

9/14/2018



TOWN OF
STRATFORD

SPEAR OPERATIONAL FEASIBILITY REPORT

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Abbreviations and Definitions

List of Abbreviations

LIC: Local Improvement Charge

GHG: Greenhouse Gas Emissions

Kwh: Kilowatt hours

PACE: Property Assessed Clean Energy

List of Definitions

Contractor: For this report, a contractor is any tradesman that can be hired to do specific energy improvement work.

Fuel Neutral Program: An energy efficiency program that does not target any specific fuel that releases GHGs and focuses on reducing the overall GHG emissions per person.

Local Improvement Charges: Funds that are advanced to a property owner by a municipality for the specific purpose of providing an ancillary service or product through a municipal program.

Property Assessed Clean Energy: An established model that provides a standardized way of applying LIC's to specific property owners with the intent of lowering energy consumption that contributes to annual greenhouse gas emissions.

Real Property Assessed Value: According to the Province of Prince Edward Island it is the value initially set based on such factors as cost of construction and uniformity of property types and locations. This value may be adjusted annually to reflect increases in the market value of property in an area.

Resource Value Test: A testing framework outlined in the National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources which is used to conduct a jurisdiction's primary cost effectiveness test for a potential energy efficiency program.

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Executive Summary

The Town of Stratford has a vision of a more sustainable future where the social needs of residents are taken care of, where our culture and heritage is rich, diverse and celebrated, where the limits of the earth to sustain us are recognized and respected, where there is a thriving local economy and where there is a transparent and responsive local government. Council adopted a Community Energy Plan in September of 2017 to reduce corporate and community energy use and greenhouse gas emissions and increase energy resilience and local economic activity. One of the signature programs proposed in the Community Energy Plan is Stratford's Program for Energy Audits and Renewables (SPEAR). The idea behind the SPEAR program is to reduce barriers to participation in energy retrofits and renewable energy installations so that more people will take advantage of the opportunities to reduce greenhouse gas emissions. The barriers are technical knowledge, finding and managing contracts, applying for provincial funding and arranging for project financing.

This report outlines the town's experience with a pilot SPEAR program to test the concepts proposed. To overcome the technical knowledge barrier, an energy audit was conducted on each participating property by a qualified energy auditor. To overcome the contracting barrier, the Town arranged for the quotes and installation. To overcome the funding barrier, the town identified and completed the paperwork for the provincial energy efficiency rebates. To overcome the financing barrier, the town arranged a loan option through the local credit union. The original intent was to offer financing through Local Improvement Charges (LIC) but, after thoroughly reviewing the risk and process, we decided to use an alternative approach.

The learnings from the pilot project include:

- participants were very satisfied with the program and process
- contractors were happy to have an intermediary who understands their business rather than dealing directly with property owners
- staff time required to administer the program is higher than estimated obtaining private financing, with the assistance of the town, was required because the LIC financing is too risky at this point – given the small sample size in the pilot, it is difficult to say how much of a barrier this might pose to program participation in the future
- Efficiency PEI appreciated the program being designed and executed to provide ease of access to their programs.

A three year full scale roll out of the SPEAR program is recommended, with program costs being recovered through an estimated \$1500 program administration fee per participant. The program cost was covered in the pilot so the fee itself may become a barrier and consideration should be given to finding a way to subsidize the program fee, at least in the

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early stages until the program has a proven track record. The three year program has estimated monetized costs of \$1,225, 570 and estimated monetized benefits of \$6,130,435 for a net benefit/cost ratio of 5.15 and the potential to reduce 9.13 tonnes of GHG emission reductions per residential property.

History

Stratford's vision is "to become a sustainable community where the social needs of residents are taken care of, where our culture and heritage is rich, diverse and celebrated, where the limits of the earth to sustain us are recognized and respected, where there is a thriving local economy and where there is a transparent and responsive local government." When this vision was created in the *Imagine Stratford Sustainability Plan*, there were many ideas and recommendations made of how Stratford could reach this vision. One of the recommendations relating to energy efficiency helped create a program concept that was recommended in the *Stratford Community Energy Plan*, approved in 2017. Stratford's Program for Energy Audits and Renewables (SPEAR) main objectives are to reduce greenhouse gas emissions (GHG's) in the community, save people money and help people understand energy efficiency without requiring a large amount of extra effort. SPEAR is a program that correlates well with this Stratford's vision but it also compliments many other existing plans in the municipality. When the new Prince Edward Island Municipal Government Act was passed in December, 2017, one important component that was included was a provision for municipalities to establish Local Improvement Charges (LIC's). This allows a municipality to provide funds to specific property owners within the municipality with the intention that the property owner pays back the funds over time. If the property owner does not pay back the funds within a given time period, then the charges become a lien on the property so that the municipality can recover their costs.

Traditionally, municipalities across Canada have used Local Improvement Charges (LIC's) to help alleviate the expense of infrastructure improvements on public property such as roads, sidewalks, and parks. These improvements were approved due to the proven benefit to a specific neighbourhood or municipality as a whole. The Government of Yukon took the additional step of applying LIC's to private properties and first employed Local Improvement Charges (LIC's) to finance grid extensions for property owners in 2004. After increased research and model development by the Pembina Institute, the LIC model became more popular across North America in 2006 and was used specifically for energy retrofit upgrades of individual improved properties. Following the publication of the report produced by the Pembina Institute, many Canadian municipalities studied the potential of LIC programs including Dawson Creek, Vancouver, Abbotsford, London, Toronto, Oakville and Ottawa; program development did not occur in these communities due to a lack of legislation allowing them to do so within their own provinces. One of the earliest successful examples of LIC's being used in North America was in

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2008 through the Long Island Green Homes company in Babylon, Long Island, New York. The original program has now been remodeled to include over six communities on Long Island due to its popularity and success¹.

The Town of Stratford has never created an investment program that promotes energy efficiency within the community like Stratford's Program for Energy Audits and Renewables (SPEAR) proposes to do.

How Energy Financing works

Energy Financing enables a municipality or district to provide access to capital for their residents or businesses for clean energy projects. Energy financing can be performed through many existing models, all of which share a similar structure:

1. The municipality receives a loan from a financial institution;
2. The municipality enters into an agreement with a local resident or commercial business owner which stipulates that the money loaned can only be used for specific purposes involving clean energy;
3. The resident or business owner uses the loan money to complete retrofits which will lower their monthly utility bills;
4. The resident or business owner starts paying back the loan on a monthly basis, often in the form of a utility payment directly to the municipality;
5. The resident or business owner pays back the loan, usually within a ten year period; where that money is used to pay back the operating costs of the program for the municipality.

The Property Assessed Clean Energy (PACE) program is one of the most common models used for energy financing that links a loan to a specific property rather than a person or company. Applying a loan to a property reduces the risk of a loan going into default. When a loan is applied to a property, it requires a person to either pay back the full cost of the loan before selling/transferring their property to another owner. If the old property owner cannot pay back the loan, then it is applied to the new property owner, ensuring that the loan will always be paid back.

There are limitations when assessing the expected life of the installed improvement. The installed retrofits must have a lifetime that matches the repayment period and attached to the property. Light bulbs are not commonly replaced in many PACE programs due to the fact they can be removed by an owner when they transfer the property to a new owner.

¹ Ecology Ottawa Briefing Paper Pay as you Save (PAYS) Financing of Energy Efficiency and Renewable Energy Building Improvements in Ottawa. 2011. Roger Peters, bob Baser, Nick LePan. Ecology Ottawa.

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PACE programming also requires significant amounts of staff time when setting up the program. Once a specific model is in place and staff are accustomed to the process, then the amount of time to administer the program decreases. Most PACE style programs take 6-12 months to develop and implement on a community wide scale².

A Local Improvement Charge (LIC) according to the Municipal Government Act stipulates that: “ A council that provides a service or product that is ancillary to or compatible with a service provided to property owners in the municipality may by bylaw offer a program to advance funds in relation to the product or service, subject to the following criteria:

- a) Only an improved property owned by a taxpayer is eligible;
- b) The amount borrowed by a tax payer in respect of each property shall not exceed twenty-five per cent of the assessed value of the property as determined under the Real Property Assessment Act, less any local improvement charge or fee payable by the taxpayer in respect of the property;
- c) The taxpayer shall comply with or satisfy any other criteria specified in the bylaw, including but not limited to the payment of outstanding liens or other debts owed by the taxpayer to the municipality; and
- d) Funds advanced in respect of real property of a taxpayer, if not repaid as required in the bylaw, constitute a lien against the real property of the taxpayer until paid in full.³

There are many barriers that restrict homeowners or businesses owners from retrofitting their properties on their own:

- Low Energy prices;
- Uncertainty concerning the payback period;
- High upfront retrofit costs;
- Lack of knowledge about energy savings;
- Lack of time to organize retrofits and apply for available rebates;
- Lack of connectivity between lower energy consumption and improved health of residents.

Municipalities are the best facilitators of energy retrofit programs due to their ability to provide upfront financing with no cost to the municipality. LIC’s can make use of priority lien’s which allow payments to be made first before a property is sold which provides a high level of security for investors. By selecting participants who would like to participate in an LIC program, certain requirements can be subjugated on the participant by the municipality such as attending various

² Guide To Energy Efficiency & Renewable Energy Financing Districts For Local Governments. 2009. Merrian C. Fuller, Cathy Kunkel, Daniel M. Kammen. Renewable and Appropriate Energy Laboratory.

³ Bill No. 58: Municipal Government Act; Government Bill. 2016. Honourable Robert J. Mitchell. Michael D. Fagan, Queen’s Printer. Charlottetown, Prince Edward Island.

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workshops and encouraging their neighbours to do so as well. Municipalities can encourage neighbourhood-scale initiatives which would make installations more cost effective, efficient and agreeable to local residents⁴.

Policy Analysis

Over the course of several months, a policy analysis was conducted that reviewed some of the legal ramifications of using Local Improvement Charge (LIC) legislation allowed in the 2017 Prince Edward Island Municipal Government Act. There are a number of improvements that could be made in the legislation to allow municipalities to adopt LIC's in their municipal government structure.

There have been other provinces with municipalities who have instituted Local Improvement Charges in for infrastructure and energy improvements. The province of Ontario recently adopted Local Improvement Charges and there has been a large amount of research completed concerning the ways in which LIC's can be used and the legal complications that can arise. The Collaboration for Home Energy Efficiency Retrofits in Ontario (CHEERIO) conducted a legal review of the current LIC legislation in Ontario and concluded that the legislation should be amended to include an indemnity and hold harmless clause for any municipality using the LIC legislation. This clause would mitigate a municipality's liability with respect to negligence claims resulting from the work undertaken by an independent contractor; this amendment would also clearly direct property owners to the independent contractor to seek remedy for any energy retrofits installed using the LIC legislation⁵

After consulting with professionals in Ontario, specifically Sonja Persram from Sustainability Alternatives Inc., concerning the LIC legislation in that province and how it compares to the legislation in PEI, certain observations were noted:

1. LIC's used for a municipal purpose can be applied to all types of buildings and real property, including conservation authority property and school board property—except buildings owned by municipalities and their local boards. Note that Crown properties cannot be subject to a priority lien.
2. LIC's cannot be used for equipment that is moveable property, i.e. chattels.
3. LIC's can be used by owners of leased premises and by lessors or sub-leasees under certain conditions.
4. LICs are unlikely to be used for brownfield sites because of the risk they pose.

⁴ Property assed payments for energy retrofits: Recommendations for Regulatory Change and Optimal Program Features. 2011. Sonja Persram. David Suzuki Foundation and Sustainable Alternatives Consulting Inc.

⁵ Collaboration on Home Energy Efficiency Retrofits in Ontario. 2016. Access Online: <http://www.cleanairpartnership.org/projects/cheerio/>.

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5. All permanent aspects of stormwater management systems including low impact development, green roofs, rainwater harvesting and backflow preventers, and other measures such as greywater reuse systems may be financed using LICs.
6. LICs can finance district energy system connections on private property.
7. LICs are not a loan to the owner. If repayments of LICs are overdue, the overdue payments become a tax lien; the entire amount of the LIC does not become due.
8. LICs run with the land.
9. LICs are financed by municipalities through their own borrowing, borrowing through provincial lending such as infrastructure Ontario (IO), or through private lending institutions.
10. If municipalities or an ON municipal finance organisation called infrastructure Ontario issues financing for municipal LICs this financing can be adjusted from calculations of municipal debt totals, i.e. does not impact calculations of municipal borrowing capacity.
11. LIC financing can be securitized.
12. Owners can be notified by municipalities of LICs via bills for property taxes, water or garbage.

The section of the Municipal Government Act that refers to the LIC legislation does not include the means of enforcement. After communication with the office of the Provincial Tax Commissioner, certain requirements of the section were revealed. The municipality would be required to administer the LIC loan program, requiring consultation with legal counsel with respect to the logistics of a lien:

- Lien registration and release requirements (and cost);
- Security status under the federal Bankruptcy and Insolvency Act;
- Potential for write off under Real Property tax Act tax sale provisions.

The Municipality would have to require each applicant to submit with their application a "clearance certificate" (applicant to request from Taxation and Property Records) to certify that their municipal property tax payments are current; procedures may need to be introduced to administer periodic "clearance certificate" reviews from the tax payer of funds borrowed extending over a number of years.

Under the current provincial legislation Stratford would have to implement collections policies and administration procedures for collections. The Municipality would have sources of information (GeoLinc, on-line open data GIS maps, etc.) to confirm whether or not a property was improved. It is important to have ways to confirm that a person lives within the boundaries of the municipality so that the Town of Stratford does not exceed its jurisdiction. The Stratford administration would have sources of information (Assessment Roll and GeoLinc) to determine the market value assessment of a property in the municipal area.

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There is also concern that the legal phrasing in the LIC legislation articulated in the PEI Municipal Government Act that the owner ‘borrows’ money, therefore referring to the LIC as a ‘loan’ whereas in looking at the LIC legislation in other jurisdictions (Ontario, Nova Scotia) that and LIC it is not a loan to the owner, and the owner does not borrow the financing from the municipality. Sonja Persram from Sustainability Alternatives Inc. has observed that this wording in the current legislation could have an impact on the municipality, the owners, on stakeholders like existing mortgage holders on the property, and the entire program due to the potential to misinterpret the legislation.

In Nova Scotia, there is currently a program being run by the Clean Foundation called Property Assessed Clean Energy (PACE) and there are a number of changes being reviewed for the current LIC legislation that have been suggested by participating municipalities such as the Town of Bridgewater.

- **Acceleration:** there is currently an acceleration clause, which currently states that: “8. In the event of default of any payment under the PACE Customer Agreement, the outstanding balance shall be immediately due and payable.”⁶ Acceleration offers extra protection to the municipality, but a large risk for the homeowner and for other lenders (e.g. mortgage companies). There is discussion of removing the clause to indicate that only the amount that is due at that time shall be in default.
- **Definition of “Equipment”:** In the current Nova Scotia legislation, it is not clear if a new homeowner who purchases a home that has equipment installed by the previous owner through a LIC supported program, would own this new equipment; especially if the previous homeowner had an outstanding PACE Charge that was not completely paid. PACE upgrades are not clearly defined as “equipment” (currently ambiguous) in the Municipal Government Act. One mitigation already being discussed is the creation of a mechanism to have subsequent purchasers also sign the Customer Agreement.

LIC Legislation Recommendations

The current Local Improvement Charge legislation outlined in the Municipal Government Act does not offer a clear way to implement LIC’s in a way that would allow energy retrofits to be funded by a municipality for local improved property owners. There are some changes that need to occur before the Town of Stratford or any other municipality in Prince Edward Island can implement Local Improvement Charges:

- Section 207 needs to specifically name energy upgrades as a specific improvement that can be completed through this legislation;
- Energy upgrades needs to be clearly defined as the Nova Scotia government has done with their LIC legislation;

⁶ Municipal Government Act. 1998. P.81. Access online:
<https://nslegislature.ca/sites/default/files/legc/statutes/municipal%20government.pdf>.

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- A clear outline of how municipal governments will collect payments for LIC's needs to be noted for section 207 so that municipalities do not have to change the entire tax collection system that already exists;
- Their needs to be legislation tabled that will allow mortgage insurance companies to provide insurance for LIC programs to protect both participants and program administrators;
- Sonja Persram from Sustainable Alternatives Inc. should be consulted before all changes are made to the current legislation.

Program Structure

SPEAR was intended to make use of existing legislation to provide funds for local property owners but also to provide project management services for energy retrofits. Because the existing legislation does not fully support the use of Local Improvement Charges at a municipal level, the Town of Stratford has decided to move to a similar model that makes use of a partnership with a local banking institution.

The decision to choose a hybrid operational model that uses a banking institution for SPEAR was due to concerns relating to risk mitigation for all stakeholders involved. Current legislation in the Prince Edward Island Municipal Government Act allows the Municipality of Stratford to use Local Improvement Charges (LICs) to finance an improved property up 25% of the Property Assessed Value (Appendix A1.). The Town of Stratford decided to set its own maximum LIC financing limit of 20% of the Property Assessed Value to lower the amount of money that would be used for each participants improved property energy retrofits. By limiting the amount of money that can be accessed by program participant, it encourages each participant to consider the financial implications of each energy retrofit investment in their property. The maximum LIC financing amount recommended for the SPEAR program was \$70,000 to further mitigate any risks for the lender.

Also under this hybrid SPEAR Model, only energy retrofits that have estimates which prove there would be a maximum 10 year return in investment would be funded. This encourages good financial responsibility by municipal program administrators but it also increases a participant's trust that the energy retrofits they undertake will provide them the savings they wish to receive and encourage them to review all the options available for their improved property. By reviewing the return of investment, there is an increased benefit to other potential stakeholders such as real-estate companies that may be selling an improved property in the future. The return of investment reports conducted through this SPEAR Model would provide evidence of the estimated lifespan of each product installed and the cost of maintenance that may be required for future property owners. To help provide evidence of a reduced cost of operation of the improved

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property, a detailed return of investment report for the owner will be provided by the municipality to ensure that if the owner seeks to sell their property in the future, they can include these retrofit costs in the value of their property.

The program structure for SPEAR also encourages a higher a savings to investment ratio by studying the return of investment. The purpose of this program is to reduce greenhouse gas emissions and save local community members money on their heating and electrical bills. The economic benefits of this program allows for increased spending by a program participant who uses the program to reduce their energy spending which allows for the spending of money on other products, therefore helping improve the local economy.

There were many concerns relating to risk management that needed to be mitigated if the Town of Stratford had pursued using the LIC legislation. If there were any defaulted payments, a mechanism would have been required where the interest rate increases dramatically immediately after the last defaulted payment to ensure a participant will pay back all funds within an appropriate time period.

Mortgage holder permission from existing banking institutions that participants are using before they join SPEAR was also a concern. By using an existing bank to administer the loans, the municipality can forego mortgage holder permission because that procedure would already be a part of the bank's loan approval process. A credit check will be part of the loan approval process through the partner bank for SPEAR which will reduce the amount of risk for the Town of Stratford. It would be up to the bank to create the payment plan with program participants also alleviating any decision required for the scheduling of payments. Other related programs such as the Town of Bridgewater or Long Island Green Homes conducted monthly payment schedules as a form of risk mitigation.

It was suggested by Sonja Persram from Sustainable Alternatives when the LIC legislation was being considered for SPEAR that a loss reserve be created so an owner does not risk losing the home in case of economic hardship. A credit protection insurance product was also considered for program participants: in case of death, disability, job loss or critical illness, the LIC balance would be paid.

What should be considered for a full implementation of the SPEAR model is a loss reserve created for the Town of Stratford so that any outstanding balances required by the partner banking institution can be paid. The Town of Stratford could set aside the program maximum of \$70,000 and take 2% of the administrative fees for SPEAR to use as a risk investment against each participants energy retrofit total. This fund could be reinvested into a related municipal energy efficiency program every ten years if it never used for a default on a participant's loan payments.

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For the full implementation of SPEAR, there should be other contingency budgets created to establish a reliable source of funds for annual marketing and other program planning that may be required. The SPEAR model relies on a registration fee of \$1,500 for each participant that would be billed to the participant when they receive the loan from the partner banking institution. This registration fee would help pay for the salary of the program specific staff that are involved as well as part of the marketing budget for the following year. These registration fees would be required before work began on the energy retrofits by the contractors involved. Program staff would be responsible for coordinating the energy retrofit work on behalf of the participant and by ensuring the Town of Stratford is paid before the work began, there would be a clear incentive for the program participant to make the payment in a timely manner. By having the program participant administering their own loaned funds, all contractors can be paid directly by the program participant; this also ensures that the program participant can communicate directly with the installer of their energy retrofit products if there are any maintenance issues in the future.

For the first year of operation, the Town of Stratford would need to provide all funds for the program administration, since all fees would be collected over time from the program participants. If a maximum of 40 residential participants and five commercial participants are reached on an annual basis, then the program fees being brought in would total \$67,500 that could be used for the salaries of one full-time administrator, one part-time administrator position and a small marketing budget each year after the first year. The part-time administrator position could be complimented by student internship funding so that two or three part-time positions be created for four to six months of the year.

Program Feasibility

SPEAR will be a fuel neutral program that offers whole-building efficiency and addresses almost all fuel types with a single program provided by a single program administrator. This results in more efficient program delivery, few transaction costs, greater efficiency measure adoption, and better customer service.

There is clear evidence that as more money is invested in efficiency programs in Atlantic Canada, increased economic benefits arise. Research shows that if approximately 81 million dollars was used to fund all fuel type energy efficiency programs, the increase in provincial GDP would be approximately 135 million dollars⁷. This same study indicates that there would be an increase of over 1200 jobs.

⁷ Energy Efficiency: Engine of Economic Growth in Eastern Canada A Macroeconomic Modeling & Tax Revenue Impact Assessment. 2011. Environmental North East. Access online: http://acadiacenter.org/wp-content/uploads/2014/11/ENEAcadiaCenter_EnergyEfficiencyEngineofEconomicGrowthinCanada_EN_FINAL_2014_1114.pdf.

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SPEAR will focus on delivering products that already have existing rebate programs provided by Efficiency PEI. Eligible energy products for SPEAR were chosen based on their ability to create enough savings that would match or exceed the original purchase price within the product's lifespan. Tradesman including plumbers, electricians, and builders were identified as potential beneficiaries of SPEAR.

The National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources was used to assess various components. Interviews were conducted from September, 2017 to November, 2017. These interviews consisted of program specific background information and a standard set of questions. All stakeholders had the ability to voice their thoughts and opinions with an understanding that their feedback would be used to make this project viable. Building permit statistics as well as provincial reports were also used. Economic analysis was completed at the sectoral level.

The monetized public health impacts were created using statistical information from peer reviewed research articles while all other impacts were assessed using primary source data or calculations provided by a simulated property improvement model (Appendix A1).

Non-Municipal Impact	Description of what each section Represents
Participant Costs	Cost of Energy Audits, Efficiency Upgrades and Renewable Energy upgrades.
Participant Benefits	Savings produced from Energy Audits, Efficiency Upgrades and Renewable Energy upgrades.
Environmental Costs	Potential costs due to fuel importation.
Environmental Benefits	If there is a Carbon Tax of \$10 per tonne then the amount of greenhouse gas emissions reduced generates savings.
Public Health Costs	The potential of asthma being created due to exposure of mould when older insulation is replaced with new insulation.
Public Health Benefits	Creating a more insulated building that you spend the bulk of your time in has been proven to reduce disease and mental stress, which has been monetized into a health benefit ratio.
Energy Security Costs	The amount of money spent on replacing grid electricity consumption with photovoltaic electricity consumption.
Energy Security Benefits	The amount of money saved by not having to pay for electricity provided by Maritime Electric.
Economic Development Costs	The amount of money lost by regional suppliers of heating oil and electricity.
Economic Development Benefits	The amount of money generated by energy efficiency upgrades paid to local contractors.

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The simulation assumed that there was an oil based furnace system that supplied heat for both the hot water heater and the main heating system. The model used a 1300 square foot home with a main level and basement floor area. The assumed occupancy of the home was four people with the assumption that very little insulation had originally been installed in the main level walls. The assumed annual expenditure of home heating oil on an annual basis was \$2,640. The assumed annual consumption of electricity was 5000 kwh for the simulated property model before energy efficiency improvements were installed.

Environmental impacts were assessed by calculating the amount of greenhouse gas (GHG) emissions that would be reduced if the simulated property model represented the average amount of change that would occur per program participant. Annual participation of the program was based on 48 participants per year with the average of 9.13 tonnes of GHG emissions reduced per property.

Energy security impacts were assessed by calculating the value of electricity consumed per property that would be converted to photovoltaic electricity production. Economic development impacts were assessed by the value of energy improvements completed by the simulated home model and the assumed participation rate within one program year.

To determine each category of measurement, existing policies of the Town of Stratford were reviewed. The Stratford Sustainability Plan focuses on five major pillars to guide the Town of Stratford towards a sustainable future:

- Local Governance;
- Economy;
- Environmental Responsibility;
- Resident Health and Safety;
- Culture and Diversity.

These major pillars of the Sustainability Plan were used to determine the categories that SPEAR should be measured by. A resource value test was conducted with both monetized and non-monetized impacts evaluated (Appendix A2).

Implementing SPEAR

SPEAR would require more hours of work than a comparable program such as the PACE program operated by the Clean Foundation in Nova Scotia which provides only partial project management service for energy retrofits. Since SPEAR requires more time to manage the entire program components, more staff would need to be involved compared to similar programs.

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There are five departments with over thirty full time staff members within the Town of Stratford government structure:

- CAO's Office;
- Finance and Technology Department;
- Infrastructure Department;
- Planning Development and Heritage Department;
- Recreation Culture and Events Department.

These departments all have specific focuses with Economic and Sustainability special projects often falling within the purview of the CAO's Office. Each department works hard to fulfill their department mandates, mandates that grow more challenging each year to achieve as the residential population continues to grow.

SPEAR would require oversight from the highest level of the organization to ensure that participant approval processes are fast and efficient. SPEAR staff would need to report directly to the CAO and would be managed as part of the CAO's office department. Additional staff will need to be hired to run this program effectively since all current staff have full workloads.

The current financial management software used by staff of the Finance and Technology Department is Townsuite. It offers a variety of applications that help local governments monitor specific municipal programs and has worked with the Town of Bridgewater to develop a Local Improvement Charge Application that would help staff monitor specific accounts. There is not enough capacity for the current Finance and Technology department to assume the responsibilities of monitoring LIC accounts within the Townsuite software; since the program will not be relying on the LIC legislation, SPEAR will not need to use the Townsuite software but could use add the module in the future when the legislation easily allows the Town of Stratford to incorporate LIC's into SPEAR. The Finance department can help verify that all existing utility accounts with the Town of Stratford are in good standing, which can help further verify a participants eligibility for SPEAR. It is common for the Town of Stratford to have some municipal residents being in default of their utility bills; by requiring that all SPEAR participants be in good standing of their municipal utility accounts before participating in the program decreases the amount of utility accounts that are in default in Stratford.

Staffing Recommendations

At least two staff members would need to be used to run a full SPEAR Program that could process 35-45 participants a year. One fulltime staff member would administer the energy auditing services, coordinate marketing campaigns, consult with Efficiency PEI and coordinate energy retrofit work and one part-time staff member would coordinate participant registration, and help execute program marketing campaigns.

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When reviewing the staff experience of other energy retrofit programs, in particular the Clean Foundation's PACE program, a number of qualifications are required to run a program such as SPEAR. The staff that run the Clean Foundation PACE program are constantly using business administrative techniques, project management skills and have an inherent knowledge of building code requirements and energy efficiency products. The fulltime staff member would be operating as a program coordinator and would need experience in managing project budgets (Appendix B1.). This program coordinator position would be best fulfilled by person who has gone to a post-secondary institution where they have studied business administration, and environmental studies. The full-time staff member should have experience with all current energy efficiency building technologies, energy management, project management as well as supervisory experience. The part-time staff member would need experience in customer service, and environmental building technologies and could be a post-secondary student or recent graduate (Appendix B2.). The part-time-staff member should have some education from a post-secondary institution and experience working for a government organization.

The Clean Foundation currently operates its PACE program through four participating municipalities using one full-time staff member and one part-time staff member. The Clean Foundation uses its own energy advisor that conducts in-house energy audits. Since Efficiency PEI offers all its program rebates through an exclusive deal for energy advising services with HomeSol Atlantic, it would not be practical for the Town of Stratford to hire its own in-house energy auditor but instead use the existing services provided by HomeSol Atlantic. Since all energy retrofit funds would disbursed by Town of Stratford's partner bank institution, SPEAR is essentially contracting all financial services to a third party organization.

Recommended Program Procedure

The Town of Stratford reviewed many forms and procedures from other Property Assessed Clean Energy programs to create the most efficient registration and verification system. The first step for a program participant to become involved in SPEAR would be to fill out the SPEAR Registration Form (Appendix C1.). After the participant has completed the registration form and submitted it to the SPEAR Coordinator, the SPEAR Coordinator will need to ensure that all information is correct by using the Provincial Government Assessment Roll Number system to verify that the participant lives within the Municipal boundaries. The SPEAR Coordinator would need to contact the Finance Department and ensure that the applicant is in good standing with their municipal utility account.

The next step would be to meet with the participant, preferably within their home to sign the Participant Agreement Form (Appendix C2.) and allow the SPEAR Coordinator to conduct a site visit of the improved property to identify if the property would have any complications; for

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example if the improved property had any missing windows, the participant would need to fully enclose the windows so that an energy auditing professional could complete a blower door test.

Once the Participant Agreement Form is signed and submitted to the SPEAR Coordinator, the SPEAR Coordinator would proceed to book an energy advisor to conduct an energy audit for the program participant; the energy audit fee for residential participants would be billed to Efficiency PEI. There is also potential for Town of Stratford to negotiate with Efficiency PEI to ensure that some of the fees associated with commercial energy audits are funded by Efficiency PEI. The SPEAR Coordinator would meet with the program participant and the energy advisor once the energy audit is complete and would begin to explain the return of investment of each recommended energy retrofit and the applicable Efficiency PEI rebates. Once there is an agreement of which energy retrofits to proceed with, the SPEAR Coordinator would fill in all required forms for Efficiency PEI rebates and would share all information from the Energy Audit with an Efficiency PEI representative. The SPEAR Coordinator would help set up an appointment for the program participant to meet with a bank representative. Before proceeding with the managing the various energy retrofit projects for the program participant, the SPEAR coordinator would wait for confirmation from the bank that the funds have been dispersed to the participant and that the participant has paid the SPEAR registration fee. The SPEAR Coordinator would begin to collect quotes for various energy retrofit work and would review the contract information with the program participant and select the contractors for each piece of work.

The SPEAR coordinator would conduct one final site assessment and finish all Efficiency PEI program administration before ending the SPEAR service with the program participant. The program participant would share their heating and electricity bills for the first year after the energy retrofit work is complete. To increase program awareness, the SPEAR Coordinator could organize an annual public meeting for past program participants and interested residents where past program participants can share their experiences in the SPEAR program.

SPEAR Pilot Project

Promotion of the SPEAR pilot program began on September 21st, 2018 with the application period ending on November 15, 2017. Over that three month period there were six applications submitted with an additional ten people who requested the application form but never submitted. The Pilot Project was advertised through social media, newsletter, promotion through public events and local radio stations.

Project Timeline:

January 31st

- All Participants were identified and had joined the SPEAR Advisory Committee.

February 28th

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- Energy Audit appointments were scheduled for all pilot project participants.
- All necessary forms and site visits were completed.

March 30th

- All Energy Audits were completed at pilot project sites.

April 30th

- All energy retrofits were identified for pilot project sites.

May 30th

- All energy retrofits had been completed for residential pilot project participants.

September 30th

- All energy retrofits for the commercial pilot project participant should be complete.

The Pilot Project consisted of four participants who were asked to not only participate in the pilot program but also attend technical committee meetings so that they could provide feedback throughout the process. A waiting list was created for the applicants who qualified for the program but were not initially selected for the Pilot Program. Of the four participants who were originally selected, one participant withdrew due to an anticipation to sell their home before or immediately after the retrofits would be complete and another withdrew due to personal family issues. One additional participant was selected from the waiting list to replace one of the participants who withdrew. The other participant slot was left vacant due to concerns of project delay and a lack of qualified applicants.

The selection criteria for program applicants were based on the following requirements:

- Date of building construction:
 - An improved property with a building built before 1984;
 - An improved property with a building built between 1985 and 1999;
 - And one improved property with a building built between 2000 and 2015.
- The type of heating used in an improved property was assessed:
 - Oil fired boiler/hydronic distribution and Oil fired furnace/forced air systems had the highest priority;
 - Any electric or biomass heating system had the lowest priority.
- If two buildings fit within the same category then the oldest property would be chosen.
- The Building size was also taken into account:
 - An improved property with a building that had less than 1499 square feet;
 - An improved property with a building that had between 1500-2499 square feet;
 - An improved property with a building that had more than 2500 square feet.
- If two properties fit within the same information category then the property with the lowest amount of square footage will be selected.

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- Since only one Commercial Property will be selected for this pilot program, the property with the oldest constructed structure will be selected for this Pilot Program.

After the program participants were selected, a specific procedure was followed for each participant:

- Registered program participants will enter into an agreement with the Town of Stratford;
- An energy audit will be performed on the participant's building free of charge;
- The energy audit results will be reviewed with the participant and recommended retrofits will be selected for the building;
- Retrofits will be organized by the Town of Stratford and completed by contracted professionals;
- Contact information will be given to participants to start a loan with the Provincial Credit Union;
- A post assessment audit will be performed on the building after retrofits are completed;
- Payments to the Provincial Credit Union will occur on a regular basis thereafter, the payments will not be more than what the participant was paying in energy costs before the retrofits occurred.
- The potential savings of the improvements made must be more than the cost of the improvements over a 10 year period;
- The Provincial Credit Union provides financial administrative services to access Local Improvement Funds.

Participants were asked to:

- Attain Clearance Certificate from Taxation and Property Records Department;
- Ensure that the Town of Stratford Utility accounts were paid and up-to-date;
- Provide energy bills from the last two years (if possible) to determine the average energy consumption of the property;
- After energy improvements are complete, send energy bills to the Town of Stratford main office for up to one year to determine if energy savings are as predicted.

If participants did not attain clearance from the Taxation and Property Records department then they were not allowed to participate in the Pilot Program. If participants had a default on their utility accounts, then they were not allowed to participate.

A list of eligible products were provided to each participant and energy auditor so that the energy auditor would be free to recommend any products that they believed offered the best return of investment:

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	Items that can be replaced for more energy efficient products	Average Product Lifespan (Years)
1	Insulation	100+
2	Draft proofing	5-10
3	Exterior doors	100+
4	Exterior windows	20-40
5	Domestic electric hot water tanks/systems	6-12
6	Heat Pumps	10-15
7	Wood and Pellet Heating Systems	15-20
8	Electrical heating system	15
9	Balanced Heat Recovery Ventilation	15-20
10	Electric Thermal Storage (ETS) Systems	5
11	Solar Hot Water Systems	20-30
12	Solar Hot Air Systems	20-30
13	Solar Photovoltaic Systems	20-30
14	Programmable Thermostats	35
15	LED Light Fixtures	15

The energy auditing company selected for the residential property energy audits was the Atlantic Branch of HomeSol Building Solutions Inc., which had recently been selected as the service provider for the Efficiency PEI Home Energy Audit Program. This meant that the two residential property participants were given a pre-energy audit and post-energy audit for a combined total of \$113 for each property serviced. Only one of the two residential property participants chose to proceed with energy retrofits and take advantage of the post-energy audit provided by HomeSol Building Solutions Inc.. The Commercial Participant was provided an ASHRAE Level II commercial energy audit by Orange Door Engineering at a cost of \$5,635. In order to apply for all available rebates offered through Efficiency PEI, Energy Audits for all participants were required.

Two to three quotes for each retrofit project was collected and compared to ensure that the best price was achieved for the work required. Contractors were chosen based on their expertise, reputation and proximity to the Town of Stratford. The Community Energy Coordinator served as the project manager for each pilot project participant and appointments were made by the project manager on behalf of the participant. The pilot project participants provided a schedule of dates and times in which they would be available for a contractor visit or retrofit work to the project manager while contractors were being solicited for quotes for energy retrofits.

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Pilot Project Results

The pilot project was delayed a number of times throughout the months of February, March and April due to increased unavailability from local contractors and complications with the commercial energy audit. The Town of Stratford Planning Development and Heritage department reported a significant increase in building permits in 2018 due to the warm winter and early spring as well as a surge of subdivision and commercial development. Despite the marked increase in development, there has been no obvious increase in local building companies, which has created a large amount of demand with local contractors struggling to meet this demand. This delayed many retrofit projects for the SPEAR pilot project because some contractors were unavailable to provide quotes for specific energy retrofit work. The commercial energy audit was difficult to complete due to the age of the building and the multiple additions that had been added to the building since it was constructed in the 1970's. It's important to note that since contractors were unusually busy during the pilot project program period, quotes for specific equipment tended to be higher than usual and labour costs were higher than in previous years.

There was one residential property owner that decided to not move forward with any energy retrofits through the pilot project once the energy audit results were reviewed. This residential property was a home of newer construction built in 2008 that had already been built with energy efficiency in mind. The home was 1972 square feet in size and already had increased insulation in the attic and walls, and used a heat pump for heating with an oil fired furnace being the primary heat source. This building was a duplex with two bungalow style homes sharing an insulated firewall. The main floor of the home had two bedrooms, a bathroom, living room and kitchen and the basement had a finished bedroom, den and bathroom. The basement had two storage rooms that were unfinished and were not insulated. At the time of the pilot project the total occupancy of the home was 2 people. At the meeting between the home owner, energy programs officer and energy auditor, specific energy retrofits were discussed (Appendix D1.). The homeowners decided that the energy retrofits were did not produce enough of a return for their investment and did not continue to participate in the pilot project.

The second residential property owner had a home that was built in 1976 and had undergone a number of renovations since it was built. The residential property owner had designed and built the home and it had not been owned by any other property owner. This house was a typical bungalow style home representative of a number of old houses existing within the Town of Stratford. The house had a kitchen, living room, bathroom, and three bedrooms on the main floor with an unfinished basement. The total square footage for the building was 1800 square feet with its primary heating source being electric wall mounted convection heaters. At the time of the pilot project, the total occupancy of the home was 1 person. At the meeting between the home owner, energy programs officer and energy auditor, specific energy retrofits were discussed

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(Appendix D2.). The property owner chose to proceed with the energy retrofits and preferred to use their own funds to pay for the improvements instead of make using the loan program. The hired energy retrofit contractor provided the weather proofing attic insulation and basement wall insulation in one single package and was able to finish the retrofits within a 1 week period. The estimated amount of greenhouse gas emissions reduced from the energy retrofits performed on this property is 1.32 tonnes of CO₂E.

The commercial property was an older building that had previously been a restaurant, butcher shop and office space before being converted into an early childhood education centre. The building was approximately 6000 square feet with three larger rooms and a number of smaller rooms on the main floor. The slab on grade foundation was built in two different stages with an additional office area built into a second floor on the east side of the building. The attic space was never properly insulated, the walls had very low insulation values and there were multiple competing heating systems in the building. The primary heat source for this building was two oil fired furnaces with an air exchange system that provided heating and cooling for only part of the building. For many of the rooms it was a common practice to use portable electric heaters in the winter time to add supplemental heat and use window air conditioners in the summer time to add supplemental cooling for the building. The normal occupancy of the building Monday through Friday was over 50 children and adults. At the meeting between the home owner, energy programs officer and energy auditor, specific energy retrofits were discussed (Appendix D3.). After quotes were collected, a second conversation occurred and many retrofits that were originally considered were changed slightly to accommodate the most feasible solution. Instead of introducing the VRV system into the building, the HVAC system was replaced which meant the estimated payback period would be closer to 10-12 years, still within the pilot project regulations. The estimated amount of greenhouse gas emissions reduced from the energy retrofits performed on this property is 19 tonnes of CO₂E.

Discussion

Participants were pleased with the results of the pilot project as evidenced by the online participant survey circulated to the residential and commercial property owners (Appendix D4.). Results from the survey show that SPEAR participants learned more about energy efficiency and energy rebate programs by participating in the pilot project. Participants were also pleased with the project management style and model used for the pilot project. One participant did not want to enter into a loan agreement with the Provincial Credit Union and the other participant noted that it was the ability to borrow a loan that attracted her to the pilot project. Feedback from contractors who participated in the program were positive with many noting that it was easier to talk to someone who was familiar with the technical details of the improved property than talking with the property owner directly. Due to the frequency of communication between the

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energy programs officer at Efficiency PEI and the pilot project manager, Efficiency PEI rebates were processed faster and services were provided more efficiently.

The amount of time required to coordinate contract work on behalf of the program participants was underestimated and a significant amount of extra hours were required to coordinate the various project work; this was more apparent when dealing with the work required for the commercial participant than the residential participant. To coordinate two participants to receive energy audits and energy retrofits within a two month period was harder than originally expected and project delays did occur. If there were four participants requiring similar work within that same time period, it would be challenging for the project manager to process the program participants in a timely manner.

Growing Stratford's Program for Energy Audits and Renewables (SPEAR)

SPEAR can expand to involve a larger amount of participants each year if more funds are dedicated to the program for staff salaries and marketing. LIC legislation is constantly transforming across Canada, and could eventually be used to administer a larger program. After three years of operation, SPEAR should be internally reviewed to assess the viability of the program. If SPEAR is successful, it can be expanded or changed to use the LIC legislation or include a larger amount of improved properties and energy retrofit improvements.

The current Local Improvement Charge legislation outlined in the Municipal Government Act does not offer a clear way to implement LIC's in a way that would allow energy retrofits to be funded by a municipality for local improved property owners. There are some changes that need to occur before the Town of Stratford or any other municipality in Prince Edward Island can implement Local Improvement Charges:

- Section 207 needs to specifically name energy upgrades as a specific improvement that can be completed through this legislation;
- Energy upgrades needs to be clearly defined as the Nova Scotia government has done with their LIC legislation;
- A clear outline of how municipal governments will collect payments for LIC's needs to be noted for section 207 so that municipalities do not have to change the entire tax collection system that already exists;
- Their needs to be legislation tabled that will allow mortgage insurance companies to provide insurance for LIC programs to protect both participants and program administrators;
- Sonja Persram from Sustainable Alternatives Inc. should be consulted before all changes are made to the current legislation.

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This operating model recommended for the Town of Stratford can easily be transferred to other municipalities that have a smaller amount of staff at its disposal. The major requirements for this model to be reproduced is a working relationship with a provincial/territorial efficiency organization, a working relationship with a local bank or credit union, and less than \$150,000 of municipal funds to be used for the first year of operation and to create a reserve fund.

The SPEAR Feasibility Study was accomplished after an extension to the project timeline. There were many legal obstacles for the SPEAR pilot project and they will need to be addressed before a full program is launched. There are many ways that SPEAR can be improved to accommodate more program participants in the future:

- One full-time staff member and one part-time staff member should be hired to deliver this program;
 - one staff member to deliver energy auditing services, consult with Efficiency PEI and coordinate energy retrofit work;
 - one staff member to coordinate participant registration, and program marketing;
- LIC Legislation should not be used to deliver this program;
 - There is not enough staff capacity at the municipal or provincial level to use LIC legislation to deliver SPEAR;
 - There is less risk if a banking institution is willing to partner with the Town of Stratford to provide energy retrofit loans to improved property owners;
- Acquire external program funding so that some risk mitigation can occur for SPEAR;
 - This would allow for the Town of Stratford to create a reserve fund to mitigate risk for all program participants.
- Before SPEAR is officially launched, quotes should be collected for each contractor and rates compared and analyzed so that a list of qualified contractors can be created for the program (Appendix D5 & D6.).

There is evidence that Stratford's Program for Energy Audits and Renewables (SPEAR) can be accomplished in the Town of Stratford and due to its flexible model can be reproduced in other communities across Canada. If other program partners such as Efficiency PEI or Maritime Electric were to help invest in this program, there is a strong possibility that this program could be sustained over a ten year period rather than just the suggested three year period. SPEAR is effective in alleviating participant concerns, increasing the amount of residents who participate in provincial efficiency programs and increasing local economic activity. This program has the potential to create jobs, reduce greenhouse gas emissions (GHG's) and make residents feel more comfortable in their homes and places of work/spending. The Town of Stratford should adopt this program as soon as it is financially feasible to do so and help its community save money while growing in a sustainable way.

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Appendix A1. Simulated Improvement Model.

Standard Home Simulated Improvements with Cost Estimations									
Total Square feet: 1302									
651 square feet on main floor and 651 square feet in basement; 31x21 foot home with basement.									
Improved Property Value \$200,000= Eligible for \$40,000 of funded improvements.									
Total Greenhouse Gas Emissions Reduced due to Renovations: 9.13 Tonnes (CO2E)									
	Building Component	Before Renovation	After Renovation	Estimated Lifespan of Renovation Product (years)	Estimated Cost	Available Rebates	Category Estimated Cost	Estimated Savings per year	Estimated Payback Period
Envelope	Insulation	Basement Walls, R-15; basement slab none	Basement Walls, R-20; R-20 slab edge; basement slab R-20 (Batt insulation)	100	\$1,238		\$4,731	\$26	10 years, 10 months
		Main floor Walls, R-15	Main floor Walls, R-30 (Blown-in insulation)	100	\$2,475			\$79	10 years, 10 months
		Attic R-30	Attic R-60 (Fibre glass Batt)	100	\$619			\$158	5 years, 5 months
	Draft Proofing and Caulking	Air Leakage around doors and windows	Insulated caulking	10	\$400			\$42	10 years
	Mechanical	Solar Hot Water	From Oil Boiler	Solar Water Heating	20	\$1,417		\$9,948	\$671
Domestic Heating Programmable Thermostats		From Oil Boiler	Air Source Heat Pump	10	\$8,503	\$500.00	\$1,983		2 years, 1 month
		Manual Thermostats	Improved heating efficiency	20	\$538	\$10.00	\$264		2 years 1 month
Photovoltaic (PV)	Solar PV	Electric from grid	Grid Tied Solar with String Inverters	25	\$15,100		\$15,100	\$978	15 years, 4 months
Energy Improvement Total							\$29,779	\$4,201	
					Estimated Energy Audit Fee		\$150		
					Estimated Administrative Fee		\$1,500		
Sub-Total							\$31,429		
Maximum Period for Fund Repayment	10 Years				Repayment Interest Rate	5%	\$8,643		
					Total Amount Paid		\$40,072		
					Total Amount Saved		\$42,007		
					Moneysaved over 10 year period		\$1,935		

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Appendix A2. Efficiency Cost-Effectiveness Report.

Efficiency Cost-Effectiveness Report		
Program Name: Stratford's Program for Energy Audits and Renewables 3 Year Timeline		Date: January 9, 2018
A. Monetized Municipal Systems Costs		B. Monetized Municipal System Benefits
Program Administration Costs	\$216,000.00	LIC Repayments \$216,000.00
Program Office Space and Supplies	\$18,000.00	In-kind Support \$18,000.00
Evaluation, Measurement, & Verification	\$6,000.00	In-kind Support \$6,000.00
Sub-Total Municipal System Costs	\$240,000.00	Sub-Total Municipal System Benefits \$240,000.00
C. Montized Non-Municipal Costs		D. Monetized Non-Municipal Benefits
Participant Costs	\$428,817.60	Participant Benefits \$604,944.00
Environmental Costs	\$0.00	Environmental Benefits \$13,147.20
Public Health Costs	\$192,000.00	Public Health Benefits \$1,021,896.00
Energy Security Costs	\$216,000.00	Energy Security Benefits \$140,832.00
Economic Development Costs	\$148,752.81	Economic Development Benefits \$4,289,616.00
Sub-Total Non-Municipal Costs	\$985,570.41	Sub-Total Non-Municipal Benefits \$6,070,435.20
E. Total Monetized Costs and Benefits		
Total Costs (PV\$)	\$1,225,570.41	Total Benefits (PV\$) \$6,310,435.20
Benefit-Cost Ratio	5.15 Net Benefits (PV\$) \$5,084,864.79	
F. Non-Monetized Considerations		
Participant Impacts	Access to energy efficiency and renewable energy information.	
Environmental Impacts	GHG emissions created from the transportation of energy efficiency and renewable energy products.	
Public Health Impacts	Improved indoor comfort, improved mental health, Improved physical health, fresh, clean air, reduced moisture issues (mold, leaks, condensation).	
Energy Security Impacts	Lower consumption can reduce the cost of energy generation and transmission and distribution, can improve system reliability and could delay costly system upgrades.	
Economic Development Impacts	Creation of jobs in various building streams including renovations, plumbing, electricians and solar array installers; increased building resale value .	
Other Non-Monetized Impacts	Participation in existing Efficiency PEI rebate programs and an impact on the way certain projects are tendered by the Town of Stratford for this program.	
Determination:	Do Efficiency Resource Benefits Exceed Costs (Yes/No)	
The benefits of this program exceed the costs.	YES	

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Appendix B1. SPEAR Coordinator (Full-Time) Job Description.

Town of Stratford

234 Shakespeare Drive,

Stratford, PE

C1B 2V8

Department: CAO's Office

Application Deadline: N/A

Position Title: SPEAR Coordinator

The Town of Stratford is looking for an outgoing, well organized program coordinator that will be managing the implementation of Stratford's Program for Energy Audits and Renewables. This position will require knowledge of energy efficiency products and standard building sciences as well as established community engagement practices and marketing techniques.

Key Responsibilities:

- Provides leadership, direction and guidance to unit staff on the implementation of program performance initiatives
- Oversees the design and content development of all major program performance activities (i.e. research, program analytics, verification of environmental benefits, business case development, program success criteria).
- Manages and helps process program participants from program registration to energy retrofit completion.
- Works on program communications to help increase program participation.
- Contributes to annual business planning and strategic planning for SPEAR.
- Implements all program requirements of SPEAR.
- Works collaboratively with other staff from other municipal departments for continual sharing of knowledge information and to ensure a coordinated and effective approach to program performance.
- Reviews program performance activities on a regular basis and report all program performance results to the Chief Administrative Officer.
- Manages the SPEAR team and is responsible for helping to recruit and coach SPEAR staff as well as management of all program budgets.
- Provides regular feedback to team members, acknowledging success and the need for growth.
- Ensures compliance with health and safety requirements and for ensuring a safe and respectful workplace.
- Contributes to cross-functional teamwork for Stratford Programs such as participating on internal staff workplace committees.

Educational Requirements	Bachelor's degree in Business Administration, Community Development or Environmental Sustainability Studies
Job Skills	Customer service skills, communication skills, interpersonal skills, computer skills, self-motivation skills, teamwork skills, independent work skills, attention to detail, problem-solving skills
Salary Range	\$40,000 to \$50,000
Position Type	Full-time Contract (2 years) 37.5 hours/week

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Appendix B2. SPEAR Participant Relations Specialist (Part-Time) Job Description.

Town of Stratford

234 Shakespeare Drive,

Stratford, PE

C1B 2V8

Department: CAO's Office

Application Deadline: N/A

Position Title: SPEAR Participant Relations Specialist

The Town of Stratford is looking for an outgoing, well organized part-time staff member that will be helping to implement Stratford's Program for Energy Audits and Renewables (SPEAR). This position will require knowledge of energy efficiency products and standard building science.

Key Responsibilities:

- Provides administration services for SPEAR.
- Processes program participants from program registration to energy retrofit completion.
- Works on program communications to help increase program participation.
- Provides regular feedback to team members, acknowledging success and the need for growth.
- Ensures that information and knowledge is shared freely among all levels of staff.
- Contributes to cross-functional teamwork for Stratford programs such as participating on internal staff workplace committees.
- This could qualify as an internship or summer student position.

Educational Requirements	High School Diploma and 1-2 years' experience in a post-secondary diploma or degree program
Job Skills	Customer service skills, communication skills, interpersonal skills, computer skills, self-motivation skills, teamwork skills, attention to detail
Salary	\$15/hour for 30-35 hours per week
Position Type	Seasonal (4-6 month contract)

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Appendix C1. SPEAR Registration Form.

Stratford's Program for Energy Audits and Renewables (SPEAR)

Stratford's Program for Energy Audits and Renewables (SPEAR) has been developed to assist property owners in the Town of Stratford achieve sustainable properties through the provision of loans geared toward Energy Efficient Upgrades, and Renewable Energy upgrades.

By registering, you pre-qualify your property for entrance into SPEAR. Upon receiving your registration form, the Town of Stratford will confirm your eligibility based on the following:

- Verification of property ownership
- Status of property tax and utility bill payments

Please note, by registering, you consent to the Town of Stratford sharing the above information with Efficiency PEI (if applicable) and all required contractors involved in energy retrofits associated with the program.

If approved, you will receive a copy of the SPEAR Customer Agreement, and Upgrade Agreement and you will be referred to a local bank employee for the loan application process.

Please note: this program is not available to tenants who do not own the property that they reside in. This program is also not available to condominium property owners.

This registration form can be delivered via fax or email to the Town of Stratford:

Fax: 902-569-5000

Email: spear@townofstratford.ca

Alternatively, you can drop off or mail the form to

SPEAR

Stratford Town Centre

234 Shakespeare Dr,

Stratford, PE C1B 2V8

1. Applicant information:

Applicant Name:	
Mailing Address:	
Town:	Postal Code:
Is this the property for which you are seeking SPEAR funding? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, complete section (2) below.	
Phone #:	Alternate Phone #:
Email:	

2. Property Information:

Complete this section if upgrade property address is different from mailing address above:

Mailing Address:	
Town:	Postal Code:
This property is <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Apartment/Condo	

3. Property Owner Information:

All Property Owners listed on the registered title for the property must be listed below (printed).

All owners must also complete the consent section at the end of this form.

Name of Property Owner 1:
Name of Property Owner 2:
Name of Property Owner 3:

4. Efficiency PEI Rebate Eligibility Information:

Additional funding can be received in the form of rebates from Efficiency PEI. These rebates can be applied to help recover part of the cost of the project, after product installation is confirmed.

Would you like to apply for rebates from Efficiency PEI to offset the costs of your energy upgrades? ☐ Yes ☐ No

If yes, complete sections (a, b & c) below. If No, only complete section (a).

a) Currently what is your building's primary heat source?

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<input type="checkbox"/> Electric resistance heaters	<input type="checkbox"/> Wood/pellet stove
<input type="checkbox"/> Electric boiler/hydronic distribution	<input type="checkbox"/> Oil fired boiler/hydronic distribution
<input type="checkbox"/> Electric furnace/ forced air	<input type="checkbox"/> Oil fired furnace/forced air
<input type="checkbox"/> Electric heat pump(s)	<input type="checkbox"/> Other (please specify)

Regardless of primary/secondary function, does the building have a functioning, non-electric central furnace or boiler? ☐ Yes ☐ No

b) Has the property received a Home Energy Assessment in the past? ☐ Yes ☐ No

If yes, how long ago was the assessment performed and what company provided the assessment?

c) What is the total square footage of your building?

Total Square Footage	
Total Finished Square Footage	
Total Unfinished Square Footage*	

*Unfinished Square Footage would be classified as an area that does not contain insulation and paneled/dry walled walls.

d) When was the building constructed?

e) Has this building received any energy retrofits since it was constructed? ☐ Yes ☐ No

If yes, please list the year and type of retrofits that have occurred:

Year:	Retrofits:
Year:	Retrofits:
Year:	Retrofits:
Year:	Retrofits:

5. Property Owner Consent:

All property owners identified in section (3) above must complete the following section in order to register the property into the SPEAR Program. By signing below, the property owners consent to participate in the SPEAR Program, understand and confirm the following:

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- All information submitted as part of this application is truthful and accurate.
- The person named as “Applicant” in section (1) is permitted to act on behalf of the property owners in all matters regarding SPEAR.
- Any funding received through SPEAR will be repaid to the Town of Stratford via a Local Improvement Charge applied to the Property tax.

_____	_____	___/___/___
Property Owner 1 (Printed)	Property Owner 1 (signature)	DD/MM /YYYY
_____	_____	___/___/___
Property Owner 2 (Printed)	Property Owner 2 (signature)	DD/MM /YYYY
_____	_____	___/___/___
Property Owner 3 (Printed)	Property Owner 3 (signature)	DD/MM /YYYY

Office Use Only	
DR:	
Rev:	
Project Ref#:	



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Appendix C2. Participant Agreement Form.

Stratford Program for Energy Audits and Renewables (SPEAR) Participant Agreement Form

1. Property Owner: _____

Name

2. Property Owner: _____

Name

3. Property Owner: _____

Name

Civic Address: _____

House Number and Street

Community

Postal Code

Property Tax Information: _____

Assessment Roll Number

THIS FINANCING AGREEMENT, is made this ____ day of _____ 2018 (“Effective Date”).

PROPERTY OWNER (S)

- and –

TOWN OF STRATFORD

(hereinafter called the “Town” and, together with the Property Owner(s), the “Parties”)

In consideration of the mutual covenants herein contained, the Parties agree as follows:

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Definitions

1. In this agreement,
 - a. **“Program Service Fee”** refers to the costs incurred by the Program Administrator to administer the program;
 - b. **“Approved Quote”** means the Contractor quote for the completion of part or all of the approved Clean Energy Upgrades that has been obtained by the Property Owner(s) and provided to and approved by the Program Administrator;
 - c. **“CAO”** mean the Chief Administrative Officer for the Town or his or her designate;
 - d. **“Clean Energy Financing Program”** or **“Program”** means a program established by the Town under which owners of Properties may obtain financing for Clean Energy Upgrades;
 - e. **“Clean Energy Upgrade”** means an installation that is affixed to the Property and which:
 - i. will result in improved energy efficiency, the generation of renewable energy, or reduced greenhouse gas emissions;
 - ii. involves building envelope upgrades such as caulking and weather stripping, duct / air sealing, insulating, or energy efficient windows and doors; building heating, ventilation and air conditioning system upgrades such as heat pumps, wood or pellet stoves, or furnaces or boilers; renewable energy upgrades such as solar thermal panels, solar photovoltaic panels, or wind turbines; or such other clean energy upgrades as are approved and agreed in writing by the Town; and
 - iii. is identified as an eligible upgrade in the Town’s SPEAR Standards Policy, and meets or exceeds applicable energy efficiency standards as defined in that Policy;
 - f. **“Enabling upgrade”** means a non-clean energy upgrade that is necessary to enable a clean energy upgrade.
 - g. **“Contractor”** means an insured person retained by the Property Owner(s) to complete the SPEAR Upgrades;
 - h. **“Director of Finance”** means the date on which Final SPEAR Customer Agreement is Signed;

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- i. **“Effective Date”** means the date on which Final SPEAR Customer Agreement is signed;
- j. **“Maximum Eligible Amount”** means a general financing cap set by the Town.
 - i. Stratford’s Maximum Eligible Amount is 20% of the market assessed value of the property as provided by MAPCO.
 - ii. Assessed property values are to be considered at the time this SPEAR Customer Agreement is signed by the Town.
- k. **“Program Administrator”** means The Town of Stratford, CAO department, and includes its employees and agents;
- l. **“Repayment Period”** means the period from the date the Financing Charge first becomes due and payable to the date the final payment is due, and shall in no case be greater than ten (10) years; and
- m. **“Property”** means a residential or commercial property located within the Town that meets the eligibility criteria for participation in Stratford’s Program for Energy Audits and Renewables (SPEAR).

Term of Agreement

- 2. This Participant Agreement commences on the Effective date and terminates at the end of the Repayment Period.

Maximum Eligible Amount Calculation

- 3. Full Assessed Property Value: \$_____ verified on (mm/dd/yyyy)_____ =
Maximum Eligible Amount \$_____

Home Owner(s) initial_____

Clean Energy Upgrades

- 4. The clean energy upgrades must be estimated, by a qualified energy assessment, to achieve an overall savings-to-debt ratio greater or equal to 1:1. In other words, the cost of the energy upgrades, program fees, and cost of borrowing combined is less than or equal to the estimated energy savings over the 10 year financing period.
- 5. The Property Owner(s) acknowledges and agrees that only those Clean Energy Upgrades approved by the Program Administrator are eligible for financing through the Program, and that the Property Owners(s) shall be solely liable for the cost of any unapproved upgrades completed on the Property.

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6. The Property Owner(s) further acknowledges and agrees that they shall be solely liable for the cost of any work in excess of the Maximum Eligible Amount, regardless of whether the excess costs were for the installation of approved SPEAR upgrades.
7. In the event that an enabling upgrade is recommended in order to enable a SPEAR upgrade, the enabling upgrade and the enabled SPEAR upgrade must be both be installed to be eligible for SPEAR financing.

Payment to Contractor

8. Upon completion of the approved SPEAR Upgrades, the contractor will send the invoices to the participant who will pay the Contract the amounts owing for the completed work, up to the Maximum Eligible Amount.
9. In the case of disputes between the Property Owner (s) and a Contractor as to whether the SPEAR Upgrades are complete, the Program Administrator reserves the right to make the final determination as to the completeness of the SPEAR Upgrades.
10. If, after starting to install the SPEAR Upgrades at the Property, a Contractor or the Property Owner(s) causes the installation of the upgrades to be stopped for any reason, including reasons related to safety (including structural deficiencies, hazardous materials or other safety hazards), or discovery of unforeseen conditions, this is a matter to be resolved between the property Owner and the Contractor. The Property Owner and contractor acknowledges and agrees that in such circumstances the Participant may pay to the Contractor any amounts which, in the reasonable opinion of the Program Administrator, are properly due and payable to the Contractor at that point in time, and that the Property Owner(s) are responsible for any remaining amounts owing to the Contractor.

Reportable Deficiencies

11. If the Program Administrator or the Town discovers any deficiencies with the Property relative to compliance with codes, standards, or other applicable regulations, the Property Owner(s) acknowledges that the Program Administrator shall be obligated to report such deficiencies to the applicable regulatory authority.

Repayment

12. Loan repayment is to be negotiated between the Program participant and the Provincial Credit Union.

Disclaimer

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13. Neither the Town, the Program Administrator, nor the respective affiliates, agents, successors and assigns shall be liable to the Property Owner(s) for any damages arising in, but not limited to tort, including but not limited to negligence, breach of contract, or under any other provision of law including property damage, direct and incidental losses, economic loss, or personal injury resulting from the installation, or use of the SPEAR Upgrade or anything done in accordance with the Program.

Property Owner Responsibilities

14. The property Owner(s) will be responsible for:
- a. providing complete and accurate information to the assessor during the Home Energy Assessment;
 - b. reviewing and approving the proposed SPEAR Upgrades;
 - c. advising the Program Administrator if there are any hazardous substances at or on the Property, or other defects, deficiencies or impediments that might impact the installation of the SPEAR Upgrades;
 - d. arranging and paying for all maintenance of the SPEAR Upgrades after installation;
 - e. arranging and paying for any materials or labour costs required to repair or rehabilitate the SPEAR Upgrades in relation to any defects or deficiencies;
 - f. all costs incurred to move the SPEAR Upgrade for maintenance and repair of the Property;
 - g. telling his or her property insurance provider that the SPEAR Upgrade is being installed and purchasing appropriate insurance coverages in this regard;

Assignment by Town

15. This Agreement binds the current Property Owner(s). The Property Owner(s) will allow the Town to assign this Agreement in whole or part, without notice, for any purpose.

Consent

16. The Property Owner(s) consents to the Program Administrator or its agents accessing the premises with reasonable notice for the purpose of quality assurance of the Program and/or the SPEAR Upgrades.

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17. The Property Owner(s) consents to the sharing and exchange of energy and water information collected from monitoring solar photovoltaic or solar hot water system installed in the course of the Program. Such information may be collected by the Town and the Program Administrator and their agents and consultants for the purposes of quantifying program impact and service delivery. This information will not be shared with third parties without the Property Owner's express prior permission. Such information may continue to reside on the Town's and/or the Program Administrator's computer system.
18. The Property Owner(s) consents to the sharing of photographs taken of their SPEAR Upgrades for the purposes of marketing and/or education. No photographs displaying civic addresses, license plates or other information that would disclose the identity of the Property Owner(s) shall be used.
19. The Property owner is consenting to the sharing and exchange of information between the Property owner's utility providers for electricity, oil, propane, natural gas and water, the Town and the Program Administrator. This information may be used for the purpose of research and evaluation of SPER and may include name(s), addresses, phone numbers and utility usage both historical and during the course of the financing.

No Warranty

20. There is no implied nor express representation or warranty by the Town, the Program Administrator, or their respective affiliates, agents, successors and assigns related to the design, installation or operation of the SPEAR Upgrades, and the Town, the Program Administrator and their respective affiliates, agents, successors and assigns expressly disclaim any and all warranties relating to the SPEAR Upgrades, associated equipment or materials as to workmanship, quality, fitness for purpose or performance.

Home Owner(s) initial _____

No Guarantee of Savings

21. Neither the Town nor the Program Administrator guarantee that the SPEAR Upgrades will save any level of energy or result in a lowering of the Property Owner's utility or other bills.

The Parties hereto acknowledge and agree that the communicating of this Agreement may be transmitted by way of e-mail transmission and that the Parties hereto agree to accept such signatures and documents as legal and binding on the parties.

Home Owner(s) initial _____

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Authorized Signature of Property Owner(s)

1. By signing below, the Property Owner(s) agree(s) to the terms and conditions described above, and hereby confirms that he or she is a registered property owner.
2. If eligible SPEAR Upgrade dollar amount (plus Program Service Fees and Supplemental Assessment Fees) surpasses the maximum financing limit, the surplus dollar amount is the sole responsibility of the Property Owner(s). The Property Owner is responsible for making contractors aware that any invoice fee that exceeds the maximum financing limit will be the responsibility of the Property Owner.

Property Owner 1	
Name (print):	
Signature:	
Date:	

Property Owner 2	
Name (print):	
Signature:	
Date:	

Property Owner 3	
Name (print):	
Signature:	
Date:	

Town Staff	
Name (print):	
Signature:	
Date:	
File Approval Number	

Please mail or email the completed Participant Agreement Form to:

Town of Stratford
 Attn: SPEAR
 234 Shakespeare Street
 Stratford, PE
 C1B 2V8
 spear@townofstratford.ca

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Appendix D1. Applicant 0004 Residential Pilot Program Participant Estimation Sheet.

Applicant 0004 Cost Estimations							
Total Square feet: 1972							
Improved Property Value \$148,800= Eligible for \$29,760 of funded improvements.							
Total Greenhouse Gas Emissions Reduced due to Renovations: 1.6 Tonnes (CO2E)							
	Building Component	Before Renovation	After Renovation	Estimated Lifespan of Renovation Product (years)	Estimated Cost	Available Rebates	Category Estimated Cost
Envelope	Insulation			100			\$3,344
		Basement Interior Walls: R14.5	Increase by R15 with Batt Insulation with a final R value of 29.5	100	\$1,957	\$413.56	
		Attic R-24	Increase by R27.2 with Batt insulation with a final R value of 51.2.	100	\$1,735	\$273.90	
	Draft Proofing and Caulking	Air Leakage around doors and windows	Increase air tightness of home by 10% with Insulated caulking, etc.	10	\$400	\$60.00	
	Energy Improvement Total						
					Estimated Energy Audit Fee		\$0
					Program Registration Fee		\$0
Sub-Total						\$3,344	
Maximum Period for Fund Repayment	10 Years				Repayment Interest Rate	5%	\$920
					Total Amount Paid		\$4,264
					Money saved over 10 year period accounting for annual 2% increase in energy cost over 10 years		\$6,371

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Appendix D2. Applicant 0006 Residential Pilot Program Participant Estimation Sheet.

Applicant 0006 Cost Estimations							
Total Square feet: 1800							
Improved Property Value \$107,600= Eligible for \$21,520 of funded improvements.							
Total Greenhouse Gas Emissions Reduced due to Renovations: 1.32 Tonnes (CO2E)							
	Building Component	Before Renovation	After Renovation	Estimated Lifespan of Renovation Product (years)	Estimated Cost	Available Rebates	Category Estimated Cost
Envelope	Insulation			100			\$5,274
		Basement Interior Walls: R0	Increase by R15 with Batt Insulation with a final R value of R15	100	\$4,600	\$691.50	
		Attic R-31	Increase by R19 with blown in insulation with a final R value of 50	100	\$1,200	\$174.42	
	Draft Proofing and Caulking	Air Leakage around doors and windows	Increase air tightness of home by 10% with Insulated caulking, etc.	10	\$400	\$60.00	
	Energy Improvement Total						
Sub-Total							\$5,274
Maximum Period for Fund Repayment	10 Years				Repayment Interest Rate	5%	\$1,450
					Total Amount Paid		\$6,724
					Money saved over 10 year period accounting for annual 2% increase in energy cost over 10 years		\$9,138

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Appendix D3. Applicant 0005 Commercial Pilot Program Participant Estimation Sheet.

Applicant 0005 Cost Estimations				
Total Square feet: 6000				
Improved Property Value \$298,200= Eligible for \$59,640 of funded improvements.				
Total Greenhouse Gas Emissions Reduced due to Renovations: 19 Tonnes (CO2E)				
Options	Estimated Cost	Available Rebates	Estimated Savings per year	Estimated Payback Period
Basic Upgrades: increase/replace roof insulation roof, replace/ fix exterior doors, Replace existing lighting with LED lighting with dimming controls.	\$31,000		\$1,475	
Replace Oil Boiler Heating system with VRV/VRF heating system	\$31,000	\$1,200.00	\$6,653	
Rebate based on Per GJ reduced energy consumption:		\$4,080.00		
Energy Improvement Total	\$56,720	\$5,280		9 years and 3 months
Estimated Energy Audit Fee	0			
Program Registration Fee	0			
Repayment Interest Rate of 5%	\$15,598			
Total Amount Paid for 10 year investment	\$72,318			
Money saved over 10 year period accounting for annual 2% increase in energy cost over 10 years	\$73,141			

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Appendix D4. SPEAR Online Participant Survey.

SPEAR Participant Survey

#1

COMPLETE

Collector: Web Link 1 (Web Link)
 Started: Tuesday, May 08, 2018 11:53:00 AM
 Last Modified: Tuesday, May 08, 2018 12:22:54 PM
 Time Spent: 00:29:54
 IP Address: 24.222.141.50

Page 1: Stratford's Program for Energy Audits and Renewables

Q1 How did you hear about this pilot program? Other (please specify):
Through the Town of Stratford Office

Q2 Your age is 65 to 74 years

Q3 How many people regularly occupy your improved property on a daily basis? 1

Q4 How many years do you intend to own your improved property that was used in the Pilot Program? 15

Q5 How was the quality of service you received from the contractors that completed the energy installations: Very satisfied

Q6 How was the quality of service you received from the Pilot Project Manager: Very satisfied

Q7 Please provide any suggestions of how the quality of service can be improved for future program participants. Respondent skipped this question

Q8 As part of this pilot program you were asked to: Submit a program application form; After approval, submit a statement of Property charges; Sign a customer agreement form; Submit your energy consumption bills from the previous year; Be available to meet with the energy auditor and energy retrofit contractor; Submit your bills after you have received the energy retrofits; And meet with an Efficiency PEI representative. Is there anything about this process that you would change?

No

Q9 How would the program change for you if the payments were part of your property tax bills?

I would not be interested in the change. Would rather pay for the upgrades myself.

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SPEAR Participant Survey	
Q10 Were you satisfied with the 10 year loan period offered to you through this program?	No
Q11 Were you comfortable with the 5% interest rate offered to you with the loan?	No
Q12 Were you satisfied with the amount of money you could access through this program? Please Explain.	
I ended up paying for the upgrade myself.	
Q13 This is the type of energy retrofits that qualified for this program if they were considered to be effective by the energy auditor: Insulation for ceilings, floors, main walls, kneewalls, foundation walls, foundation headers, foundation slabs, and crawlspaces; Draft proofing (caulking, weather stripping, etc.); Exterior doors; Exterior windows; Domestic Hot Water Tanks; Drain Water Heat Recovery Systems; Heat Pumps; Wood & Pellet Heating Systems; Exhaust Ventilation; Balanced Heat Recovery Ventilation; Electric Thermal Storage (ETS) Systems; Solar Hot Water Systems; Solar Hot Air Systems; Solar Photovoltaic Systems; Programmable Thermostats; Lighting Fixtures. Is there anything you would change about this list?	
No	
Q14 Is there any way we can make this program more appealing to residents and businesses?	
Not at this time	
Q15 How much knowledge of Efficiency PEI Rebates did you have before and after your participation in SPEAR?	
Before:	Average
After:	Very large
Q16 How much knowledge of energy efficiency did you have before and after your participation in SPEAR?	
Before:	Average
After:	Very large
Q17 What drew you to Stratford's Program for Energy Audits and Renewables?	The knowledge that project management/contracting would be provided by the Town of Stratford.

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SPEAR Participant Survey

#2

COMPLETE

Collector: Web Link 1 (Web Link)
 Started: Thursday, May 10, 2018 10:58:37 AM
 Last Modified: Thursday, May 10, 2018 11:12:49 AM
 Time Spent: 00:14:11
 IP Address: 142.163.116.57

Page 1: Stratford's Program for Energy Audits and Renewables

Q1 How did you hear about this pilot program? Social Media

Q2 Your age is 35 to 44 years

Q3 How many people regularly occupy your improved property on a daily basis? 100

Q4 How many years do you intend to own your improved property that was used in the Pilot Program? 25

Q5 How was the quality of service you received from the contractors that completed the energy installations: Neither satisfied nor dissatisfied

Q6 How was the quality of service you received from the Pilot Project Manager: Very satisfied

Q7 Please provide any suggestions of how the quality of service can be improved for future program participants.

I thought the project manager did a great job keeping me informed throughout the process, I like that the entire program was managed by the project manager and felt confident in his knowledge base and ability to provide me with clear guidance.

Q8 As part of this pilot program you were asked to: Submit a program application form; After approval, submit a statement of Property charges; Sign a customer agreement form; Submit your energy consumption bills from the previous year; Be available to meet with the energy auditor and energy retrofit contractor; Submit your bills after you have received the energy retrofits; And meet with an Efficiency PEI representative. Is there anything about this process that you would change?

No

Q9 How would the program change for you if the payments were part of your property tax bills?

I think that would be a fantastic idea, It would eliminated the need to negotiate a loan to complete upgrades.

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SPEAR Participant Survey

Q10 Were you satisfied with the 10 year loan period offered to you through this program? **Yes**

Q11 Were you comfortable with the 5% interest rate offered to you with the loan? **Yes**

Q12 Were you satisfied with the amount of money you could access through this program? Please Explain.

I was happy with the amount of money that we could access; it was enough to permit me to complete just about all of the recommended upgrades.

Q13 This is the type of energy retrofits that qualified for this program if they were considered to be effective by the energy auditor: Insulation for ceilings, floors, main walls, kneewalls, foundation walls, foundation headers, foundation slabs, and crawlspaces; Draft proofing (caulking, weather stripping, etc.); Exterior doors; Exterior windows; Domestic Hot Water Tanks; Drain Water Heat Recovery Systems; Heat Pumps; Wood & Pellet Heating Systems; Exhaust Ventilation; Balanced Heat Recovery Ventilation; Electric Thermal Storage (ETS) Systems; Solar Hot Water Systems; Solar Hot Air Systems; Solar Photovoltaic Systems; Programmable Thermostats; Lighting Fixtures. Is there anything you would change about this list?

I would have like to see water efficiency upgrades to reduce water consumption included in the program.

Q14 Is there any way we can make this program more appealing to residents and businesses?

I thought the program was very appealing and I'm not sure what options might make it more appealing.

Q15 How much knowledge of Efficiency PEI Rebates did you have before and after your participation in SPEAR?

Before:	Very little
After:	Average

Q16 How much knowledge of energy efficiency did you have before and after your participation in SPEAR?

Before:	Very little
After:	Average

Q17 What drew you to Stratford's Program for Energy Audits and Renewables? **The knowledge that personal funds would not have to be used for installing the retrofits.**

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Appendix D5. Names and type of companies that would be affected by energy improvements in Prince Edward Island.

Type of Work	Name of PEI Companies Affected
Insulation for ceilings, floors, main walls, kneewalls, foundation walls, foundation headers, foundation slabs, and crawlspaces	<ul style="list-style-type: none"> • Green Foot Energy Solutions Inc. • Mackenzie Builder Services Limited • MR J Construction Limited • Southern Kings Construction Limited • Kings County Construction Limited • Warren's Carpentry Inc. • Joshua Longuepee • McGuirk Bros Construction Limited • Maritime Construction Limited • Fitzgerald & Snow (2010) Limited • Friends Renovations • Titan Homes Limited • W M & M (1993) Limited • Semour DesRoches Construction Limited • J E Matheson Construction Inc. • Toombs Plumbing & Heating Limited • BernMar Construction • Wilsons's Renovations & Restorations • Birt & MacKay Construction • Anavrin Group Inc. • Queens' Country Construction Limited • Dean Arsenault Construction • E & D Construction • Gill Construction Inc.
Draft proofing (caulking, weather stripping, etc.)	<ul style="list-style-type: none"> • Same as list above.
Exterior doors	<ul style="list-style-type: none"> • Same as list above. • Keir' Overhead Doors Limited
Exterior windows	<ul style="list-style-type: none"> • Same as list above.
Domestic Hot Water Tanks	<ul style="list-style-type: none"> • Mr. Plumber
Drain Water Heat Recovery Systems	<ul style="list-style-type: none"> • Mr. Plumber
Heat Pumps	<ul style="list-style-type: none"> • Mr. Plumber • M. B. Eye Electrical • Greenfoot Energy Solutions Inc.
Wood & Pellet Heating Systems	<ul style="list-style-type: none"> • E365 • Advanced Air Systems
Exhaust Ventilation	<ul style="list-style-type: none"> • Greenfoot Energy Solutions Inc. • Keir' Overhead Doors Limited • Entire Mechanical Contractors • Gill Gavin Inc.
Balanced Heat Recovery Ventilation	<ul style="list-style-type: none"> • Entire Mechanical Contractors

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	<ul style="list-style-type: none"> • Ross Ventilation • Top Notch Heating and Ventilation • Kiers Ventilation • Hughes Home Ventilation • Gill Gavin Inc.
Electric Thermal Storage (ETS) Systems	<ul style="list-style-type: none"> • Sun Air Energy Solutions
Solar Hot Water Systems	<ul style="list-style-type: none"> • Sun Air Energy Solutions • M. B. Eye Electrical
Solar Hot Air Systems	<ul style="list-style-type: none"> • Sun Air Energy Solutions • M. B. Eye Electrical • Renewable Lifestyles • West Prince Solar
Solar Photovoltaic Systems	<ul style="list-style-type: none"> • Sun Air Energy Solutions • M. B. Eye Electrical • Renewable Lifestyles • West Prince Solar
Programmable Thermostats	<ul style="list-style-type: none"> • Hansen Electric • Fischer Electric • Entire Electrical
<p>Note: This chart includes over 40 contractors that have their base of operations in Prince Edward Island (PEI). There may be other contractors that were mistakenly excluded that do work relating to renewable energy and energy efficiency in PEI.</p>	

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Appendix D6. Price per Unit chart constructed from Pilot Project Results.

Work	Average Estimated Price per unit	Details
Attic Insulation	\$1.15/square foot	Based on quotes blown-in insulation (R40 value) for a 6000 square foot building.
Basement Spray Foam Insulation	\$5.75/square foot	Based on quotes for 2 inches of spray foam with fireproofing agent applied overtop on all basement wall space.
Replacing Commercial Fluorescent Light Fixtures for LED Light Fixtures	\$176.50/light fixture	The specific quotes were for 16 led disc lights, 42 2x4 LED flat panel lights and 5 1x4 LED flat panel lights.
Replacing old wooden doors and door frames with Aluminum doors	\$2,223/door	The specific quotes were for three exterior doors all of them being different sizes.
Weather Proofing	\$5/square foot of building	This was based on rebate values from Efficiency PEI.
Installing a VRV/VRF System	\$8,974.11/indoor head	The specific quotes were for seven indoor VRV heads connected to one outdoor unit.
Note: Quotes were collected from Wilson's Restorations and Renovations, Greenfoot Energy Solutions, Entire Electrical and Mechanical Contractors, M.B. Eye Electrical, R. Cudmore Electric, A & J Insulating, Habitat Insulfoam and other contractor companies were consulted.		