximately 30 person-years per $1M of spending.[4]

3.3.2 Documentation (Evaluation, Measurement & Verification)

The NEER Business Case assumed that homeowners would provide access to annual utility bills to evaluate, measure and verify the performance of the program rather than adding the expense and inconvenience of pre- and post-energy audits to homeowner costs.

[4] Dunksy Energy Consulting (2018). The Economic Impact of Improved Energy Efficiency in Canada. Prepared for Clean Energy Canada. Source: https://cleanenergycanada.org/wp-content/uploads/2018/04/TechnicalReport_EnergyEfficiency_20180403_FINAL.pdf

4. Program Launch

The Entity, as Program Administrator, would be responsible for the development of a viable Business Plan, based on the Business Case, that included additional market research and risk assessment, prior to program launch.

4.1 Business Plan

I would encourage [us] not to rely on past practices to guide the development of this program - if we had been successful in the past we would not require this model…We are in a climate emergency and relying on "business as usual" practices is not going to cut it.
Scott Vokey, Stakeholder Advisory Group Member

To develop a strong business case, elements of a business plan were considered. The Entity would require reasonable resources to complete its due diligence, including supplemental market testing and program risk assessment, to finalize a NEER Business Plan for the approval of the MSC Board of Directors.

SAG members identified several issues to be further considered during the development of the Business Plan:

- Conduct additional market research (e.g., the impact of age and income) to refine the size of the market for standardized deep energy retrofits and the penetration rate assumed in the Business Case.
- Identify strategies to grow a new market for standardized deep energy retrofits through community engagement.
- Continue to learn from the experience (e.g., data and tools) of previous energy conservation programs in Ontario and other jurisdictions, recognizing "business as usual practices" are part of the market problem to be solved[5].
- Consider how to promote or integrate other government and utility energy conservation or fuel switching programs into the standardized offering, without putting at risk the viability of the core business model. Collaborate with and leverage the utilities (power/water/waste) on an ongoing basis. Early engagement is key to ensure that the programs are complementary, if not jointly designed/developed, and so both the town and the residents realize the synergies and enjoy the full benefits of these programs. In certain US states where utilities are "attributed" a specific % of their energy efficiency and carbon reduction plans, utility programs are considered the base programs, and further enhanced based on the specific needs of local jurisdictions.
- Work with local utilities to identify other potential program synergies (e.g., load displacement through the promotion of Distributed Energy Resources).
- Address the accessibility of the program for harder to serve segments of the residential sector (e.g. seniors on fixed incomes).
- Considering the changing regulatory environment, review the technology mix offered in the standardized package to optimize energy savings, emission reductions and residential savings. There are several emerging and newly commercialized low carbon technologies that will find their way into mainstream during the plan period. The product/technology mix

[5] Enbridge, Newmarket Hydro and Windfall Ecology Centre have collected considerable current-market data from the residential sector through Conservation and Demand Management programs and energy retrofits which would be a valuable input into the development of the final NEER Business Plan.

of the retrofit package should evolve and will fall in the shoulders of the Entity to review and incorporate as part of the mix.

- Continue stakeholder input in the development of the detailed NEER program design through the business case process. Engage the real estate sector to identify new homeowners planning extensive home renovations.
- Update financial assumptions to reflect prevailing market conditions, recognizing these would also be updated in annual business plans.
- Developing capacity and capability for energy retrofit associated work within the community/town will be essential in meeting the economic goals of the plan. Strategic partnerships will help accelerate the capacity and capability building efforts.
- Education and awareness should accompany any equipment or physical home energy retrofit program. Behavioural shifts will be necessary to help ensure that the savings and carbon reductions persist.

4.1.1 Program Set-Up Costs

The NEER Business Case estimated initial net start-up and working capital, defined as maximum negative cash flow, will be about $1,620,000. In 2020, there are 9 months of organisation costs with no countervailing retrofit revenues, in 2021 the retrofit activity supports about half of the organisation costs, and by 2022 organisation costs are fully covered. In subsequent years, the Entity generates profit. A faster start up would reduce the net start-up working capital required.

4.1.2 Ongoing Operation Tasks

The NEER Business Case identified five core business functions: General Administration, Finance and Credit (including order acceptance and fund management), Marketing, Sales, Retrofit Management (including quality control and materials management). Retrofit installation would be in partnership with local contractors.

4.1.2.1 How would it work for a homeowner?

John and Emily moved to Newmarket 6 years ago buying their first home. They could only afford a fixer upper. Their plan was to renovate and sell at a profit to be able to afford a larger home to raise a family.

However, with two young children, Brittany and Lucas, and a third child on the way, life soon got in the way. Most of their free time and discretionary funding now goes to their growing family. While they love developing their DIY skills, they simply don't have the time anymore. They would be happy to borrow money in the short term to finance home improvements but any investment they make must increase the resale value of their home. Their pain points are professionals that don't turn up on time, work that takes longer than promised and having to spend time getting quotes or finding professionals to do the work right. With a young family, too much disruption of their daily routine is also a worry.

One day their neighbour mentioned a new energy retrofit program being offered for detached homes twenty years or older. They went online and liked what they saw being offered in the standard package. They knew they needed new windows and a furnace. So, they signed up to see the price being offered for their home. It looked good. They asked their neighbour, a local homebuilder, for his opinion. He confirmed they would not be able to match it on their own, so they signed up. When they learned which contractor had been assigned to them, they were thrilled because the company had a great reputation in the community.

Much to their delight, the job was done in four days - as promised. They took advantage of the 20-year financing plan offered through a partnership with the municipality. Since their goal was to move within a few years, they liked the assurance their investment would be passed on to the next owner, in case they wanted to use more of their profits for their next home. They tracked their savings carefully for the first year and were delighted to see they more than covered the additional monthly payment on their tax bill. Now, understanding the resale value of their energy retrofit, they were excited to get their first home energy label.

4.1.2.2 How would it work for the contractor?

"A program such as this, if successful, would require me to expand my business with added crews. The commitment of the Town would be critical for me to invest in expanding my business"

Contractor Interview

Bob Carter had been renovating homes for over twenty-five years. He had seen his fair share of energy retrofit programs come and go. So, he was naturally sceptical when he heard of a yet another one. Though, what piqued his interest in the new program was its commitment to delivering a quality, deep-energy standardized retrofit. Mostly, he stayed away from home energy retrofits because there were too many unrecovered costs to make it worth his while.

As a building professional, he knew the potential to increase the energy performance of the homes in his community. So, he signed up, to check out the new program.

Today, he keeps two crews busy with the weekly work orders he receives. His margin on energy retrofits projects has doubled. His reputation for quality installation and the favourable pricing on high-efficiency windows has made him more competitive in the marketplace for more customized work. He is proud of the role his business is playing in reducing the community's emissions while helping to save his customers money.

4.1.2.3 How would it work for the investor?

For many years, Impact Investing Inc. had been looking for a partner to aggregate the residential energy retrofit market. Now, they cannot keep up with demand for their new investment offering. They can offer a slightly more attractive rate than Provincial 20-year Bonds to clients. The number of impact investors - looking for a reasonable return on their capital while making a difference on climate change - continues to grow. The insurance industry was the first to knock on their door but now pension funds are getting into the market.

4.1.3 Ongoing Operating Costs

The NEER Business Case included estimates for ongoing operating costs for the program (*Appendix G*). These costs would be refined during the development of the Business Plan.

4.2 Pre-Launch

During the pre-launch period, the Entity would pursue market leads to support a successful program launch. In addition to traditional marketing approaches, the NEER Business Case contemplates providing funding ($100/retrofit) to community organizations to promote homeowner participation and community-led social change. Partnership with community groups, like the Windfall Community Centre will be essential to build community awareness and buy-in to participate in the program.

"To encourage people to commit will require a lot of engagement, communication and advocacy."
Contractor Interview

4.3 Launch

Program launch is proposed to take place in the next few years (ideally by 2021) to provide reasonable time to 1) establish the Entity (including hiring at least a General Manager); 2) apply for FCM funding; 3) develop and approve a Business Plan; 4) enact an LIC By-law; 5) execute a Town-Entity agreement; and 6) prepare for Program Launch.

5. Conclusion & Recommendations

A business case is an assessment of a business opportunity that culminates in a Go/No-Go decision on whether a company should attempt to solve a market problem by producing a product – in this case, standardized energy retrofits – that will successfully compete with other products in the market. In the absence of a "company", the Town of Newmarket has stepped up to consider the following market problem and solution.

5.1 The Market Problem

The current energy efficiency retrofit market for homeowners and contractors is relatively unattractive. From the perspective of the contractor, the effort to prepare customized proposals is high and the closing rate is low. Low volumes and the fact that every project is specific to each household means that material costs are expensive and performance guarantees are risky. From the homeowner's perspective, obtaining understandable bids from various contractors is burdensome. They are responsible for finding their own sources of funding based on their individual credit rating. Finally, the low volumes result in retrofit costs that typically exceed the value of the energy saving, even over many years.

5.2 The Product Solution

The proposed solution is to offer standardized energy retrofits to homeowners at high volumes. Contractors benefit from increased project predictability, improved margins and vastly higher project volumes. Homeowners benefit from a simplified transaction, guaranteed pricing, lower cost pre-financed retrofits and a simple billing and payment mechanism.

5.3 Conclusion

A business model is a description of how a business intends to generate revenues and earn a profit. The model shows the revenue streams the business will have. The model is based on assumptions made about consumer behaviour, the economy and the competitive environment. All business models have an element of risk because sometimes the assumptions used turn out to be wrong.

Based on the analytical findings and stakeholder engagement, the SAG concludes there are reasonable grounds to proceed to implement the CEP Home Energy Retrofit Strategy. This conclusion is made with the understanding that the Entity established to administer the program would need to complete a Business Plan to implement the Business Case. However, without establishing an Entity with a mandate to deliver high quality, standardized residential energy efficiency retrofit packages to most Newmarket homes, the Town's energy and efficiency goals, as approved in the CEP, are unlikely to be realized.

5.4 Recommendations

The SAG recommends that Town Council:

1. Endorse the Final Report of the Stakeholder Advisory Group: Newmarket Energy Efficiency Retrofit (NEER) Business Case.
2. Incorporates a Municipal Services Corporation to serve as the Program Administrator with a mandate to develop a NEER Business Plan.
3. Applies for FCM Community EcoEfficiency Accelerator program funding to support program set-up and launch, including the development of a final NEER Business Plan.
4. At the appropriate time, enacts an LIC By-law and enters into an agreement with the Municipal Services Corporation, with appropriate terms and conditions, to make optional LIC loans available to homeowners participating in the program.

5. Encourage the Municipal Services Corporation to consider program accessibility during final program design and the potential to leverage retained earnings over time to address the needs of low-income residents and/or seniors on fixed incomes.

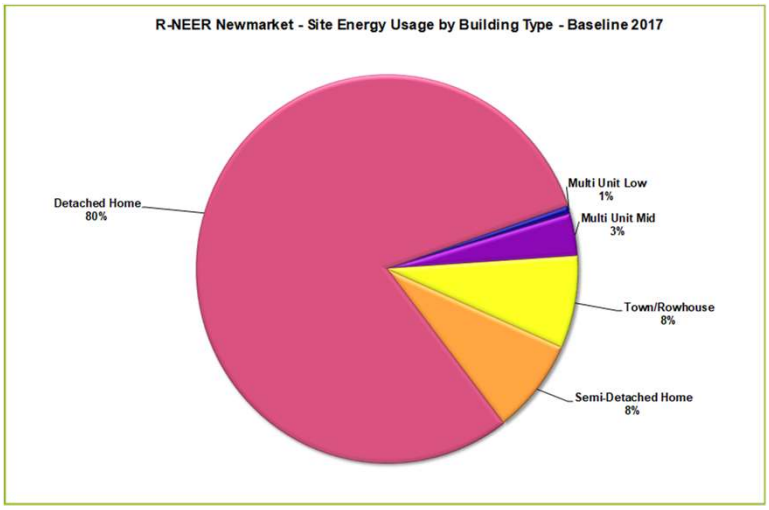
List of Appendices

Appendix A: Newmarket Residential Energy and Emissions Profile

Residential Energy Efficiency Retrofit Business Plan

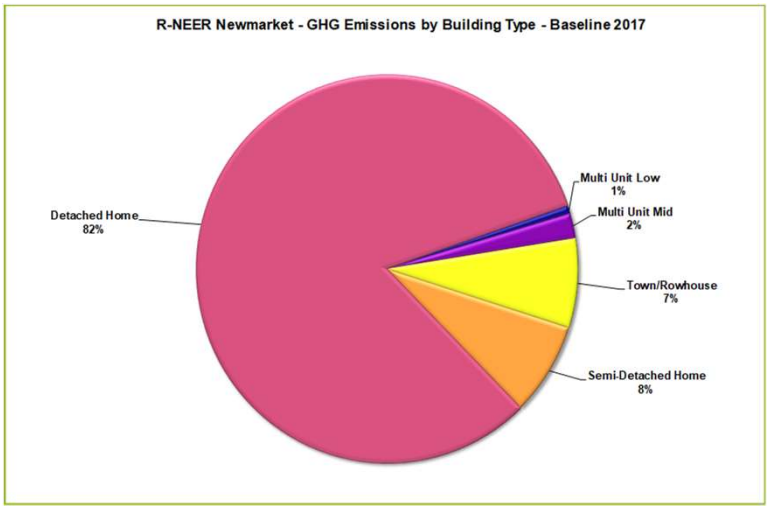
Baseline – Base Case Recap

2017 Residential Baseline
Site Energy – Type – 3.0M GJ



Detached Homes ~ 80%

2017 Residential Baseline
GHG – Type – 126,000 Tonnes

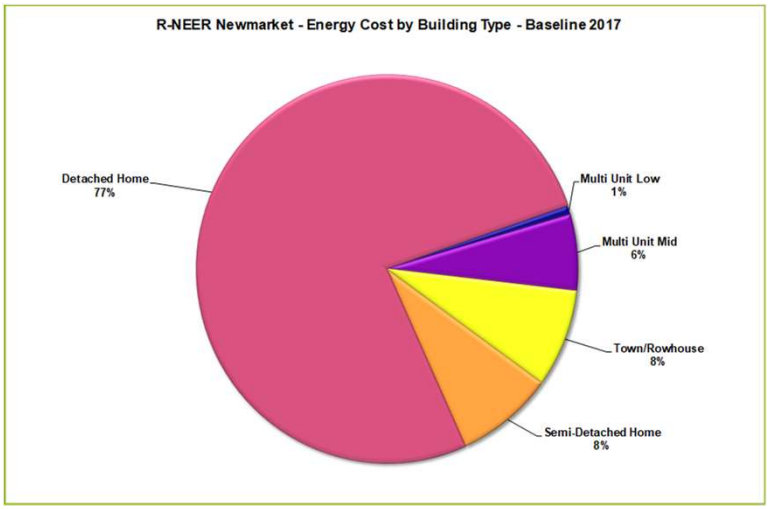


Garforth International llc
Energy Productivity Solutions

Detached Homes ~ 80%

Newmarket
Home Efficiency
Business Case

2017 Residential Baseline
Utility Cost – Type – $74M

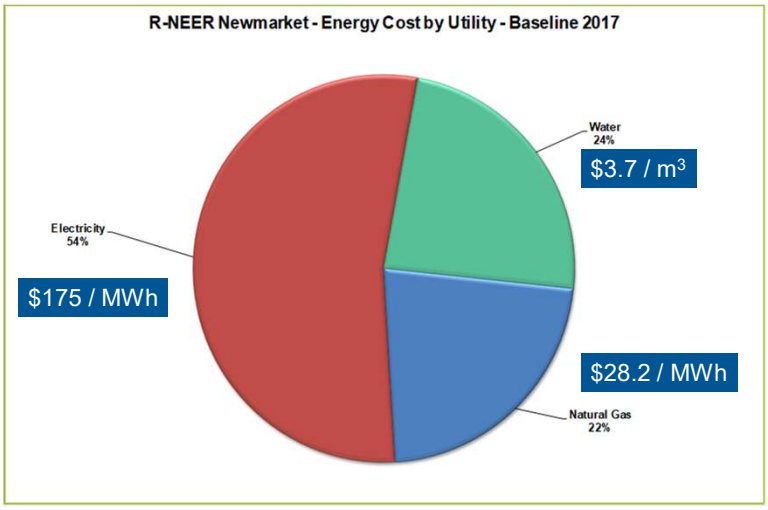


Garforth International llc
Energy Productivity Solutions

Detached Homes > 75%

Newmarket
Home Efficiency
Business Case

2017 Residential Baseline
Utility Cost – Utility – $74M



Garforth International llc
Energy Productivity Solutions

$74M to Between $151M and $258M in 2042

Newmarket
Home Efficiency
Business Case

2017 Residential Baseline
Summary of key findings

- The residential sector consumed 4.3 million GJ of energy emitting 126,000 tonnes of GHG in 2017
- 1.3 million GJ of that energy is consumed prior to reaching the consumer (conversion losses)
- Homeowners and tenants paid $74 million for this energy
- Costs are expected to increase to between $151 million & $258 million in 2042
- Most of these energy dollars leave the community

Garforth International llc
Energy Productivity Solutions

Note: Updated 2019-01-17

Newmarket
Home Efficiency
Business Case

Appendix B: Stakeholder Advisory Group (SAG) Membership

Newmarket
Home Efficiency
Business Case

Stakeholder Advisory Group Membership

Name	Title	Sector
John Birchall		Community
Joshua Campbell (Chair)	Founder, Knowledge Broker	Economic Development
Teresa Cline	Senior Planner, York Region	Municipal & Regional Planning
Catherine Ethier		Community
Vicki Gagnon	IESO	Energy
Ken Gray	Conservation Program Coordinator, Tay Power Distribution Ltd.	Utilities
Cheryl Green	Chair, Condominium Board	Property Owner
Dave Kempton		Community
Gabriella Kalapos	Executive Director, Clean Air Partnership	Environmental Organization
Brent Kopperson	Executive Director, Windfall Ecology Centre	Environmental Organization
Erika Lontoc	Manager, DSM Partnership, Enbridge	Utilities
Cindy McPhee	First Step Design Limited	Economic Development
Dave Potter	Chief Building Official, Town of Newmarket	Building & Renovation Industry
Jeff Ranson	GTA Regional Director, Canada Green Building Council	Building & Renovation Industry
Jane Twinney	Town Council (Ward 3)	
Scott Vokey	Director, Solutions Development Canadian Municipal Sector, Ameresco	Energy
Steve Whitfield		Building & Renovation Industry

Appendix C: Stakeholder Advisory Group (SAG) Charter

Newmarket
Home Efficiency
Business Case

Newmarket Energy Efficiency Retrofit (NEER) Home Efficiency Business Case Stakeholder Engagement Group Charter

Sheridan | Get Creative

Garforth International llc
Energy Productivity Solutions

Karen Farbridge
& ASSOCIATES

November 2018

STAKEHOLDER ADVISORY GROUP CHARTER

Purpose of this document

The document outlines the role of the Stakeholder Advisory Group (SAG) in the development of the Newmarket Energy Efficiency Retrofit (NEER) Home Efficiency Business Case. It also provides guidelines for how the SAG will operate, including how and when meetings will take place. This document may be amended by the SAG as the project progresses, in consultation with the Project Working Team (PWT).

Table of Contents

Project Overview

In 2016, the Town of Newmarket approved a Community Energy Plan (CEP) with targets to:

- Reduce per capita primary energy use by 40% from 2013 baseline by 2031
- Reduce per capita GHG emissions by 40% from 2013 baseline by 2031

These targets were established to align with the Town's CEP vision *to create a sustainable community whose energy future is efficient, secure, reliable, and environmentally responsible. Our approach to managing energy will demonstrate leadership and be well beyond the ordinary.*

Homes are responsible for about 38% of the town's total energy use, with a relatively high average energy use compared to both Ontario and global best practice. Most homes are low-density (single or semi-detached houses) or town homes, and the large majority (~90%) of homes were constructed prior to the 2012 Ontario Building Code (OBC). The 2012 represented a step change in building energy performance.

Strategy 1A in the Newmarket CEP aims to increase the energy performance of the existing residential sector. Over the plan period, existing homes will have deep energy efficiency retrofits, yielding efficiency gains between 30% and 50% depending on the age/type of the building. It has been targeted that at least 80% of existing homes will participate in this retrofit program by the year 2031.

Strategy 1A aligns with the CEP goals, specifically:

We will continue to demonstrate leadership in increasing efficiency of existing buildings and will continuously improve building performance through best management practices.

STAKEHOLDER ADVISORY GROUP CHARTER

In 2018, the Town of Newmarket initiated the development of a Home Efficiency Business Case to implement Strategy 1A for the town's homes. Consistent with the development of the CEP, the Town of Newmarket is committed to providing an inclusive community engagement process to engage stakeholders in the development of the Newmarket Energy Efficiency Retrofit (NEER) Home Efficiency Business Case.

Mandate

The SAG mandate is to provide a forum for community-based oversight of the CEP implementation and to report regularly to the community and Council.

The SAG serves as a sounding board for the Town and the Project Working Group (PWT; see Appendix 1), providing strategic guidance, challenge and support of pathways forward, as well as sharing technical advice, community knowledge and networks.

With the support of the PWT, the SAG provides an ongoing forum for consultation and feedback to the public and Council at key points through the development of the NEER Home Efficiency Business Case.

The SAG will assist the PWT to ensure that planned engagement efforts provide the public and stakeholders with a clear and meaningful understanding of the project and encourage participation.

The SAG is expected to be make the final recommendations to Council, with support from the PWT, at the conclusion of the Project.

Terms of Reference

In carrying out its mandate, the SAG has the following specific responsibilities, processes and requirements:

A. Specific Responsibilities

a. Consider matters, issues or information provided by the PWT relating to NEER and provide advice and recommendations.
b. Identify potential community issues and opportunities for the PWT.
c. Participate in two-way communication between members' constituencies and the PWT, liaising with the organization they represent (if applicable) to bring forward advice, issues or comments from their organization and to return information and results to the organization from the SAG.
d. Ensure that the results of SAG discussions are accurately recorded in the meeting records, or in any additional documents that the SAG or the PWT may determine are needed.
e. When providing advice or recommendations to ensure effective communication with the public and stakeholders.
f. Provide active support for final Council approval.
g. Serve as an ongoing champion for NEER and CEP implementation.
h. Attend all SAG meetings whenever possible.

B. Processes

1. Membership

a. The Town of Newmarket will invite members of the community to participate on the SAG.
    a. Members will be selected from a variety of stakeholder groups and represent a balance of interests and range of perspectives in the community.
    b. Members will largely represent those stakeholder groups that were engaged in the initial development of the CEP.
    c. Public at Large representation will be identified through a call for submissions of interest managed by the Town of Newmarket.
b. The SAG will consist of up to 32 members.
c. SAG membership includes:

Sector	Up to
Energy Sector	3
Building & Renovation Industry	3
Municipal and Regional Planning	2
Development Industry	2
Large Energy Users (public & private)	2
Property Owners (commercial & non-profit)	3
Educational Institutions	2
Utilities	4
Economic Development	3
Environmental Organization	3
Municipal Council	1
Other	2
Community-at-large	2
Total	**32**

d. SAG member core competencies include:

Core Competency	Description
Collaborative Leader	Has demonstrated personal and/or professional leadership in multi-stakeholder efforts by building consensus and drawing people into a process of change. Has an ability to maintain and strengthen connections to effect action.
Communicator	Able to share ideas and describe what is already known and what is being discovered to diverse audiences.

Community Translator	Understands the different language used by stakeholders and serves as a bridge between the various communities and groups with an interest in the initiative.
Lifelong Learner	Desire to deepen understanding of complex social and economic issues that take complex solutions.
Politically Astute	Broad non-partisan understanding of political and social issues influencing the public policy environment.
Strategic	Seeks continuous improvement and is a future thinker. Understands the lay of the land and can work within it.
Practical	Can manage the details and get things done on time.

e. SAG membership is voluntary.
f. It is required that SAG members understand and agree to the terms and conditions outlined in this Charter.

2. Town Liaison

a. The Town of Newmarket sponsor for the SAG is the Planning & Building Department.

3. Meetings

a. A minimum of five (5) SAG meetings are anticipated during the Business Casening process.
b. Members are expected to attend all five (5) SAG meetings.
c. Meetings are expected to be two to three hours in length.
d. Members are expected to come fully prepared to meetings.
e. Members are encouraged to participate in other engagement activities, as appropriate.
f. Meetings are held in accessible locations.
g. Meeting are open to the public, as observers, with date, time and place of each meeting published on the Town's website.
h. A quorum of members is required to hold a SAG meeting.
i. PWT members attend SAG meetings as a resource.

4. Chair

a. SAG members select a chair at their first meeting.
b. Supported by the PWT, the chair approves final meeting agendas, preside over meetings and coordinate the activities of the SAG.
c. The chair assists the SAG develop and approve meeting process rules and other procedures related to committee effectiveness, as required.
d. The chair is the spokesperson for the SAG.

5. Decision-making

a. The SAG strives to operate in a consensus mode where participants openly discuss views and opinions and seek common ground.
b. If there is an unresolvable lack of consensus, decisions are made by a simple majority vote.

6. Minutes, Documentation and Administration

a. A minute-taker will be provided by the PWT.
b. Minutes are circulated to the SAG members following each meeting for review and comment.
c. Minutes are approved at the following SAG meeting.

d. Minutes are made available to the public.
e. Administrative services for the SAG are the responsibility of the Town of Newmarket.

7. Term

a. The mandate of the SAG is completed upon Council's approval of the NEER Home Efficiency Business Case.
b. The SAG is charged with determining its ongoing role in supporting the implementation of NEER and the CEP.

Appendix 1 – Project Working Team

The Stakeholder Advisory Group will be supported by the PWT.

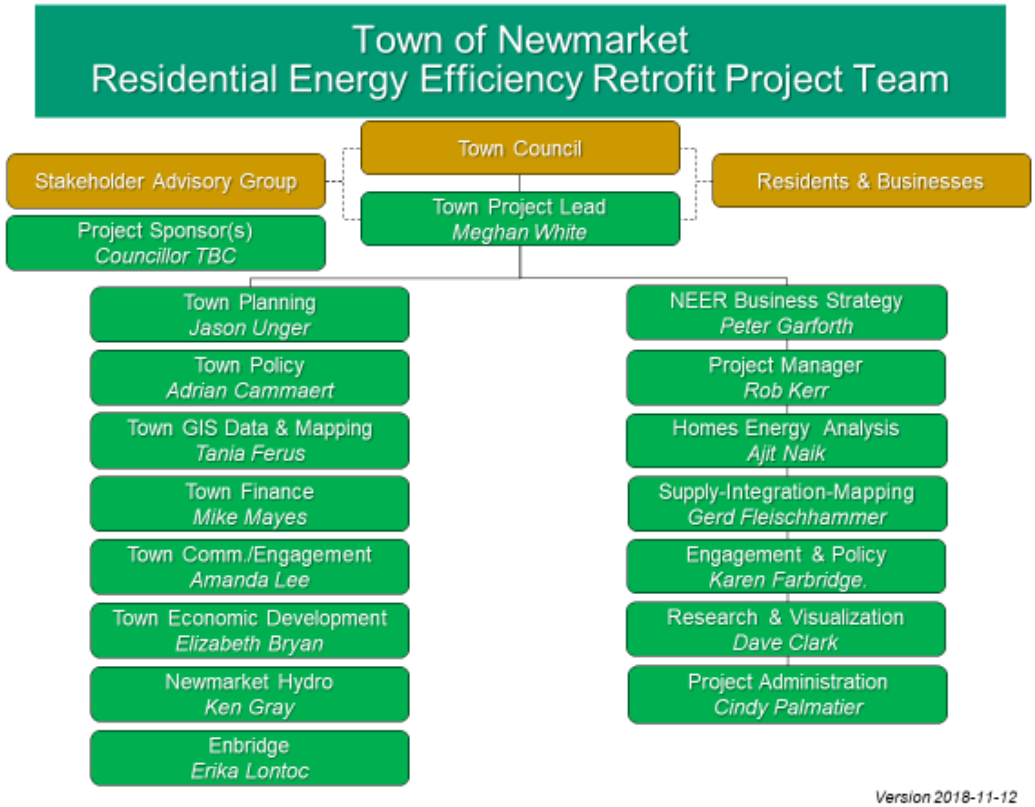
The experience of GIL/Sheridan in previous integrated energy planning efforts has shown that a collaborative, integrated team structure between the Town and the Consulting team is an essential prerequisite for a fully supported Plan, leading to successful implementation.

The PWT is a representation of this collaborative approach. The members of the PWT consist of GIL/Sheridan team. In addition, the Town and Utility Members are nominated by the Town's Project Manager in collaboration with the project management of the GIL/Sheridan team. The current make-up of the PWT is shown in Figure 1 below.

The expectation that the core Project Working Team (shown in green in Figure 1) would work collaboratively throughout the project. This core team would also work closely with the project's Strategic Advisory Group (SAG), as directed by the Town Project Manager.

The PWT will be expected to attend, at a minimum, the currently planned 5 Milestone meetings as described in the project timeline. Each meeting typically runs for 3 hours. The project is expected to run from August 2018 to September 2019.

Between meetings, PWT members are expected to provide data, information and general feedback on the progress of the project and the deliverables at each Milestone.



Appendix D: Project Working Team (PWT)

Newmarket Energy Efficiency Retrofit (NEER)
Project Working Team

Name	Title	Project Role
Adir Glikson	Community Energy Plan Intern, Town of Newmarket	Project Support
Adrian Cammaert	Senior Policy Planner, Town of Newmarket	Town Policy
Ajit Naik	Energy & Building Systems Engineer, Baumann Consulting	Home Energy Analysis
Amanda Lee	Communications Coordinator, Town of Newmarket	Town Communications and Engagement
Dave Clark	Project Officer, Sheridan College	Research and Visualization
Elizabeth Bryan	Business Development Specialist, Town of Newmarket	Town Economic Development
Gerd Fleischhammer	Principal, Ingenieurbüro Gerd Fleischhammer	Supply Integration Mapping
Jason Unger	Acting Director of Planning, Town of Newmarket	Town Planning
Justin Campsall	Seasonal Park Worker II, Town of Newmarket	Project Support
Karen Farbridge	President & Urban Connector, Karen Farbridge & Associates	Engagement and Policy
Ken Gray	Conservation Program Coordinator, Newmarket-Tay Power Distribution Ltd.	Newmarket Hydro
Meghan White	Planner, Town of Newmarket	Town Project Lead
Mike Mayes	Director of Financial Services, Town of Newmarket	Town Finance
Peter Garforth	Strategic Energy Planning Consultant & Principal at Garforth International llc.	NEER Business Strategy
Peter Noehammer	Commissioner of Development & Infrastructure Services, Town of Newmarket	Senior Town Management Liaison
Rick Nethery	Director of Planning & Building Services, Town of Newmarket	Town Management Liaison
Rob Kerr	President, Robert J. Kerr & Associates	Project Manager
Tania Ferus	GIS Technician, Town of Newmarket	Town GIS Data and Mapping

Appendix E: Stakeholder Engagement Summary

NEER Engagement Timeline

Engagement Piece	Date	Persons Involved	Engagement Description
Stakeholder Advisory Group (SAG) Meeting #1 (Municipal Office)	November 29, 2018	• NEER Project Working Team (PWT) • SAG members • General public	The first meeting of a series of five which focused on introducing the NEER business case to its members. The meetings are open to the general public for observation.
SAG Meeting #2 (Municipal Office)	January 17, 2019	• NEER Project Working Team (PWT) • SAG members • General public	The second meeting of a series of five which reviewed the residential energy retrofit market. The meetings are open to the general public for observation.
Coffee with the CAO (Municipal Office)	February 1, 2019	• NEER PWT • Town municipal staff	Event held quarterly where municipal departments showcase new and progressing innovations that are unfolding within the organization (municipal staff only).
SAG Meeting #3 (Municipal Office)	March 19, 2019	• NEER PWT • SAG members • General public	The third meeting of a series of five which analyzed different business model options and reviewed project engagement deliverables. The meetings are open to the general public for observation.
Newmarket Chamber of Commerce Home and Lifestyle Show (Ray Twinney Complex)	March 29, 2019 – March 31, 2019	• NEER PWT • Volunteers (SAG members & Windfall Ecology Centre staff) • General public	Event held annually showcasing local businesses and contractors from a wide variety of fields including windows, insulation, legal, roofing, plumbing and more.
Newmarket Community Open House (Newmarket Municipal Office)	April 3, 2019	• NEER PWT • Municipal staff • General public	Event held annually where municipal departments showcase new and progressing innovations that are unfolding within the organization to the general public.

Local Improvement Charge (LIC) Workshop (City of Vaughan City Hall)	April 4, 2019	• NEER PWT • Municipal staff from neighbouring cities • Industry experts	Workshop organized by the City of Vaughan, and affiliated consultants, designed as a brainstorming session to predict possible risks affiliated with LICs and how to mitigate them.
Smart City Council Meeting (Newmarket Chamber of Commerce)	April 18, 2019	• NEER PWT • Current/past municipal staff • General public	A committee composed of advocates as well as past/current municipal staff gathered together to brainstorm implementation strategies for smart technology solutions across the community.
Climate Change Workshop	April 23, 2019	• NEER PWT • Municipal staff	A workshop put on by York Region on their Climate Change Action Plan. It was a workshop to get the community's input on climate change action and plans that the Region should undertake.
Homeowner Focus Group (Municipal Office)	June 6, 2019	• NEER PWT • General public	This workshop gathered 15 Newmarket residents to participate in an open-ended and interactive discussion relating to the feasibility of the business case.
SAG Meeting #4 (Municipal Office)	June 25, 2019	• NEER PWT • SAG Members • General public	The fourth meeting of a series of five which reviewed the draft NEER business case and further engagement deliverables. The meetings are open to the general public for observation.
Contractor Focus Group (Municipal Office)	June 25, 2019	• NEER PWT • Local companies in the renovation industry	This workshop gathered local companies in the renovation in the industry for an open-ended and interactive discussion relating to the feasibility of the business.

Senior Leadership Team (SLT) Meeting #1
(Municipal Office)
	July 15, 2019	• NEER PWT
		• Senior Leadership Team (SLT)
		  ○ CAO
		  ○ Commissioners
			A team composed of Newmarket's CAO and Commissioners gathered together to review ongoing projects within the Corporation. This meeting served as a progress update for NEER.

SAG Meeting #5 (Municipal Office)	August 13, 2019	• NEER PWT • SAG members • General public	The fifth meeting of a series of five which will finalize the NEER business case (approval). The meetings are open to the general public for observation.
SLT Meeting #2 (Municipal Office)	TBD	• NEER PWT • SLT	A team composed of Newmarket's CAO and Commissioners gathered together to review ongoing projects within the Corporation. This meeting will serve as a progress update since the last meeting.
Town Council Workshop (Municipal Office)	September 30, 2019	• NEER PWT • Town Council • SLT	This workshop will provide an in-depth examination of the business case to the Town Council. The Town Council will have the opportunity to ask questions and provide additional feedback.
Committee of the Whole (Municipal Office)	TBD	• NEER PWT • Town Council • SLT • General public?	A Committee of the Whole (CoW) meeting where the Town Council will decide on the next steps for NEER.

Appendix F: Summary of Business Case Assumptions

Newmarket
Home Efficiency
Business Case

Summary of Business Case Assumptions

Program/Business Design Parameter	Assumption	Additional commentary
Governance		
Program administrator	Municipal Services Corporation (MSC)	Owned by the Town of Newmarket as a subsidiary of Newmarket Hydro Holding Inc.
Corporate structure	For-profit	Operating with social goals
Program Scope		
Properties	Residential only	Initial target market detached, semi-detached, and town homes older than 20 years with multi-unit homes added in year 3.
Projects	Standardized energy efficiency retrofit designed to achieve 30 to 50% energy savings	Aligned with CEP goal
Measures	Energy and water efficiency only	Windows, weatherization, insulation, HVAC upgrades, lighting, water saving devices and comfort controls
Business Model		
Retrofit package	Standardized based on category of home	Twenty home categories based on type of home (detached, semi-detached and townhouse, and multi-unit low-rise and mid-rise) and age of home (post 2012, 1998-2011, 1975-1997 and pre-1975)[1].
Retrofit pricing	Fixed index per specific area ($ per m^2) based on home category to minimize transaction costs and complexity	Based on energy modelling for 20 home category building archetypes
Market penetration	Maximum uptake in any home category is 80%	Aligned with CEP Goal to retrofit 80% of Newmarket homes existing in 2017 by 2042
Market penetration rate	4% of detached, semi-detached and town homes retrofitted annually	Detached, semi-detached, and town homes will be retrofitted when they are 20-years or older. Multi-unit homes in

[1] Age ranges are determined by the Ontario Building Code.

	3% of multi-unit homes retrofitted annually	the same age category will be retrofitted 2 years later.
Annual retrofits	170 to 1140	Entity achieves 25% of the targeted retrofit in 2021, 50% in 2022, 75% in 2023 and hits targeted rates by 2024.
Retrofit cost	$25,000 to $30,000	For a standard 175 m^2 (1884 ft^2) home
Term of LIC loans	20 years	Homeowner could use own funds or repay loan at any time without penalty
Year retrofits completed	2052	
Year financing completed	2061	
Retrofit cost structure	33% savings over market norm	Reduced material, labour, general & administrative, marketing, sales and financing costs
Contractor margin	21%	Increase of 110% over market norm
Organization Structure and Costs		
Staffing	10 to 12	See Appendix F for a list of functions and salaries
Annual operating costs	$1.8 M until 2039	See Appendix F for operating cost assumptions.
Start-up working capital	$1,620,000	See Appendix F for P&L assumptions.
Financing		
Property-assessed financing	LIC	Offered by Town of Newmarket
Government and utility incentives	None assumed with one exception ($50 rebate for thermostat)	
Capitalization	Private-sector investors	$2.5M tranches with 20-year term
Annual return	4.25%	
Other		
Inflation	1% per year	2% in higher price case
Interest rates	3.5% per year	5% in higher price case
Corporate tax rate	26.5%	No tax optimization has been applied

Appendix G: Full Business Case

Newmarket

Community Energy Plan
Residential Energy Efficiency Retrofit
Business Case / Feasibility Study

Project Work Team
Draft Business Plan (SMS 3a)
June 6th, 2019
(Includes Post Meeting Updates July 15th)

Planning & Building Services
Planning Division
Town of Newmarket
395 Mulock Drive
PO Box 328, STN Main
Newmarket, ON, L3Y 4X7
www.newmarket.ca
planning@newmarket.ca

modern green forward-thinking inclusive community progressive creative urban smart innovative

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Community Energy Plan

Newmarket Residential Energy Efficiency Retrofit
Business Case / Feasibility Study

Breakthrough Energy Performance
Well Beyond the Ordinary

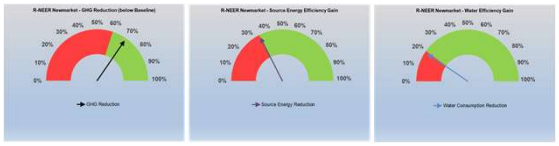
R-NEER Draft Business Plan – SMS 3a
Agenda 2019-06-06

- Administrative Items
- Recap
  - *Programme Goals*
  - *Baseline*
  - *Target homes*
  - *Retrofit packages and Options*
  - *Utility Pricing (adjusted assumptions)*
- Business Case
  - *Opportunity Size*
  - *Retrofit Pricing*
  - *Managing Pricing Risks*
  - *Regulatory Framework*
  - *Financing and Funds Flows*
  - *Single Retrofit Process Flow*

R-NEER Draft Business Plan – SMS 3a
Agenda 2019-06-06

- Business Case
  - *Organization Structure and Cost*
  - *Order to Delivery Structure*
  - *Contractor and Material Partners*
  - *Retrofit Performance Validation*
  - *Managing Performance Risks*
  - *Results for Entity & Town*
  - *Results for Typical Homeowner*
  - *Stakeholder Benefits*
- Discussion
  - *Key Assumptions*
  - *Entity ownership options*
  - *Town dividend*
  - *Treatment of options*
  - *Treatment of Incentives*
  - *Communication*
  - *Other…..*

R-NEER Business Case
Summary Performance



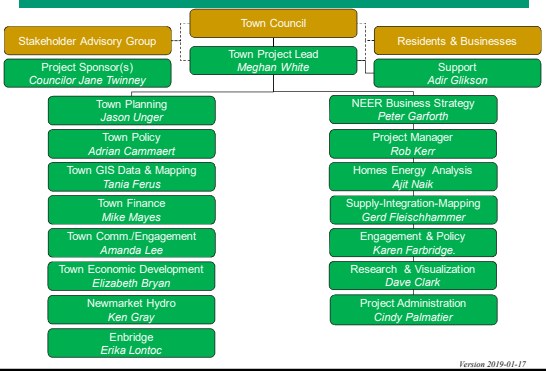
- Meets goals aligned with overall CEP targets
- Total cost saving between $390M & $620M
- Creates valuable Municipal Services Company
- Multiple homeowner, contractor and material partners benefits

Credible Starting Point for Due Diligence

Residential Energy Efficiency Retrofit Business Plan

Project Working Team

Town of Newmarket
Residential Energy Efficiency Retrofit Project Team



Version 2019-01-17

Residential Energy Efficiency Retrofit Business Plan

Data Edition Level

Garforth International llc
Energy Productivity Solutions

R-NEER PWT Draft Business Plan
Newmarket, Ontario, June 6th, 2019

Newmarket
Home Efficiency
Business Case

R-NEER SMS3a Draft Plan 190606
Milestone Documentation

- Data tools' versions used for the SMS Review are noted for future tracking purposes
- Integration Workbook

190726_NEER_Newmarket_Integration_Workbook_rev2_127_NEER

Input Spreadsheet – Energy Demand

190112_NEER_Newmarket_Modelling_Input_Efficiency_AN_v7

Reminders

1. *Active versions of the data tools are not a project deliverable*
2. *Minor updates and adjustments are normal throughout the project so care should be exercised in selecting material for future meetings.*

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Newmarket
Home Efficiency
Business Case

Residential Energy Efficiency Retrofit Business Plan

Process & Timeline

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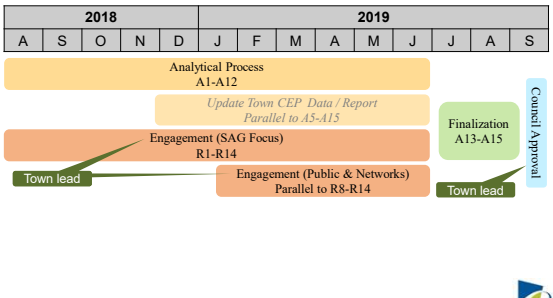
R-NEER PWT Draft Business Plan
Newmarket, Ontario, June 6th, 2019

Newmarket
Home Efficiency
Business Case

R-NEER
Process & Timing Overview (190606)



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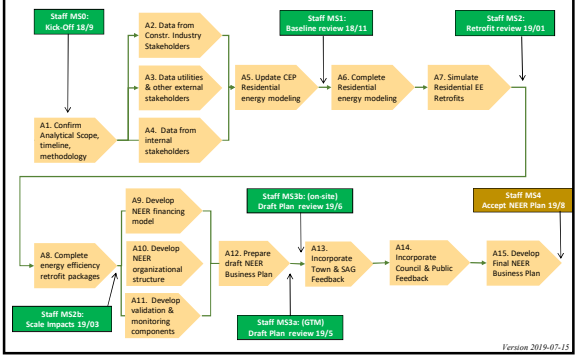
Informal NEER Project Start August 2018

Newmarket
Home Efficiency
Business Case

R-NEER Business Case
Analytical Process Timing (190715 status)



Version 2019-07-15

Residential Energy Efficiency Retrofit Business Plan

Business Case Goals

Newmarket Community Energy Plan
Goals

Newmarket

- Economic Development
- Energy Generation & Distribution
- Behaviour Change & Education
- Energy Efficiency of Buildings
- Land Use & Growth Planning
- Transportation Efficiency

Newmarket MEP
Summary of Strategies

Newmarket

- Strategy 1a: Residential Efficiency
- Strategy 1b: Commercial/Institutional Efficiency
- Strategy 1c: Industrial Efficiency
- Strategy 1d: Transportation Efficiency
- Strategy 2: District Energy
- Strategy 3: Solar PV

Meet CEP Goals

Residential Efficiency
2031 Efficient Case – Existing Homes

Newmarket

- Targets
  - Deep retrofit of 80% of existing homes
  - Efficiency gain of 30% & 50% depending on age/type
  - Average 1,500 retrofits/year
- Strategy
  - Create Entity to deliver retrofits standardized by property age & type
  - Team with local contractors, material suppliers and investors
  - Use LIC and standardized pricing approaches to create scale

Essential to Achieve Scale

R-NEER Programme Goals
Contribution to CEP Targets

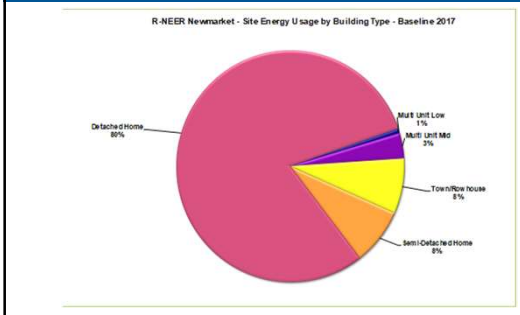
- Existing homes will meet or exceed energy and climates performance levels necessary to support Community Energy Plan Targets
- By 2042 existing homes in Newmarket will be:
  - *35% more source energy efficient*
  - *60% less carbon intensive*
  - *20% more water efficient*
- Homeowners' utility cost less that retrofit cost
- Investors receive attractive returns
- Contractors gain volume and margins
- Town Corporation exposed to no unacceptable financial risks

Preliminary Indication That All Could be Met

Residential Energy Efficiency Retrofit Business Plan

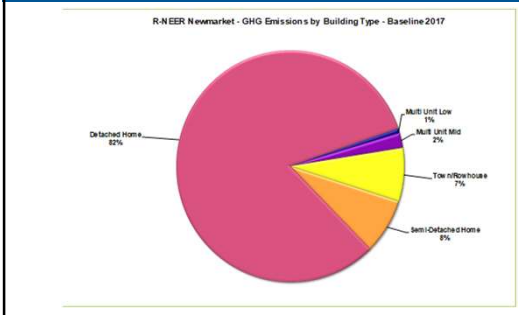
Baseline – Base Case Recap

2017 Residential Baseline
Site Energy – Type – 3.0M GJ



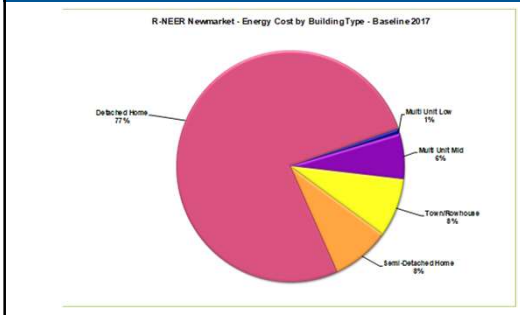
Detached Homes ~ 80%

2017 Residential Baseline
GHG – Type – 126,000 Tonnes



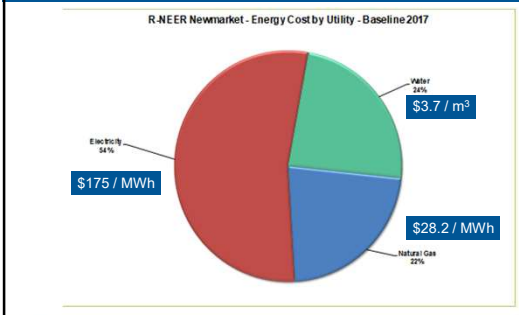
Detached Homes ~ 80%

2017 Residential Baseline
Utility Cost – Type – $74M



Detached Homes > 75%

2017 Residential Baseline
Utility Cost – Utility – $74M



$74M to Between $151M and $258M in 2042

2017 Residential Baseline
Summary of key findings

- The residential sector consumed 4.3 million GJ of energy emitting 126,000 tonnes of GHG in 2017
- 1.3 million GJ of that energy is consumed prior to reaching the consumer (conversion losses)
- Homeowners and tenants paid $74 million for this energy
- Costs are expected to increase to between $151 million & $258 million in 2042
- Most of these energy dollars leave the community

Note: Updated 2019-01-17

Residential Energy Efficiency Retrofit Business Plan

Target Market

NEER Business Case
Target Markets

- Potential
  - *All existing Homes in 2017*
- Prioritization - Type
  - *Detached Homes - Highest*
  - *Semi-Detached Homes - High*
  - *Town/Rowhouse - Medium*
  - *Other - Lower*
- Prioritization – Age
  - *Older to newer*
  - *Prior to 2012 OBC change*
- Prioritisation – Ownership
  - *Owner occupier – Highest*
  - *Housing Associations – High*
  - *Landlords - Lower*

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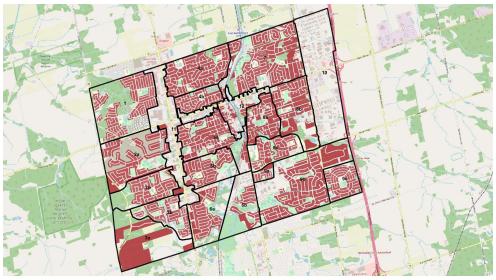
Minimize Transaction Complexity

Newmarket Home Efficiency Business Case

Newmarket Residential Sector 2017
Single Units (All) – 24,800 / 4.68 M m²



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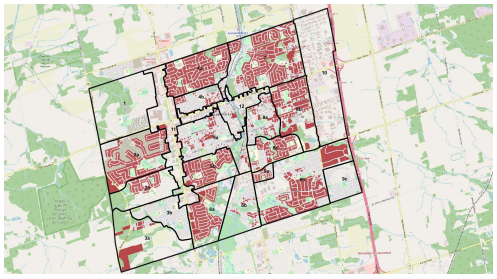
Highest Priority Programme Targets

Newmarket Home Efficiency Business Case

Newmarket Residential Sector 2017
Single Units >20 yrs old – 13,000 / 2.43 M m²



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First High-Priority Customers

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Retrofit Packages

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R-NEER PWT Draft Business Plan
Newmarket, Ontario, June 6th, 2019

Newmarket Home Efficiency Business Case

Single Units (Detached, Semi, Town)
Archetype Characteristics - Baseline

Type: Single Units with, attic roof, wood-frame walls, slab-on-grade foundation, and metal-frame windows. Served by furnace and split AC units.
 # Floors: 2
Area: 223 SM
Window-to-Wall Ratio: 15%

	Pre-1975	1975-1997	1998-2011	Post-2011
Window Properties	U-2.98 [SI]	U-2.27 [SI]	U-1.99 [SI]	U-1.40 [SI]
Wall Properties	R-1.06 [SI]	R-1.49 [SI]	R-3.03 [SI]	R-4.24[SI]
Roof Properties	R-1.04 [SI]	R-2.01 [SI]	R-5.24 [SI]	R-6.15 [SI]
Heating Efficiency	78%	78%	80%	84%
Cooling Efficiency	3.13 COP	3.13 COP	3.97 COP	4.10 COP
Lighting Power Density	3.88 W/SM	3.88 W/SM	2.57 W/SM	2.57 W/SM
Equipment Power Density	6.53 W/SM	6.53 W/SM	6.53 W/SM	3.97 W/SM
Infiltration	6.5 ACH50	5.0 ACH50	4.0 ACH50	3.5 ACH50

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Note: Baumann Consulting Inc Proprietary Information

Newmarket Home Efficiency Business Case

Retrofit Core Package
Standard Package by Home Type & Age

- Windows
  - *Replace windows to target efficiency level*
- Weatherization
  - *Weather-strip all doors, windows and other openings*
- Attic insulation
  - *Upgrade to target R-Value with "batts" or "snow"*
- Other insulation wherever feasible
  - *Allocation for high-impact measures*
- HVAC upgrades
  - *Replace AC / Furnace / Water Heater to target efficiency levels*
  - *Limited pipe and duct insulation*
- Lighting / Other Electricity
  - *100% LED re-lamping*
  - *Allocation for Smart Strips*
  - *Occupancy sensors*
- Water / Hot Water
  - *Low-Flow faucet regulators & shower heads*
  - *WC flow regulators*
- Comfort Controls
  - *Install Smart Thermostat assuming utility rebate*

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"Easy to Buy – Easy to Sell" (Priced in $ / m²)

Newmarket Home Efficiency Business Case

Single Units (Detached, Semi, Town)
Archetype Characteristics - Retrofitted

Type: Single Units with, attic roof, wood-frame walls, basement, and metal-frame windows. Served by furnace and split AC units.
 # Floors: 2
Area: 223 SM
Window-to-Wall Ratio: 15%

	Pre-1975	1975-1997	1998-2011	Post-2011
Window Properties	U-1.0 [SI]	U-1.0 [SI]	U-1.0 [SI]	U-1.0 [SI]
Wall Properties	R-1.23 [SI]	R-1.63 [SI]	R-3.07 [SI]	R-4.24[SI]
Roof Properties	R-6.10 [SI]	R-6.10 [SI]	R-6.10 [SI]	R-6.15 [SI]
Heating Efficiency	96%	96%	96%	96%
Cooling Efficiency	4.10 COP	4.10 COP	4.10 COP	4.10 COP
Lighting Power Density	1.5 W/SM	1.5 W/SM	1.5 W/SM	1.5 W/SM
Equipment Power Density	4.97 W/SM	4.97 W/SM	6.53 W/SM	3.05 W/SM
Infiltration	4.6 ACH50	3.5 ACH50	2.8 ACH50	2.5 ACH50
Retrofit Cost Index	**216 $/m2**	**211 $/m2**	**186 $/m2**	**143 $/m2**

Cost Indexes based on current market practices

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Energy Productivity Solutions

Note: Baumann Consulting Inc Proprietary Information

Newmarket Home Efficiency Business Case

Retrofit Core Package
Possible Option Packages

- Solar PV
- Solar Hot Water
- Car charging port
- Reroofing ?
- Heat pumps?
- Geothermal?
- Energy Management?
- Other….

- Notes:
  - *Not yet included in business case*
  - *R-NEER can channel incentives*

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"Easy to Buy – Easy to Sell"

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Utility Pricing

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Energy Productivity Solutions

R-NEER PWT Draft Business Plan
Newmarket, Ontario, June 6th, 2019

Newmarket Home Efficiency Business Case

R-NEER Business Case
Residential Utility Pricing - General

- First financial benefits from R-NEER retrofits to homeowners are in 2021
- Estimated future utilities cost range drives potential homeowner cost benefit
- Business Case has Lower & Higher price outlooks for natural gas, water & electricity
- Current outlooks are built from 2017 Baseline
- Confidence levels in current outlook
  - *Natural Gas – Medium to High*
  - *Water - Medium*
  - *Electricity – Medium*
- Electricity is more than half baseline cost

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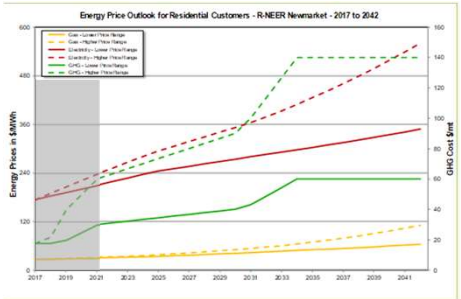
Need to Revisit Electricity Assumptions

Newmarket Home Efficiency Business Case

Utility Price Evolution - Energy
NEER Lower & Higher Outlooks



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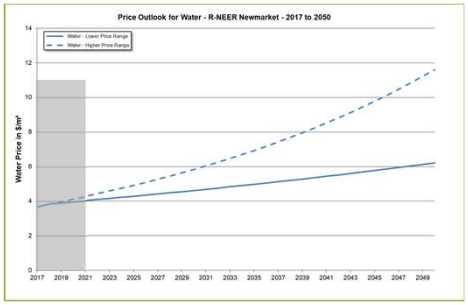
Energy Productivity Solutions

Electricity (Low) in 2021 ~ $210/MWh

Note: Updated 2019-06-06

Newmarket Home Efficiency Business Case

Utility Price Evolution - Water
NEER Lower & Higher Outlooks



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Energy Productivity Solutions

Note: Updated 2019-06-06

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Opportunity Size

Market Penetration
Operational Targets

- First targets are older Single Units
- 4% of these renovated annually
- After 2 years target older Multi Units
- 3% of these renovated annually
- As homes become 20 years or older, they are targeted
- Maximum uptake in any category is 80%
- Start ramp (% of yearly rate):
  - *2021: 25%*
  - *2022: 50%*
  - *2023: 75%*
  - *2024: 100%*

Home Category	Start Year	Yearly Rate	End Rate
Pre-1975 Multi Unit Low	2025	3.0%	80%
Pre-1975 Multi Unit Mid	2025	3.0%	80%
Pre-1975 Town/Rowhouse	2021	4.0%	80%
Pre-1975 Semi-Detached Home	2021	4.0%	80%
Pre-1975 Detached Home	2021	4.0%	80%
1975-1997 Multi Unit Low	2025	3.0%	80%
1975-1997 Multi Unit Mid	2025	3.0%	80%
1975-1997 Town/Rowhouse	2021	4.0%	80%
1975-1997 Semi-Detached Home	2021	4.0%	80%
1975-1997 Detached Home	2021	4.0%	80%
1998-2011 Multi Unit Low	2027	3.0%	80%
1998-2011 Multi Unit Mid	2027	3.0%	80%
1998-2011 Town/Rowhouse	2025	4.0%	80%
1998-2011 Semi-Detached Home	2025	4.0%	80%
1998-2011 Detached Home	2025	4.0%	80%
POST-2012 Multi Unit Low	2035	3.0%	80%
POST-2012 Multi Unit Mid	2035	3.0%	80%
POST-2012 Town/Rowhouse	2033	4.0%	80%
POST-2012 Semi-Detached Home	2033	4.0%	80%
POST-2012 Detached Home	2033	4.0%	80%

Includes Today's Newer Homes in Future

R-NEER Opportunity
Overview

	2021	2022	2023	2024	2025	2026	2039	2042
Total M	$4.4	$8.8	$13.3	$17.9	$23.8	$24.0	$30.8	$20.9

- Annual retrofits from 170 to 1,140 per year
- Local contractor employment ~33% of value
- High material volumes – most Canadian
- Annual energy cost reduction between $43M and $77M by 2042

Bringing Energy Value Back to the Town

Residential Energy Efficiency Retrofit Business Plan

Retrofit Pricing
&
Managing Pricing Risks

R-NEER PWT Draft Business Plan
Newmarket, Ontario, June 6th, 2019

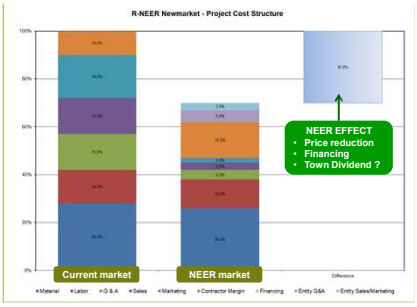
Retrofit Pricing Approach
Minimize Transaction Cost & Complexity

- Pricing Approach
  - *Core Package defined by type and age of home*
  - *Current market contractor cost estimated in $/m2*
  - *Scale productivity factor applied*
  - *R-NEER entity cost coverage added to index*
  - *Price calculated based on specific home area*
- Benefits
  - *Easy to buy*
  - *Drives high volumes*
  - *Easy to sell by community groups*
  - *Avoids site evaluation costs/activity prior to sale*
- Possible Risks
  - *Gap between estimates and actuals*
  - *Conditions needed for specific EEM exclusions*
  - *Inequitable impact on Property Taxes*
  - *Achieving benefits of scale*

Trust the "Law of Large Numbers"

*See Slide Notes

R-NEER Market Transformation
Typical Retrofit Initial Cost Structure



About $26,500 for 170m² SFH

NEER Market – Typical Home Retrofit
Impact of Scale

Item	Market Norm	NEER gain	NEER	Comments
Materials	28%	10%	26%	• Volume prices for higher-performance materials *("Better stuff – Better price!")* • Negotiating "carrot" includes R-XEER proliferation - initially to Brampton, Oakville and Windsor • Preference for material partners' commitment to establish local facilities
Labour	14%	15%	12%	• Multiple retrofits on similar homes - geographically clustered • Minimized teams' down time • Complete skills structures & minimal sub-contracting & higher % of apprentices
Contractor G&A	15%	75%	4%	• Simplified transaction ordering and billing through standardization • Single ordering/payment entity - NEER • Simplified personnel management
Contractor Selling Expense	15%	80%	3%	• Detailed proposals eliminated through standardization • NEER handles necessary permitting • Contractor promotes of R-NEER programme
Contractor Marketing Expense	18%	90%	2%	• NEER responsible to promote R-NEER programme • Marketing to Community and to NEER to maintain "approved contractor" status
Contractor Profit	***10%***	***50%***	***15%***	• Improved margin for Entity "approved contractors"
NEER G&A	0%	NA	5%	• Based estimates of entity mature organization structure
NEER Sales & Marketing	0%	NA	3%	• Assumes mature selling expense of less than $1000 per retrofit • Standardized retrofit and pricing greatly simplifies selling and closing process • Marketing simplified using existing Town and other information platforms
Retrofit Price	**100%**	**30%**	**70%**	• Price before financing

Retrofit Pricing Approach
Managing Risks

- Gap between estimates and actuals
  - *Regular monitoring of completed projects*
  - *Adjust pricing gap or deviant costs*
- Specific EEM exclusions
  - *Allow exclusion if EEM meets NEER levels*
  - *Standard index reduction per EEM*
- Achieving benefits of scale
  - *Commit to robust R-NEER Organization*
  - *Negotiated conditions with contractors*
  - *Negotiated material contracts with key suppliers*
- Inequitable impact on Property Taxes
  - *Accept as reality of market*
  - *Reserve funds for possible mitigation*

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Plan and Negotiate for Success

Newmarket Home Efficiency Business Case

NEER Market –Home Retrofits
Mature Scale Indicators

- Initial Market
  - *13,000 Older Single Unit Homes*
  - *44% of total homes*
  - *More 50% of energy impacts*
  - *After 2025 start on older Multi Unit Homes and newer Single Unit homes*
  - *After 2033 start on newest homes as they get to 20 years old*
- Target Volumes
  - *Older Single Unit Homes ~ 10 / week*
  - *Programme Average ~ 22 / week*

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About $26,500 for Typical Detached Home

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Regulatory Framework

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Newmarket, Ontario, June 6th, 2019

Newmarket Home Efficiency Business Case

R- NEER Regulatory Basis
Local Improvement Charge

- Principle
  - *R-NEER operates in current Ontario Regulation*
- Role of Local Improvement Charge (LIC)
  - *Ontario Municipal Act 2001 allows financing local improvement project via LIC*
  - *LIC is collected via a Property Tax Assessment*
  - *Ontario Regulation 586/06 extends LIC to energy conservation, renewable energy and water conservation projects on private residential or non-residential property*
  - *R-NEER retrofits will be funded using LIC mechanism*
  - *Retrofit added to property valuation increases property taxes through 20-year financing of retrofit*
  - *Town retains collection rights as senior creditor*

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Private Investment as Public Good

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Financing & Funds Flow

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Newmarket, Ontario, June 6th, 2019

Newmarket Home Efficiency Business Case

R-NEER Financing
Sources & Uses of Funds

- Sources of Funds
  - *Loans from Lender Partners*
  - *Customer payments via property taxes*
  - *Interest on unused loans*
  - *Initial working capital to form entity*
  - *Public incentives (assumed zero in current analysis)*
- Uses of Funds
  - *Lender interest payments*
  - *Lender capital repayments*
  - *Contractor payments*
  - *Entity operational expenses*
  - *Community Group sponsorship*

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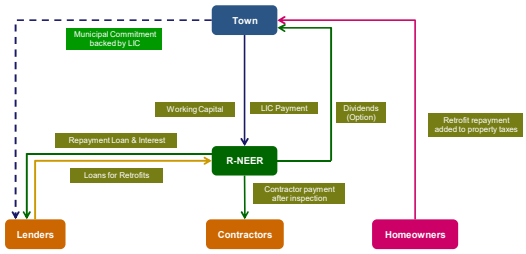
Minimize Town Budget and Risk Exposure

Newmarket Home Efficiency Business Case

R-NEER Funds Flow



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Strategic Town Commitment to CEP

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Transaction Flow

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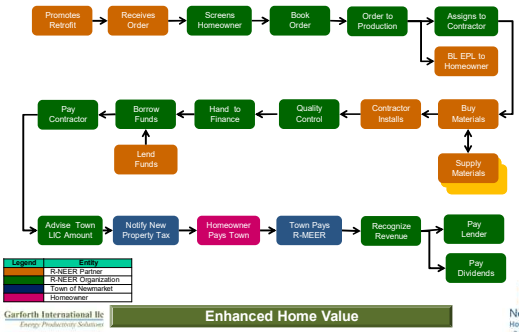
Newmarket, Ontario, June 6th, 2019

Newmarket Home Efficiency Business Case

R-NEER Business Model
Single Retrofit Transaction



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Enhanced Home Value

Newmarket Home Efficiency Business Case

R-NEER Business Model
Transaction Summary

- Retrofits qualify for LIC treatment
- R-NEER Entity promotes retrofit to homeowners
- Homeowner orders from Entity using standardized pricing
- Entity screens and approves homeowner
- Entity assigns order to partner contractor
- Contractor installs retrofit
- Entity approves installation quality
- Entity pays contractor using standardized pricing
- Entity borrows at small premium to 20-yr bond rate
- Entity lends at same rate
- Homeowner pays via LIC increment for 20 years
- Town pays Entity retrofit portion of property tax
- Retrofit obligation survives change of ownership

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Enhanced Home Value

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Organization Structure & Cost

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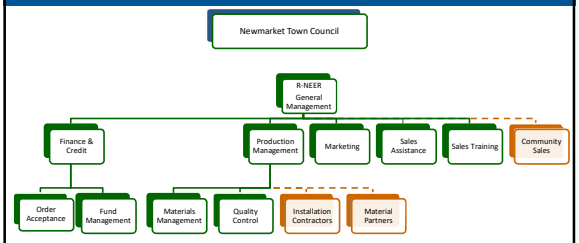
Newmarket Home Efficiency Business Case

R-NEER Organization
Overview



- Municipal Services Corporation
- Organized to be scalable to NR-NEER
- Future potential to team with other communities

"Efficiency Utility"

R-NEER Organization Cost
Payroll Costs and Timing

Function	Headcount	Salary etc.
General Manager	1	$150K + 12% bonus
GM Assistant	1	$60K + 4%
Finance Manager	1	$115K + 12%
Finance Specialist	1 to 2	$75K + 6%; phased by retrofit volume
Sales Training	1	$50K + 5%; focus on Community Group training
Sales Assistance	1	$50K + 15%; focus on HP sales targets
Marketing Specialist	1	$80K + 6%
Production Manager	1	$120K + 12%; focus on contractors and QC
QC/Training Specialist	1 to 2	$55K +3%; phased by retrofit volume
Material Manager	1	$100K + 6%; focus on strategic selected suppliers

Payroll ~ $1.5M / year from 2020 to 2039

R-NEER Organization Costs
Other Costs, Indexes and Timing

Item	Assumption	
Legal costs	$50/sale	Costs associated with homeowner and contractor contracts
Marketing & Sponsorship costs	$100/sale	Publicity and Sales Partner Organization support costs (not salaries)
Rents	$20,000/year	Newmarket Energy Efficiency Centre
Travel & Miscellaneous	5%/payroll	Office supplies, utilities, travel etc.
Other Costs Increase	1.0% / year	
Salary Increase	1.0% / Year	
Social Security Overhead	26%/payroll	Average used for all salary ranges

Total ~ $1.6M / year from 2025 to 2039

R-NEER Structure
Promotion & Sales

- Community groups and engagement act as main sales channels
- R-NEER support with training and sales material
- Small amount of sponsorship funding is budgeted
- Consider outreach centre in high traffic location
- Responsible to receipt of *unscreened* order

High Community Engagement

R-NEER Structure & Roles
Order to Delivery

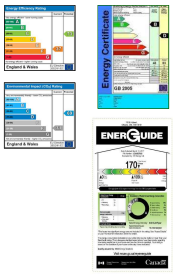
- Entity Order Handling
  - *Confirm homeowner credit risk*
  - *Conclude homeowner contract*
  - *Issue Baseline Energy Performance Label*
  - *Transfer Order to Production*
  - *Pay contractors*
- Entity Production Management
  - *Contractor Management*
    - *Contactor advice resource*
    - *Contractor order confirmation and scheduling*
    - *QC and final acceptance against standardized criteria*
  - *Material Management*
    - *Conclude agreements with partners for core material categories*
  - *Contractor Partners*
    - *Conclude agreements with 2 to 3 partner contractors*
- Contractor Partner Tasks
  - *Apply for any permits*
  - *Material procurement*
  - *Retrofit installation*

High Quality Work – Low Customer Risk

Residential Energy Efficiency Retrofit Business Plan

Retrofit Performance Validation
&
Managing Risks

Pre-Retrofit Performance
Baseline Energy Performance Labeling



- EPL is low-cost performance validation tool
- Utility release required from customer
- BL EPL issued by Entity from utility data
- Format probably some adaptation of NRCan Energuide
- EPL supports sale or rental value
- Engage Real-Estate agents in accelerating the process using the EPL as the "hook"

Basis for Market Driven Engagement

Post –Retrofit Performance
Risk Management

- Background
  - *Sales promotes average efficiency gain for home of same type*
  - *Assumes efficiency gain is ± one sigma (1σ / standard deviation) from median*
  - *Estimated homeowner cost saving based on average*
  - *R-NEER has no routine audit and M&V*
  - *A few customers will fall outside ±1σ*
- Managing Atypical Performance
  - *Manage atypical results as exceptions*
  - *Maintains simplicity and low transaction costs*
  - *Track deviations year on year to adjust sales arguments based on actual results in Newmarket*
  - *Maintain Transparency - Report programme performance to City, Lenders and Community*

Homeowner buys "Retrofit" not "Saving"

Post –Retrofit Performance
Managing Deviations

- Below Average
  - *Individual on-site visit to clarify issue*
  - *Counselling on energy use habits and practices*
  - *Keep provision account to rectify or enhance solution*
  - *Offer extended paid services in some circumstances*
  - *Standardized community communications process with explanations and examples of constructive follow up*
- Above Average
  - *Standardized community communications process with explanations and examples of higher performance*
  - *Avoid conflicts with clients who fall in the average range*

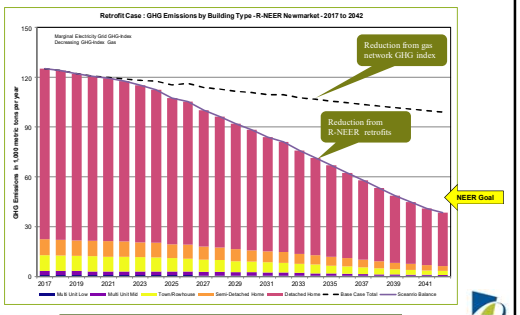
Above Average More Likely

Residential Energy Efficiency Retrofit Business Plan

Results – Energy & Emissions Balances

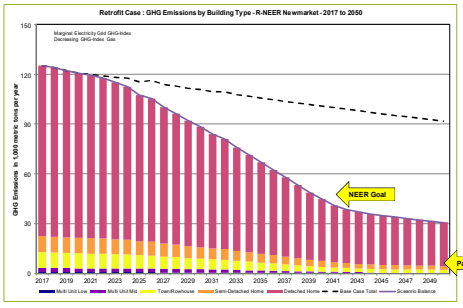
R-NEER PWT Draft Business Plan
Newmarket, Ontario, June 6th, 2019

2017-2042 Residential Retrofit Case
GHG Emissions - HomeType



Exceeds R-NEER Goal

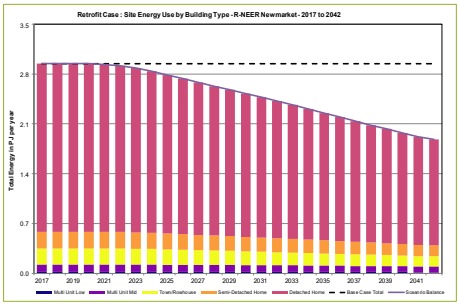
2017-2050 Residential Retrofit Case
GHG Emissions - HomeType



Exceeds R-NEER Goal

**Paris Goal is indicative estimate*

2017-2042 Residential Retrofit Case
Site Energy – Home Type



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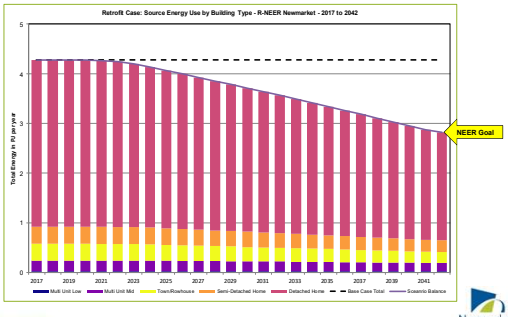
Acceleration Possible

Newmarket Home Efficiency Business Case

2017-2042 Residential Retrofit Case
Source Energy – Home Type



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Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Results – Cash Flows

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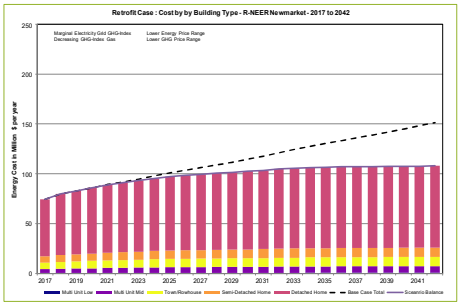
Newmarket Home Efficiency Business Case

2017-2042 Residential Retrofit Case
Cost Outlook – Home Type - Lower Price



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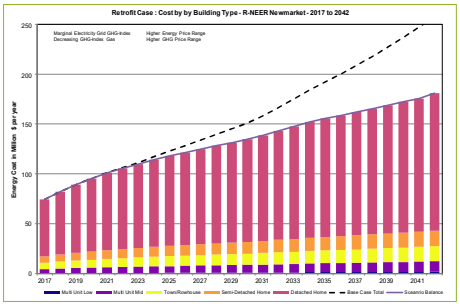
Cumulative Savings $390M by 2042

Newmarket Home Efficiency Business Case

2017-2042 Residential Retrofit Case
Cost Outlook – Home Type - Higher Price



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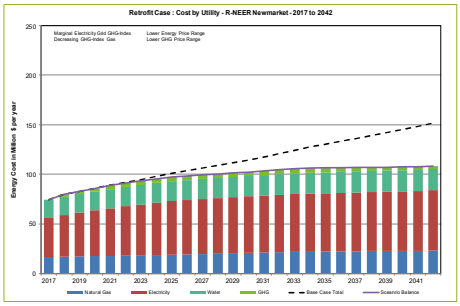
Cumulative Savings $620M by 2042

Newmarket Home Efficiency Business Case

2017-2042 Residential Retrofit Case
Cost Outlook - Utility - Lower Price



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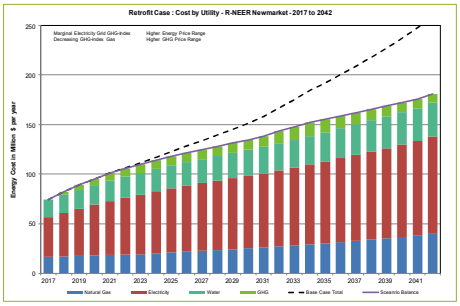
Cumulative Savings $390M by 2042

Newmarket Home Efficiency Business Case

2017-2042 Residential Retrofit Case
Cost Outlook - Utility - Higher Price



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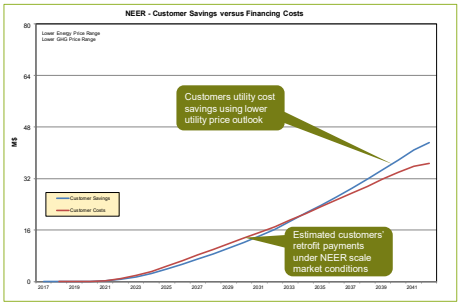
Cumulative Savings $620M by 2042

Newmarket Home Efficiency Business Case

R-NEER Programme Savings & Costs
Result – Lower Prices & Interest



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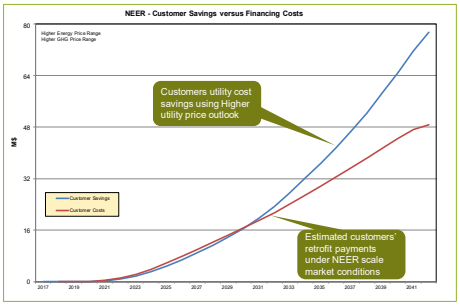
Approaching Cost Neutrality

Note: Interest rate 3.5%

Newmarket Home Efficiency Business Case

R-NEER Programme Savings & Costs
Result – Higher Prices & Interest



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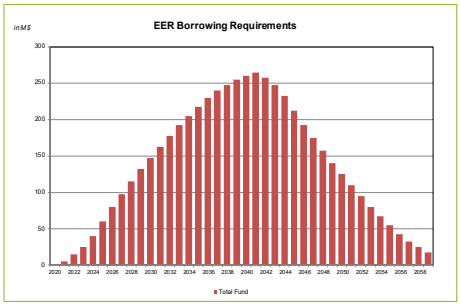
Clear Price Risk Avoidance

Note: Interest rate 5.0%

Newmarket Home Efficiency Business Case

R-NEER Programme
Net Borrowing Requirements



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Peak Net Borrowing ~ $265M in 2041

Newmarket Home Efficiency Business Case

R-NEER Entity Financial Summary
Profit / Retained Earnings

- Profit after Tax
  - *Entity taxed at 26.5%*
  - *Year 1: $(960k)*
  - *Year 2: $(630k)*
  - *Year 3: $(30k)*
  - *Year 4: $400k*
  - *~ $2M / year from Year 10 through 2041*
- Total Retained Earnings
  - *$ 37M – 2041*
  - *$ 48M – 2052*
  - *$ 44M - 2062*
- $60M Equity in 2042 at P/E Ratio of 20

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Potential Municipal Dividend

Newmarket Home Efficiency Business Case

CEP Strategy 1a - Residential Retrofit
Community Summary – Higher Prices

Item	Units	2042 R-NEER Plan Horizon	2059 Financing Complete
Electricity saved	GJ/yr	235,590	255,720
Gas saved	GJ/yr	828,270	881,900
Total Energy Saved	GJ/yr	1,063,860	1,137,620
GHG avoided	mt CO_{2e}/yr	86,740	99,640
Water	m^3/yr	930,560	1,039,300
Electricity cost reduction	$	251,335,000	1,044,052,000
Gas cost reduction	$	185,726,000	1,075,661,000
GHG cost reduction	$	115,381,000	393,779,000
Energy cost reduction	$	552,442,000	2,513,492,000
Water cost reduction	$	68,716,000	279,650,000
Homeowner payments	$	483,600,000	1,068,360,000
Net savings	$	137,558,000	1,724,782,000

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Newmarket Home Efficiency Business Case

CEP Strategy 1a - Residential Retrofit
Community Summary – Lower Prices

Item	Units	2042 R-NEER Plan Horizon	2059 Financing Complete
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Total Energy Saved	GJ/yr	1,063,860	1,137,620
GHG avoided	mt CO_{2e}/yr	86,740	99,640
Water	m^3/yr	930,560	1,039,300
Electricity cost reduction	$	173,756,000	580,975,000
Gas cost reduction	$	126,528,000	492,045,000
GHG cost reduction	$	41,335,000	127,280,000
Energy cost reduction	$	341,619,000	1,200,300,000
Water cost reduction	$	48,055,000	157,340,000
Homeowner payments	$	377,410,000	800,700,000
Net savings	$	12,264,000	556,940,000

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Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Results – Typical Homeowner

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Newmarket, Ontario, June 6th, 2019

Newmarket Home Efficiency Business Case

R-GEER Retrofit Content and Cost (2021)
Homeowner's Perspective

- Home
  - *Detached Home dating from 1975*
  - *Finished area of 170 square meters*
- Retrofit Costs
  - *$26,530 (priced at $156m²)*
  - *3.5% interest rate*
- Standard Retrofit Content
  - *Weather-stripping, windows, AC, furnace and water heater, attic insulation, LED Lighting, Smart Thermostat, Smart power strips,*
- Repayments & Savings
  - *LIC payment $1,900 per year for 20 years*
  - *Total payments $38,000*
  - *Total 20 year saving at least $45,800*

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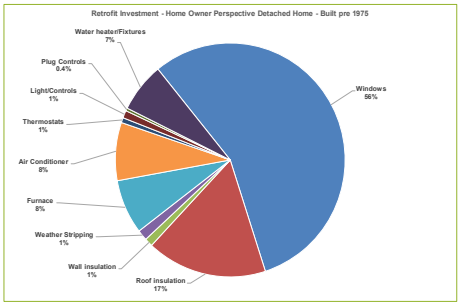
Easy to Buy – Easy to Pay

Newmarket Home Efficiency Business Case

*See Slide Notes

Retrofit - Content and Cost
Homeowner's Perspective



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Comprehensive Energy Retrofit for $26K

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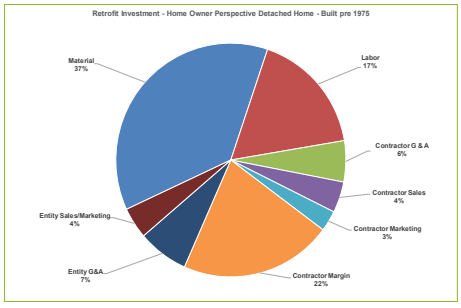
Retrofit – Use of Funds
Homeowner's Perspective



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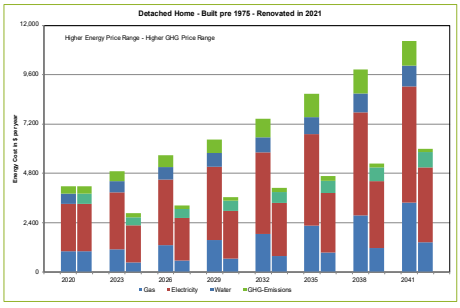
Majority in Local Economic Activity

Newmarket Home Efficiency Business Case

Retrofit – Before & After
Homeowner's Savings – Higher Utility Prices



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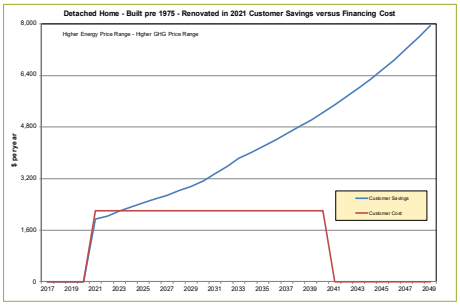
20 Year Saving Far Greater than Payments

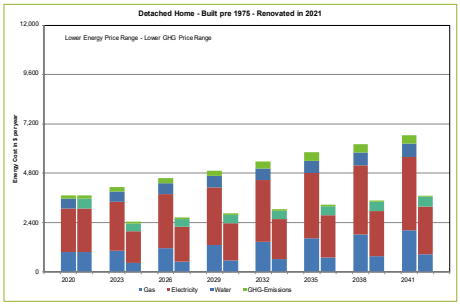
Newmarket Home Efficiency Business Case

Retrofit – Before & After
Homeowner's Savings – Higher Utility Prices



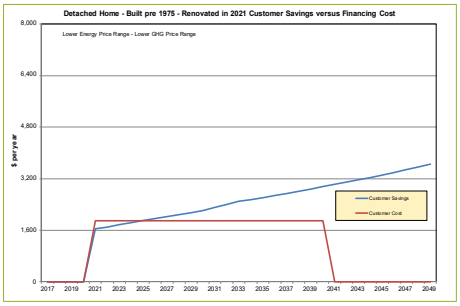
20 Year Saving Far Greater than Payments

Retrofit Example – Before & After
Homeowner's Savings – Lower Utility Prices



20 Year Savings Exceed Payments

Retrofit Example – Before & After
Homeowner's Savings – Lower Utility Prices



20 Year Savings Exceed Payments

Residential Energy Efficiency Retrofit Business Plan

Stakeholder Benefits

R-NEER PWT Draft Business Plan
Newmarket, Ontario, June 6th, 2019

R-NEER Stakeholder Benefits
Homeowner - Contractor

- Homeowner
  - *Reduced energy and maintenance costs*
  - *Increased property value*
  - *Increased comfort*
  - *Environmental satisfaction*
- Contractors
  - *High project volume*
  - *Minimal marketing expense*
  - *Higher margins*
  - *Reduced G&A*
  - *Growth – NR-NEER & other municipalities*

*See Slide Notes

R-NEER Stakeholder Benefits
Town / Community Groups

- Town of Newmarket
  - *Aligned with CEP goals*
  - *Valuable Municipal Services Company with growth potential*
  - *Energy saving spent in community*
  - *Local employment*
  - *Increased property values*
- Community Groups
  - *Neighbourhood revitalization*
  - *Support environmental mission*
  - *Potential funds for other social projects*
  - *Competitive spirit / cohesion*
  - *Youth employment as a public good*

*See Slide Notes

R-GEER Stakeholder Benefits
Utility / Province / Material Partners

- Gas and Electric Utilities
  - *Scale support of statutory efficiency targets*
  - *Reduces future capital requirements*
- Province
  - *Scale prototype for other communities to follow*
- Material Partners
  - *Volume material sales from R-NEER*
  - *Future sales potential from NR-NEER*
  - *100's of comparable cities in Ontario & beyond*
  - *Increased viability of higher performance products*

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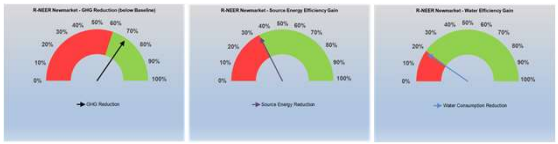
Newmarket Home Efficiency Business Case

R-NEER Business Case
Summary Performance



- Meets goals aligned with overall CEP targets
- Total cost saving between $390M & $620M
- Valuable new Municipal Services Company
- Multiple homeowner, contractor and material partners benefits

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Credible Starting Point for Due Diligence

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

SMS 3a Meeting Discussion Topics

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Newmarket, Ontario, June 6th, 2019

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R-NEER Draft Business Plan – SMS 3a
Discussion Topics - 1

- Validating key assumptions
  - *All assumptions were discussed and confirmed*
  - *Analytical tools allow most assumptions to be stress-tested*
- Timing
  - *Overall project timetable through Council Decision and Implementation start were confirmed*
- Entity ownership options
  - *The recommended model is for the Entity to be a Municipal Services Corporation with Town ownership*
  - *Minority strategic partnerships could be considered in future*
- Town Dividend
  - *No Town Dividend is assumed in the current Business Case*
  - *After year 4 of operation the Entity should be generating positive after-tax profits and a Dividend could be considered.*

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R-NEER Draft Business Plan – SMS 3a
Discussion Topics - 2

- Options
  - *Entity's delivery partnerships and logistics can be used to add options to the standard retrofit*
  - *Options would be consistent with the energy mission including EV charging stations, Solar thermal and PV, Energy Labelling etc.…*
- Incentives
  - *No incentives are assumed in the Business Case*
  - *All applicable utility and other incentives would be applied to the retrofit pricing*
- Communication
  - *Entity success will require effective community and homeowner marketing communications*
  - *Important to share experiences and successes*

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Newmarket Home Efficiency Business Case

Thank You

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BACK-UP

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Residential Energy Efficiency Retrofit Business Plan

Business Case Goals

R-NEER Business Plan Goals
Background - 1

- Homeowner Goals
  - *Enhanced property value*
  - *Reduced energy costs*
  - *Increased comfort*
- City Goals
  - *Meet CEP targets for existing homes*
    - *Energy use and cost*
    - *Greenhouse gas emissions*
  - *Support economic development*
  - *Provide high-quality employment*
  - *Minimal financial risks for City*
- Third-Party Investor Goals
  - *Acceptable returns*

Preliminary Indication That All Could be Met

R-NEER Business Plan Goals
Background - 2

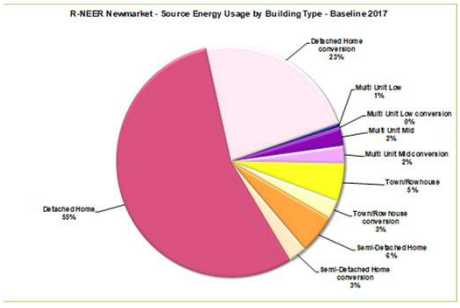
- Retrofit Contractor Goals
  - *High-volume predictable retrofit project flow*
  - *Higher margin than current remodeling market*
- Strategic Material Partner Goals
  - *New market development*
  - *Significant incremental sales volume*
  - *Reduced selling expense*
- Electricity and Gas Utility Goals
  - *Meet statutory incentive programmes' efficiency targets*
- Community Goals
  - *Improved neighbourhoods*
  - *Greater housing affordability*
- Key Process Goal
  - *Implemented within current regulatory constraints*

Preliminary Indication That All Could be Met

Residential Energy Efficiency Retrofit Business Plan

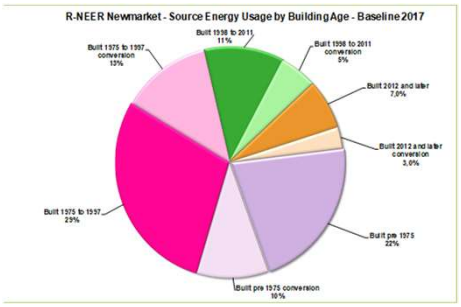
Baseline – Base Case Recap

2017 Residential Baseline
Source Energy – Type – 4.3M GJ



Detached Homes ~ 80%

2017 Residential Baseline
Source Energy – Age – 4.3M GJ



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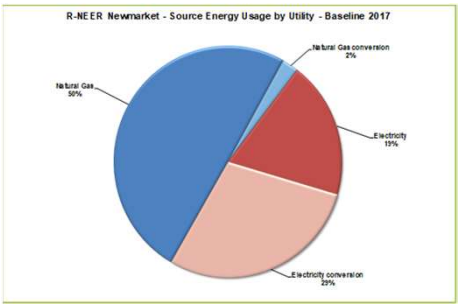
20 Years or Older – About 70%

Newmarket Home Efficiency Business Case

2017 Residential Baseline
Source Energy – Utility – 4.3M GJ



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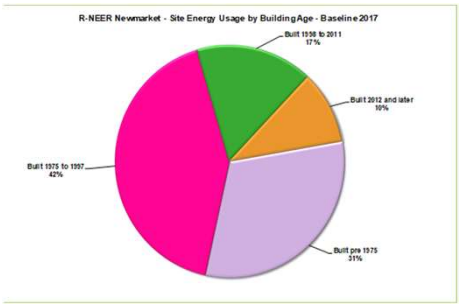
2017 Residential Baseline
Site Energy – Age – 3.0M GJ



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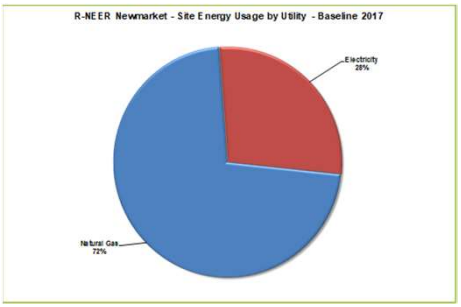
20 Years or Older – about 70%

Newmarket Home Efficiency Business Case

2017 Residential Baseline
Site Energy – Utility – 3.0M GJ



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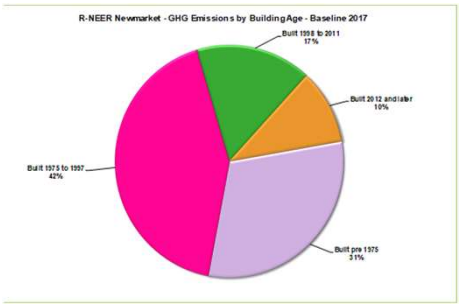
Newmarket Home Efficiency Business Case

2017 Residential Baseline
GHG – Age – 126,000 Tonnes



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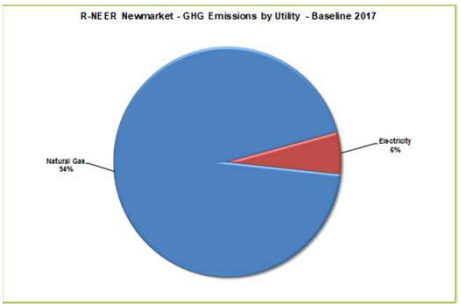
20 Years or Older – About 70%

Newmarket Home Efficiency Business Case

2017 Residential Baseline
GHG – Utility – 126,000 Tonnes



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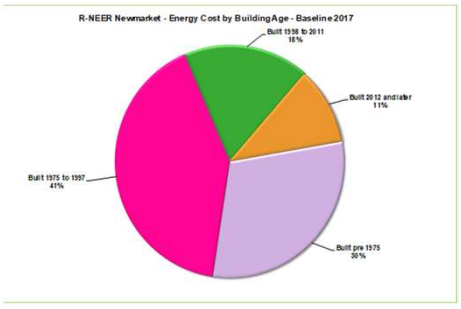
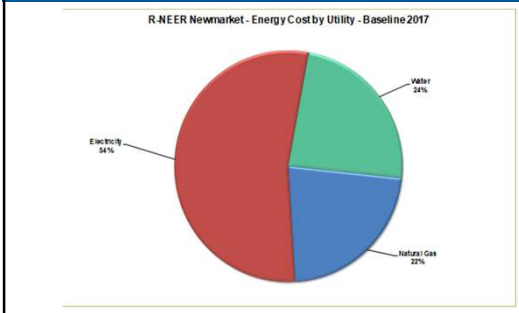
2017 Residential Baseline
Utility Cost – Age – $74M

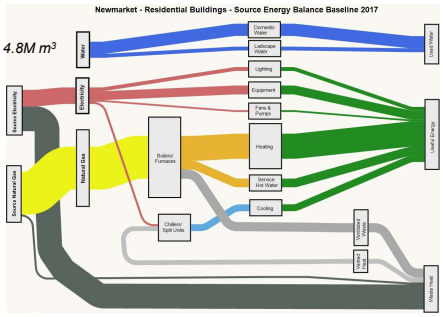


20 Years or Older – About 70%

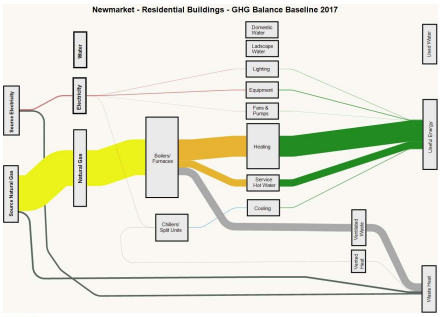
2017 Residential Baseline
Utility Cost – Utility – $74M



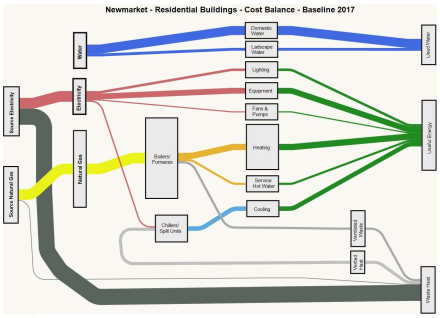
2017 Residential Baseline
Energy & Water Balance - Total 4.3M GJ



2017 Residential Baseline
GHG Balance - Total 126,000 mt



2017 Residential Baseline
Energy Cost Balance - Total $74M

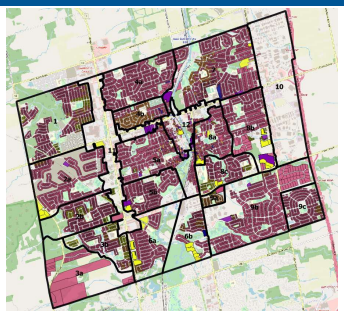


Residential Energy Efficiency Retrofit Business Plan

Target Market

R-NEER PWT Draft Business Plan
Newmarket, Ontario, June 6th, 2019

Newmarket Residential Sector 2017
Homes By Type – 29,000 / 4.8M m²



Detached Homes ~ 80%

Residential Energy Efficiency Retrofit Business Plan

Retrofit Packages

R-NEER PWT Draft Business Plan
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R-NEER Retrofits
Maximum Standardization

- Standard package by home type and age
- Core Package includes:
  - *Weatherization of envelope*
  - *Attic insulation*
  - *Other insulation wherever feasible including insulated ducts*
  - *HVAC upgrades of furnaces, boiler and A/C*
  - *Low-Flow faucets, showers and WC*
  - *Domestic hot water upgrades*
  - *Windows*
  - *Lighting*
  - *Comfort Controls*
- Package Options within R-NEER Payment Structure
  - *Solar PV/Thermal*
  - *Car charging port*
  - *Ground Source Heat Pumps?*
  - *Reroofing ?*

Review Core Package Costs and Impacts

R-NEER Retrofits
Core Package - Estimating Current Costs

- Installation & Material
  - *Toronto RS Means where available*
- Engineering & Contingencies
  - *RS Means Recommendations*
    - *Engineering – 7%*
    - *Contingency – 6.5%*
    - *Architectural for "Greening of Building" – 3%*
- Harmonized Sales Tax
  - *13% applied on all costs*
- Exceptions
  - *Windows – clear mismatch to global price norms*
  - *Smart Thermostats, LED light bulbs, occupancy sensors and smart power strips*

No Adjustments for NEER Volume or Productivity

R-NEER Retrofits
Core Package - Estimating Costs

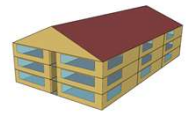
- Windows
  - *Used RS Means for installation labour, engineering and contingency*
  - *Material price benchmarking (EU/Canada) showed clear mismatch to global norms*
  - *Assumed Euro-standard windows NEER negotiated price could be same as top-of-range double-glazed in current Canadian market*
- Thermostats, LED bulbs, occupancy sensors and smart power strips
  - *Used RS Means for installation labour, engineering and contingency*
  - *Used on-line vendor pricing for materials*
  - *$50 utility rebate applied to thermostat*

Minor Adjustment for Potential NEER Volume

Multi Unit Low-Rise Apartment
Archetype Characteristics - Retrofitted

Type: 18-unit apartment with attic roof, , steel frame walls, slab-on-grade foundation, and metal-frame windows. Served by furnace and split AC units.
 # Floors: 3
Area: 2,007 SM
Window-to-Wall Ratio: 16%

	Pre-1975	1975-1997	1998-2011	Post-2011
Window Properties	U-1.0 [SI]	U-1.0 [SI]	U-1.0 [SI]	U-1.0 [SI]
Wall Properties	R-1.06 [SI]	R-1.49 [SI]	R-3.03 [SI]	R-4.24 [SI]
Roof Properties	R-6.10 [SI]	R-6.10 [SI]	R-6.10 [SI]	R-7.33 [SI]
Heating Efficiency	96%	96%	96%	96%
Cooling Efficiency	4.10 COP	4.10 COP	4.10 COP	4.10 COP
Lighting Power Density	1.5 W/SM	1.5 W/SM	1.5 W/SM	1.5 W/SM
Equipment Power Density	9.51 W/SM	9.51 W/SM	7.40 W/SM	5.09 W/SM
Infiltration	4.6 ACH50	3.5 ACH50	2.8 ACH50	2.5 ACH50
Retrofit Cost Index	240 $/m2	237 $/m2	220 $/m2	147 $/m2

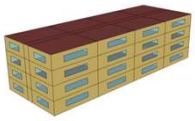


Cost Indexes based on current market practices

Note: Baumann Consulting Inc Proprietary Information

Multi Unit Mid-Rise Apartment
Archetype Characteristics - Retrofitted

Type: 31-unit apartment building with built-up roof, steel frame walls, slab-on-grade foundation, and metal-frame windows. Served furnaces and split AC units.
 # Floors: 4
Area: 2,823 SM
Window-to-Wall Ratio: 20%



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Roof Properties	R-6.10 [SI]	R-6.10 [SI]	R-6.10 [SI]	R-6.17 [SI]
Heating Efficiency	96%	96%	96%	96%
Cooling Efficiency	4.10 COP	4.10 COP	4.10 COP	4.10 COP
Lighting Power Density	1.5 W/SM	1.5 W/SM	1.5 W/SM	1.5 W/SM
Equipment Power Density	9.51 W/SM	9.51 W/SM	3.75 W/SM	2.50 W/SM
Infiltration	4.6 ACH50	3.5 ACH50	2.8 ACH50	2.5 ACH50
Retrofit Cost Index	**214 $/m2**	**211 $/m2**	**199 $/m2**	**112 $/m2**

Cost Indexes based on current market practices

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Note: Baumann Consulting Inc Proprietary Information

Newmarket Home Efficiency Business Case

Residential Energy Efficiency Retrofit Business Plan

Utility Pricing

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Newmarket, Ontario, June 6th, 2019

Newmarket Home Efficiency Business Case

Residential Electricity Price Evolution
Background

- Estimate for typical 800 kWh customer
- Used 2018 Tariff structure from Ontario Energy Report and Newmarket Tay Power
- Current NEER Assumption - $167 / MWh
  - *Commodity cost – $113.6*
  - *Distribution costs - $ 53.4 / MWh*
  - *Total variable – 82%*
  - *Total Fixed – 18%*
- 2016 Ontario Long-Term Energy Plan includes significant Residential Rebates
- Rebates planned at least through 2035
- NEER Outlooks
  - *Lower: rebates continue following LTEP trajectory*
  - *Higher: reversal of rebates & return to 2013 LTEP*

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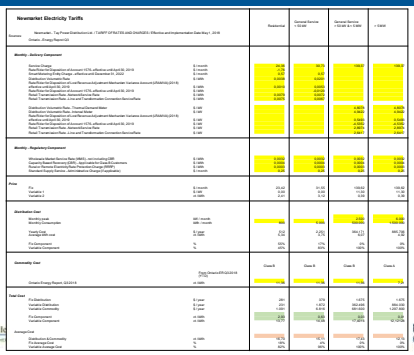
Residential Price Evolution -ToN
Baseline Sources



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Newmarket Home Efficiency Business Case

Price Outlooks
Natural Gas

- Enbridge 2017 average of $28.2/MWh
- 13% HST assumed
- Lower outlook: 2% rising to 3.5% annually
- Higher outlook: 3% rising to 7% annually
- Upward pressure combination of:
  - *Inflation*
  - *Power-generation fuel switching*
  - *Increased Canadian exports*
  - *Environmental concerns over fracking*

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Newmarket Home Efficiency Business Case

Price Outlooks
Water

- York Region Water Master Plan
  - *Serve 100% growth through efficient use of assets, conservation and some added supply*
  - *Invest $3.2 Bn by 2041*
  - *Annual incremental costs of about $400M pa by 2041*
  - *Financial Goal to move to Financial Sustainability*
    - *Set prices to achieve full cost recovery*
    - *Build reserves for future capital rehabilitation and replacement*
    - *Establish rate stabilization reserves*
- Newmarket 2015 staff update to Council estimated total 7% to 8.5% increase over 6 years
- NEER Pricing assumptions
  - *2017 baseline $3.7 / m³*
  - *Lower outlook: 1.5% annually*
  - *Higher outlook: 3.5% annually*

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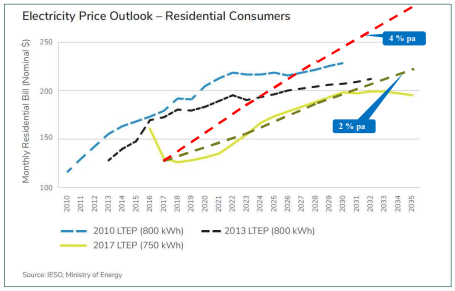
Residential Price Evolution -ToN
Lower and Higher Outlooks - Update



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Residential Energy Efficiency Retrofit Business Plan

Opportunity Size

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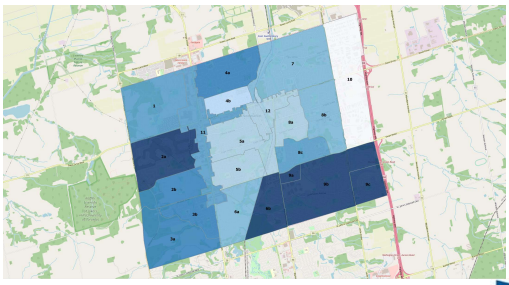
R-NEER PWT Scale Impact Discussion
Newmarket, Ontario, March 19th, 2019

Newmarket Home Efficiency Business Case

Newmarket Income 2016
Household Income by EPD



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First High-Priority Customers??

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Residential Energy Efficiency Retrofit Business Plan

Retrofit Pricing
&
Managing Pricing Risks

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Newmarket, Ontario, June 6th, 2019

Newmarket Home Efficiency Business Case

Current Market – Typical Home Retrofit
Business Model

- Homeowner
  - *Requests proposal*
  - *Provides/sources financing*
  - *Personally responsible for financing*
- Contractor
  - *Custom proposal – high "no-sale" rate*
  - *Low-volume material costs*
  - *Manages necessary permits*
  - *Significant sub-contracting*
  - *Possible pre- and post- energy audits*
  - *Limited performance guarantees or tracking*
  - *Change orders / scope creep common*
  - *Low unpredictable project volumes*
- General
  - *Disruptive and slow*

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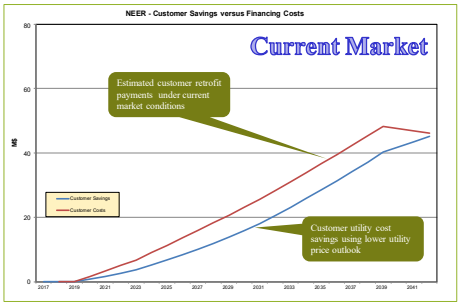
About $40,000 for Typical SFH

Newmarket Home Efficiency Business Case

NEER Customer Savings & Financing
Simulation Result – Lower Prices & Interest



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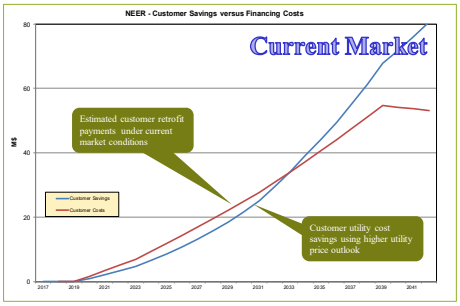
Business Case Must Address Productivity

Newmarket Home Efficiency Business Case

NEER Customer Savings & Financing
Simulation Result – Higher Prices & Interest



Business Case Must Recognize Price Risk Avoidance

Residential Energy Efficiency Retrofit Business Plan

Financing & Funds Flow

R-NEER PWT Scale Impact Discussion
Newmarket, Ontario, March 19th, 2019

R-NEER Financing
Relationship with Lenders

- Retrofits will be funded by market-based loans
- Rates between 3.5% and 5% - up to 100 bp above typical Ontario municipal obligations
- 20-year terms
- Annual coupon with close-out capital payment
- Potential Lenders
  - *Likely to be institutional*
  - *Canadian/US targeted to minimize currency risks*
- Outreach to potential lenders
  - *Early involvement of potential lenders is desirable*
  - *Provisional lender prospectus prepared*
  - *GMHI to lead early stage investor discussions*
- Loan Guarantee Risk
  - *Limited to default of customers' property tax payments*

High Probability of Willing Lenders

R-NEER Financing
Relationship with Homeowners

- Retrofits priced simply and competitively
- Retrofits cost repaid by homeowners
- Rates between 3.5% and 5% - up to 100 bp above typical Ontario municipal obligations
- Paid through increase in property taxes for 20 years
- Payments sufficient to cover retrofit repayments, lender interest, Entity operating costs and (optional) Town Dividend
- Total payments less than energy cost savings
- Serious payment delinquency may result in forced sale of home minimizing Entity risks

High Probability of Willing Customers

Residential Energy Efficiency Retrofit Business Plan

Results – Energy & Emissions Balances

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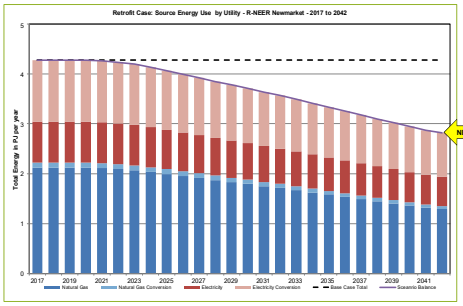
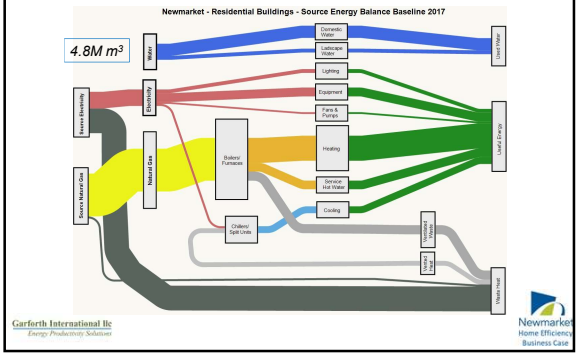
Newmarket, Ontario, June 6th, 2019

2017-2042 Residential Retrofit Case
Source Energy - Utility



2017 Residential Baseline
Energy & Water Balance - Total 4.3M GJ



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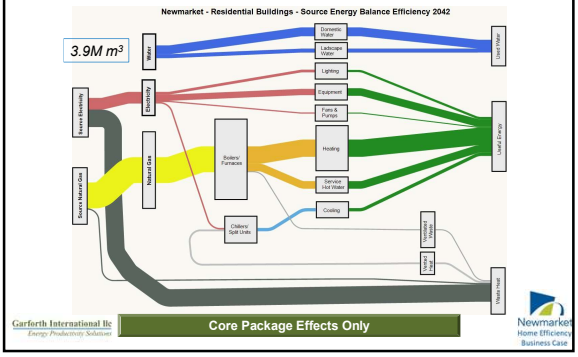
Energy Productivity Solutions

Newmarket Home Efficiency Business Case

2042 Residential Retrofit Case
Energy & Water Balance - Total 2.8M GJ



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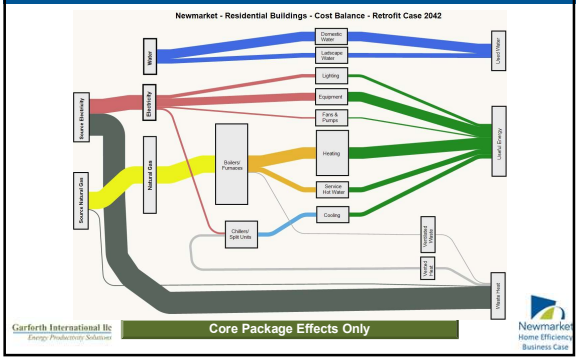
Energy Productivity Solutions

Core Package Effects Only

Newmarket Home Efficiency Business Case

2042 Residential Retrofit Case
Energy Cost Balance -Total $108M



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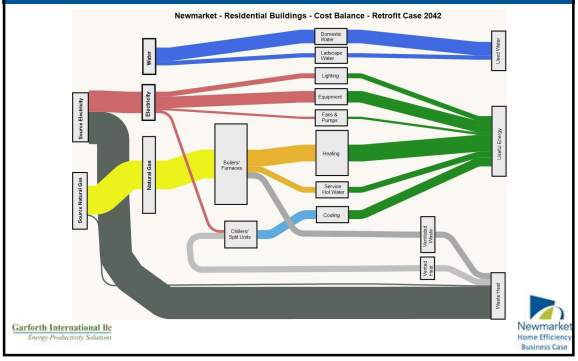
Energy Productivity Solutions

Core Package Effects Only

Newmarket Home Efficiency Business Case

2042 Residential Base Case
Energy Cost Balance – Total $151M



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Newmarket Home Efficiency Business Case

R-NEER Business Case
Collateral Values - Discussion

- Homeowner
  - *Property values*
  - *Comfort & bundled options*
- R-NEER Operations
  - *Sales of options – PV, car charger etc.*
- R-NEER Business Development
  - *Scale-up to NR-NEER*
  - *Offer R and NR-XEER services beyond Town*
- Contractor
  - *Added-value from all of the above*
  - *Skilled to serve "Non-NEER" Customers*

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Energy Productivity Solutions

Newmarket Home Efficiency Business Case

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Energy Productivity Solutions

Newmarket Home Efficiency Business Case

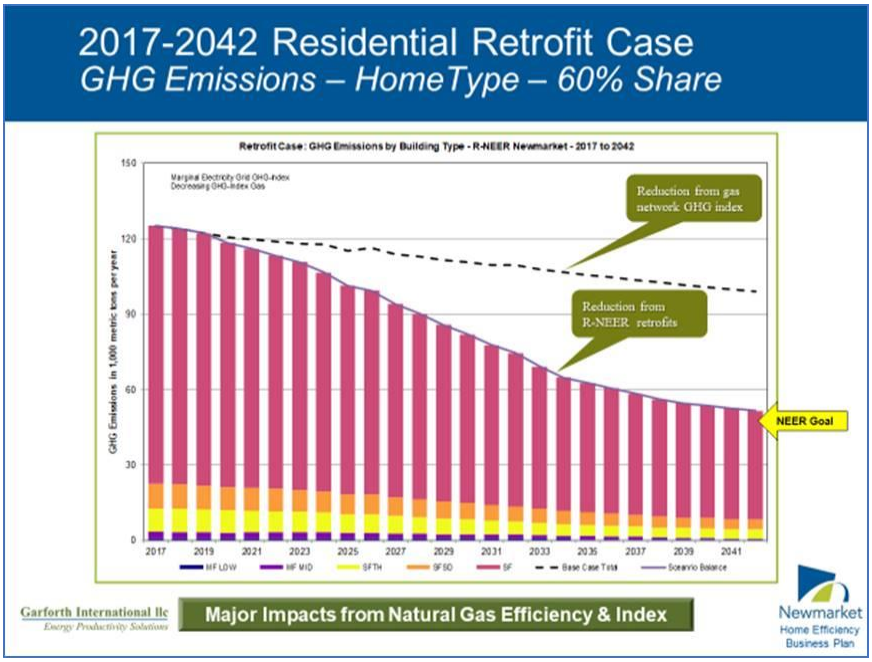
Appendix H: Stress Testing Results

Newmarket
Home Efficiency
Business Case

Stress Testing Results

Market Penetration

The CEP established a target to retrofit 80 percent of all homes existing in 2017 by 2042. The SAG was interested in understanding the Business Case impacts if this target was reduced to 60 percent of homes. Stress testing of the Business Case showed that the NEER goal for residential GHG reductions would be just missed and results would be far off the trajectory needed to reach Paris Climate Agreement targets (see extract below). It lowers peak borrowing requirements by about $30M and reduces the long-term value of the business. While not aligning with Newmarket's strategic goals, the business model remains viable.



Market Penetration Rate

Appendix I: Municipal LIC Risk Assessment

Qualitative Municipal Risk Assessment for an LIC Energy Retrofit Loan Program

Administrative Model: Municipal Owned or Third-Party Entity

Rating: Red – High, Yellow – Medium, Green – Low

Note: This qualitative risk assessment only considers the municipal risk associated with offering an LIC loan to homeowners. It does not consider the risk associated with delivering the retrofit program which would be transferred to a Municipal Owned or Third-Party Entity. This risk assessment has been informed by work conducted for the City of Vaughan by the Ontario Climate Consortium.

No.	Risk	Context	Impact	Likelihood	Rating	Potential Strategies to Address Risk	Conclusion
Service Delivery - customer expectations are not met, or service can no longer be provided							
1	Province repeals enabling LIC legislation.	LICs have been used in Ontario for many years to fund municipal infrastructure projects and recover costs from benefiting property owners. Regulations were expanded in 2013 to include voluntary energy and water efficiency upgrades of private homes and buildings undertaken on single properties (O. Reg 586/-6). Without this enabling legislation, municipalities could not offer an LIC Energy Retrofit Loan to property owners. Since this legislation promotes private investment in energy efficiency, it is not considered at risk of being repealed.	Catastrophic	Rare		**Mitigate:** communicate broadly the value of LICs for promoting private investment in energy efficiency to reduce emissions. **Mitigate:** Entity considers a business plan based on market-based financing, if required.	**Accept**
2	Council repeals LIC bylaw.	Councils must pass a by-law specific to energy retrofits to enable the application of LICs. Community energy planning can demonstrate the rationale and build community support for an energy retrofit program, as well as serve as the foundation for the integration of energy and climate policies into planning tools (e.g., official plans, secondary plans, community improvement plans).	Catastrophic	Unlikely		**Mitigate:** complete a community energy plan with robust public and stakeholder engagement. **Mitigate:** integrate energy and climate policies into planning tools **Mitigate**: develop a robust business case to test the feasibility of the retrofit program ensuring strong input from internal staff to build ownership and durability of the program in the event of changes in senior management or Council. **Mitigate**: Entity considers a business plan based on market-based financing, if required.	**Accept with mitigation**
3	Competing municipal	Municipalities require funds to build and maintain capital projects such as	Major	Likely		**Transfer:** establish a Municipal Services Corporation or enter into an agreement with an existing Third-Party Entity to	**Accept with mitigation and**

	priorities for capital.	buildings, roads and sewers. Regardless of the strength of a business case for the program, limits on the amount of capital and/or durability of the program in the event of changes in senior management or Council. However, up-front municipal capitalization can be recouped over time through the program or covered by grant funding (e.g., FCM Community EcoAction)				administer the program and secure private capital based on the merits of the program. **Mitigate:** plan to recoup up-front municipal capitalization and/or seek grant funding. <u>Alternative to further reduce Risk Rating:</u> **Transfer:** enter into an agreement with an existing Third-Party Entity	**transfer of capital financing risk**
4	Insufficient municipal resources to meet property owner demand.	Municipalities will require staffing and other administrative resources including information technology systems to manage the LIC Loan Program. Legislation allows for the municipality to recoup administrative costs through the LIC Loan.	Minor	Likely		**Mitigate:** recover administrative costs through the LIC payment. **Mitigate:** Entity engages appropriate departments in program design.	**Accept with mitigation**
Employees - risk of negative impact including physical harm							
5	Impact on internal processes and workload related to building permits.	Most basic energy efficiency measures do not require a building permit. However, renewable energy measures like solar thermal and PV do require building permits.	Moderate	Somewhat Likely		**Mitigate:** Entity (initially) limit program to energy efficiency measures. **Mitigate:** recover administrative costs through the LIC payment. **Mitigate:** Entity engages building department in program design.	**Accept with mitigation**
6	Impact on internal processes and workload related to tax roll adjustments.	To qualify the special charge as having priority lien status, a municipality must have entered into an agreement with the property owner and prepare and certify a local improvement roll for the private LIC. The annual amount of the LIC that is due to the municipality must appear on the property tax roll and the property tax account for the participating property.	Moderate	Almost certain		**Mitigate:** develop a resourcing plan. **Mitigate:** recover administrative costs through the LIC payment. **Mitigate:** Entity engages tax departments in program design	**Accept with mitigation**

Public - risk of negative impact on a citizen							
7	Homeowner placed in a "technical" mortgage default position.	The Canadian Bankers Association has raised a concern that the LIC could put homeowners/borrowers in an unexpected default position under most lenders' standard charge term for residential mortgages. Almost all lenders obtain covenants from their borrowers with respect to additional borrowing that could result in charges against the property or that might impair priority of the lender's charge. The City of Toronto has addressed this risk by requiring homeowners to seek the consent of their mortgage lender which limited participation. However, there has been limited appetite of traditional mortgage providers to agree to new senior covenants for retrofit loans tied to property tax. Currently, mortgages insured by the Canadian Mortgage and Housing Corporation (7% of mortgages in Ontario) would not be approved for an LIC loan, regardless of the business case. The Clean Energy Financing program in Nova Scotia has addressed this risk by recommending homeowners notify their mortgage lender about their participation in program. During the initial program design process, mortgage lenders were consulted with and an internal legal discussion was conducted to address lender concerns. To date, the Clean Foundation has not encountered any bank putting their customer in a default	Major	Rare		**Mitigate:** Entity engages local underwriters to help them understand the program. **Mitigate:** Entity addresses risk through program design, e.g.: • require homeowners to advise their mortgage lender of their participation in the program • require homeowner to secure mortgage lender consent to participate in the program (not recommended due to significant impact on participation rates experienced in Toronto) • exclude properties with a CMHC insured mortgage • conduct detailed financial due diligence **Mitigate:** Advocate for recommendations in the Final Report of the Expert Panel on Sustainable Finance that support a vibrant retrofit market. **Transfer:** Entity establishes a Loan Loss Reserve to manage mortgage lender concerns regarding potential losses in the event of a default.	**Accept with mitigation and monitoring**

		position and it has not impacted program uptake. Loan Loss Reserves (LLR) have been successful in other jurisdictions to manage mortgage lender concerns. The announcement for the FCM Community EcoAction program noted the potential to establish an LLR for a retrofit program. The retrofit cost relative to the value of the asset is low. The risk of a mortgage lender not renewing a mortgage if the homeowner is current with both their mortgage and property tax payments is low. In the Final Report of the Expert Panel on Sustainable Finance it is recommended that in the case of municipality-sponsored PACE programs, CMHC could provide guarantees for Local Improvement Charge (LIC) financing programming.					
8	MPAC increases homeowner property taxes.	Home improvements can increase the value of the home which might increase the MPAC-assessed value of the home. However, MPAC currently does not include energy efficiency in its property assessments so there is no clear link to increasing property assessments and resulting taxes.	Minor	Unlikely			**Accept with monitoring**
9	Impact on resale of home.	Despite the presumed offset of reduced utility costs, an LIC attached to a home could have the perception of higher cost of ownership in the marketplace. Alternatively, improved energy efficiency could have a positive impact on increasing the market value (not the MPAC-assessed value) of the home, thus	Moderate	Somewhat Likely		**Mitigate:** Entity engages real estate industry early in program design. **Mitigate:** implement a home energy labelling program to change market demand for efficient homes.	**Accept**

		increasing the asset value to the homeowner.					
10	Increase in municipal tax sales.	If a homeowner defaults on their property taxes, the municipality can take their property to a tax sale. However, the default rate on municipal property taxes is low. Municipal property taxes are also considered "recession proof". The municipality also has other options to consider before taking the step of initiating a tax sale.	Moderate	Unlikely		**Mitigate:** Entity addresses through program design by ensuring annual utility savings are equal to or exceed the annual increase to property taxes.	**Accept with mitigation**
Physical Environment - risk of damage to natural capital							
None identified.							
Reputation - risk of damage to municipal reputation							
11	Failure to establish an effective governance model for the entity as a Municipal Services Corporation	Effective governance of the Municipal Services Corporation is essential for the success of the program.	Major	Unlikely		**Mitigate:** include governance expertise in the due diligence process **Transfer:** enter into cross-municipal partnerships to share governance knowledge **Transfer:** enter into a partnership with an existing municipal owned corporation	**Accept with mitigation and/or transfer risk**
12	Entity fails to efficiently deliver the retrofit program	This could include fraudulent use of the program or home energy savings not being realized or failure to achieve cost scale.	Moderate	Unlikely		**Mitigate:** robust due diligence in establishing LIC-enabling partnership agreement between the municipality and the entity.	**Accept with mitigation**
Financial - risk of financial harm to the municipality							

13	Negative impact on municipal debt management and credit rating.	Municipal governments have a provincially legislated debt ceiling or Annual Repayment Limit (Ontario Regulation 403/02 (Debt and Financial Obligation Limits) under the Municipal Act, 2001). Municipal debt obligations in respect of the owner's share of the cost of a work undertaken as a local improvement do not count towards the municipal debt limit. The debt of municipal services corporations is not attributed to the owner municipality.	Major	Rare		**Mitigate:** engage credit agencies early. **Mitigate:** use reserves for up-front municipal capital contributions **Mitigate:** plan to recoup up-front municipal capitalization and/or seek grant funding.	**Accept with mitigation**
14	Homeowners default on LIC payment.	The default rate on municipal property taxes is low. Municipal property taxes are also considered "recession proof". Also, the municipality has priority lien status in the event of a tax sale.	Moderate	Rare		**Mitigate:** Entity address through program design, e.g.: • ensure annual utility savings are equal to or exceed the annual increase to property taxes • establish financial limitations including debt-service ratio, combined loan to value ratio, and assessment to value ratio for project eligibility • ensure applicant's property tax and utility bills are in good standing • require homeowner to sign-up for a pre-authorize payment plan **Transfer:** require homeowners to secure mortgage lender consent to participate in the program (not recommended due to significant impact on participation rates)	**Accept with mitigation**
15	Impact of interest rate fluctuations.	Interest rates of capital vary over the course of a retrofit program	Minor	Likely		**Mitigate:** Entity stress test for changes to interest rates in the business plan.	**Accept with mitigation**
16	Municipality liable for damages due to defective work of independent contractors.	By promoting an LIC-based retrofit program, a municipality may expose themselves legally if a contractor provides defective work, whether endorsed by the municipality or not.	Minor	Unlikely		**Mitigate:** include language in the enabling By-law to protect the municipality. **Mitigate:** Entity addresses through program design, e.g., • Entity enters into contract with contractors • pre-qualified contractors • quality control oversight	**Accept with mitigation**

17	Administration costs exceed business plan.	Incremental increases to municipal administrative costs associated with offering LIC loans are to be recouped through the LIC payment.	Major	Unlikely		**Mitigate:** Entity uses conservative assumptions and include appropriate contingencies in business plan	**Accept with mitigation and monitoring**
Regulatory Risk - risk of non-compliance with legislation or regulations							
18	Non-compliance with LIC legislation.	The portion of the imposed special charge due each year must be added to the municipality's tax roll for that property to ensure the LIC is appropriately attached to the property. The useful life of the proposed energy improvement cannot be less than the LIC payment term limit. However, municipalities have experience with the LIC mechanism as well as establishing internal controls to ensure regulatory compliance.	Moderate	Unlikely		**Mitigate:** Entity engages tax and legal departments in program design to ensure effective internal controls **Mitigate:** document regulatory obligations in the enabling by-law **Mitigate:** Entity integrates building science assessment into program design	**Accept with mitigation and monitoring**
19	Non-Compliance with Ontario Building Code (OBC)	Some energy retrofits may require a building permit. Renewable energy retrofits are more likely to require a building permit than energy efficiency measures	Minor	Unlikely		**Mitigate:** Entity engages building department in program design **Mitigate:** Entity addresses through program design, e.g.: • integrate building permit compliance into program design • limit eligible retrofit measures to energy efficiency	**Accept with mitigation and monitoring**
20	Non-compliance with O.Reg. 599/06 (Municipal Services Corporation)	Some Ontario municipalities have limited experience with Municipal Services Corporations.	Major	Unlikely		**Mitigate:** Entity engages legal department in program design	**Accept with mitigation**

Appendix J: Homeowner Personas

The Stakeholders Advisory Group (SAG) undertook an exercise to better understand the homeowner market using personas.

Personas are fictional, generalized representations of an ideal customer. They help you understand your (prospective) customers better. A negative persona is someone who won't be interested in your product or service or may be too expensive to acquire. Understanding your customer personas allows you to target your marketing for different segments of your audience. They are created through research, surveys and interviews of your target audience.

The further development of personas for the Newmarket market would support the development of the Business Plan.

For the purposes of the SAG and their role in the process, the following research was used to explore the potential of personas:

Victoria Haines & Val Mitchell (2014) A persona-based approach to domestic energy retrofit, Building Research & Information, 42:4, 462-476, DOI: 10.1080/09613218.2014.893161

https://doi.org/10.1080/09613218.2014.893161

The Idealist Restorer – the property is a project

"If you're going to do a job, you might as well do it well"

John & Shena brought their house in a run down condition 5 years ago. They are seeking to achieve an **aesthetic, tasteful** home of **character** that exudes both **individuality & quality**. John likes to carry out work himself as he enjoys **mastering practical skills** but also wants to ensure a **quality job**. He is the dominant decision maker regarding home improvement & has a **grand plan** for the property. He likes to ensure that underlying structural issues are sorted before more cosmetic improvements are made.

John Silverstone age 43

Lives with his wife Shena & 2 children in a terraced 4 bed Victorian villa in a North London suburb. He is an IT manager for a large firm of accountants.

Attitudes & Motivations

- Motivated to **live in an older property** because of the character & the opportunity it provides for restoration & improvement. Values the aesthetic period features & space afforded by older homes
- John wants to **restore as many original features** within the home as possible but not at the expense of aesthetics, comfort & convenience. Although he wishes to keep the sash windows, he has replaced the quarry tile floor in the hallway with laminate flooring
- Motivated to learn new DIY skills & **wants to do things thoroughly**
- **Energy efficiency** is perceived as a construct of **quality** but aesthetics & comfort are valued more highly

Pain Points

- Shoddy workmanship
- Lack of professionals with specialist knowledge of older properties
- Poor quality products or materials
- His own lack of time

Opportunities for Retrofit

- Very open to retrofitting energy efficiency measures & in an **optimal order** if the aesthetics of the home are respected
- Interested in **'clever'** energy saving technologies but only if the character of the home can be maintained

Key Variables

Getting the job done

Trust in professionals

Tolerance of disruption

Hunger for information

Interest in energy saving

The Affluent Service Seeker – the property is a pleasure

"It's not just that you've got more money , its also that your time becomes more precious so that its worth paying others"

Deniz & Azra brought their house 23 years ago when their 3 children still lived at home. Now it's rather large for 2 people but they **value the comfort**, location, mature garden & space for entertaining. They view their home as a **substantial financial asset** & are therefore alert to opportunities to add value to their home. Deniz employs **specialist professionals** to carry out work on his home & **highly values the recommendations** of friends & neighbours with similar properties. He has recently had solar PV installed at the rear of his house & is pleased with the **financial payback**.

Deniz Ablak age 64

Deniz lives with his wife Azra in a detached 19th century property in rural Hampshire. He owns a car dealership & service centre.

Attitudes & Motivations

- Motivated to **live in an older property** because of the character, idyllic **rural location** large garden & useful outbuildings
- Deniz accepts that older properties are **expensive to maintain** and views spending on the property as a way to preserve & add value to his investment
- He seeks **luxury & quality** but also **value for money**. Known to be **financially savvy**
- **Carries out very little DIY** through choice but he is also less **physically fit** than when he was a younger man
- **Energy efficiency** is perceived as difficult to achieve in a large old property but Deniz is keen to take advantage of any **grants or incentive schemes** available. Values comfort over financial saving

Pain Points

- Lack of professionals with specialist knowledge of older properties
- Poor customer service
- Jobs not completed to schedule
- Poor information about available grants & incentive schemes

Opportunities for Retrofit

- Open to incentive schemes & polices that generate income for the homeowner or add value to the property
- Will choose to use specialist professionals to ensure a quality job

Key Variables

Getting the job done

Trust in professionals

Tolerance of disruption

Hunger for information

Interest in energy saving

The Functional Pragmatist – the property is a place to live

"To be honest I don't think we'd do it until something went wrong"

Robert & Suzanne have lived together for 18 years and have two teenage children. They chose an older property as it was close to the town centre and because it was more **spacious & roomy** than an equivalently priced newer home. They enjoy socialising at home and often have friends around. They are a little **daunted by the maintenance issues** and consider some problems (e.g. damp) to be unsolvable. Without a master plan for their property, they undertake **only basic DIY**, relying on recommendations from friends & family for larger jobs. They may respond to unsolicited approaches from professionals if they coincide with having some money available.

Suzanne Miller age 47

Suzanne & Robert live in a Victorian villa-style house near the centre of Lincoln, with their 2 children. Suzanne works at the local health centre and Robert is a Sales Manager.

Attitudes & Motivations

- Motivated to live in an older property because of the **layout and room size** that accommodates a full and active family life
- **Home improvements are seen as a hassle** rather than a hobby; they take time away from more important things - hobbies & family time
- They are **not particularly interested in keeping older features** of the house, but place greater value on convenience
- They are concerned about the environment and climate change, as a result of their **family values**

Pain Points

- Finding time getting quotes & finding professionals to do work
- Professionals who provide a poor service
- Jobs taking longer than anticipated
- Having to do home improvements at all

Opportunities for Retrofit

- When things wear out or go wrong
- At the time of purchasing the house
- When re-purposing a space or extending the home
- When finance becomes available

Key Variables

The Aesthetic Pragmatist – the property is a home

"I'd like to keep the windows as traditional as possible because it's a traditional house"

Over the years, Ben & Eleanor have created a home that meets their **practical needs** as well as being **full of character** and charm. Eleanor loves home-making and carries out most of the minor decorating and **small repair jobs**, but they rely on professionals for everything else. Ben & Eleanor love **restoring the older features** in their home and will preserve these where cost allows. They **redecorate regularly** and so are not particularly concerned about durability.

Ben Dixon age 56

Ben lives with his wife Eleanor in a stone cottage outside Bristol. Ben is an accountant and Eleanor works part time as an Occupational Therapist.

Attitudes & Motivations

- Motivated to live in an older property because of the **character & space** it offers
- Enjoy having a project on the go but **improving or updating the decor**, furniture & appliances within the home will be of higher priority than repurposing of space or non-essential maintenance
- Likely to **cover up some issues** like damp through frequent redecoration
- Value 'off the shelf' solutions, preferring to finance these from savings or windfalls rather than loans. Want a **neat and tidy job** to be done, with a good quality finish

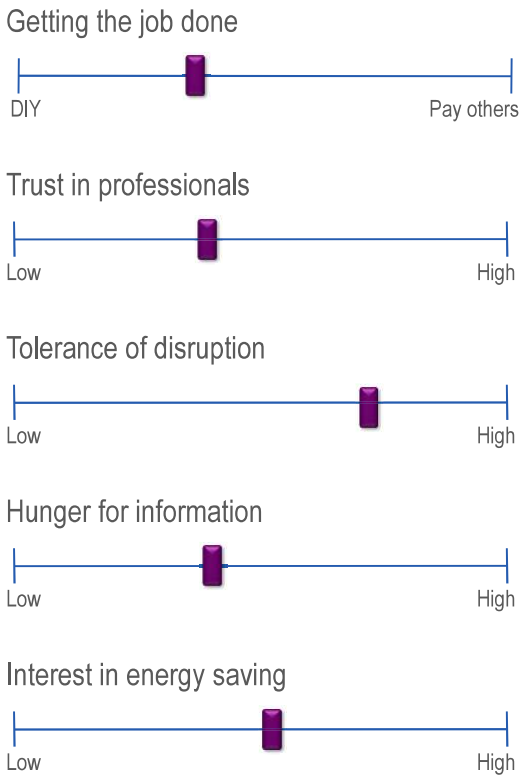
Pain Points

- Having to spend time getting quotes & finding professionals to do work
- Professionals who do not turn up on time or job takes longer than anticipated (unplanned disruption)
- Only being able to afford options that detract from the character of the property

Opportunities for Retrofit

- When they first purchase the house or within the regular cycle of decorating and refurbishment
- The order of retrofit will be driven by aesthetic priorities, e.g. the desire for new kitchen may lead to a new boiler

Key Variables



The Property Ladder Climber – the property is a step up

"We like the older kinds of properties, we wanted a place that needed work doing"

Reece & Emily chose their house as it needed considerable work in order to 'do it up.' They **intend to sell at a profit** as a step towards a bigger property. Older properties that have undergone little or no renovation are particularly attractive although the age of the property was not one of their main concerns. Following an **overall plan**, they have addressed the structural problems, replaced all the windows and put in a new heating system. Once the kitchen, bathroom and redecoration are finished, they will sell the house, **buy another and start again**.

Reece Martin age 31

Reece & Emily have been together for 7 years, living in 4 Midlands properties in that time, each of which they have renovated. They both work full time and so use all of their spare time on the house.

Attitudes & Motivations

- They are motivated to live in an older property by the **potential it offers to add value** to its resale value through renovation
- **Happy to borrow money** in the short term to finance home improvements, paying these back when the house is sold
- They enjoy developing their DIY skills as the projects get bigger with each house they buy
- Open to consequential improvements as they are thinking at a **whole house level** but these improvements must lead to financial gain at the point of resale
- Energy saving beyond current building regulations is not a priority

Pain Points

- Professionals who do not turn up on time or job takes longer than anticipated
- Delays in work starting may have knock on effects for other jobs that are planned
- Having to spend time getting quotes & finding professionals to do work

Opportunities for Retrofit

- Open to the use of finance schemes if these are cost effective within the context of 'improving to sell'
- Unlikely to consider technologies with long payback times unless the cost of installation is passed on

Key Variables

Getting the job done

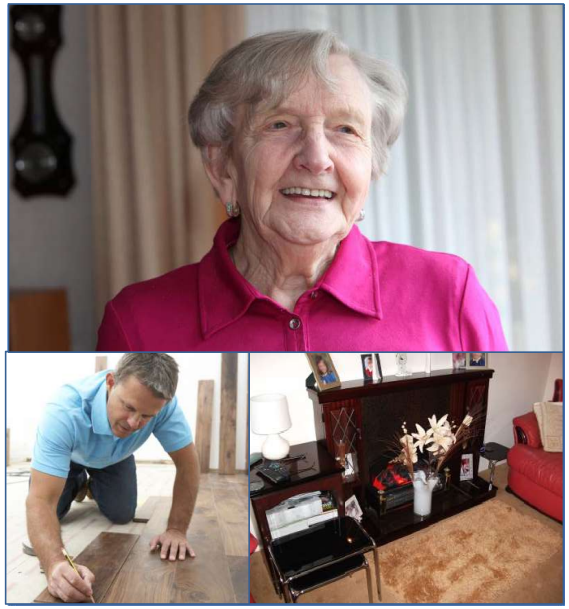
Trust in professionals

Tolerance of disruption

Hunger for information

Interest in energy saving

The Stalled (Lack of Finance) – the property is a shelter



"You know, there's not much money left. So it's a case of having to do it yourself"

Brenda has lived in her house for 34 years. Now divorced, she used most of her savings to buy sole ownership of the house. She wants her home to be a **pleasant, warm and secure place to live**. She likes the original features of the house but is happy to sacrifice these for comfort and security. She undertakes **only basic maintenance** unless work is funded by up-front grants or is supported by friends & family. She relies heavily on information and **advice from family and close friends**.

Brenda Stirling, age 72

Brenda lives alone in her Victorian mid-terrace property in Leeds. She is divorced and relies on a small pension as her sole income.

Attitudes & Motivations

- Brenda wants a warm, comfortable home, but is **not extravagant** in her requirements
- She wants to **feel safe and secure i**n her home and be assured that any work undertaken is not ripping her off or putting her in danger
- Brenda is **frugal** and is interested in saving energy primarily to save money. She is positive towards opportunities to improve the warmth and security of her home.
- Its not uncommon for Brenda to leave parts of the house **unheated** through the winter, but uses **draughtproofing** to increase comfort

Pain Points

- Worry about being unable to afford repairs and renovations that are needed for a reasonable standard of living
- Limited capacity in old age for change or disruption
- Unfriendly or impolite workers

Opportunities for Retrofit

- Limited to when grants are available
- Will undertake consequential improvements if dictated by grant scheme

Key Variables

Getting the job done

Trust in professionals

Tolerance of disruption

Hunger for information

Interest in energy saving

The Stalled (Pressures of Life) – the property is a necessity

"I'm frustrated a little bit because I'd like it to be more efficient, but the kind of things I would need to do to make it are big things"

Callum & Maria chose an older house because they liked the **style and character, at an affordable price.** Since having a baby, Maria has given up work as she hasn't been well and their **focus of attention has turned to health and family matters**. They undertake only essential repairs on their house, to make a problem go away, at least temporarily, but recognise they will need to deal with it eventually. This **could be years away**, once they gain control over their lives again.

Callum Peacock, age 33

Callum lives with his wife, Maria and their baby, Melissa, in a 1910s semi-detached house in Newcastle. Callum works as a secondary school teacher.

Attitudes & Motivations

- Callum do**es not have the time, emotional energy or financial resource** to undertake home improvements at present
- He will use a trusted, known professional to help with any **essential jobs** around the house but won't undertake any major projects
- Callum & Maria may consider taking a **loan** to fund essential maintenance but they prefer to wait and use **savings** when they can afford

Pain Points

- Having to find time getting quotes & finding professionals to do work
- Professionals who do not turn up on time or job takes longer than anticipated (unplanned for disruption)

Opportunities for Retrofit

- Almost none at present

Key Variables

Getting the job done

Trust in professionals

Tolerance of disruption

Hunger for information

Interest in energy saving

Appendix K: Homeowner Survey Report

NEER Survey Results

Homeowner Interest

6/25/2019

1.0 Introduction

This report is in support of the development of the Newmarket Energy Efficiency Retrofit (NEER) Business Plan. A survey was designed to engage homeowners and quantify public interest towards the initiative. The report provides a thorough examination of the survey results and a summary of the key findings that were discovered.

2.0 Survey Breakdown

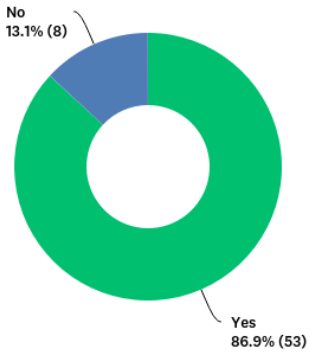
The survey contains 9 questions separated into 3 sections. The first section encompassed 4 questions and pertained to surveyors living status. The second section encompassed 2 questions and related to homeowners' previous consideration to energy-efficiency retrofits. The final section encompassed 3 questions and pertained to a general interest in the NEER business plan as well as general thoughts towards local improvement charges (LICs). Finally, 3 additional questions were asked regarding joining the mailing list and/or a homeowner focus group.

3.0 Survey Results

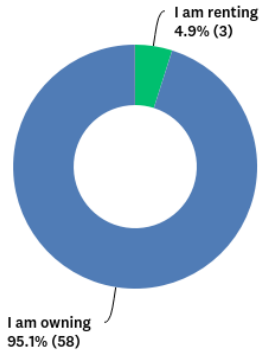
After participating in the Chamber of Commerce Home and Lifestyle Show (March 29th - March 31st), and Newmarket's Community Open House (April 3rd), a total of 61 surveys were completed. The following section presents the findings collected from the surveys.

3.1 Homeowner Status

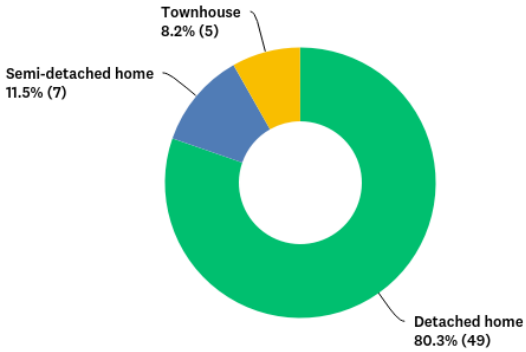
As previously indicated, the first 4 questions in the survey related to the surveyors and their current living status.



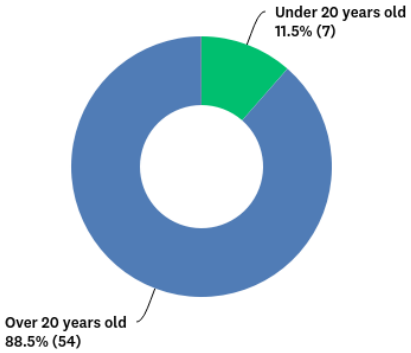
Q1: Are you a Newmarket resident?



Q2: What is your current living status?



Q3: What type of household are you currently living in?



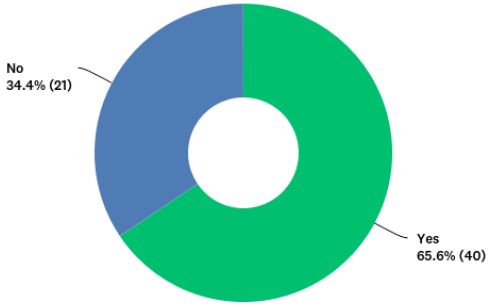
Q4: How old is your home?

Based on the 61 surveys collected, most participants were residents of Newmarket (86.9%). Further analysis revealed that a majority of surveyors (80%) are living in detached homes and 88.5% of participants claimed that their homes were 20 years or older.

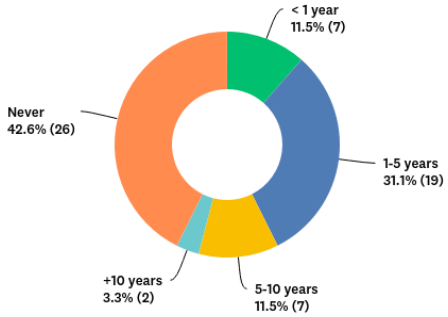
Note that these results are well aligned with the analytical findings collected from the 2017 residential baseline which states that approximately 80% of Newmarket homes are single-family detached households and that a significant portion are 20 years or older. It is important to also make note that a majority of the surveyors belonged in the initial 2020 target market as described in the draft business plan; Newmarket residents living in detached homes that are 20 years of age and older.

3.2 Past Energy-Efficiency Retrofits

The second section of the survey analyzed surveyors past experiences with energy-efficiency retrofits and examined their level of aptitude when addressing home energy problems.



Q5: Have you considered any energy-efficiency retrofits within the last year?



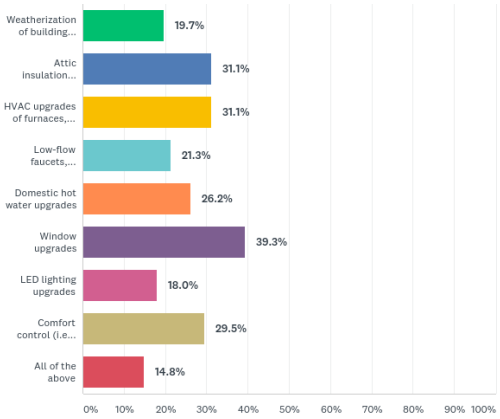
Q6: When was the last time you completed an energy-efficiency retrofit?

It was discovered that 65.6% of participants have considered some form of energy-efficiency retrofit within the last year. Although a majority have considered a retrofit, only 11.5% completed a project within the year. More so, 42.6% claimed to have never completed a retrofit while an additional 3.3% have not finished a retrofit in 10+ years.

This concludes that a majority of participants are fully aware of energy-efficiency retrofit options but many consistently postponing projects. This begs the question, why are residents hesitant to buy into energy-efficiency retrofits? What are the factors limiting homeowners from committing to a home energy-efficiency retrofit project?

3.3 NEER Business Plan Interest

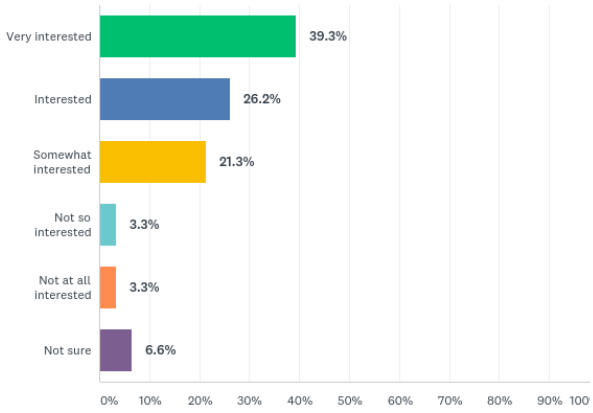
The final section of the survey examined surveyors interest levels in the R-NEER Entity as well as their overall opinions towards local improvement charges as a financing mechanism.



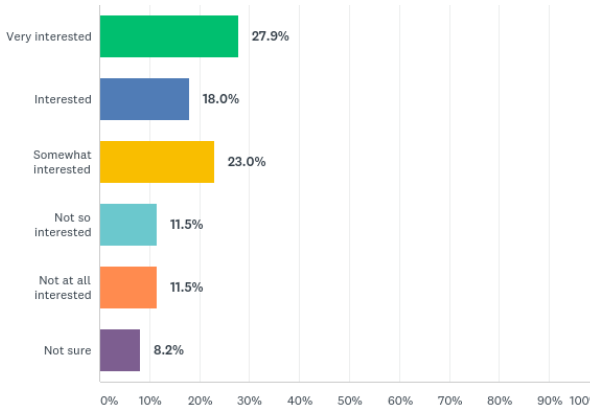
Q7: Which of the following energy/water efficiency retrofits interests you most?

Top 3 Retrofits

1. **Window Upgrades**
2. **HVAC Upgrades**
3. **Attic Insulation Upgrades**



Q8: How interested would you be in participating in this energy retrofit business case?



Q9: How interested would you be in this loan initiative?

It was discovered that over 86% of surveyors were interested in the initiative and their top 3 retrofits options being window upgrades, HVAC upgrades, and attic insulation upgrades. This is particularly interesting because the upgrades most selected were almost entirely associated with heating/cooling. Furthermore, the upgrades selected were some of the costliest to retrofit.

Relating the conclusion in the previous section to the following section, there is a promising connection between retrofit completion and financing limitations. More so, through the many discussions held throughout the two events, participants stated that most retrofits completed were directly influenced by government incentives. Therefore, financial support significantly influences homeowners' commitment to energy-efficiency retrofits.

A similar outcome was concluded for LICs with 68.9% of surveyors showing some interest in the financing method. The remaining 8.2% were unsure and 23% were not interested at all. This may perhaps be due to their comfort level associated with an increased property tax and the overall lack of understanding of LICs. It is encouraged that strong public engagement and advocacy be made to reduce LICs anxiety.

4.0 Summary

In summary, R-NEER's participation in the Home and Lifestyle Show, as well as Newmarket's Community Open House, provided excellent public engagement and feedback. The addition of the R-NEER Homeowner Survey established quantifiable data relating to homeowner perspective and the initiative.

4.1 Key Findings

1. 65.6% of surveyors considered an energy-efficiency retrofit within the last year.
2. Although a majority have considered a retrofit, 42.6% have never committed to completing a project and an additional 3.3% are due for an upgrade (10+ years).
    - 11.5% have completed some kind of energy-efficiency retrofit within less than a year and the remaining participants have completed a project between 1-5 years (31.1%) or between 5-10 years (11.5%).
3. Surveyors were most interested in window upgrades, HVAC upgrades, and attic insulation upgrades:
    - The retrofits most preferred related primarily to heating/cooling applications and are some of the costliest to retrofit.
    - There is a positive linkage between the completion of home energy-efficiency retrofits and financial support.
    - Most homeowners that have previously completed a retrofit stated that government incentives highly influenced their decision to retrofit.
4. Over 86% of surveyors have some level of interest in the program; 39.3% were very interested, 26.2% were interested and 21.3% were somewhat interested.
5. Surveyors were more interested in the retrofit business plan as opposed to LICs however an identical outcome was developed. Almost 70% were in some level interested in LICs; 27.9% very interested, 18% interested and 23% somewhat interested.
    - The discontinuity may perhaps be due to the uncertainty of adding additional debt.
6. Homeowners were progressively more interested in the business case if the initiative included a means of quantifying energy savings after a NEER retrofit is complete.
    - Reassurance that the additional charges on the property tax do not exceed the utility savings from the retrofit.

4.2 Future Consideration

1. Further investigation should be conducted on why homeowners are reluctant to retrofit their homes:
    - This will help the NEER team address potential concerns and increase future project uptakes.
2. More research should be conducted to attract more consumers with additional retrofit options but still avoid falling into the traditional retrofit market. Consider additional energy efficiency retrofits options (add-ons) including solar PV/thermal, ground/air source heat pumps, grey-water recovery system, combined heat/power furnace, enhanced BAS system, etc.
    - This is geared towards participants who have already completed a majority of the retrofits listed in the standard package.
3. Further homeowner engagement on LICs will be necessary to increase consumer confidence as well as further clarify their understanding of the LIC program.

Appendix L: Homeowner Focus Group

A group of 17 Newmarket homeowners attended a focus group. The purpose of the focus group was to gather some early feedback on program design parameters.

During the hour and half session, participants learned about the proposed program and answered several questions (see results that follow). The development of some of the survey questions was informed by two research papers:

- Why do homeowners renovate energy efficiently? Contrasting perspectives and implications for policy? C. Wilson, L. Crane, G. Chryssochoidis. Energy Research and Social Science (2015)
- https://www.sciencedirect.com/science/article/pii/S2214629615000298

- Quantitative modelling of why and how homeowners decide to renovate energy efficiently. C. Wilson, H. Pettifor, G. Chryssochoidis. Applied Research (2017)
- https://www.sciencedirect.com/science/article/pii/S0306261917317002

Three key themes emerged from the focus group that should be considered in the final design of the program:

- Transparency – Participants felt that there needed to be full transparency of the costs and benefits of the program to the homeowner.

- Quality – Participants felt that good quality control of retrofit installation was both necessary and a valued part of the proposed program.

- Flexibility – Participants were interested in receiving credits for work already undertaken, whenever possible.

Overall, most participants expressed interest in the proposed program. A few participants indicated they were not interested in the proposed program; a few had already completed an energy retrofit or had enough expertise and financial means to not require the proposed program. Some participants were interested in the retrofit program but not the LIC loan. Participants agreed the LIC loan should be optional and that there should be the opportunity to pay off the LIC loan at any time without penalty. While a few participants did not feel they would purchase a standardized retrofit, they did see the value in the proposed program because it would make an energy retrofit financially accessible to a wider range of homeowners. Those interested in participating confirmed that matching utility savings with the LIC loan payment made the program highly attractive.

Welcome to the R-NEER Homeowner Focus Group

Why have we asked you here?
Let's get to know each other!

How long have you lived in Newmarket?

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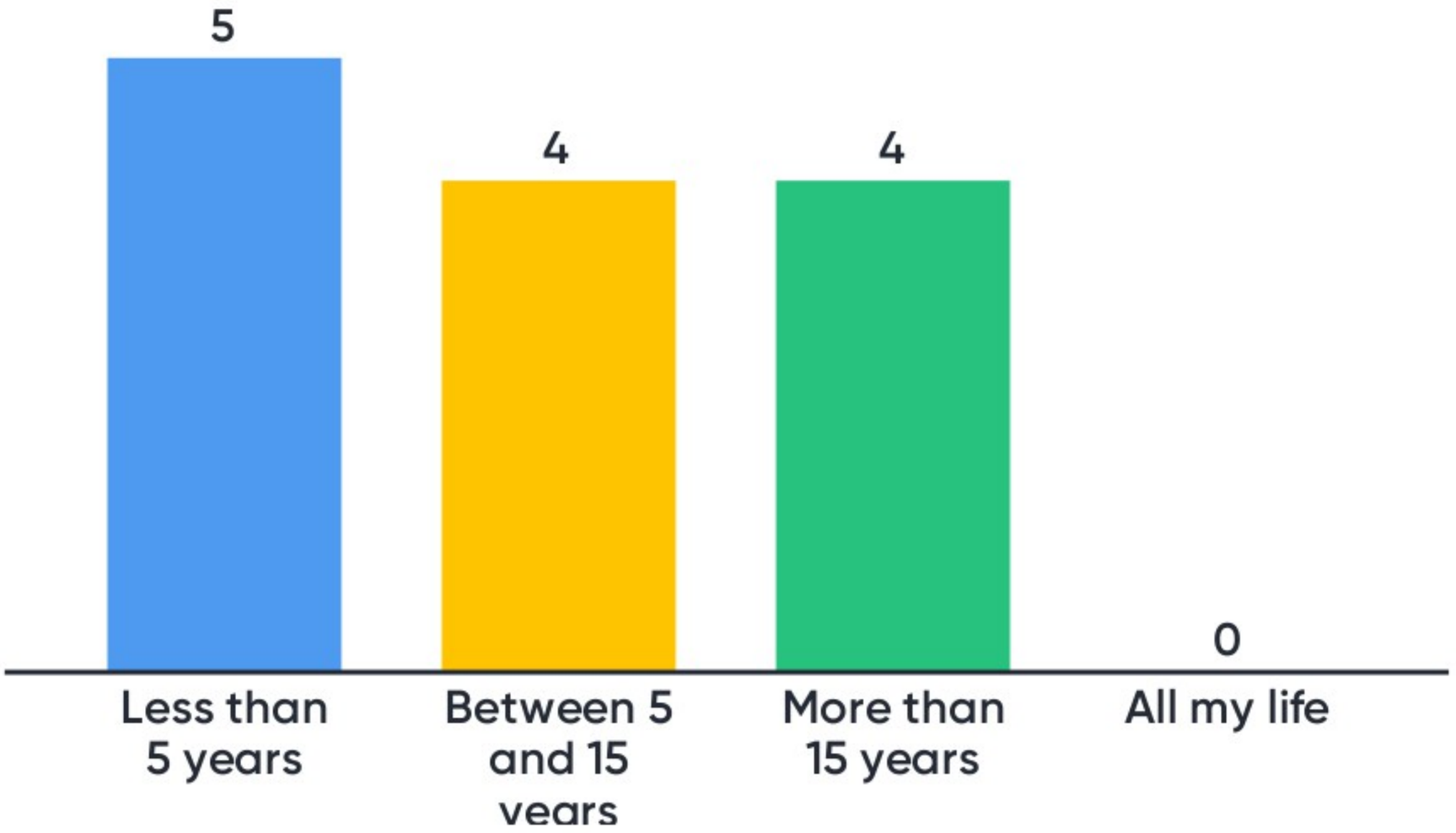

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How long have you lived in your current home?

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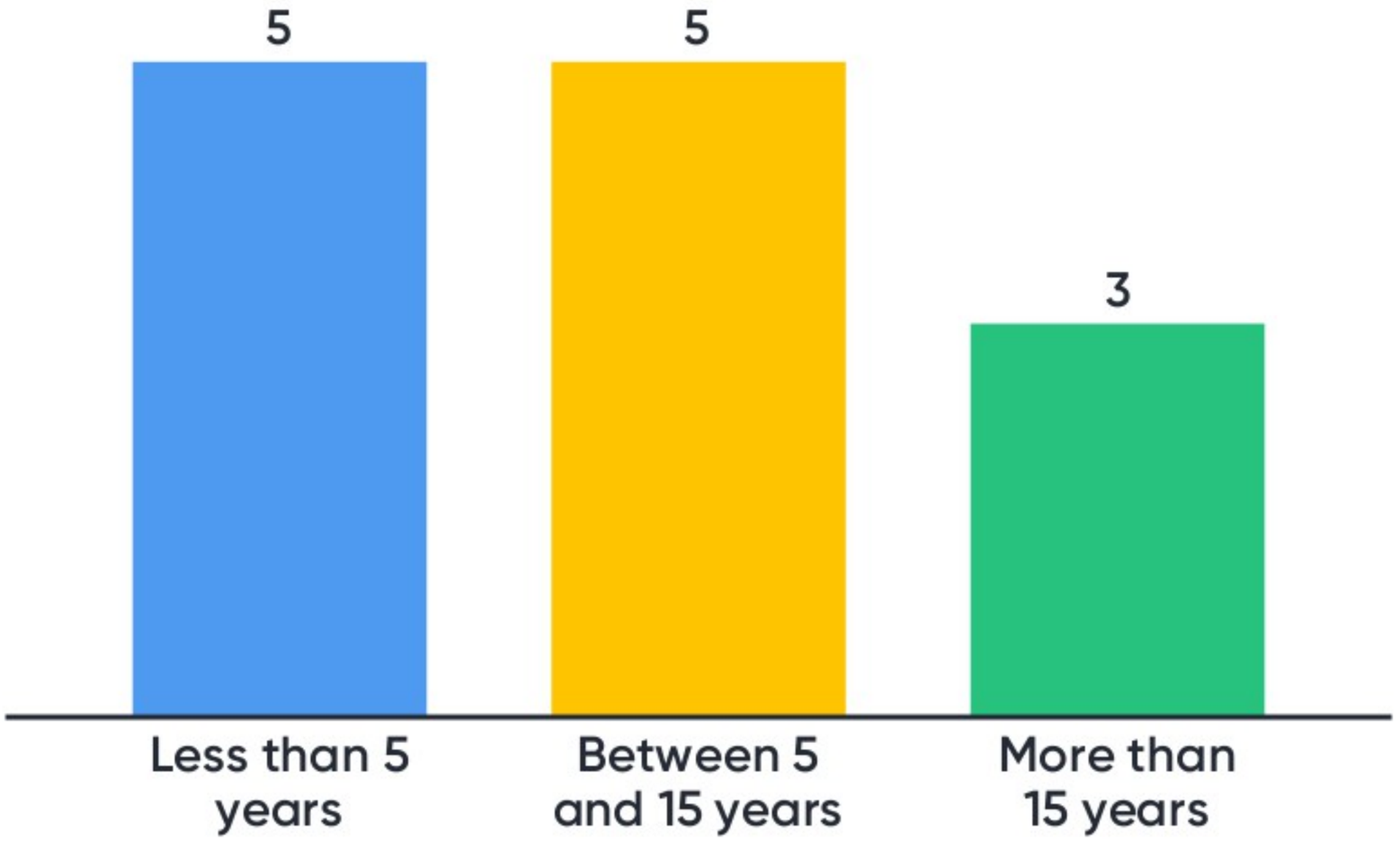

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How do you make your home renovation decisions?

- Why renovate?
- How and what to renovate?
- Which renovation products?

How do you make your home renovation decisions - why renovate?

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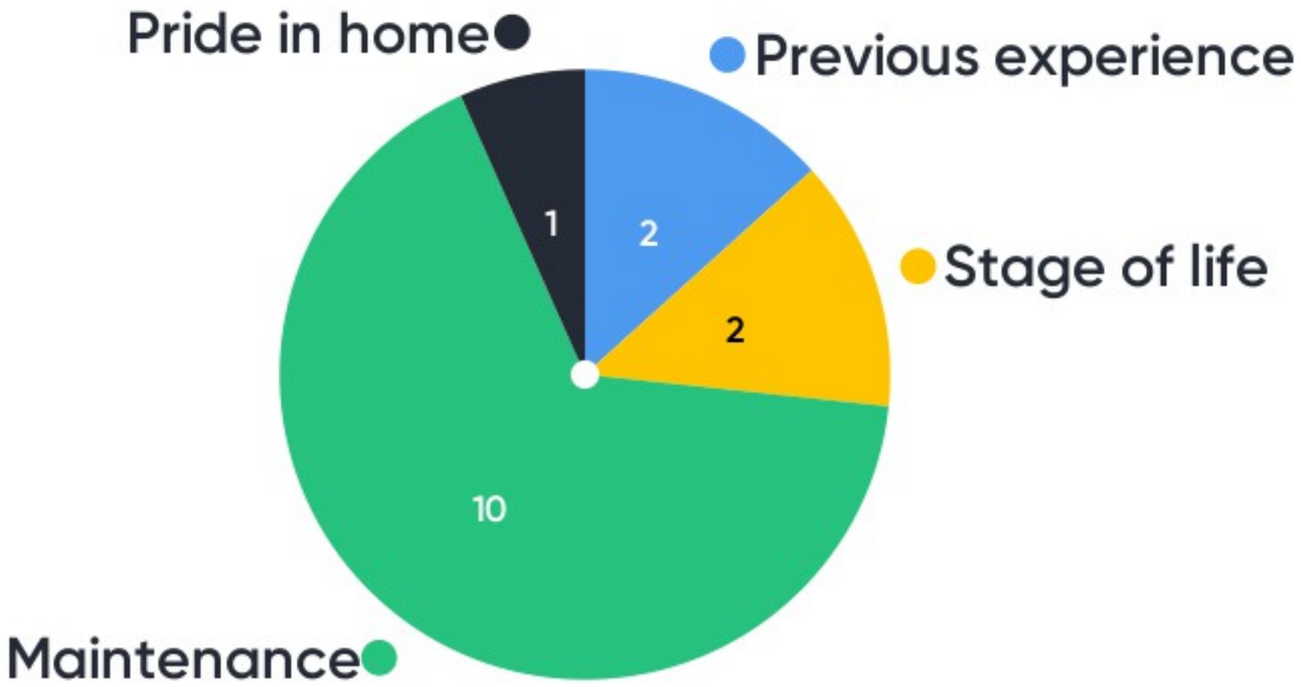

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How do you make your home renovation decisions - how and what to renovate?

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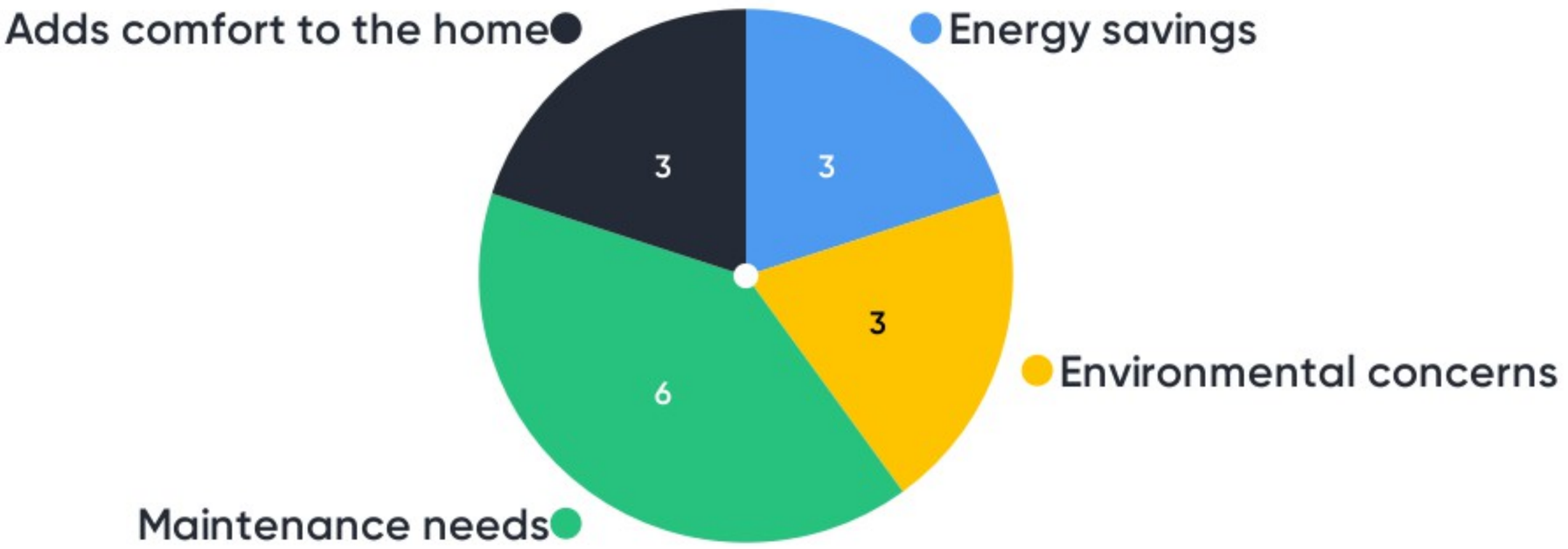

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How do you make your home renovation decisions - which renovation products?

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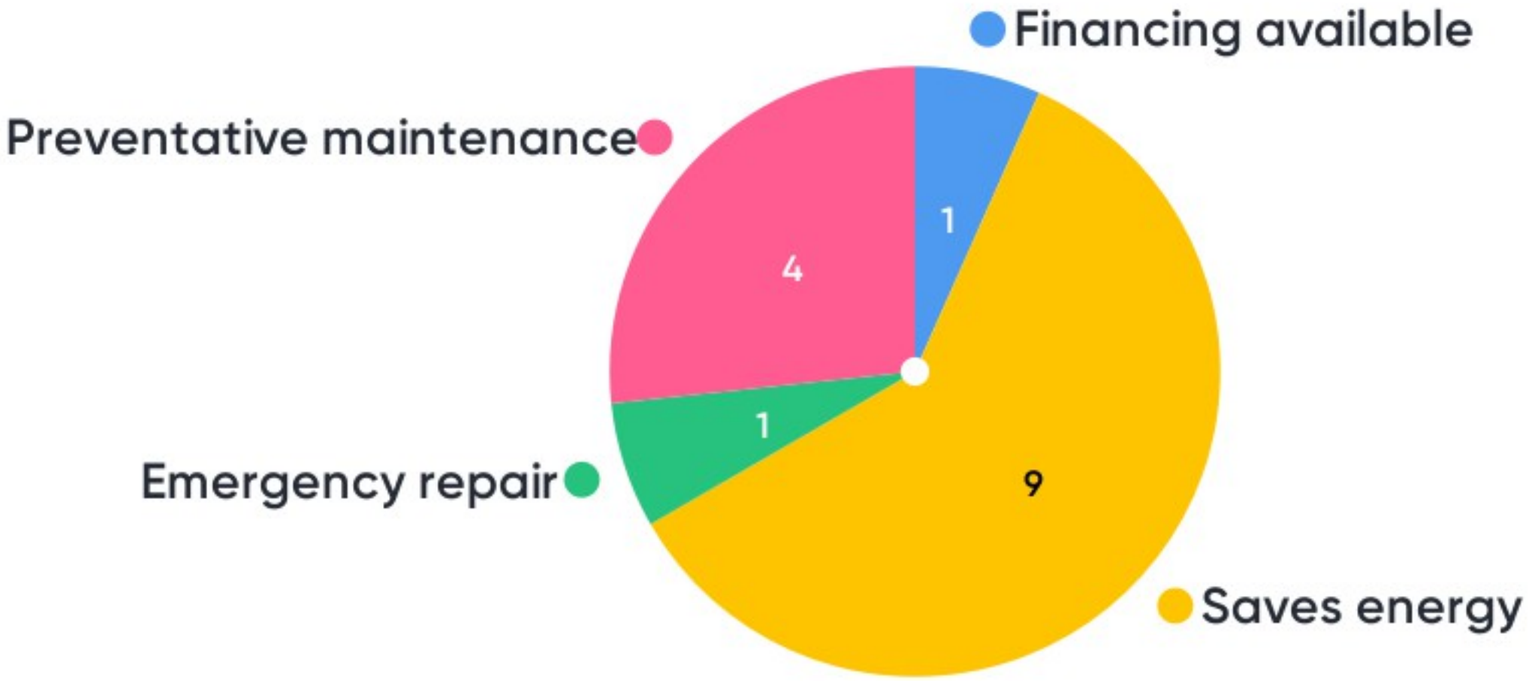

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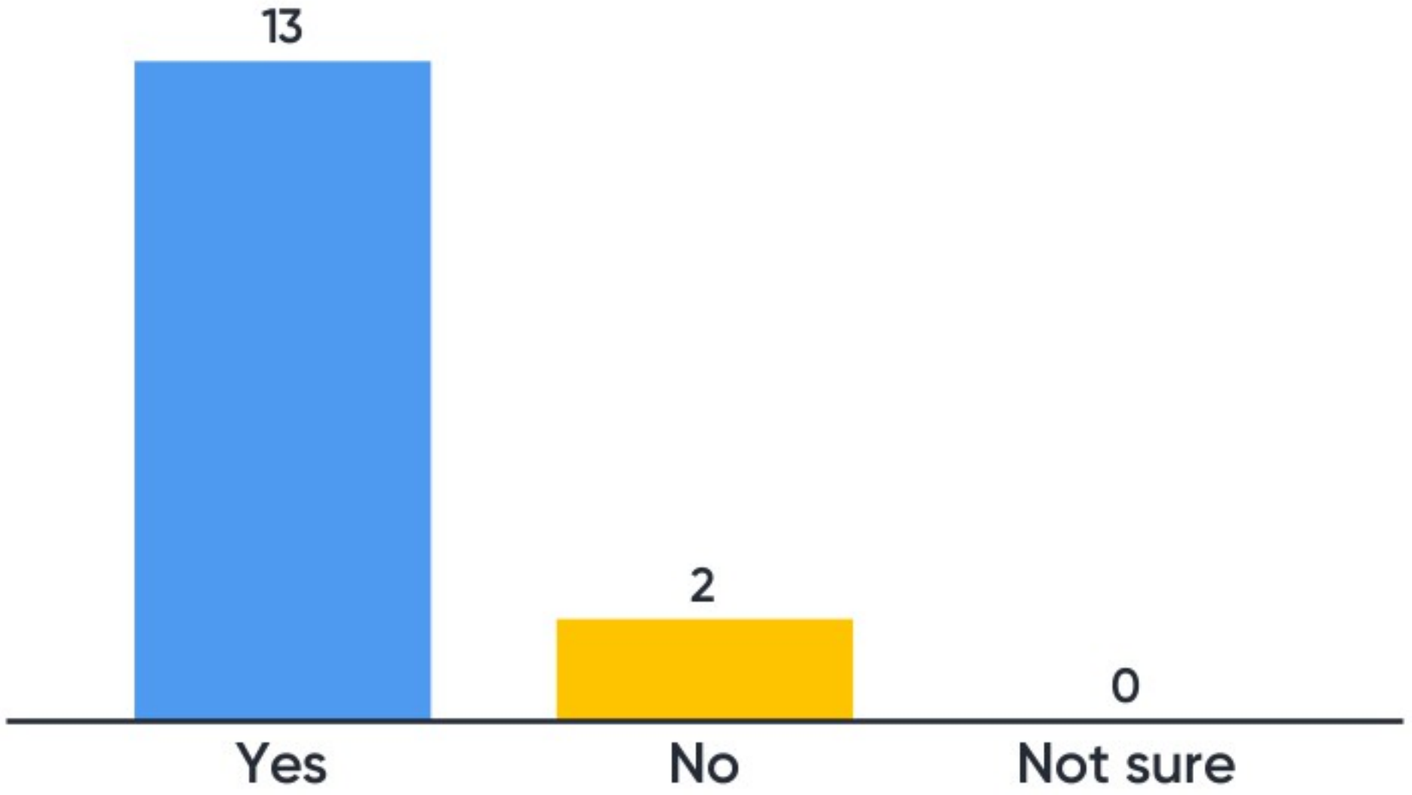
Efficiency Renovations

Review the handout of proposed energy & water efficiency measures.
Do you have any questions before we ask the next set of questions?

Have you completed any efficiency renovations in your current home?



Do you plan to undertake any efficiency renovations in the next 3 to 5 years?

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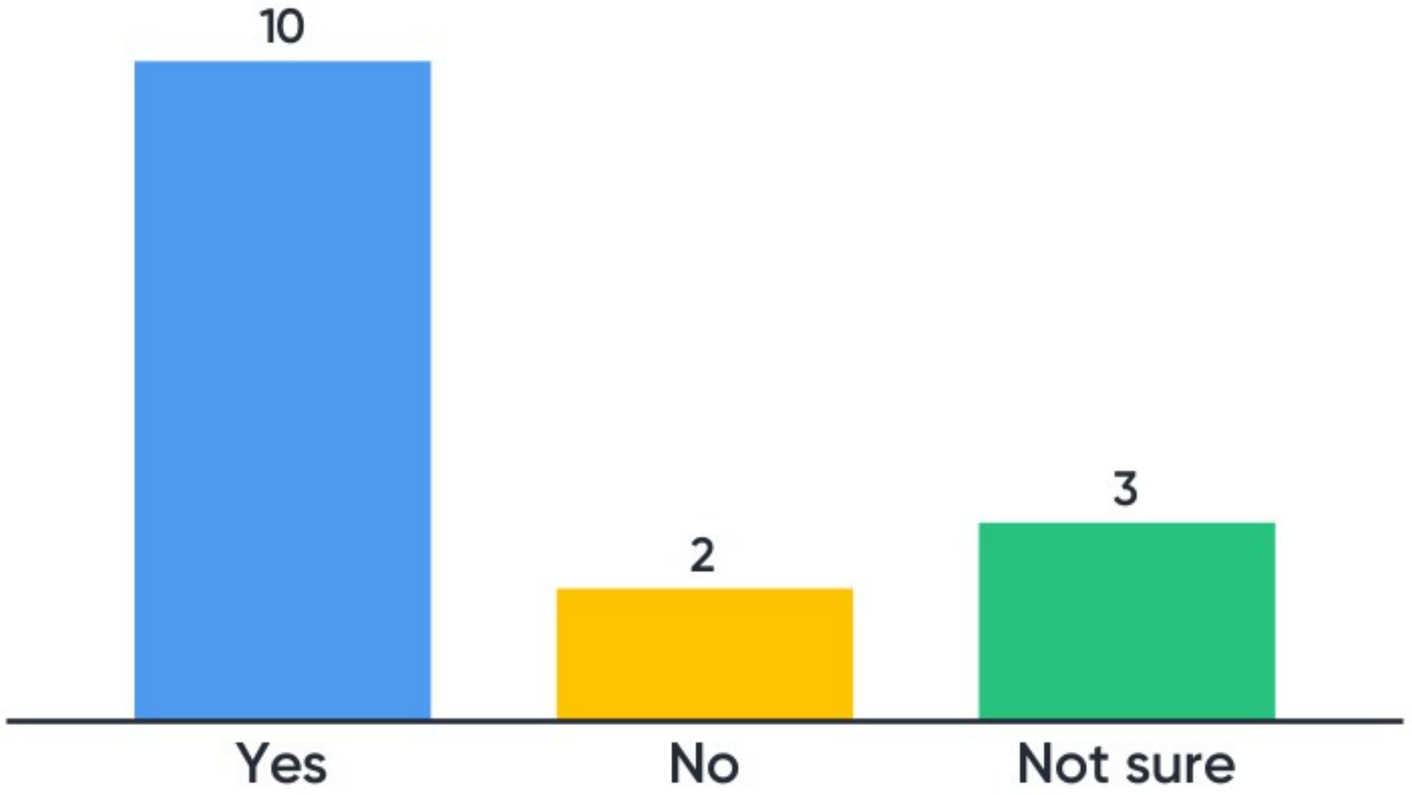

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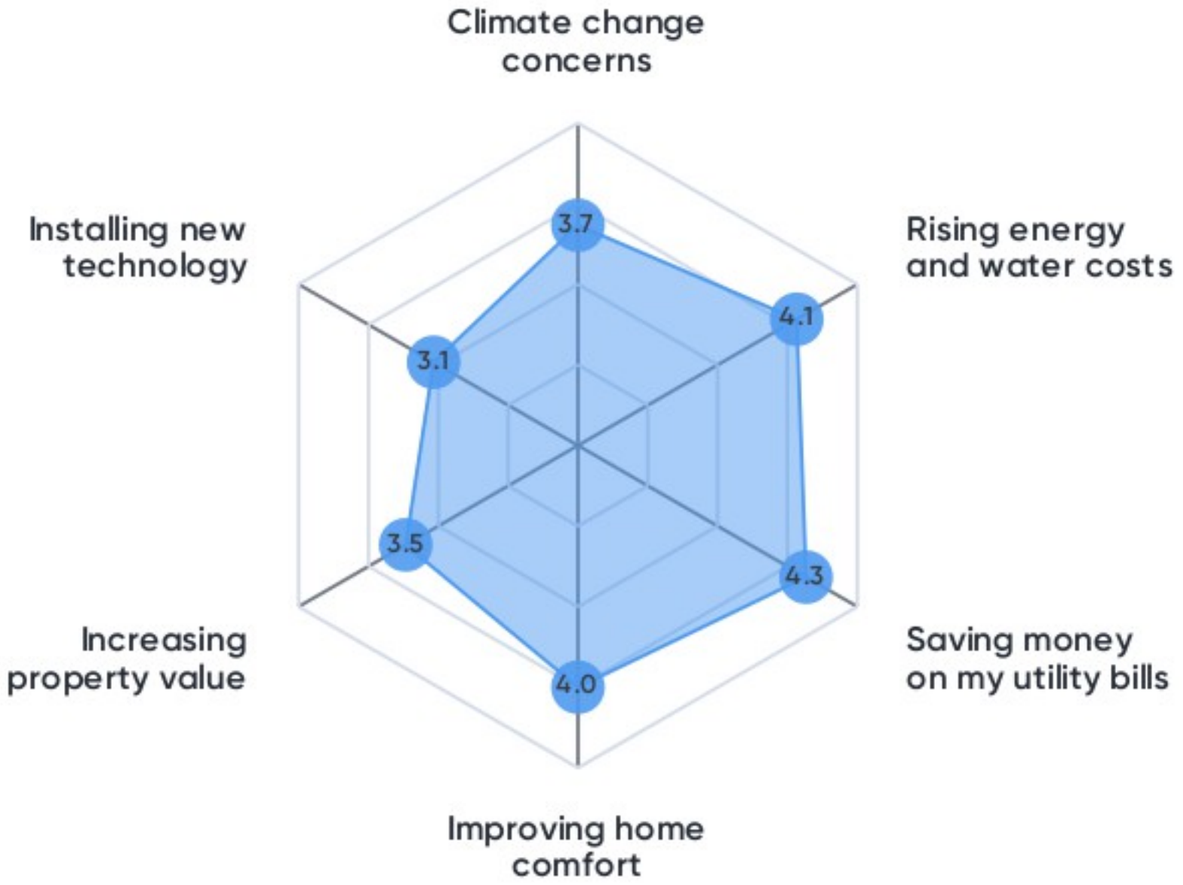
What would be your motivation to undertake an efficiency renovation?



What might stop you from undertaking an efficiency renovation?

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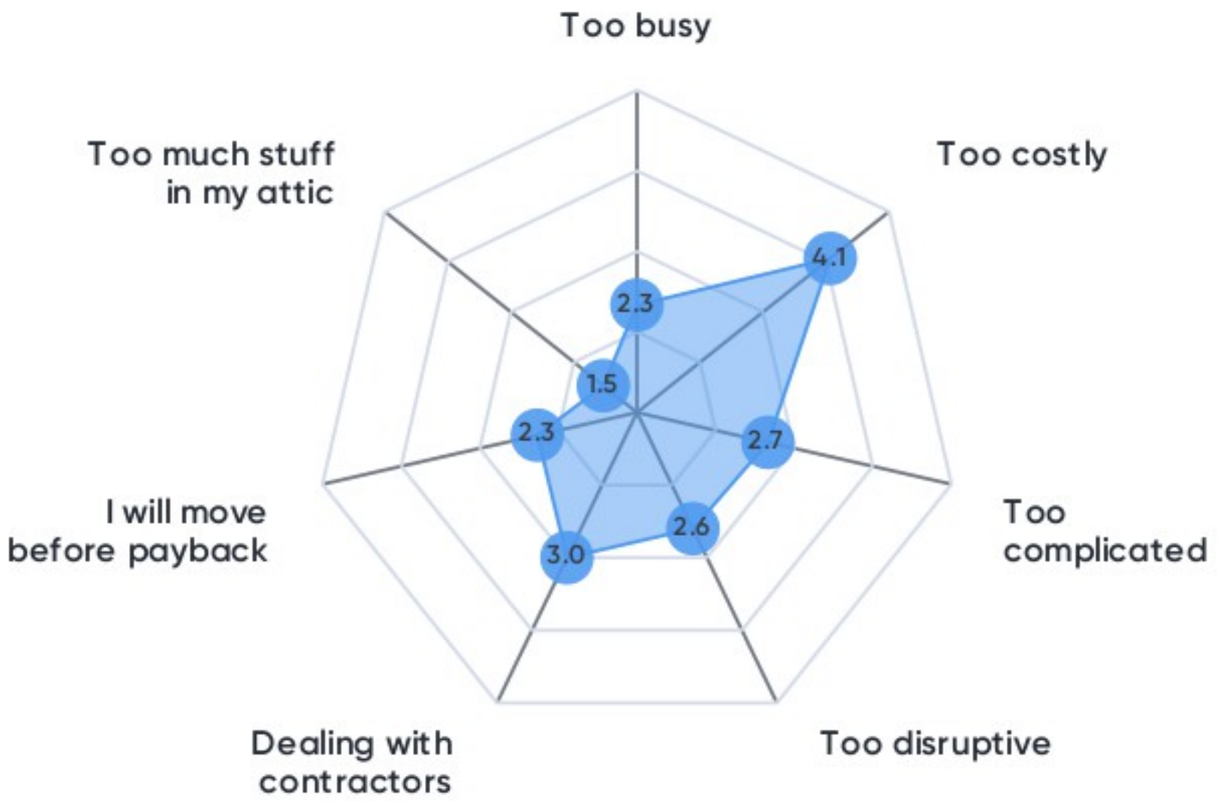


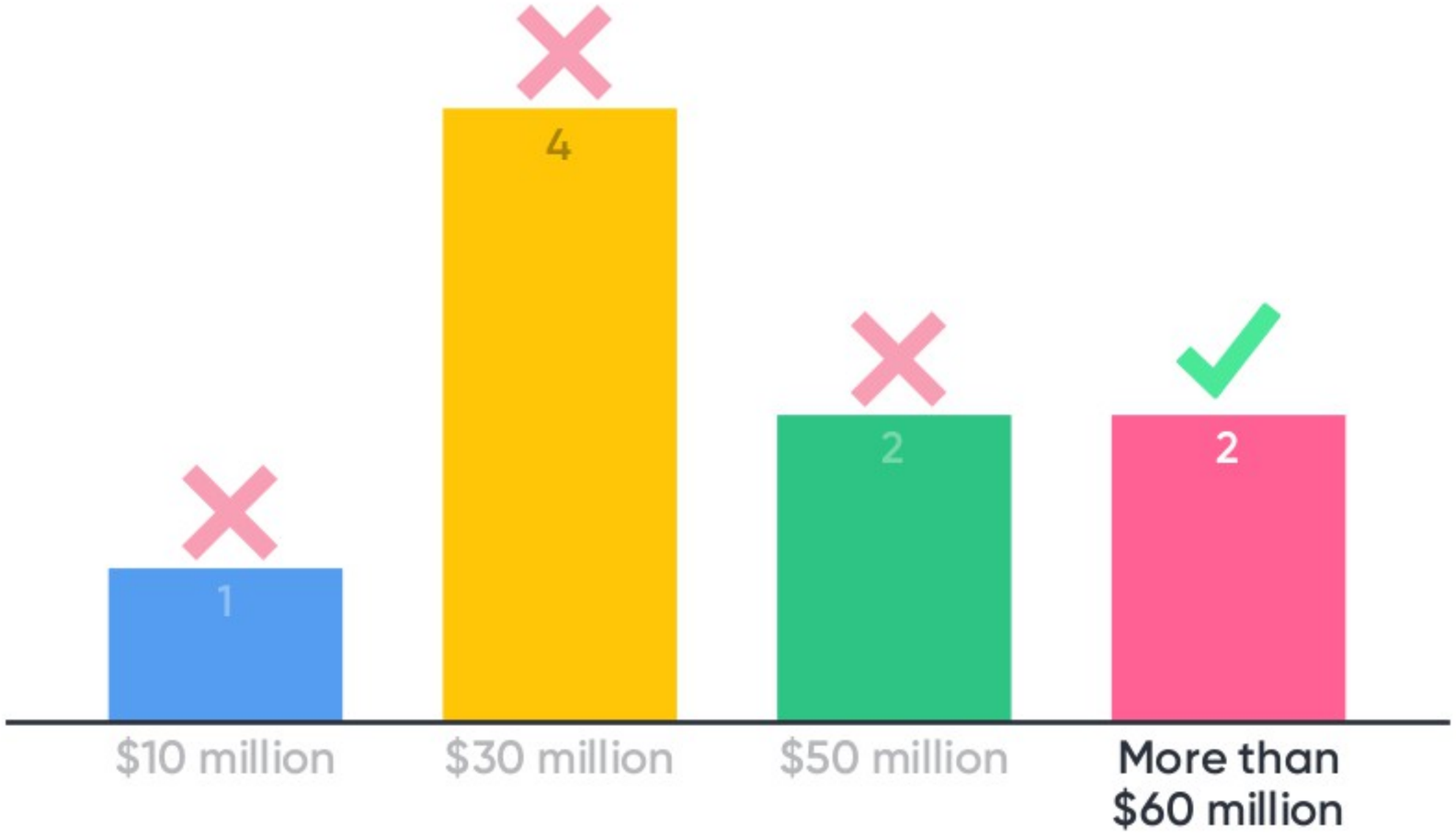
15

Introduction to R-NEER

Now we will introduce you to the proposed Newmarket Energy Efficiency Retrofit program for homes, but first a mini-quiz!

How much do all Newmarket homeowners and tenants spend on electricity, natural gas and water each year?

Mentimeter



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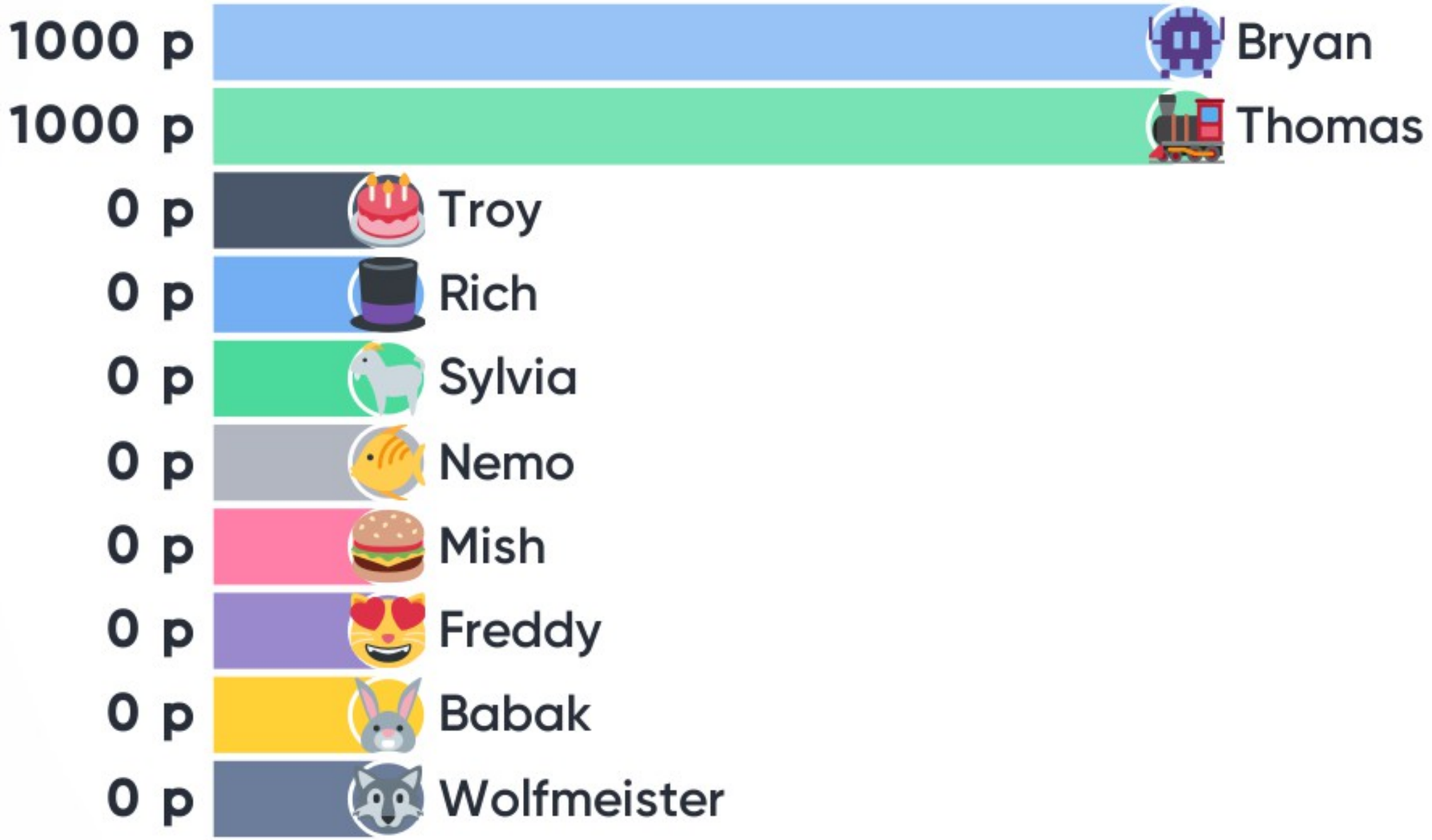
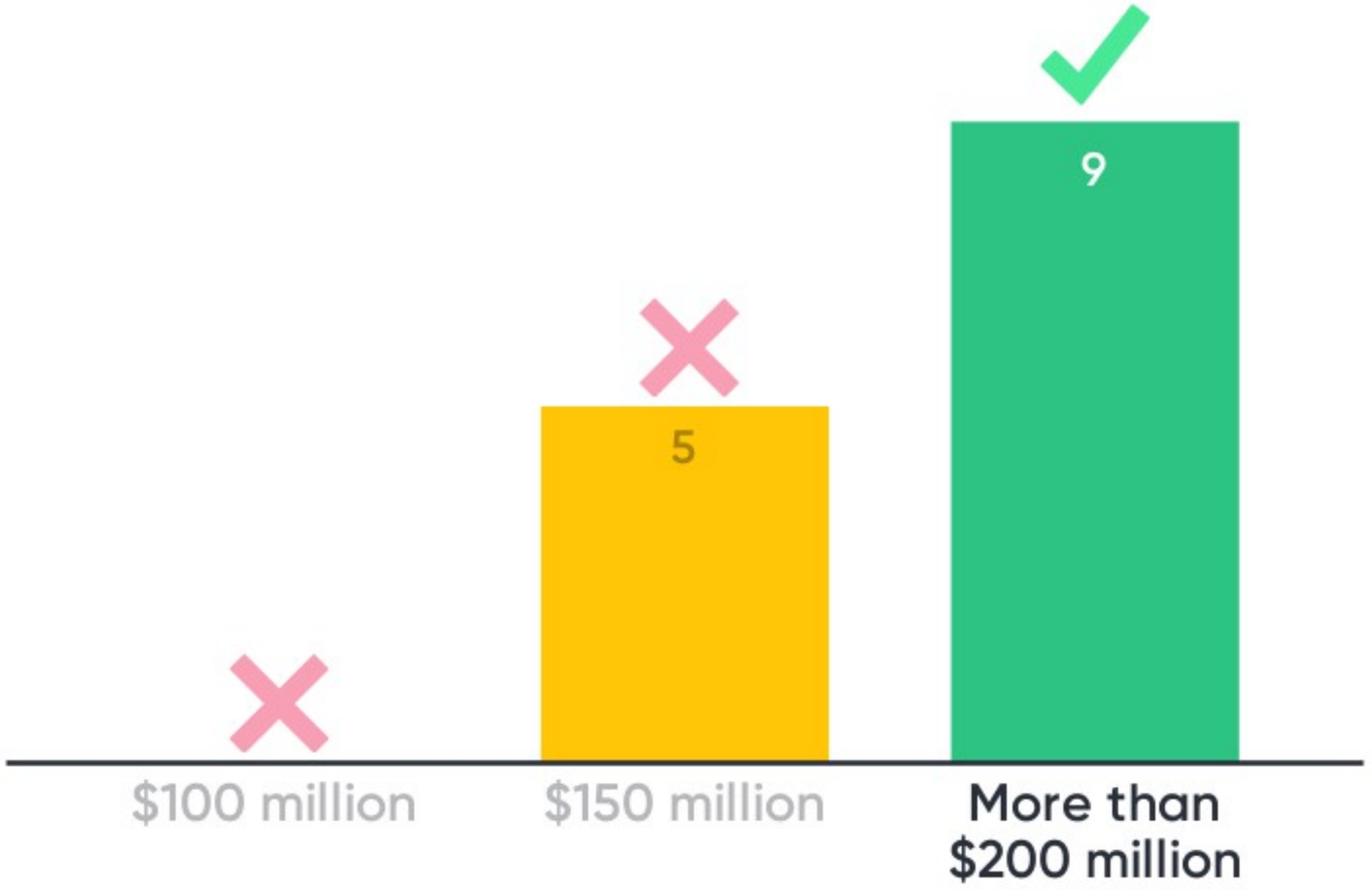
Leaderboard



What is the estimate that Newmarket homeowners and tenants will spend on utilities in 30 years?

Mentimeter



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Leaderboard

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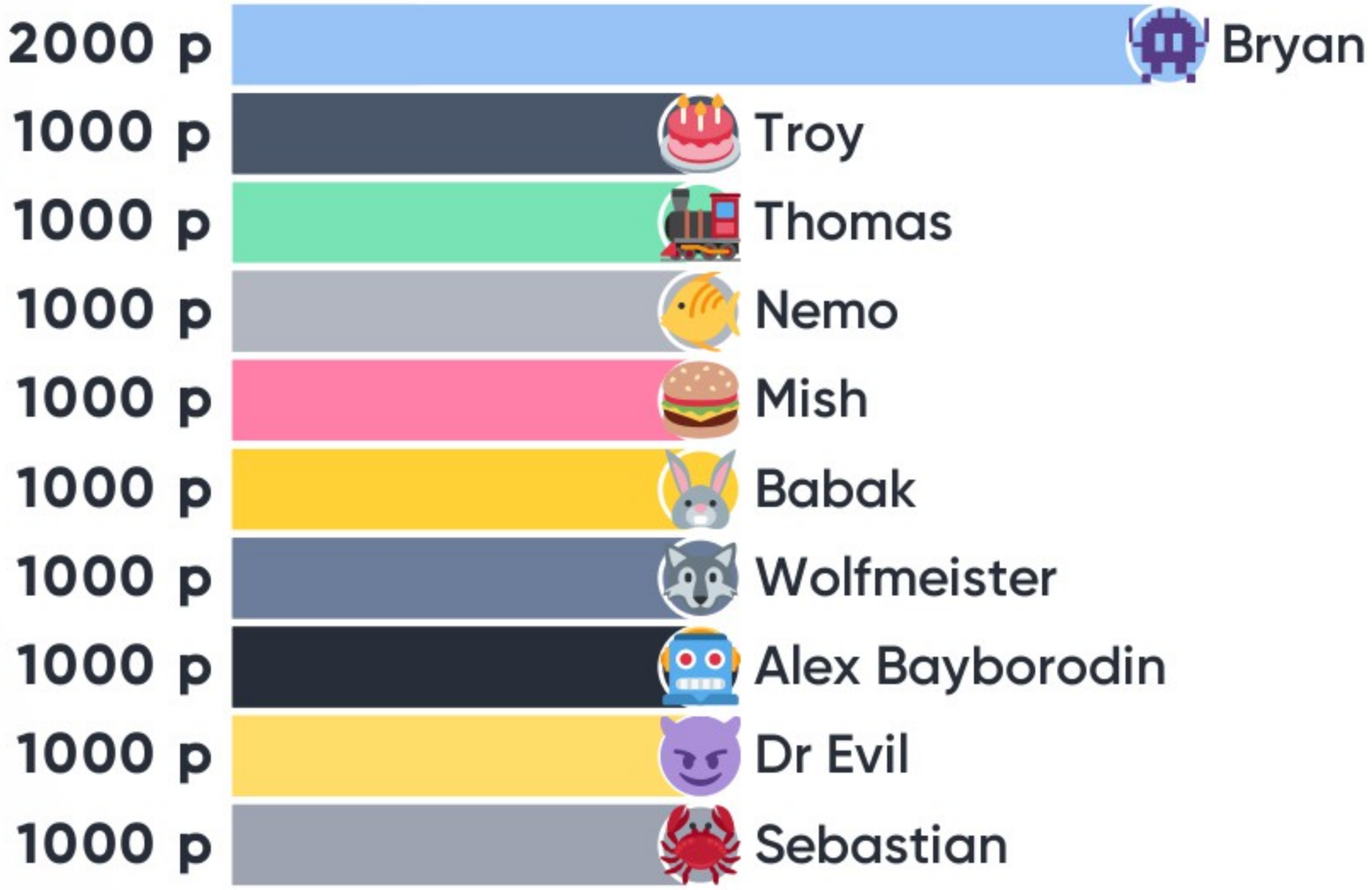


14

So, how will R-NEER work?

Review the handout. Do you have any questions before we start?
If you could book a pre-qualified contractor to come to your home and install - within three to five days - energy and water efficiency measures to reduce your utility bills by a third or as much as a half, would you be interested?

How might R-NEER impact your decision to make an efficiency renovation?

Mentimeter

High impact

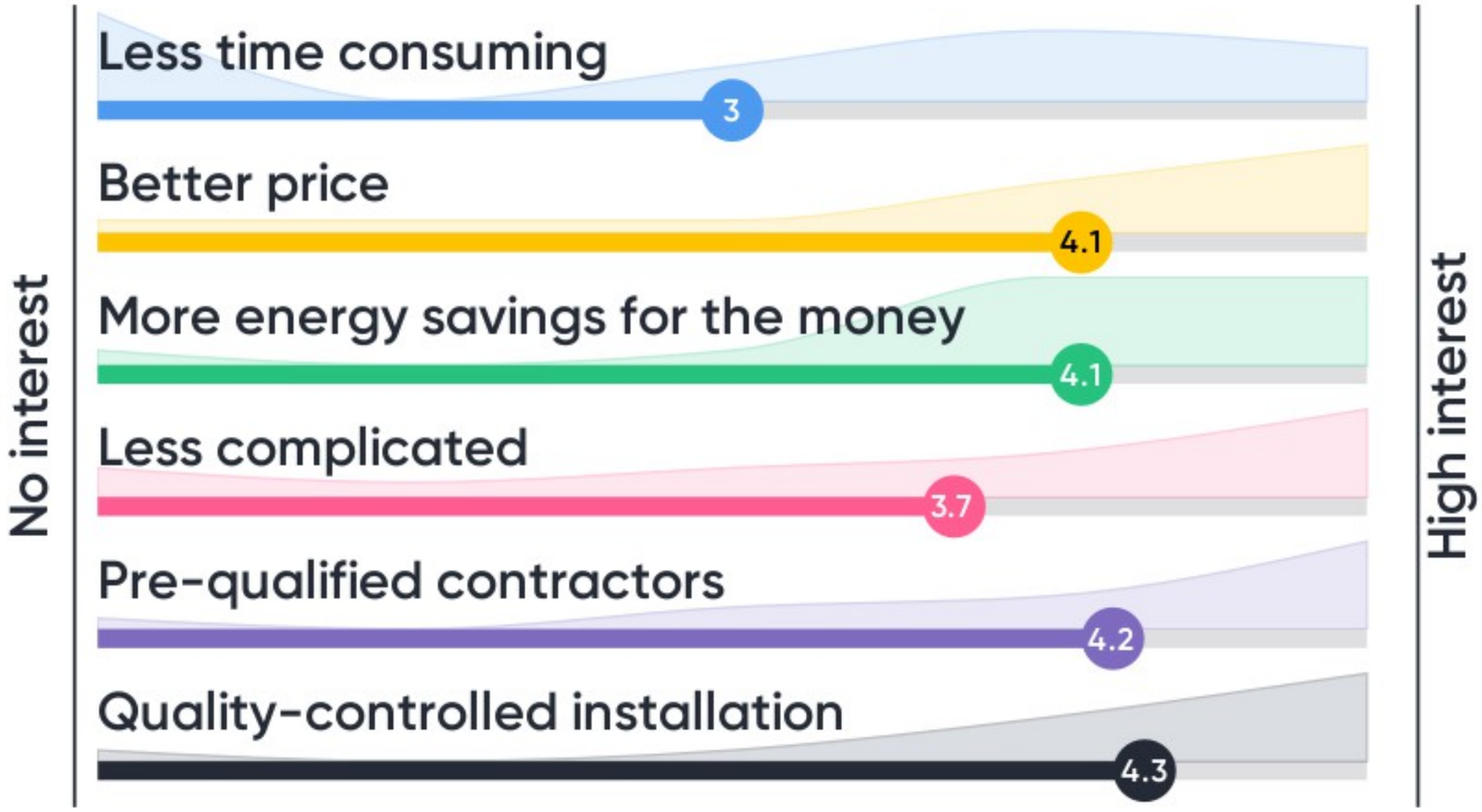
Low impact

0

No impact

14

What interests you about purchasing a standardized retrofit?



If you were in the market for a new home, would knowing the home had participated in R-NEER be a plus?

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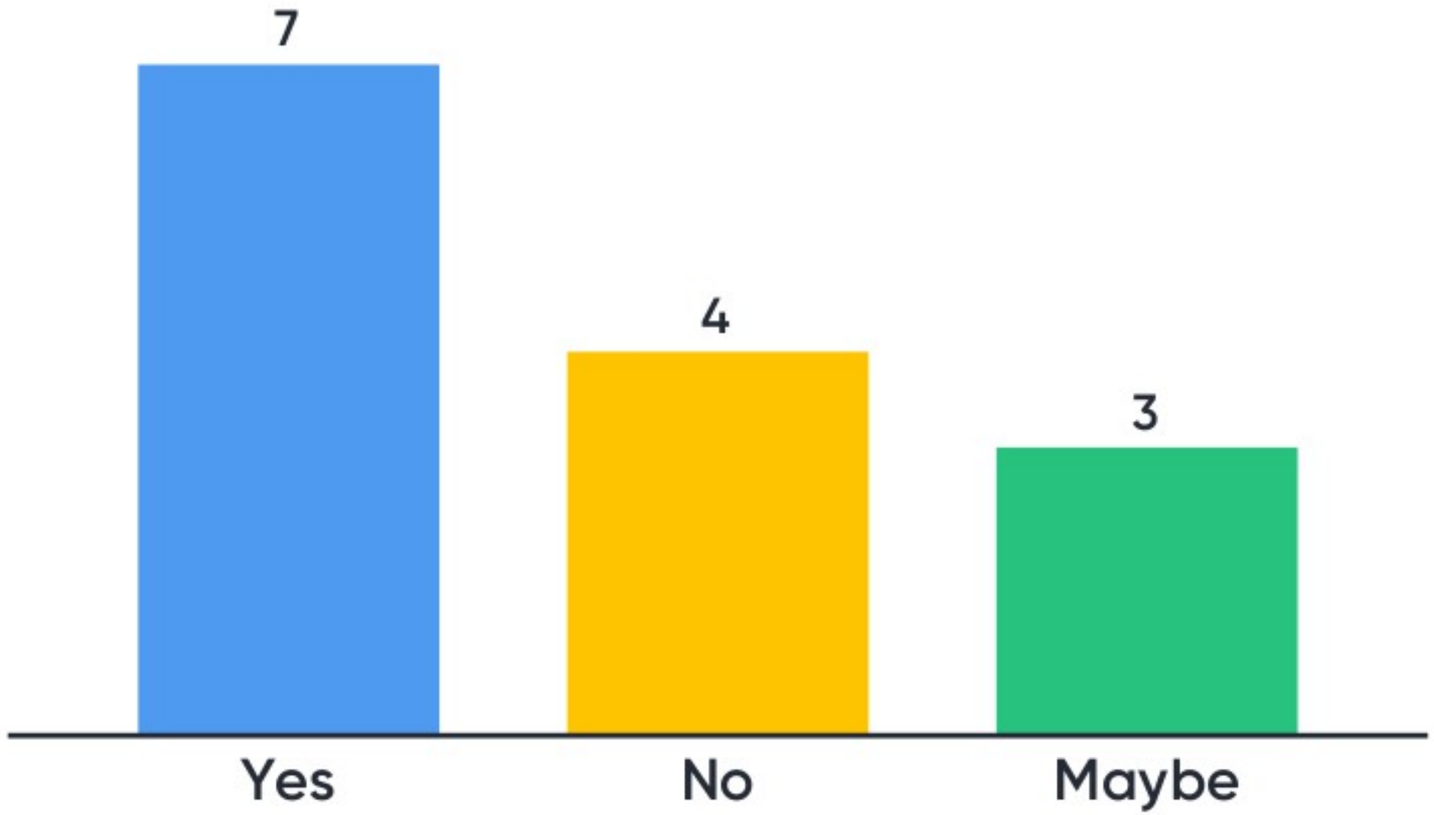

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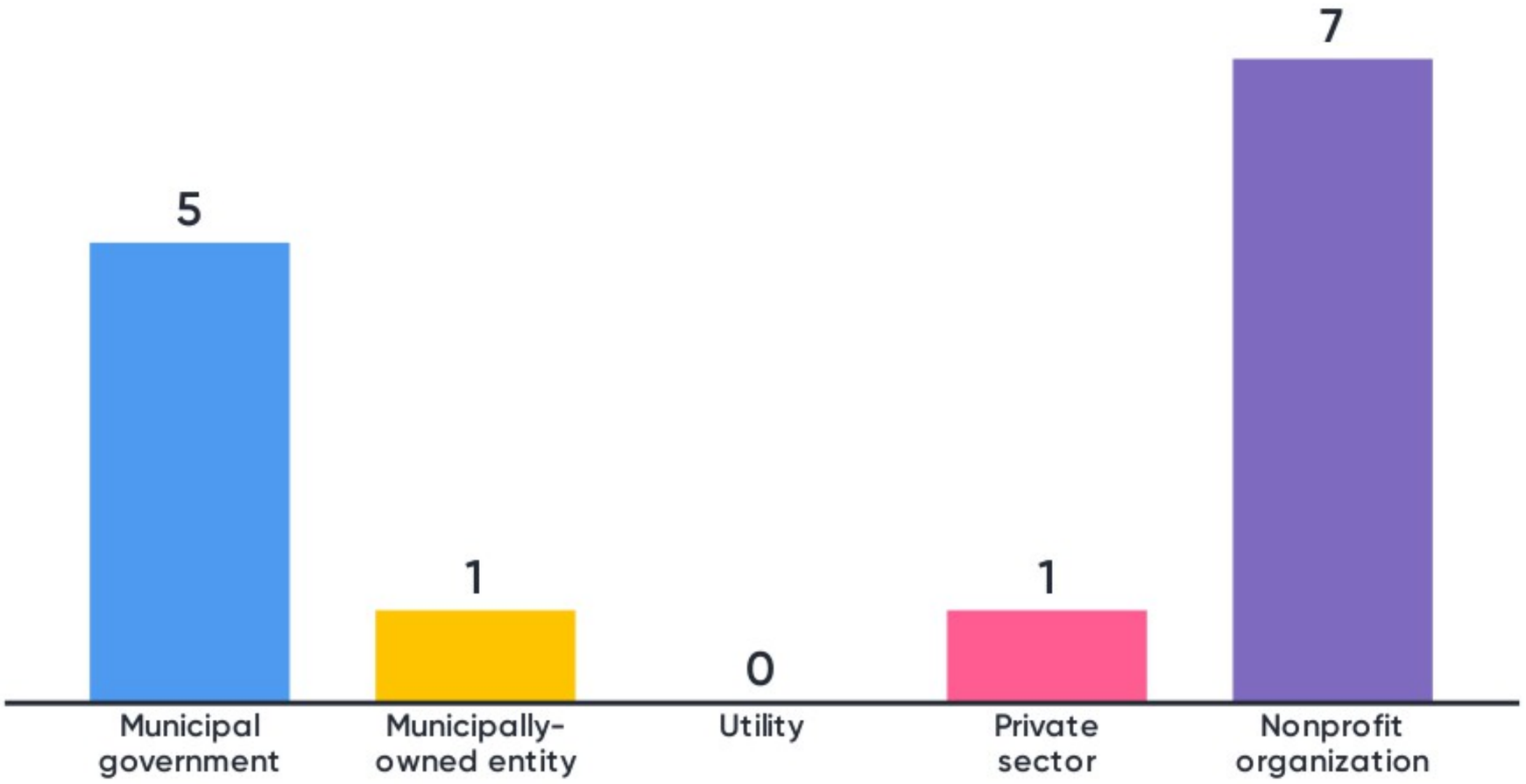
Who would you trust most to deliver this program?

Mentimeter



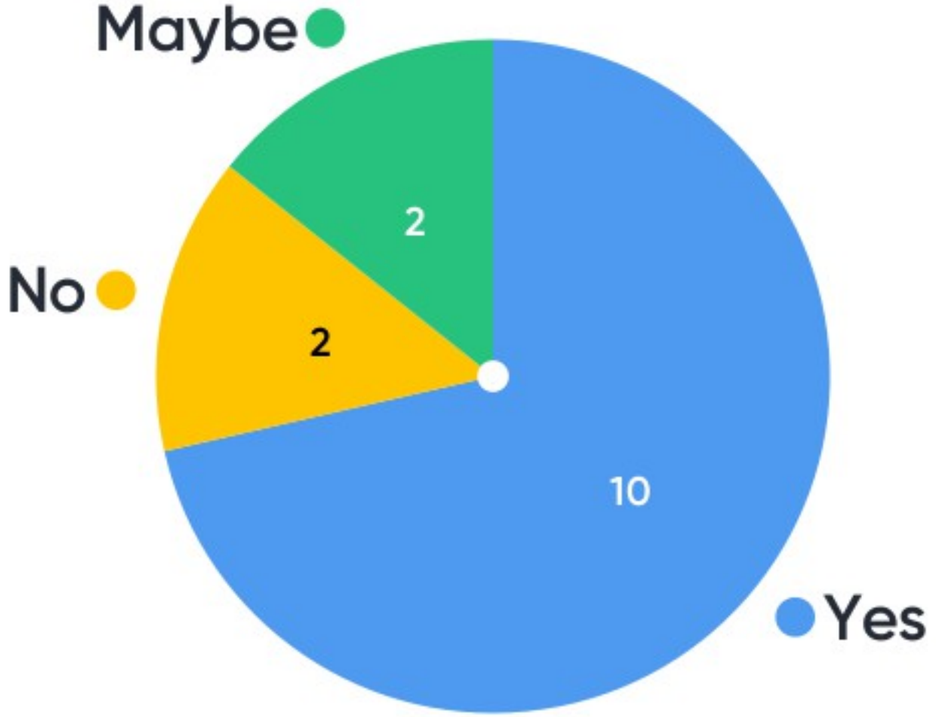
14

Municipal Loan

Provincial government rules allow municipal governments to loan homeowners money to pay for an efficiency renovation. The loan is paid back over a long period of time at a very low interest rate through an additional charge on the property tax bill. If you sell your home before you have paid back the loan, the next homeowner is responsible for making payments.

Would you consider a municipal loan?

Mentimeter



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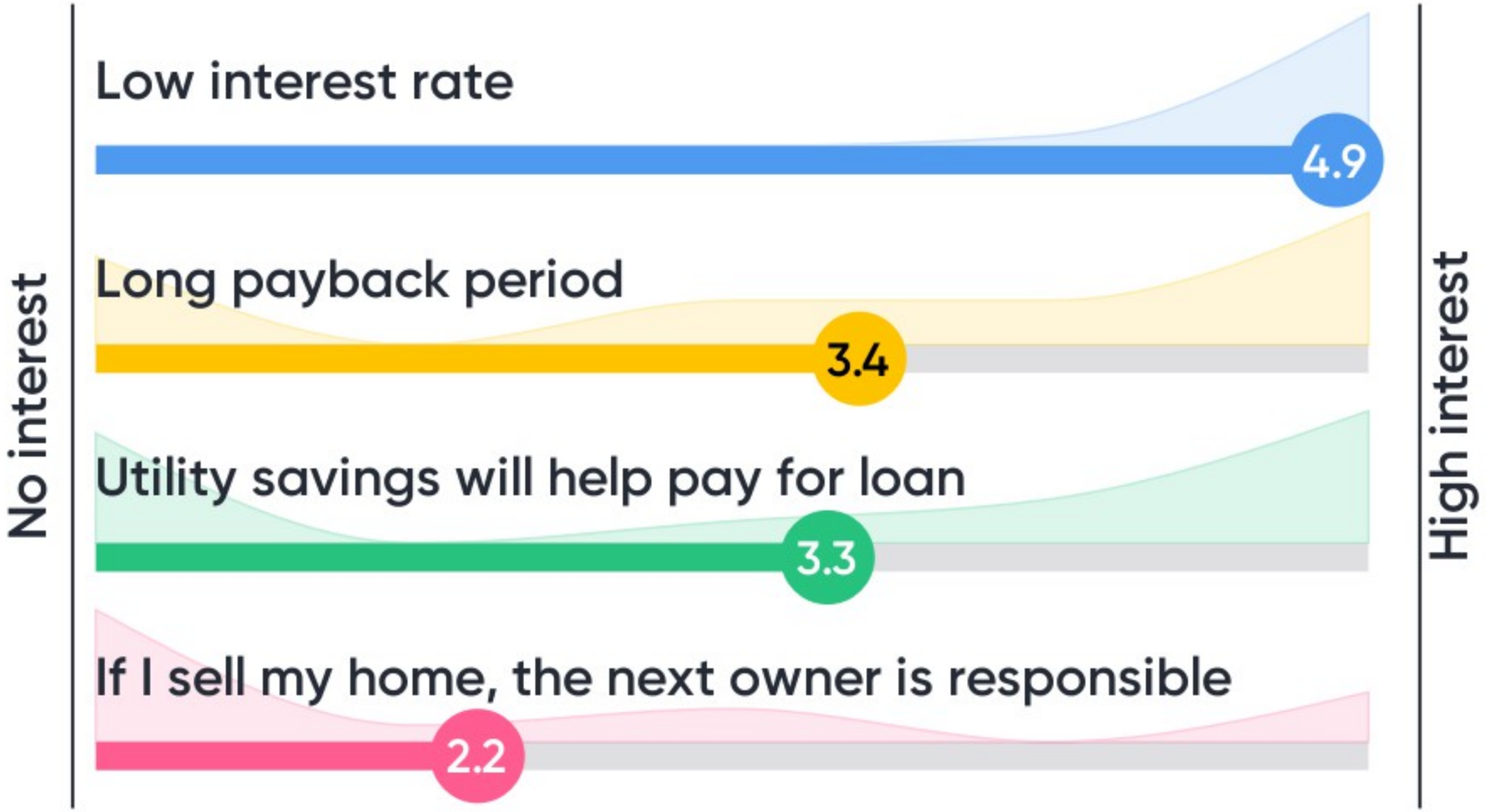
What interests you about a Municipal Loan?

Mentimeter



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What worries you the most about a Municipal Loan?

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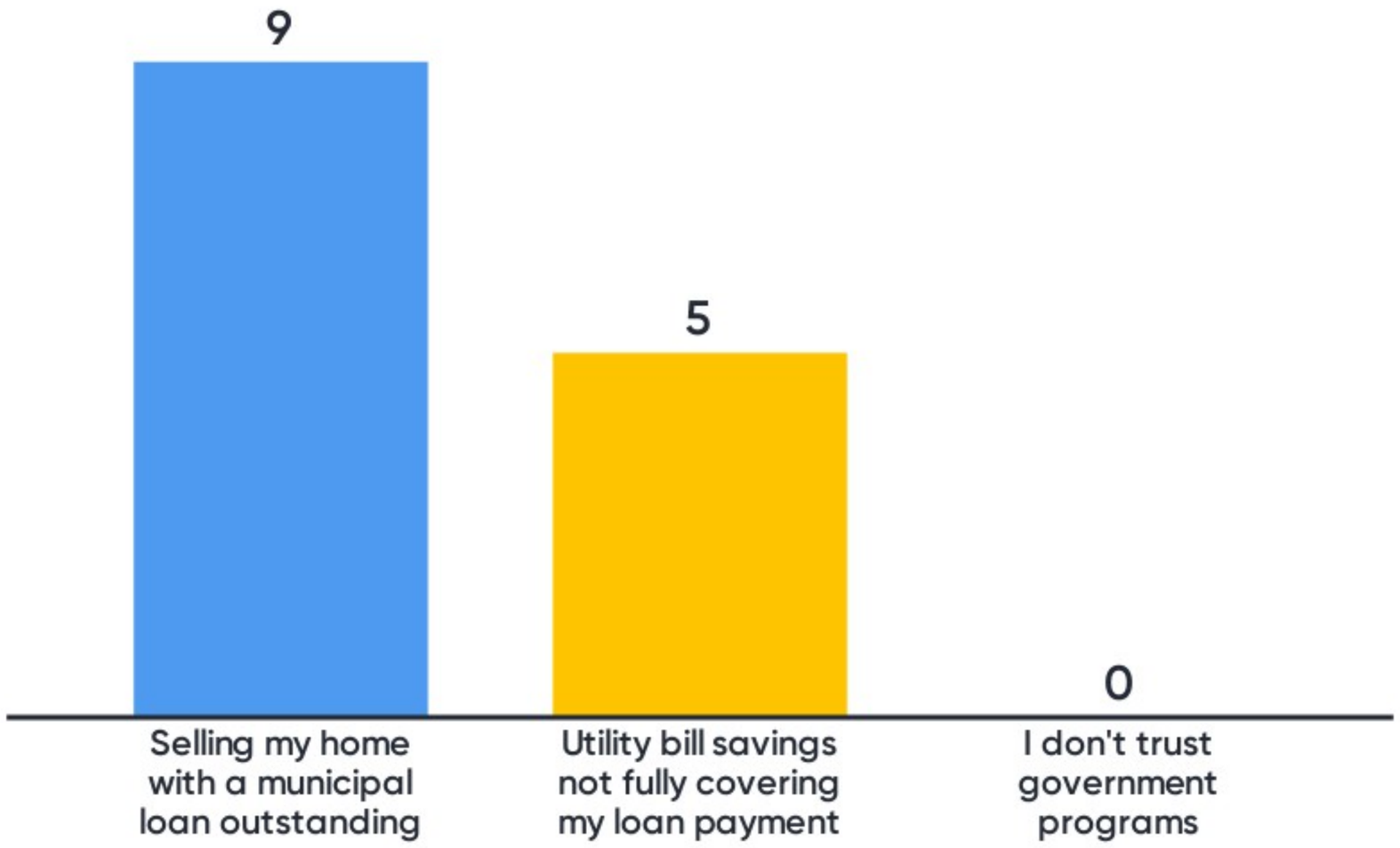

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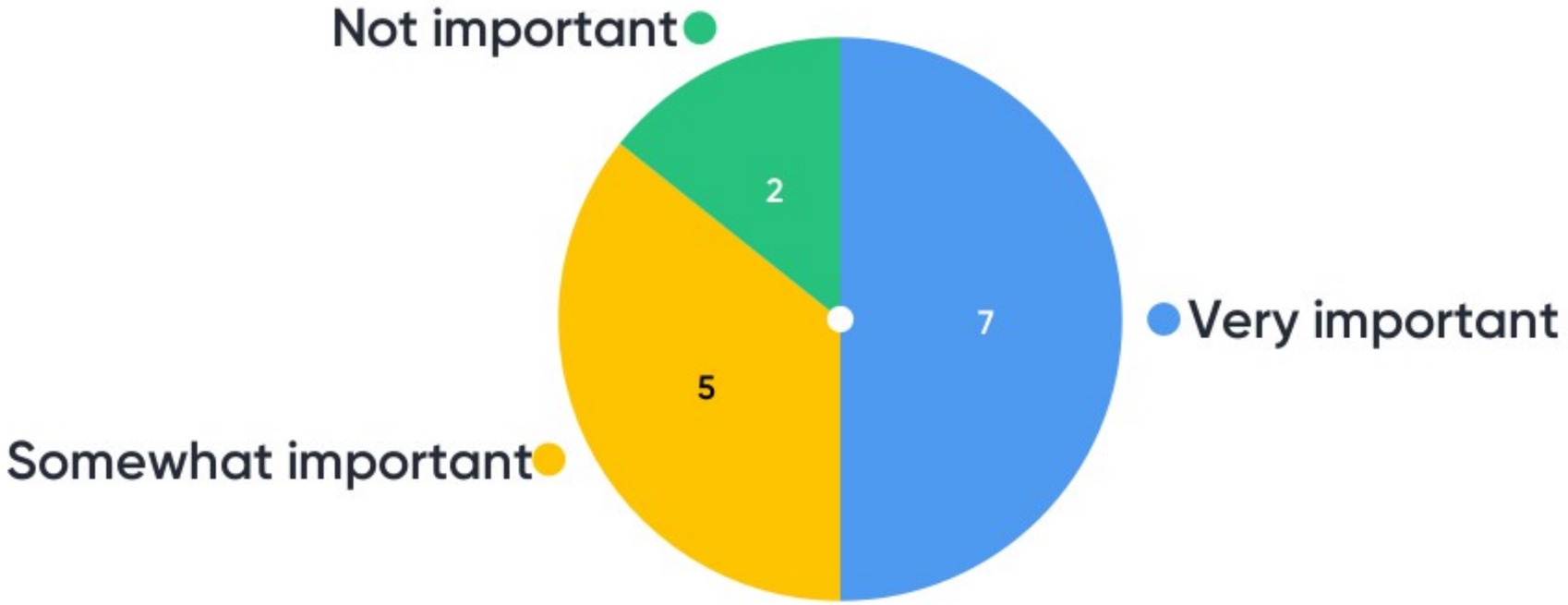
How important is it that the monthly municipal loan payments are covered by monthly utility savings?

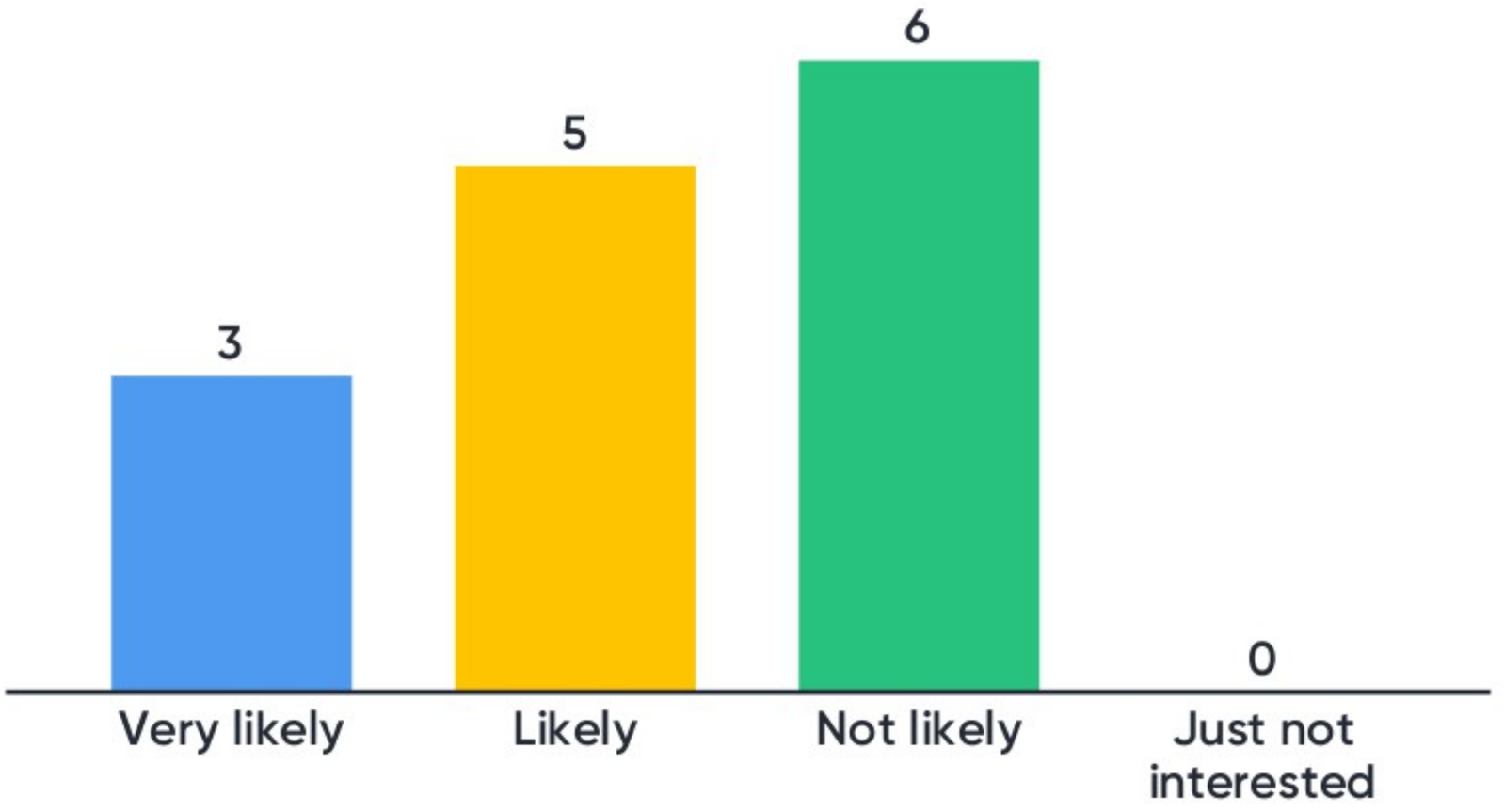


Final question

Yeah!

Based on what you know about R-NEER, how likely would you be to participate within the next 3 to 5 years?

Mentimeter



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Appendix M: Energy Efficiency Retrofits and the Ontario Building Code

Newmarket
Home Efficiency
Business Case

Energy Efficiency Measures & the Ontario Building Code

The following table summarizes the energy efficiency measures included in the Business Case and whether a building permit might be required.

Retrofit Component	Building Permit	Comments
Weatherization of envelope	No (note exceptions)	For such things as caulking and routine maintenance/replacement of façade materials etc., Building Permits are not typically taken out. The exception being masonry or where other structural modifications are being made). A Building Permit might be required depending on the extent of weatherization to the envelope. The Building Code Act requires that a Building Permit be taken out for construction (demolition) which can include anything from an addition or a material alteration through to a building repair. Where upgrading to the envelope has the potential for altering the performance of the wall (i.e. adding insulation in the exterior wall of an older house) we require a Building Permit so we can address 'unintended consequences' that may impact the performance and durability of the wall.
Attic insulation	No (note cautions)	Topping up an attic with additional loose-fill type insulation does not typically require a Building Permit. Notwithstanding there could be unintended consequences if the additional insulation blocks venting or covers electrical fixtures that have not been properly protected. Depending on how much insulation is installed there could also be impacts on loading and durability, particularly in attics containing shallow clearances.
Other insulation wherever feasible	Yes	Upgrading basement insulation is an area where we frequently run into unintended consequences with

including insulated ducts	(note complicating issues in Newmarket)	moisture and structural problems being at the top of the list. Foundation walls in older buildings are not well suited to accommodate additional insulation and air sealing. Newmarket is known for frost prone susceptible soils; therefore, extra precautionary measures over and above the Building Code are considered on all new construction to minimize risks associated with ad-freezing etc. Unfortunately, it is difficult and expensive to incorporate these measures into the built environment. Where Building Permits have been taken out to upgrade basement insulation (such as creating an Accessory Dwelling Unit), we caution homeowners about the potential problems to limit our exposure and liability.
HVAC upgrades of furnaces, boiler and A/C	No (some exceptions)	If it's a straight replacement of the appliance we do not require a Building Permit. If work needs to be performed on an exhaust or the fuel source is being changed (i.e. oil to gas) other approvals (Enbridge) would be required. If modifications are being made to the distribution system or the appliance is a new addition to the residence, then a Building Permit is required. Examples would include adding/reconfiguring a heat duct system or adding a boiler for a radiant floor heating system where additional code requirements (i.e. backflow prevention) may be applicable.
Low-Flow faucets, showers and WC	No	These are considered fixtures and considered routine replacement. Again, a Building Permit is typically not required unless additional changes are being made to the plumbing system.
Domestic hot water upgrades	No (some exceptions)	Simply replacing a domestic hot water tank with a more efficient unit would not trigger the need for a Building Permit unless the water distribution system was being altered. If work needs to be performed on an exhaust or the method of operating the tank is being changed (i.e. oil to gas or electric to gas) other approvals (Enbridge and/or ESA) would be required. Introducing either a tank-less water heater or a hot water recirculation system would be considered new additions to a residence and therefore prompt the need for a Building Permit.
Windows	No	Straight replacement of a window of the same size would not require a Building Permit. In certain instances, windows perform other functions (i.e. egress, ventilation, guard); therefore, any replacement

		window would have to maintain those same attributes.
Lighting	No	Falls under ESA authority unless it is being installed for life/fire safety (i.e. Accessory Dwelling Unit).
Comfort Controls	No	Replacing a thermostat with a programmable or smart unit would not require a Building Permit.