



Town of Newmarket
395 Mulock Drive P.O. Box 328,
Newmarket, Ontario, L3Y 4X7

Email: info@newmarket.ca | Website: newmarket.ca | Phone: 905-895-5193

Newmarket Energy Efficiency Retrofit Business Case Progress Update Information Report

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Department(s): Planning and Building Services

Author(s): Meghan White & Adir Glikson

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In accordance with the Procedure By-law, any member of Council may make a request to the Town Clerk that this Report be placed on an upcoming Committee of the Whole agenda for discussion.

Purpose

This Information Report provides an update on implementation of Newmarket's Community Energy Plan (CEP), and specifically the Energy Efficiency Retrofit program business case development. The target for the Residential Newmarket Energy Efficiency Retrofit (R-NEER) is to reduce residential annual greenhouse gas (GHG) emissions by 60%, increase annual energy efficiency by 35% and increase annual water efficiency by 20% within the next 20 years.

Background

Current Retrofit Market Vs. R-NEER Market

The current energy-efficiency retrofit market for both homeowners and contractors is relatively unattractive. From the perspective of the contractor, the efforts to prepare customized proposals are high and project uptake is low. Low volumes and the fact that every project is specific to each household means that material costs are expensive and that performance guarantees are risky. From the homeowner's perspective, obtaining understandable bids from various contractors is burdensome and funding large-scale energy retrofit projects can pose a challenge.

R-NEER would deliver a standardized, scaled approach that does not currently exist in the retrofit market and would benefit both homeowners and contractors. Contractors would benefit from increased project predictability and higher project volumes.

Homeowners would benefit from a simplified transaction, guaranteed pricing, and a simple payment approach.

Progress to Date

The business case is a comprehensive investigation into the feasibility of establishing a fully functioning and autonomous Municipal Service Company, as an Entity, that would deliver high energy-efficiency retrofit solutions to a majority of Newmarket's residential sector.

Standardized Core Energy-Efficiency Retrofit Packages

The operations of the Entity will be structured such that Newmarket residents can easily engage with an R-NEER representative who would offer a standardized core energy retrofit package and result in annual energy savings between 30 to 50%. The package cost would be dependent on home age and type and include most if not more of the following retrofits:

- 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
- Lighting / Other Electricity
 - 100% LED re-lamping
 - Allocation for Smart Strips
 - Occupancy sensors
- Water / Hot Water
 - Low-Flow faucet regulators & shower heads
 - Toilet flow regulators
- Comfort Controls
 - Smart thermostat and smart power strips

Although the business case currently only assumes the installation of these standardized retrofits, the Entity could investigate additional options including solar photovoltaic (PV), solar thermal, and vehicle charging stations. Future options could also include heat pumps, heat recovery ventilators, energy management services and more.

Retrofit Pricing Approach

The standard retrofit packages are designed to be priced based on a fixed index cost per specific area (\$/m²) which will minimize transaction costs and complexity. The benefit of this approach is that the retrofit would be easy to buy and easy to sell.

The Entity would collaborate and negotiate with local contractors and material suppliers to ensure predictable quality and costs. The Entity would also track completed projects to rigorously manage ongoing cost and pricing.

Local Improvement Charges (LICs)

The R-NEER business case proposes to fund retrofits using Local Improvement Charges (LICs) as its financing mechanism. LICs are a fixed annual charge added by the municipality onto the property tax which amortizes the cost of the project over a period of time. The benefit of LICs are that:

1. There are little to no upfront costs.
2. The LIC is typically the same or less than the annual energy savings from the retrofit depending on the age, type, and condition of the property.
3. Residents have access to low-interest rates that are typically only available to municipalities.
4. The LIC charge remains with the property and will not follow homeowners if they move.

Additional exploration into LICs was completed to ensure no adverse effects towards the Town's financial liability and allowable debt load. A report on risk management is currently being completed to address prior concerns with LICs. Current indications are that the risks are manageable. Additional information is available if desired.

Market Penetration

The CEP calls for a majority of existing homes (~80%) to be retrofitted within the next twenty years. The business case details the market priorities and annual penetration rate by age and type to meet this goal.

The business case predicts that the first retrofits will be completed by 2021; to ensure sufficient start-up time. At start-up, the Entity would only target older single-unit homes at a 1% annual market penetration rate. This is because older homes will have the greatest potential for cost-effective and environmentally impactful energy-efficiency retrofits. That is an initial target market of approximately 13,000 households.

During the second year of operation, the Entity would still only target single-unit homes, but would seek to increase market penetration to 2%. After 2 years, once the Entity gains maturity, the Entity would begin targeting both single-unit homes and older multi-unit homes at a 3% penetration rate. Finally, in the fourth year, and subsequent years after, the Entity would aim to maintain an annual market penetration of 4% for single-units; between 700 to 1140 homes every year. The same penetration rate will be maintained for multi-unit households.

Note that as homes built today become twenty years or older, they would then be targeted as well. Even though a potential customer may not fall under the scheduled market penetration, the Entity should generally not refuse an order as long as it can be effectively fulfilled.

Stress Test

As recommended by the Stakeholder Advisory Group (SAG), a feasibility study was completed concerning the impact of scale and the risk to the Entity if an 80% penetration rate is not achieved.

Consultants have found that even with a 60% penetration rate, the business case is still justifiable. The Entity can still operate accordingly although the initiative would miss its GHG targets and would not be fully aligned with the approved CEP, so the 80% target was maintained.

Organizational Structure, Possible Corporate Structure and Cost

The business case also details possible organizational and corporate structures. The report proposes that the Entity be structured as a Municipal Services Corporation. Analysis reveals that a start-up working capital of \$638,000 will be required as well as an approximate organizational cost of \$1.8M per year until 2039.

The level of governance between the Corporation of Newmarket and the NEER Entity is up to the discretion of the Town Council. The suggested Corporate Structure is that the Entity be a wholly-owned subsidiary of Newmarket Hydro Holding Inc. This would make the Entity an organizational peer to Newmarket-Tay Power Distribution Ltd. and Envi Network Ltd. In this configuration, the Holding Company would be the sole shareholder of NEER, allowing the Town to retain full governance and decision making. Additionally, the Board of Directors could be structured similarly to that of Envi Network with a minimum of 4 directors, the Mayor or designate and with the CAO as an observer.

Homeowner and Community Perspective

It is important to reiterate that the business case was developed to benefit individual Newmarket residents and collectively contribute to the community goals of the CEP for the existing residential sector. The business case assessed the year-by-year utility savings compared to the annual cost of the retrofit. Despite competitively low utility costs in Canada, the analysis concluded that the utility savings generated from an R-NEER retrofit outpace the homeowner's LIC payments.

At the community level, analysis suggests that the annual utility cost savings for all NEER customers will surpass the total annual retrofit payments for all these customers within 10-15 years of the first retrofit. However, each customer would see savings and payments balance out almost immediately after the retrofit.

By introducing R-NEER to Newmarket, a deep and accelerated reduction of GHG emissions in the residential sector is predicted thus bringing the Town closer to its CEP targets and moving towards Canada's national commitment to the Paris Climate Agreement Goals.

Analytical findings suggest that R-NEER would meet the program's targeted residential GHG emission reduction, but fall short of the Paris Agreement targets. Regardless, R-NEER is a major step towards the Town being on the correct track to meet its broader

CEP targets. As the Entity evolves, it can explore ways to accelerate emission and cost reduction.

R-NEER Opportunity Overview

Through the implementation of R-NEER, Newmarket would create a business that would allow residents to access comprehensive, energy efficiency retrofits and reduce the home's annual energy consumption between 30 to 50%. The business case targets an 80% market penetration rate by 2042 which is equivalent to a total of 700 to 1,140 retrofits per year.

Additionally, R-NEER promotes high-quality, long-term local employment with partners, contractors and NEER itself. The material suppliers would also benefit from increased volumes.

By 2041, the annual energy cost saving is predicted to be between \$43M and \$79M, much of which will be spent in various ways in the local economy.

Project timeline

The project is still ongoing with the final Stakeholder Advisory Group (SAG) meeting taking place on August 13th, 2019. Additionally, a Town Council workshop has been scheduled for September 30th, 2019. Lastly, a final reporting to Council is expected for early 2020.

Conclusion

R-NEER is a proactive strategy for tackling climate change and mitigating environmental risks from aging infrastructure. The business case confirms the feasibility of establishing a high-functioning, professional Entity that challenges traditional retrofit market methods. The program would be transformational and would deliver economic, environmental, and other benefits to the Town.

Business Plan and Strategic Plan Linkages

The R-NEER business case relates closely to the 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.
- 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:

- Through long-term, predictable work for local retrofit contractors.

3. Environmental Stewardship:

- By supporting Newmarket's contribution to aiding the country in its commitments to the Paris Agreement.
- The initiative is the first phase of the first strategy outlined in the approved Community Energy Plan (CEP).

Consultation

An Engagement Plan was created for the business case, there have been numerous consultation with the public, various internal departments and key stakeholders. Ongoing consultation for this project has taken place through events such as the Chamber of Commerce Home and Lifestyle Show, Coffee with the CAO, LIC Risk Assessment Workshop, Community Open House and Homeowner/Contractor/Investor Focus Groups.

Future consultations include a Town Council workshop, collaboration with the Town of Newmarket's Smart City Council and NEER Stakeholder Advisory Group (SAG) meetings which have been integral in the development of the business case. Online engagement is also available through www.heynewmarket.ca and www.newmarket.ca/NEER.

Human Resource Considerations

None.

Budget Impact

Funds have been approved in the 2018 budget for the preparation of the Newmarket Energy Efficiency Retrofit business case. Furthermore, two grants have been awarded; one from the Federation of Canadian Municipalities (FCM) and another from the provincial Ministry of Energy (MOE).

Attachments

1. Draft business case executive summary.

Contact

For more information on this report, contact: Meghan White, Planner, at (905)-953-5300, ext., mwhite@newmarket.ca, Adir Glikson, Community Energy Plan Intern, at (905)-953-5300, ext. 2419, aglikson@newmarket.ca

Approval



Adir Glikson, E.I.T.
Community Energy Plan Intern



Meghan White, MCIP RPP
Planner



Jason Unger, BES MPI MCIP RPP
Acting Director, Planning & Building Services



Peter Noehammer, P.Eng,
Commissioner, Development & Infrastructure Services



Appendix 1

R-NEER Draft Business Case

EXECUTIVE SUMMARY

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1.0 Introduction

This executive summary outlines the key findings from the draft business case for the Newmarket Residential Energy Efficiency Retrofit (NEER) initiative called for in the Community Energy Plan (CEP) unanimously approved by the Town Council in 2016. The draft business case is a comprehensive investigation into the feasibility of establishing a fully functioning and autonomous Municipal Service Company that will deliver high energy-efficiency retrofit solutions to a majority of Newmarket’s residential sector.

To introduce the draft business case, it is appropriate to begin with the conclusion. To support the overall CEP, the intended target for this initiative is to reduce residential annual greenhouse gas (GHG) emissions by 60%, increase annual energy efficiency by 35% and increase annual water efficiency by 20% within the next 20 years. With the development of the NEER Entity and following the guidance in the business case, Newmarket will meet and potentially exceed these goals. Additionally, the Town will establish a company that delivers sustainability with positive economic impact across the community and beyond.

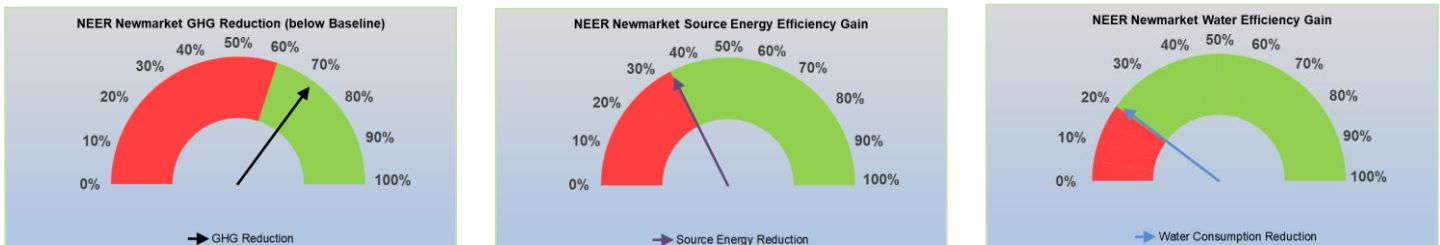


Figure 1: Predicted Performance Summary

1.2 Project Purpose

In accordance with the strategies outlined in Section 6.3 by the Town of Newmarket’s approved *2016 Community Energy Plan* on residential energy efficiency, the Town called for a plan to support the development of an entity delivering high-quality, standardized residential energy efficiency retrofit packages to most of the homes in the Town. Additionally, the NEER business case is fully aligned with the recently approved council strategic priorities which states to promote environmental stewardship by leading proactive planning and actions related to climate change and other environmental initiatives (one of which is the Community Energy Plan).

1.3 Residential Baseline Case Study (2017)

Please review *Information Report PCI 2019-05* for the complete 2017 residential baseline case study. To summarize the key findings, in 2017, the residential sector of Newmarket consumed 4.3 million gigajoules (GJ) of energy, costing a total of \$74 million, and causing 126,000 metric tonnes of GHG emissions. These annual costs for energy are expected to increase to between \$151 million and as high as \$258 million by 2042.

2.0 Business Case

The NEER Entity is assumed to operate as a Municipal Services Corporation with social goals, functioning with little to no profit. However, the Entity will be structured as a “for profit” corporation allowing for future flexibility to pay municipal dividends, expand its scope into other socially desirable initiatives, and potentially partner with similar public or private entities beyond Newmarket. The business case outlines the organizational structure and costs including staffing and external costs. The business case can be assessed under different combinations of assumptions including energy price outlooks, inflation, interest rates, and project costs and volumes.

2.3 Retrofit Core Packages

The operations of the Entity will be structured such that Newmarket residents can easily engage with a NEER representative who will offer a standardized core energy retrofit package that will result in annual energy savings between 30% to 50%. The package cost will be dependent on home, age and type (section 2.4).

Although the business case currently only assumes the installation of these standardized retrofits, the Entity could include energy-related options. Initially these will include solar power, solar hot water, thermal, and vehicle charging stations. Future options could include air and ground source heat pumps, energy management services and more.

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

Garforth International Inc. Energy Production Solutions
"Easy to Buy – Easy to Sell" (Priced in \$ / m²)
Newmarket Home Efficiency Business Plan

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

Garforth International Inc. Energy Production Solutions
"Easy to Buy – Easy to Sell"
Newmarket Home Efficiency Business Plan

Figure 2: Typical R-NEER standard retrofit package (L) & add-ons (R)

2.2 Initial Target Market

The Entity will initially target single-family homes 20 years and older. They are at least two times less energy efficient than systematic global best practices. They will have the greatest potential for cost-effective and environmentally impactful energy efficiency retrofits. This is an initial target market of approximately 13,000 households.



Figure 3: Map of all single-family homes in Newmarket (L) & a map of all single-family homes in Newmarket 20 years and older (R)

2.3 Market Penetration

The CEP calls for 80% of all homes existing in 2017 to be retrofitted by 2042. The business case details the market priorities and annual penetration rate by age and type summarized in Figure 4 to meet this strategic goal.

- First targets are single-family homes.
- 4% of these are renovated annually.
- After 2 years, older multi-family homes are targeted
- As homes become 20 years or older, they are targeted.
- Maximum uptake in any category is 80%.

However, even though a potential customer may not fall under the scheduled market penetration, the Entity will generally not refuse the order project.

Home Category	Start Year	Yearly Rate	End Rate
Pre-1975 MF LOW [Y] AC	2024	3.0%	80%
Pre-1975 MF MID [Y] AC	2024	3.0%	80%
Pre-1975 SFTH [Y] AC	2020	4.0%	80%
Pre-1975 SFSD [Y] AC	2020	4.0%	80%
Pre-1975 SF [Y] AC	2020	4.0%	80%
1975-1997 MF LOW [Y] AC	2024	3.0%	80%
1975-1997 MF MID [Y] AC	2024	3.0%	80%
1975-1997 SFTH [Y] AC	2020	4.0%	80%
1975-1997 SFSD [Y] AC	2020	4.0%	80%
1975-1997 SF [Y] AC	2020	4.0%	80%
1998-2011 MF LOW [Y] AC	2026	3.0%	80%
1998-2011 MF MID [Y] AC	2026	3.0%	80%
1998-2011 SFTH [Y] AC	2024	4.0%	80%
1998-2011 SFSD [Y] AC	2024	4.0%	80%
1998-2011 SF [Y] AC	2024	4.0%	80%
POST-2012 MF LOW [Y] AC	2034	3.0%	80%
POST-2012 MF MID [Y] AC	2034	3.0%	80%
POST-2012 SFTH [Y] AC	2032	4.0%	80%
POST-2012 SFSD [Y] AC	2032	4.0%	80%
POST-2012 SF [Y] AC	2032	4.0%	80%

Figure 4: Annual R-NEER market penetration rate base on home age/type

2.4 Retrofit Pricing Approach and Managing Risks

The standard retrofit packages will be designed based on home type and age. They will be priced based on a fixed index per specific area (\$/m²). This minimizes transaction costs and complexity. The benefit to this approach is that the retrofit will be easy to buy and easy to sell. Additionally, this will avoid the cost and inconvenience of site evaluation, energy auditing and other activities prior to pricing and concluding the sale.

It is necessary to address the potential risks that could arise including the possibility for discrepancy between the estimated cost and actual cost. The Entity will collaborate and negotiate with local contractors and material suppliers to ensure predictable quality and costs. The Entity will also track completed projects to rigorously manage ongoing cost and pricing. By far the most effective way of managing potential price risk will be to rapidly achieve the targeted rate of delivery of retrofits.

It is important to note that every home is different therefore the retrofit will have a different impact per household. The retrofit is sold based on a typical efficiency gain, not a guaranteed gain.

Another risk can be the perception of inequitable impacts on both energy saving and property taxes. This will be managed by effective communication approaches and potentially a financial reserve to support exceptional customer circumstances.

The business case calls for a robust R-NEER Entity, rigorous negotiation with contractors/suppliers, excellent quality control, and the scale effects of many retrofits, along with the sharing of good-news stories will ensure the success of the initiative.

2.5 Current Retrofit Market Vs. R-NEER Market Transformation

The current energy-efficiency retrofit market for both homeowners and contractors is relatively unattractive. From the perspective of the contractor, the efforts to prepare customized proposals is high and the closing rate is low. The 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 providing their own source 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.

By creating the Entity and committing to scale and standardized restricts, the market is now transformed in favor of the homeowners, contractors and material supply partners. Contractors benefit from increased project predictability, and vastly higher project volumes. Homeowners benefit from a simplified transaction, guaranteed pricing, lower cost pre-financed retrofits and a simple billing and payment approach.

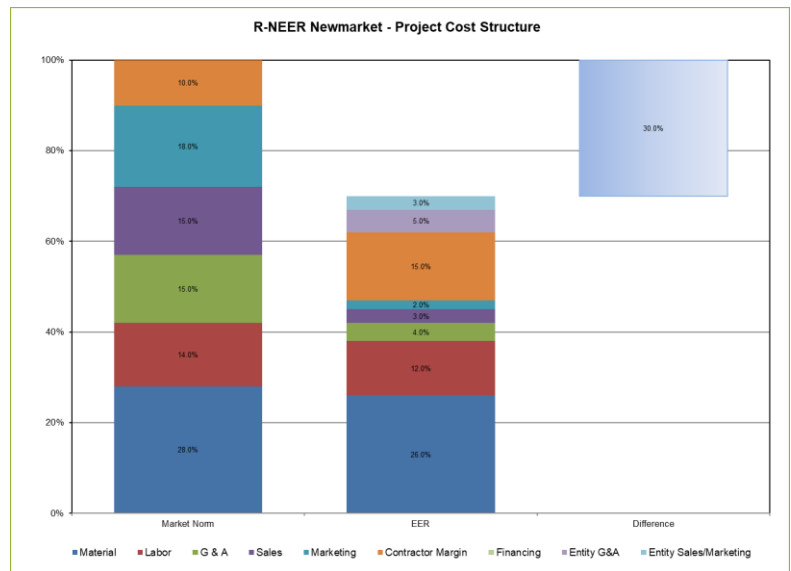


Figure 5: Current energy retrofit market vs. the NEER energy retrofit market

2.6 R-NEER Opportunity Overview

Through the implementation of NEER, Newmarket will create a business that will give accessibility for residents to comprehensive, energy efficiency retrofits that reduce the home’s annual energy consumption between 30%-50%. The business case targets an 80% market penetration rate by 2042, equivalent to a total of 700 to 1,140 retrofits per year. The total value of these retrofits for selected years is shown in Table 1.

	2020	2021	2022	2023	2024	2025		2039		2042
Total M \$	\$17.6	\$17.9	\$18.3	\$18.7	\$25.0	\$25.5		\$37.8		\$12.9

Table 1: Estimated Annual Values of NEER Residential Retrofits for selected years from 2020 to 2042

At least 40% of these values translate in high-quality long-term local employment with partner’s contractors and NEER itself. The material suppliers will also benefit from substantially increased volumes, and most of these will be Ontario or Canadian based suppliers.

By 2041, the annual energy costs saving will be between \$43M and \$79M, much of which will be spent in various ways in the local economy.

3.0 Local Improvement Charges

The R-NEER business case is designed to fund retrofits using Local Improvement Charges (LICs) as its financing mechanism. In this way, the cost of the retrofit is viewed as an investment in the property and will be added as an increment to the property tax. The homeowner will pay off the investment over a 20-year agreement. This avoids the need for the homeowners to pay for the retrofit upfront. The benefit from the low interest rates available to the Entity. The homeowner benefits in the following ways:

1. Little to no upfront costs.
2. The LIC increment will typically be about the same or less as the annual energy savings from the retrofit depending on the age, type and condition of the property.
3. The LIC charge remains with the property and will not follow homeowners if they move.

Additional exploration into LICs is currently being conducted to ensure the LIC does not adversely affect the Town’s financial liability and allowable debt load. Current indications are that these aspects are manageable.

4.0 Financing and Funds Flows

The following is a general representation of the financing/funding flows for the NEER Entity with respect to the Town, lender(s), contractor(s), and homeowners. The financing model is flexible. Over time it can 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. This flexibility can further minimize any possible municipal liability and better leverage borrowing. The model is designed such that the Town as a Corporation will only be responsible for collection of the LIC payments and their transfer to the Entity. All borrowing is on the balance sheet of the Entity, not the Town of Newmarket.

- 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

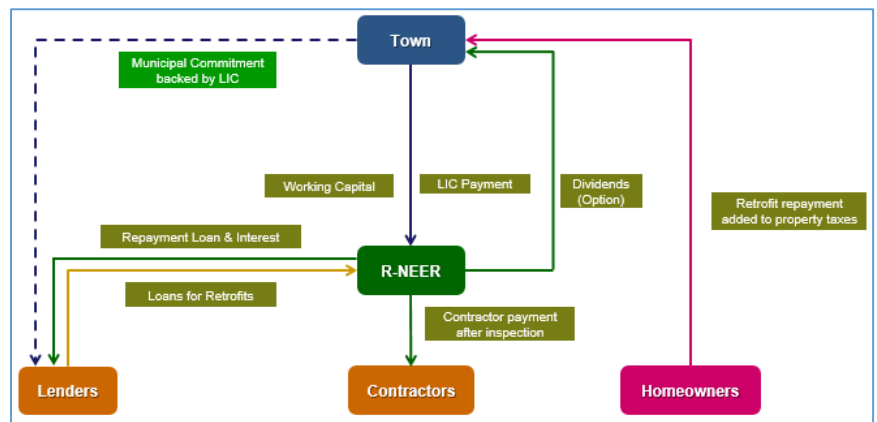


Figure 6: Funding Flow Chart for R-NEER

As the Entity matures and free cash flow increase, there are possibilities for dividends to the Town, along with possible subsidies for selected residents or other sustainability initiatives. The activities of NEER will make parts of its offering eligible for various Federal, Provincial and Utility incentives. Currently, the business case assumes no subsidies/incentives, making this a significant financial upside.

5.0 Transaction Flow

Figure 8 shows the flow of a typical transaction for a single retrofit:

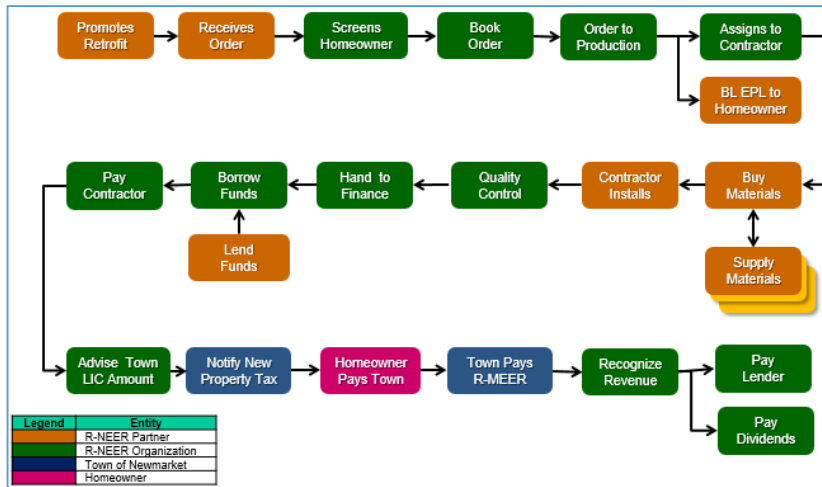


Figure 7: Single retrofit transaction

1. Home age and type qualifies for LIC treatment
2. Entity promotes retrofit to homeowners
3. Homeowner orders from Entity using standardized pricing
4. Entity screens and approves homeowner mostly based on property tax payment history
5. Entity assigns order to partner contractor
6. Contractor installs retrofit
7. Entity approves installation quality
8. Entity borrows from Lenders at a small premium over Provincial 20-yr bond rate
9. Entity pays contractor using standardized pricing
10. Entity advise Town of LIC increment amount
11. Homeowner pays Town via LIC increment for 20 years
12. Town pays Entity LIC increment
13. Retrofit obligation survives change of ownership
14. New owner continues LIC increment payment

6.0 Organization Structure and Cost

6.1 Organization Structure

The proposed Entity organizational structure and roles are shown in Figure 9. This would be a Municipal Services Corporation within the Town of Newmarket.

A potential corporate structure could be to make the NEER Entity a wholly owned subsidiary of Newmarket Hydro Holding Inc. This would make the Entity an organizational peer to Newmarket-Tay Power Distribution Ltd. and Envi Network Ltd. In this configuration, the Holding Company would be the sole shareholder of NEER, allowing the Town to retain full governance and decision making. Equity investors could be sought.

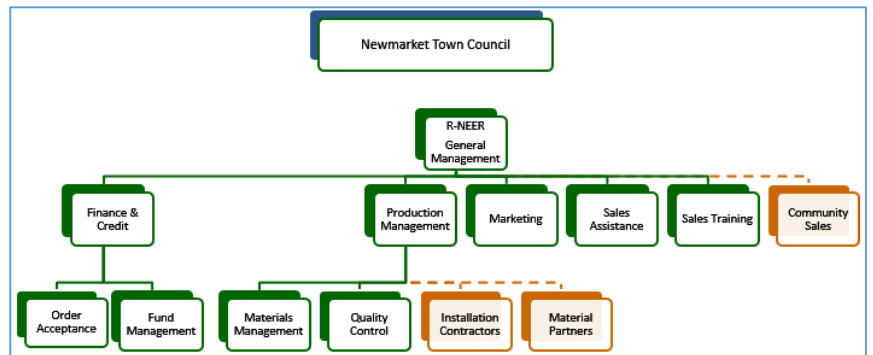


Figure 8: NEER corporate structure as a municipal services corporation

The board of directors could be structured in a similar manner to that of Envi Network with a minimum of 4 directors, the Mayor or delegate and with the CAO as an observer. This is one possible construct; others could be considered.

6.2 Organization Cost

The following Tables show the breakdown of the estimate of the proposed annual organizational costs for R-NEER.

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

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

Table 1: Organization costs including payroll (L) and other possible administrative costs (R)

The Entity has an approximate organizational cost of about \$1.8M per year till 2039. The initial net start-up working capital, defined maximum negative cash flow, will be about \$632,000.

6.3 Profitability and Equity

The business case for the Entity has been developed using internationally accepted accounting principles. A corporate tax rate of 26.5% has been assumed. During the start-up year, the Entity requires \$632,000 of working capital. By year 2, the estimate after tax profit is about \$1M and rises to an average of \$2 M per year through to 2041.

Assuming no diversification, subsidy programmes or dividend payments, the total potential retained earnings by 2041 exceeds \$400M, and will continue to rise until 2062 as the LIC payments serving the later retrofits flow in. A very rough estimate of the 2042 equity value of the Entity by 2042 is \$3.8Bn which would underline the importance of the Town maintaining a high ownership stake to maximize the value to the community as a whole.

6.4 Net Borrowing Requirements

Figure 9 shows the annual net borrowing requirements for the residential retrofit activity of the Entity through 2058. The maximum is approximately \$255M in year 2039 and falls to zero by 2058.

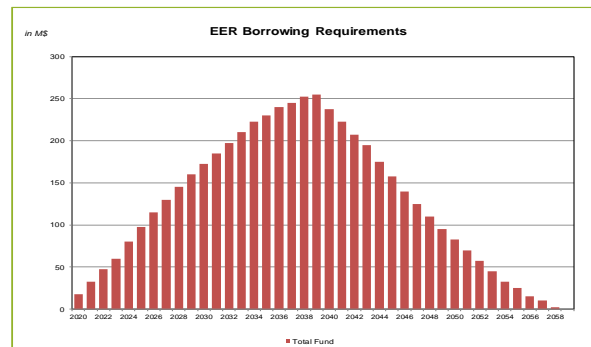


Figure 9: Net borrowing requirements every year

To put this in context, at the peak of the Entity's residential retrofit activity over 1,100 retrofits are being delivered at a typical cost of between \$25,000 and \$30,000 each. Each of these will be paid for over 20 years, with the Entity issuing 20-year loan to run the program.

7.0 Homeowner Perspective

The business case was developed to both benefit individual Newmarket residents and to collectively contribute to the community goals of the CEP for the existing residential sector. R-NEER can only be a success if it meets both individual and community goals. The business case assessed the year-by-year utility savings compared to the annual cost of the retrofit. Despite the generally low utility

costs in Canada, the analysis concluded that the utility savings generated from a NEER retrofit outpace the homeowner's payment. The graphs in Figure 12 below show a low-case and high-case scenario of the utility savings versus homeowner payment.

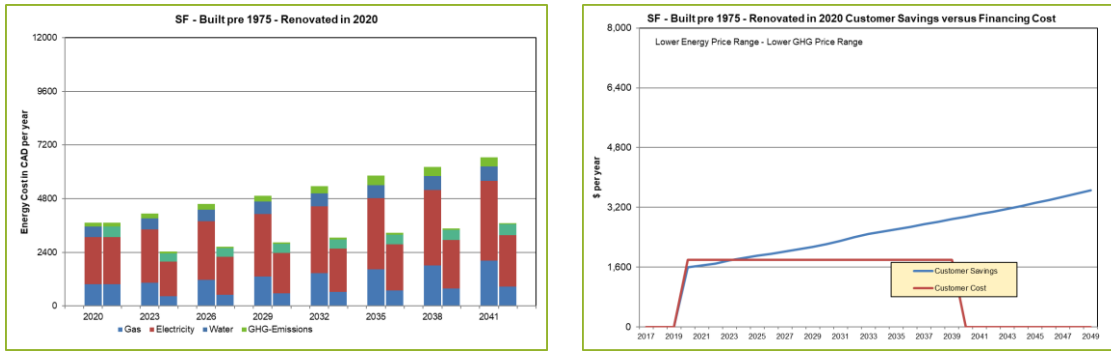


Figure 10: Low-case utility costs between a "business-as-usual" case vs. an R-NEER retrofit case (L) & the utility savings from an R-NEER retrofit vs. annual LIC repayments (R)

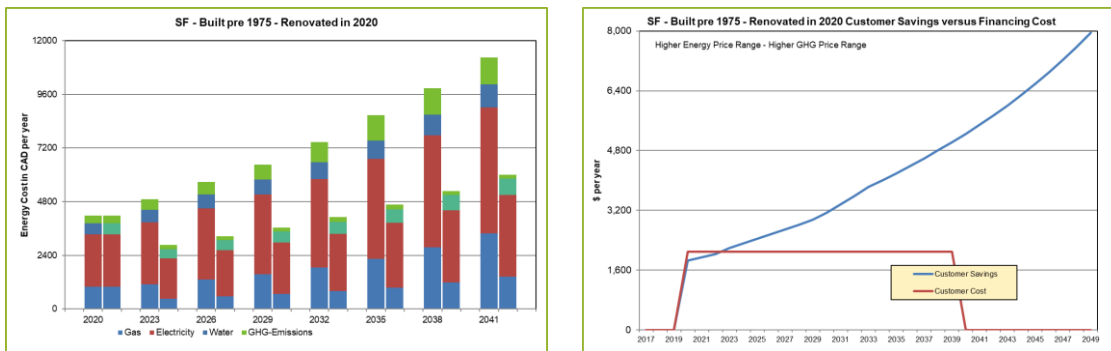


Figure 11: High-case utility costs between a "business-as-usual" case vs. an R-NEER retrofit case (L) & the utility savings from a R-NEER retrofit vs. annual LIC repayments (R)

In both pricing outlooks, a similar result can be seen. In the very early years, the energy saving and the LIC are comparable, after which there is a clear year by year benefit. This does not factor in the immediate comfort benefits and the potential increase in the value of the property resulting from the retrofit updates.

8.0 Results

8.1 Residential Sector Emissions & Source Energy Usage Impact

With the current "Business-As-Usual" base case model, the Town's existing homes will only moderately reduce the total GHG emissions produced annually, mostly as a result of an anticipated addition of biogas to the natural gas network. By introducing the R-NEER program, a deep and accelerated reduction is predicted, bringing the Town closer its own CEP targets and moving towards Canada's national commitment to the Paris Climate Agreement Goals.

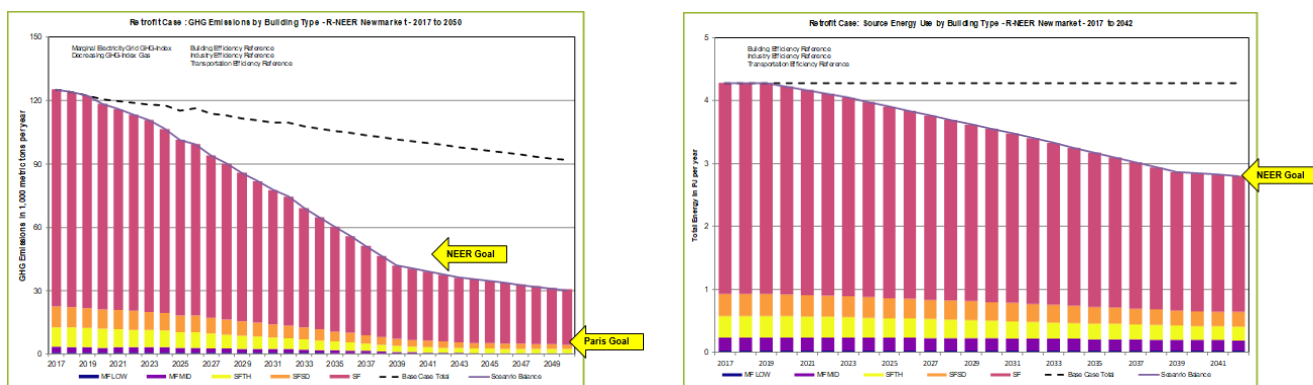


Figure 12: Predicted annual GHG reduction rate (L) & source energy usage reduction rate (R) by 2042

As shown in Figure 10, R- NEER meets the Town’s CEP goal, but falls short of the Paris Agreement targets. R-NEER is a major step that the Town is on a track to meet its broader CEP targets. As the Entity evolves, it will explore ways to accelerate the emissions and cost reduction and add even more value to the homeowner’s solution.

8.2 Program Savings vs. Costs

At the community level, the analysis suggests that the annual utility cost savings for all NEER customers will surpass the total annual retrofit payments for all these customers within 10-15 years of the first retrofit. Obviously, each individual customer will see savings and payments balance out almost immediately after retrofit.

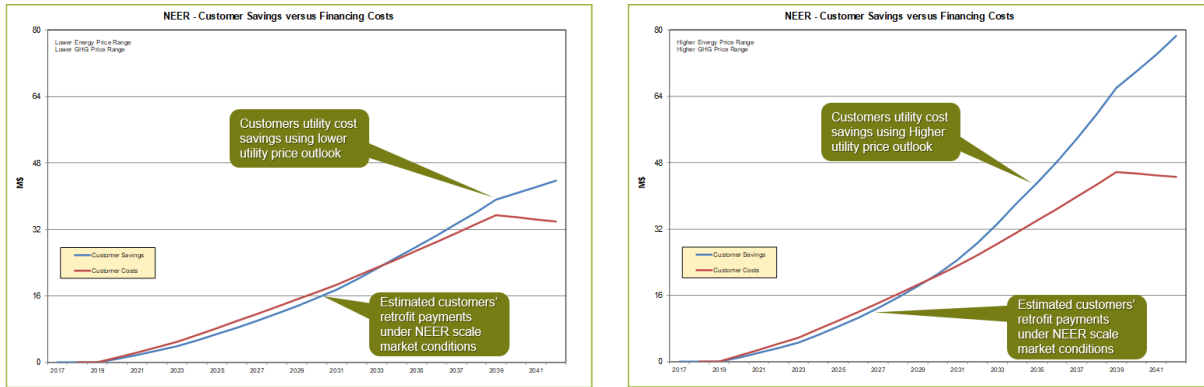


Figure 13: Customer savings versus financing cost low-case (L) & Customer savings versus financing cost low-case (R)

8.3 Community Summary

Table 3 shows a summary of the annual electricity savings, gas savings, water savings, and GHG reduction in 2042 and 2059 respectively at the community level only from the R-NEER program.

Item	Units	2042 R-NEER Plan Horizon	2059 Financing Complete
Electricity saved	GJ/yr	238,990	256,060
Gas saved	GJ/yr	838,840	882,220
Total Energy Saved	GJ/yr	1,077,830	1,138,280
GHG avoided	mt CO _{2e} /yr	87,480	99,660
Water	m ³ /yr	949,560	1,040,100
Electricity cost reduction	\$	294,303,000	1,090,152,000
Gas cost reduction	\$	214,721,000	1,106,647,000
GHG cost reduction	\$	133,129,000	412,469,000
Energy cost reduction	\$	642,153,000	2,609,268,000
Water cost reduction	\$	80,479,000	292,408,000
Homeowner payments	\$	556,400,000	1,039,940,000
Net savings	\$	166,232,000	1,861,736,000

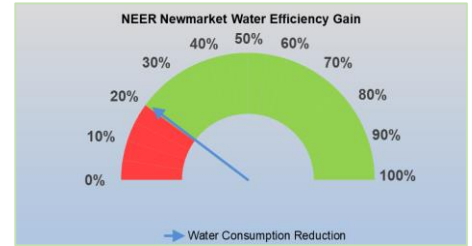
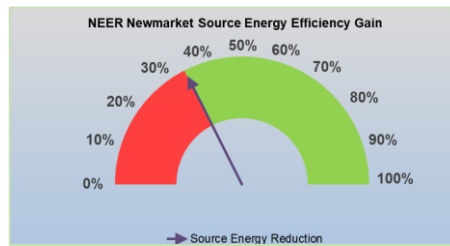
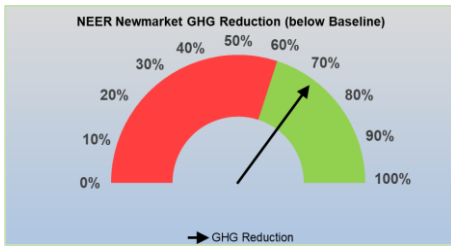
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Total Energy Saved	GJ/yr	1,077,830	1,138,280
GHG avoided	mt CO _{2e} /yr	87,480	99,660
Water	m ³ /yr	949,560	1,040,100
Electricity cost reduction	\$	205,880,000	614,812,000
Gas cost reduction	\$	148,743,000	515,219,000
GHG cost reduction	\$	48,048,000	134,297,000
Energy cost reduction	\$	402,671,000	1,264,328,000
Water cost reduction	\$	57,034,000	166,860,000
Homeowner payments	\$	440,310,000	793,630,000
Net savings	\$	19,395,000	637,558,000

Table 2: High-end (L) and low-end (R) cost, energy and GHG emission savings for 2042 and 2059

The lower part of the tables shows the cumulative costs saving and payments from the start of NEER.

9.0 Conclusion

The business case confirms the feasibility of establishing a high-functioning, professional Entity that challenges traditional market methods. The program will be transformational and will deliver economic, environmental, and other benefits to the Town and a large part of its population in very tangible ways. It will be a challenging task. It will require motivated leadership, committed team and a willingness to take risks. It will also require sustained commitment by the Town's leaders over many years.



The business case will inform the finalization of the program design and business model as well as the development of a business plan by the Entity in preparation for program launch. When successful NEER will pave a way for smarter community planning, more proactive collaboration and economic prosperity through sustainable development in Newmarket and beyond.

"Never doubt that a small group of thoughtful, committed, citizens can change the world. Indeed, it is the thing that ever has"

- Margaret Mead