

Detailed Operational Study: LOCAL ENERGY FINANCING SYSTEMS

Submitted to:



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1. Executive Summary

Study background

The Town of Bridgewater retained Verterra Group Environmental Services and Dunskey Energy Consulting (together, the Verterra team) to conduct a Detailed Operational Study on how Community Economic Development Investment Funds (CEDIFs) and Energy Service Company (ESCO) structures could be used to implement Bridgewater's energy projects; neighbourhood energy efficiency retrofits and a solar garden.

This study is phase two of the work identified in previous studies, namely Bridgewater's Community Energy Investment Plan and their Smart Cities Challenge application. Phase one included a research and scoping study and phase three will include detailed business planning.

Throughout this project the Verterra team have referred to and based our recommendations on the four pathways that were developed through Bridgewater's Community Energy Investment Plan; clean, efficient, secure, and affordable.

The study consisted of four main steps project definition, business definition, market assessment and feasibility and finally implementation.

Community Economic Development Investment Funds (CEDIFs)

The CEDIF structure was identified as a potential financing mechanism for the Town's clean energy projects that maximises the value to Bridgewater's residents.

A CEDIF is a for profit corporation that is qualified for and registered under the Equity Tax Credit Act. CEDIF investors receive Equity Tax Credits (ETC) on their investments equal to an initial credit of 35% at the time of investment and a further 20% after the initial 5 years and then 10% after year 10. A summary of the rules and process required for CEDIFs is provided and detailed explanations can be found in the Equity Tax Credit Guidelines: Community Economic Development Investment Funds and Community Economic Development Corporation Regulations.

The Bridgewater Smart Energy CEDIF would have a mission to promote Bridgewater's energy objectives through investing in local energy projects. It would raise funds through a series of offerings and invest these funds in local energy projects.

The key aspects that lead to a successful CEDIF investment are 1) focused marketing campaign to recruit investors, 2) due diligence to ensure that a project meets the CEDIFs investment criteria and 3) a regular dividend payment to investors.

The Town would provide funding to a purposed Community Foundation, which acts as the vehicle to float funding to the CEDIF, for initial start-up costs. Alternatively, the Town may leverage community buy-in, encouraging the private market to cover start-up costs. The cost of preparing the offering document and marketing costs is estimated at \$120,000. If a CEDIF is well managed with a respected Board of Directors and a good marketing campaign, then it is realistic to expect that it can raise close to the maximum limit of \$3,000,000.

Potential changes to the Community Economic Development Corporation Regulations due to the expiration to the Equity Tax Credit Act in 2022 pose the biggest risk. This could result in changes to the CEDIF rules and process.

The implementation plan for any CEDIF hangs around the investment season in January and February. The offering document should be submitted and processed in the Fall so that the 90day offering period is open from the end of December to mid-March.

Implementation stages include:

- CEDIF incorporation and business planning
- Initial outreach and marketing
- Preparation of the application to Nova Scotia Securities Commission and Department of Finance for the ETC
- Securing investors once the application has been approved and the offering period is open
- Invest in energy projects
- Ongoing management of the CEDIF including annual filings, dividend payments and application for rollover credits after years 5 and 10.

Neighbourhood Retrofits

To meet the ambitious goals that Bridgewater has to improve energy efficiency within homes, a new simplified ESCO model was designed to encourage ESCOs to implement retrofits in residential buildings, and to reduce the barriers faced by homeowners. This new business model involves an ESCO managing the complete process of upgrading the energy efficiency of participants' homes, from initial recruitment to final closure of the project.

The targeted market are homeowners of single-family homes and small multi-unit residential buildings with high energy bills that could benefit from energy efficiency measures such as:

- Insulation;
- Air sealing;
- LED Lighting;
- Heat pump installation;
- Low-flow shower heads and faucets;
- Heat pump water heater;
- Drain water heat recovery;
- Automated HVAC system controls;
- Windows replacement.

The measures would be implemented at no costs for the participant and the monthly energy bill savings would be used to reimburse the retrofit work.

The Town of Bridgewater would need to work with a program administrator that would, among other things, approve each project and retrofit contracts between the participant and the ESCO and manage the financing and payment processes. They would also conduct quality control activities and track the results of the program and ensure the savings level guaranteed by the ESCO are met. Based on the research conducted, our team recommends that the Town enter into a service agreement with Efficiency Nova Scotia to fill this role.

The high-level financial analysis conducted showed that the Town of Bridgewater would need to secure a loan of approximately \$4 million through the selected financing mechanism to finance the initiative. They would also need to set aside approximately \$50,000 per year to cover a portion of the

administrative fees and the cover the financial risk associated with payment defaults and unachieved savings.

As part of this study, we have identified three main risk areas:

1. Partnership with the ESCOs: The ESCOs might not wish to enter the residential market if they deem it too risky.
2. Market Uptake: The market barriers may remain too high to see a significant uptake in the participation rate.
3. Financial Risks: There is also an important financial risk for the Town of Bridgewater depending on the chosen approach to guarantee the loans and the savings.

Mitigation strategies are proposed in the report.

The implementation of the neighbourhood retrofits program would take under 2 years. This estimate is conservative and could be compressed if Efficiency Nova Scotia (as recommended – or another program administrator) and the ESCO quickly come to an agreement. During this period, the following key tasks will need to be completed:

- Select and set up the financing mechanism;
- Sign a service agreement with the program administrator;
- Prepare and launch an RFP process to select the ESCO;
- Award and negotiate the contract with the selected ESCO;
- Set up the program;
- Prepare and launch the marketing campaign.

Solar Garden

The scope for the solar garden was defined by the Town through a series of meetings where different models were presented. The solar garden would be a 6MW (AC), ground mounted photovoltaic system. A portion would be owned by virtual net metering customers and the remaining portion would be jointly owned by the CEDIF and the project developer.

The solar garden would serve all electricity customers in the utilities service area as well as the CEDIF investors by paying dividends on the investments. It would add additional renewable energy to the grid offsetting electricity generated using non-renewable sources. The virtual net metering portion of the project enables residents, who may not be able to install solar energy on their home to purchase a portion of the solar project and offset this against their own electricity bill through virtual net metering.

The key finding of this study is that a 6MW solar garden is not feasible at this time. This is because there are currently limited routes to sell electricity to the utility and secure a power purchase agreement (PPA) for a solar project of this size in Nova Scotia. In addition, the cost of solar projects is high compared to that of other renewables such as wind energy. For this reason, we believe that this does not meet Bridgewater's energy objective of affordability.

To meet Bridgewater's needs we suggest that the Town explore the feasibility of:

- 1) a smaller solar project (<1MW) implemented as a pilot for virtual net metering that includes a provision for low income residents and those living in energy poverty and
- 2) supplying the remaining needs of the Town with a wind energy project

These both reduce the overall capital costs required for the project and the virtual net metering project also provides a means to explore a structure that removes barriers and increases participation to an existing program.

In order to realize any renewable energy project greater than 100kW at this time in Nova Scotia the Town of Bridgewater needs to work in partnerships with the key stakeholders.

Conclusions

Overall, the Neighbourhood Retrofit and Solar Garden projects met the Town's clean and efficient objectives by helping the community switch away from fossil fuels and by providing a greater number of efficient homes than would normally be achieved through a 'business as usual' approach.

The neighbourhood retrofit project can significantly help lower the market barriers preventing homeowners to improve the energy efficiency of their residence. Partnering with ESCO presents a great opportunity for Bridgewater to revamp its housing stock and meet their objective to reduce their citizens' dependence on expensive energy.

The high costs of solar do not make energy more affordable and a 6MW Solar Garden will contribute to increase energy costs for residents in the long term. A more affordable approach is presented and further work on this revised approach is required to understand its feasibility.

Residents with low income and those living in energy poverty require tailored approach for both projects.

Further work is required on both projects to confirm the feasibility, define the project parameters and funding sources before implementation.

The partnerships that the Town of Bridgewater build and maintain are crucial to the successful implementation of their energy projects.

2. Introduction

2.1. Context and Background

The Town of Bridgewater retained Verterra Group Environmental Services and Dunskey Energy Consulting (together, the Verterra team) to conduct a Detailed Operational Study (DOS) on Community Economic Development Investment Funds (CEDIFs) and Energy Service Companies (ESCOs) as part of the Town's comprehensive capitalization strategy for Bridgewater's community energy systems.

The project includes an assessment of CEDIFs and ESCOs and develops pathways of least resistance that increase the ability and interest of the Town, its residents, and its businesses to invest in and implement renewable energy options (specifically a Solar Garden) and energy efficiency retrofits. As part of this assessment, our team also developed an implementation strategy designed to help the Town achieve its goals and outcomes regarding local energy generation, local energy ownership, and a reduction in energy poverty, as articulated in the following plans:

- **Community Energy Investment Plan:** On January 8th, 2018, Bridgewater's Town Council approved its Community Energy Investment Plan, which describes the need and requirements necessary for achieving Bridgewater's energy shift to a clean, efficient, secure, and affordable energy economy.¹ The core elements of the plan include:
 - The assessment and creation of innovative and effective **local financing mechanisms** to facilitate the capitalization of the town's community energy projects and programs;
 - The assessment and possible creation of a **locally owned and managed energy utility**, and
 - The assessment, capitalization, and development of **community-scale energy projects**, including a neighbourhood energy retrofits program, a district heating system, and a solar garden.
- **Smart Cities Challenge:** On May 14, 2019, Bridgewater was announced as the winner of Infrastructure Canada's \$5 million Smart Cities Challenge for its proposal focusing on a systematic approach to curbing energy poverty in the Town of Bridgewater.²

Throughout this project the Verterra team have referred to and based our recommendations on the four pathways that were developed through Bridgewater's Community Energy Investment Plan. These are:

Clean – switching the community away from fossil fuels and onto renewable sources, such that by 2050 its GHG emissions are reduced by 80% compared to 2011 emission levels.

Efficient – reduce wasted energy especially from heating systems and commercial/industrial processes. Educate and train the community as a whole to change awareness and habits.

Secure – lowers dependency on externally sourced energy by driving down energy needs, increasing local energy generation and ownership, and increasing the skill and capacity of the community to innovate its own energy solutions.

¹ <https://www.bridgewater.ca/document-library/sustainability/sustainable-bridgewater/1667-community-energy-investment-plan-the-way-forward/file>

² <https://www.bridgewater.ca/town-services/planning/planning-programs/bridgewater-smart-cities>

Affordable – energy should be affordable for all people, businesses and organizations in the community. Overall energy costs will decline substantially in all sectors and for all residents.

A core component of both initiatives is the development of innovative capitalization strategies to bring millions of dollars into the community to upgrade community energy infrastructure, improve housing stock, and create better and more affordable transportation options. This study is Phase Two in the work to implement the goals of these plans. Phase One included a research and scoping study³, and Phase Three will include detailed business planning, incorporation, and resourcing.

To meet the objectives of Phase Two, this report provides an operational overview of the path forward for both CEDIF investments, conducting neighbourhood retrofits via an ESCO partnership and implementation of a solar garden focusing on a feasibility study for each path as well as a related implementation plan. The overall structure of the report is as follows:

- **Introduction**, including background and context, key terms of concepts, and study approach
- **CEDIF Structure and Overview**
- **Neighbourhood Retrofits ESCO-Based Program Structure and Overview**
- **Solar Garden Project Structure and Overview**
- **Conclusion and Next Steps**

2.2. Key Terms and Concepts

Specific terms and acronyms are defined throughout the report as they are introduced. However, the general premise of this study requires an understanding of several key terms and concepts; these terms are identified and explained here.

- **Community Economic Development Investment Fund (CEDIF):** A CEDIF is a pool of capital that has been raised from Nova Scotian residents to invest in local for-profit small businesses and co-operatives within a community. Through investing in a CEDIF a Nova Scotia taxpayer becomes eligible for Equity Tax Credits (ETC). The ETC provides an initial tax credit of 35% to the investor at the time of investment and a further 20% after the initial 5 years and then 10% after year 10.
- **Energy Service Companies (ESCOs):** Energy Service Companies, also known as ESCOs, are private corporations or entities that provide comprehensive energy solutions to customers (mostly building owners), including the design, implementation, and measurement/verification of energy efficiency retrofits and/or renewable energy projects. ESCOs will also provide overall project management and in some cases, facilitate loan applications or provide financing. Their unique value-add is that ESCOs offer one-stop energy efficiency services and will enter into energy performance contracts (EPCs) with customers that reduce or eliminate project risk from the customer's standpoint, in that ESCOs will guarantee a portion or all of the estimated energy savings, from which their fees and associated loan repayments will be paid during the payback period. Because of the complexity of these contracts and the need for significant energy savings to warrant the

³ <https://www.bridgewater.ca/document-library/sustainability/sustainable-bridgewater/1738-community-energy-financing-mechanisms-scoping-study/file>

investment and risk, ESCOs traditionally only work with large commercial, industrial, and institutional facilities.

- **Neighbourhood Retrofits:** While energy retrofits can focus on home renovations, commercial and industrial (C&I) retrofits, and energy retrofits to public infrastructure and amenities, we use the term *neighbourhood retrofits* to refer to a targeted program focusing on residential and small commercial retrofits in defined areas within the Town. While larger C&I facilities may exist in those areas, they will not be included in the ESCO model being developed within this study, as they are well adapted to enter into Energy Performance Contracts under a traditional ESCO model.
- **Solar Garden:** A community solar garden is a solar photovoltaic (PV) project that is fully or partially owned by members of the community. Solar gardens are situated in an ideal location, in terms of both exposure to the sun and technical requirements, for generating solar energy. They can be situated on large rooftops or be ground mounted.

2.3. Study Approach

The operational study consisted of four main steps, as outlined below.

Project Definition

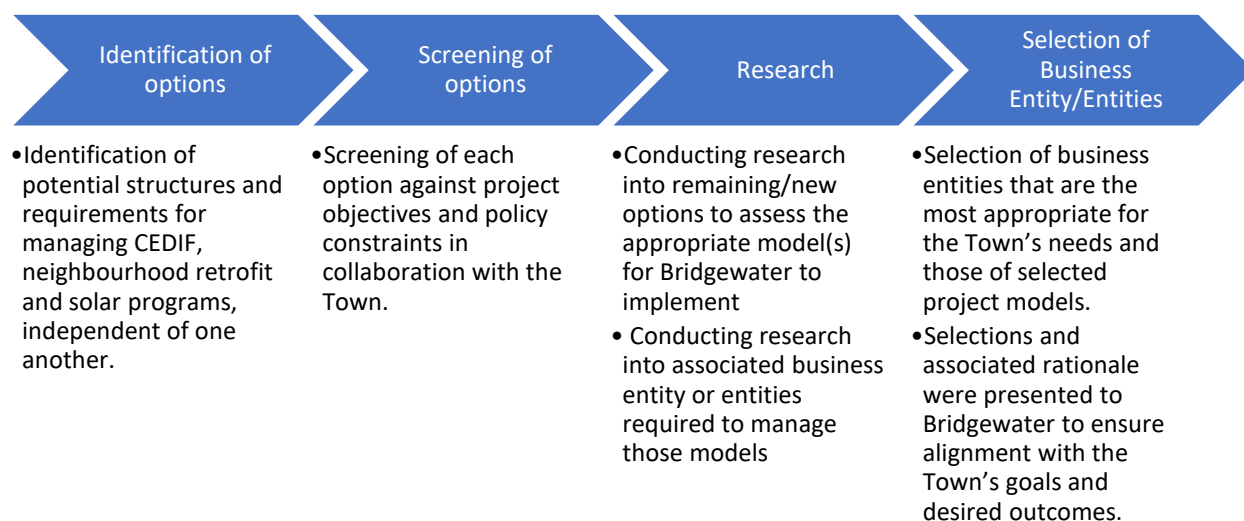
First, a kickoff meeting was conducted with the Town of Bridgewater to clarify the project scope and expectations. During this meeting the project team reviewed the project description and discussed the scope, desired outcomes, financing objectives and the Town's role for both projects; neighbourhood retrofits and a solar garden.

The team also identified project stakeholders and mapped them in terms of their interest and influence to determine who to contact for the project and how to manage them.

Finally, the team discussed how the project should be managed. The agreed on a communications plan and a project tracking tool that was used to track project progress and highlight any challenges, assumptions and items for the Town's attention.

Business Definition

The next step in the project was to identify a business entity that could manage the CEDIF, neighbourhood retrofits and/or solar projects. Our team was open to the possibility of one entity managing both mechanisms, or for the need for different entities if different skills, knowledge sets, or considerations were required. As such, our work consisted as follows:



For a detailed outline of the initial models that were reviewed, please see Appendix A.

Market Assessment and Feasibility Study

Key components of the operational study were a market assessment and feasibility study for the CEDIF, ESCO and solar models. The intention was to identify elements such as the target market for each initiative, participation and entry barriers, risks, opportunities, and resources and constraints of the models.

Both components involved understanding the perspectives, needs, and constraints of key market players; opportunities and constraints of the Town; and overall legislative and regulatory hurdles. As such, our team leveraged two forms of research:

- **Primary research:** Our team conducted interviews with key stakeholders in relevant areas, including the Town, ESCOs, existing CEDIFs, government, program administrators and implementers, and others.
- **Secondary research:** We also completed additional research as required into such areas as regulatory and insurance requirements, contracting needs, jurisdictional examples, and others. This component of the research was designed to supplement our primary research, which was focused on Bridgewater's specific goals and needs rather than a more general approach to what other jurisdictions have implemented.

Implementation Plan

Based on the results of our research, the Verterra team developed an implementation plan for CEDIF, ESCO and Solar program, with considerations for synergies, alignment, and potential overlap as necessary. These considerations are addressed in the conclusion and next steps section, which bring the two separate analyses together.

3. Community Economic Development Investment Funds (CEDIFs)

3.1. Overview

The CEDIF structure has been successfully used to raise pools of capital from residents of Nova Scotia to invest in small for-profit local businesses and cooperatives within communities since 1999. The town of Bridgewater identified the CEDIF structure as a potential financing mechanism for its energy projects in its community financing mechanisms scoping study and now wishes to understand their detailed operations, review the feasibility of using the structure to help finance the Town's energy projects and understand the steps required to implement a CEDIF.

The CEDIF is a for profit corporation or cooperative that is qualified for and registered under the Equity Tax Credit Act. A CEDIF is able to provide investors with Equity Tax Credits (ETC) on their investments. The ETC is equal to an initial credit of 35% to the investor at the time of investment and a further 20% after the initial 5 years and then 10% after year 10.

A Community Economic Development Corporations (CEDC) is the corporate entity that applies to the Department of Finance to be eligible for the ETC and the CEDIF is the investment fund for the CEDC. All stakeholders tend to use both CEDC and CEDIF interchangeably and most commonly CEDIF. For simplicity this report will use the term CEDIF.

Unfortunately, CEDIFs have not always been used well and so have a tainted reputation. In particular the failed CEDIF that was used to raise funds for the new Seaport Market in Halifax has reduced confidence. Also, many financial advisors are not in support of CEDIF investments, this is for a number of reasons including lack of certainty on return on investment, lack of liquidity for the shares given long-term nature of investment and competition for their business. In addition, the long term nature of the investment doesn't work well with older investors and it is not compatible with RRIFs. More recently, the CEDIF structure has successfully been used to invest in the wind energy Community Feed In Tariff (COMFIT) projects in Nova Scotia.

Potential changes to the CEDC Regulations are likely, due to the expiration to the Equity Tax Credit Act in 2022. This could result in changes in the CEDIF rules and process.

This study reviews the CEDIF process and business model, it describes the market, the financial aspects and steps required to implement a CEDIF. Interviews with established CEDIFs and staff from Department of Finance and Nova Scotia Securities Commission helped to confirm the process and understand some of the difficulties and critical considerations.

3.2. Description of CEDIF Model

The Bridgewater Smart Energy CEDIF would have a mission to promote Bridgewater's energy objectives through investing in local energy projects.

The CEDIF will raise funds through a series of offerings and invest these funds in local energy projects identified in this study and other studies that the Town of Bridgewater will be conducting. Investing in a portfolio of projects spreads the risk to the investor and conducting a series of offerings helps to establish a brand and confidence with the CEDIF investor.

The application process and ongoing management of a CEDIF and the associated ETCs is clearly set out by the Department of Finance and Nova Scotia Securities Commission. Detailed explanations of these

rules and processes can be found on the Nova Scotia's Department of Finance website under Equity Tax Credit ⁴, the Equity Tax Credit Guidelines: Community Economic Developer Investment Funds⁵ and the CEDIF page of the Nova Scotia Securities Commission website⁶. This section provides an overview of the process and refers to these sources. Where a number of different options are available, we have recommended and described the most appropriate for the Town.

CEDIF Rules

Rules for CEDIFs are set out in the Community Economic Development Corporation Regulations and summarised below.

- Maximum offering is \$3,000,000
- Minimum offering is equal to the total amount required to close the offering
- Any individual is able to invest up to \$50,000 per offering.
- The initial offering must have at least 25 investors
- Subsequent offerings (including those for roll over credits at years 6 and 11) must have at least 3 investors.
- The maximum any CEDIF is able to raise is \$6,000,000

It's worth noting that more than \$3,000,000 was raised for one CEDIF. In this particular case the CEDIF applied to the Department of Finance and Securities Commission to extend the maximum based on the benefit to the community in raising more.

The CEDC regulations do not set a minimum investment level however most CEDIFs set one in order to ensure that administration fees are covered for processing each investment. More detailed financial analysis would be required to fully understand the administration costs and set an appropriate minimum investment level. Minimising this level is recommended in order to encourage broad participation.

A process flow describing the CEDIF process can be found below in Figure 1

Key Actors

Town of Bridgewater – The role of the Town will be to set the mandate for the CEDIF in terms of its mission and objectives. The relationship between the Town, the Community Foundation and the CEDIF i.e. arm's length agreement or memorandum of understanding (MOU), requires further work as it must comply with the restrictions set in the Municipal Act.

Department of Finance and Treasury Board – reviews and approves the application and issues the Certificate of Registration that is required prior to the CEDIF issuing shares to the investors. The certificate makes the CEDIF shares sold eligible for the ETC. The department also issues the ETC to the CEDIF investors once they have submitted their tax return.

⁴<https://www.novascotia.ca/finance/en/home/taxation/tax101/personalincometax/equitytaxcredit/default.aspx>

⁵ [https://novascotia.ca/finance/docs/ETC_Guidelines - CEDIFs 2018-04.pdf](https://novascotia.ca/finance/docs/ETC_Guidelines_-_CEDIFs_2018-04.pdf)

⁶ <https://nssc.novascotia.ca/corporate-finance/community-economic-development-investment-funds>

[Nova Scotia Securities Commission](#) – the securities commission reviews and approves the CEDIF offering document and any associated marketing material.

[Community Economic Development Investment Fund \(CEDIF\)](#) – the CEDIF is a corporation or cooperative that meets the criteria as prescribed in the Equity Tax Credit Regulations, and that is registered as a CEDIF by the Minister of Finance under the Equity Tax Credit Act. The criteria for a CEDIF is clearly defined in the Equity Tax Credit Guidelines: Community Economic Developer Investment Funds.

A number of different business models meet the prescribed criteria. For the purposes of this report **the Bridgewater CEDIF it would be a for profit corporation and an active business**. Further work is required to confirm the most suitable business model for the Town’s purposes and given the restrictions set by the Municipal Act.

[Community Investor](#) – is an individual who wished to invest in the CEDIF, they generally have middle to high income and a high tax burden. In addition, they are supportive of the CEDIF and its mission.

[Community Foundation](#) – is a not-for-profit organizational structure, whose sole function is to act as the vehicle for which start-up funding can be provided from the Town to the CEDIF.

CEDIF Process Flow

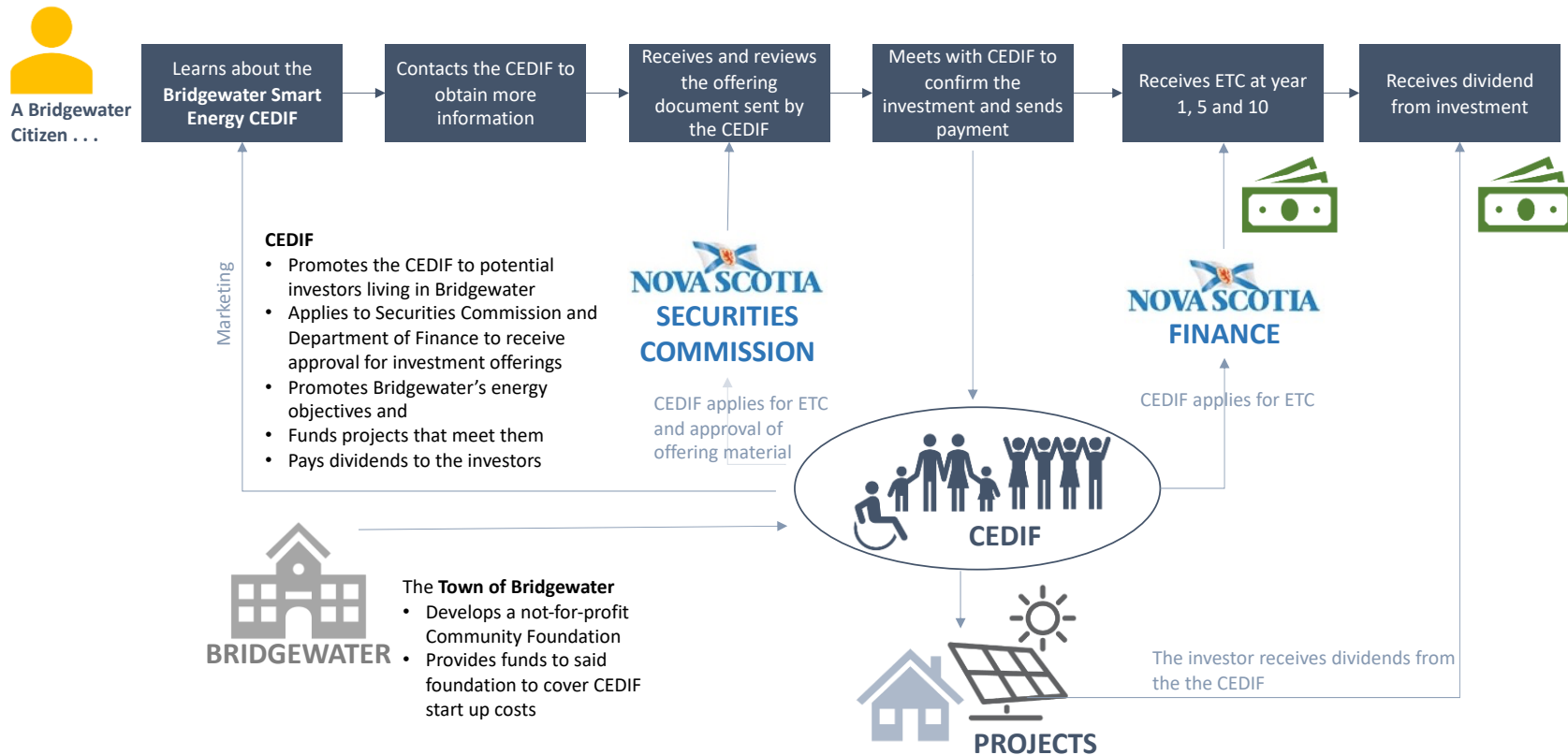


Figure 1 – CEDIF Process Flow

Key steps

An investor learns about the Bridgewater Smart Energy CEDIF

The investor will learn about the CEDIF opportunity through various marketing and communication initiatives conducted by the CEDIF. These initiatives could range from a personal meeting with one of the CEDIF staff or Directors, advertising at a community event, a CEDIF representative speaking at a local special interest group meeting i.e. Lions Club, or some kind of media format such as a local paper, online social media, radio or billboards. Initial information that a CEDIF is able to provide is limited to a description of the organisation, the amount of funds needed to be raised and an outline of the tax incentive.

At this point the CEDIF may ask a potential investor to sign an expression of interest, this is to help the CEDIF keep a record of interested individuals who they can then reach out to again once the offering has been approved and is open. Any expression of interest must include warnings that any potential investor understands that they need to read and consider offering document, consult with a professional advisor and that the expression of interest is not in any way binding.

The CEDIF receives approval from Department of Finance and Securities Commission and the offering is open for investors

Staff from the CEDIF will present the potential investor with the offering document and any marketing material that has been pre-approved by the Securities Commission. The offering document will describe the CEDIF, the business and use of proceeds as well as the personnel involved in the CEDIF.

The investor then reviews the offering document and seeks financial advice in order to decide whether the CEDIF is the right investment for them and, if it is, how much they should invest. The CEDIF investment is also eligible as a RRSP or TFSA and so the individual investor may want to make an investment as part of their RRSP portfolio. If an investor is closer to 70 an RRSP investment may not be right for them and a financial advisor would be able to help them make this decision.

Once the investor has read the offering document and met with their advisor, they will make the investment by writing a cheque payable to the CEDIF. As per CEDIF rules described above, the maximum amount that can be invested is \$50,000. Although there is no rule for a minimum investment amount, we recommend that it be set to balance administration costs and minimised in order to provide broad participation.

Received ETC at year 1

In order to receive the ETC an investor must add the CEDIF contribution to the provincial section of their tax return.

ETC after year 5 and 10

After years 5 and 10 the investor will receive tax credits of 20% and 10% respectively. In order to do this the investor must include the CEDIF investment details on their tax return.

Receives dividend from CEDIF

As part of the investment, the investor will also receive dividends from the investment. The CEDIF staff and Board will determine when the dividends will be issued and how much they will be. These will be based on the revenue from the projects that the CEDIF invests in.

CEDIF Offering Document

The CEDIF offering document is the document used to describe the CEDIF investment to potential investors. Before the offering document is presented to a potential investor it must be approved by Nova Scotia Securities Commission. A template is provided in Appendix B.

The document describes:

- the offering, with a high level overview in terms of the minimum and maximum number of shares, price per share and proceeds.
- risk factors of the investment,
- details of distribution,
- a description of the issuer (which is the CEDC) and its business,
- specified investments,
- use of the proceeds
- financial forecasts and/or projections,
- dividends, distributions and redemptions,
- a description of personnel involved with the issuer including the promoters, officers, directors and key personnel.

If during or following the offering period, a CEDIF proposes to invest more than 40% of the total proceeds in a single specified investment that was not disclosed in the offering document it must:

- provide security holders a circular describing the details of the transaction and potential investment,
- call a special meeting and
- obtain approval from at least 50% plus one of the votes cast at a special meeting excluding the votes of directors, officers, promoters and related parties

3.3. CEDIF Business Description

Business operations

As a municipality, the Town of Bridgewater is not eligible for ETC. It therefore must work with a new or existing CEDIF which has a commitment to invest in energy projects in the Town of Bridgewater.

The form in which the relationship between the town and the CEDIF takes must meet the restrictions set in the Municipal Act and has yet to be confirmed, but there is little doubt that the CEDIF will be an entity independent of the Town which secures start-up funding by means of an intermediary not-for-profit Community Foundation, or through private investments.

The CEDIF will be a for-profit corporation and would work within the town of Bridgewater to promote the town's energy objectives. It will:

- identify potential investors and
- identify and invest in energy projects for the Town of Bridgewater.

Responsibilities would include:

- establishing the CEDIF and writing the business plan, including identifying energy projects to invest in,

- managing and writing the offering documents and application process to the Department of Finance and Nova Scotia Securities Commission,
- recruiting investors through a number of different marketing initiatives,
- receiving and processing the investments,
- identifying energy projects to invest in and conducting due diligence,
- applying for rollover tax credits after years 5 and 10 of the project,
- paying dividends to investors.

Financing Operations:

The money raised through the CEDIF offerings would be used to cover the costs required to operate the CEDIF, invest in the energy projects and pay dividends to the investor. Any CEDIF offering must be able to stand alone on its own investment merits.

In order to raise all of the funds required for different projects a series of offerings may be necessary.

Operation costs include all staff and service provider costs for the offering period and ongoing management.

Criteria would be set by the CEDIF for investments and a thorough due diligence conducted for any project that the CEDIF invests in. The investment can take the form of an equity stake in a renewable energy project or a loan with a set rate of interest for funding the neighbourhood retrofits project.

Revenue sources:

The money that is used to pay the ongoing CEDIF operation costs and dividends to the investors comes from the revenue generated by the projects that it invests in or from the interest paid on any loan that it gives to a project.

Projects

A number of different energy projects have been identified by the Town of Bridgewater, some of which are included as part of this study. As mentioned above the CEDIF offering has to stand alone on its own investment merits, the revenue stream from a project will enable the CEDIF to cover its costs as well as pay dividends to its investors. The ETC received by the investor means that the expected project returns do not have to be as high as those expected by conventional financial institutions.

The CEDIF staff and Board of Directors must conduct a thorough due diligence of any project before investing in it. This is to ensure fiscal responsibility and that the CEDIF is acting in the best interests of its investors.

Examples of projects that a CEDIF could invest in are provided below:

- **Neighbourhood Retrofits:** The neighbourhood retrofit project is described in section 4 of this report. The CEDIF could provide financing to the project in terms of a loan.
- **Solar Garden:** the CEDIF could invest in the development of a virtual net metered solar garden as described in section 5 of this report. The CEDIF funds could be used to help finance the development of the project and then receive a premium, for financing the high risk early development stage of the project when it is sold.
- **Other Projects:** other investments could include medium sized solar rooftop, a wind project whereby the CEDIF has a partial ownership of the project, and other energy projects that the

Town has identified. A good example of a similar cooperative investing in solar is the Ottawa Renewable Energy Cooperative⁷.

Customer base

Although the preferred CEDIF investor would be a resident of the Town of Bridgewater the town recognises that restricting the investor pool to this small area would limit the total amount likely to be raised in an offering.

The CEDIF would target investors who are residents of Bridgewater as well as other Nova Scotian residents who support the development of renewable energy and Bridgewater's energy objectives. Investors who have previously invested in successful CEDIFs should also be a target audience.

The ETC provides the greatest benefit to individuals with a middle to high income and who have a high tax burden. The CEDIF investment is also eligible for RRSP investments and so suitable for those making regular RRSP contributions.

Options for low income residents

There are no advantages to low income residents and those living in energy poverty to participate in a traditional CEDIF model. This is mainly because they have limited income and therefore a low tax burden. To reduce barriers to those who do want to invest, the minimum investment level should be set as low as possible to encourage broad participation.

Those living in energy poverty could be empowered to participate by using a co-op model and gifting shares. Further work would be required to confirm that this model would qualify for a ETC.

Management and personnel requirements

A CEDIF is a long term commitment and requires a substantial effort to prepare and submit the application and offering document as well as recruit investors. Annual reporting is required as well as tasks after years 5 and 10 to ensure that all investors receive their ETC.

In general, there are three roles required to establish and operate a CEDIF these are a project manager, community investment manager and a financial expert. Some of these roles can be fulfilled by the same person however it would be challenging to find someone who has a skillset that satisfies all of them. All three roles would require knowledge of the CEDIF rules and process as well as familiarity with the towns energy objectives and projects planned to achieve them.

This is unlikely to require a full time annual commitment from staff, however the period running up to the offering and the offering itself would require a full time commitment.

We have assumed that the Town informally collaborate with the CEDIF to procure staff to act in these roles and appoint the Board of Directors, however the Town will have no binding authority on staffing and board appointment thus incurring the risk of a non-municipally governed entity acting on the Town's behalf.

⁷Ottawa Renewable Energy Cooperative <https://www.orec.ca>

Project Manager

The project manager would have overall responsibility for ensuring that the CEDIF stays on schedule and meets all of its key milestones in the process. The project manager would identify energy projects to invest in and conduct due diligence. In addition, the project manager would report to the Board of Directors on the status of the project schedule and budget.

Community Investment Manager

In this role the community investment manager would oversee and participate in all investor recruitment and outreach activities. They would work with and manage any marketing service provider.

Financial Expert

This person would be an accountant or have a strong financial background. They would write or assist with the writing of the offering document. Create all financial statement and be responsible for the financial aspects of the project due diligence.

Officers and Directors

In addition to the CEDIF staff, an engaged and active Board of Directors is required to govern the organisation. Their role is to provide good governance and fiscal responsibly. In addition, and of equal importance, the board should act as promoters and sales agents of the CEDIF. A Board member should be a person of good standing and someone who is well respected and connected within the community. They should conduct themselves with integrity, be familiar with the CEDIFs mission and act in its best interests. The board position is often a voluntary one or the directors may receive a small stipend to cover expenses. The CEDC regulations requires that two directors be independent.

Legal/Regulatory and operational requirements

The CEDIF is subject to a number of legal and regulatory requirements. These relate to:

- **Relationship with the Town:** The Municipal Act restricts the Town from owning another entity or having an arm's length agreement. Further work is required to understand what the relationship between the Town and the not-for-profit Community Foundation would be and how to ensure the CEDIF acts on the Town's behalf.
- **Eligibility for ETC:** In order to qualify for the ETC the CEDIF must comply with the CEDC regulations that are part of the Equity Tax Credit Act as well as the Securities Act.

Insurance requirements

Along with the usual commercial and professional liability insurance a CEDIF should also carry liability insurance for its Directors and Officers.

Partners

Partnerships with service provider and key stakeholders is key to the success of the CEDIF. This section discusses the various stakeholders and the relationship between them and the Town.

Existing CEDIFs

Partnering with an existing CEDIF to implement this plan may bring many benefits. In particular, an existing CEDIF has experience in writing the offering document and recruiting investors as well as being able to offer the investment to their own existing pool of investors.

Disadvantages may be that the Bridgewater CEDIF takes a lower priority than their existing operations as many of the CEDIFs created have been done so in order to further an organisations own business goals.

Service providers

Community investment experts – a number of local and national firms offer support services for community investment initiatives. These services range from advice on the process, business structure, preparing offering document and managing the CEDIF on an ongoing basis i.e. AGMs, roll over tax credit applications etc.

Financial Administration – a financial institution is required to hold the investment funds in trust and register RRSPs and TFSA

Legal – legal counsel is required to incorporate the CEDIF and write any agreement between the Town and the CEDIF. They are also required in the application process to certifying that the application is in compliance with the CEDC regulations.

Financial – financial statements need to be prepared for the application and submitted annually to Securities Commission and the CEDIF investors.

Other partnerships

In order to streamline the application process for a CEDIF it is important to build relationships and maintain open communications with staff from the Department of Finance and the Securities Commission.

Staff at the Department of Business are also a valuable resource and will help work with the Town of Bridgewater to create a business structure and plan that is able to best meet the town's objectives while using the CEDIF structure.

3.4. Market Assessment

The ETC and CEDIF legalisation was introduced in 1999. Its aim was to keep retirement investments within Nova Scotia and help build the local economy. The CEDIF structure is widely admired by other jurisdiction across the country and has recently been adopted or is in the process of being adopted in New Brunswick, Alberta and PEI.

Since the legislation was introduced over 70 CEDIFs have been established in Nova Scotia. All of these are listed on the Department of Finance website⁸ along with the year of the raise, number of investors and total amount raised.

A number of CEDIFs were identified from this list and interviewed to understand their business model, gain insights to the CEDIF process and any lessons learnt from their experience. In addition, each CEDIF was asked if it was interested in partnering with the town to implement a CEDIF specific to their needs. The criteria used for selecting these CEDIFs was a high level of success in raising funds, diverse business models, a focus on renewable energy or energy efficiency and/or a geographic focus.

⁸ https://www.novascotia.ca/finance/cedif/1999-2017_CEDIF.pdf

Interview questions focussed on:

- **Business model and structure** of each CEDIF
- **Administration effort and lessons learnt** in preparing the offering document and supporting application material as well as ongoing administration once the CEDIF funds have been raised
- **Investor recruitment** and how to maximize funds raised
- **Return on investment and dividend payments** ROI, how it is stated in offering doc and if it has been realised, and
- **Partnering with the town**, is there any interest in partnering

Business Model

A number of different business models exist for CEDIFs. These generally fall into two categories:

- **Investing in one project** by partnering with the project owner to help finance the project. This was the most common way in which CEDIFs were used help finance COMFIT projects. It was also how the Seaport Market CEDIF was structured.
- **Invest in a portfolio of projects or businesses** which are aligned with the CEDIFs mission and values. In this case the CEDIF can provide the investment through a loan or as equity in the project.

In all cases the CEDIF is established to realise a business objective or to fulfill its mission. Staff from the business or organisation support the CEDIF in terms of day to day management and operations and charge a fee for this service. In some cases, the CEDIF is volunteer lead. This requires a dedicated group of individuals able to make a serious commitment to spearhead and drive the initiative.

Administration effort and lessons learnt

Completing the tasks required to establish the CEDIF, in terms of creating the business plan and writing the offering document, is a substantial undertaking. All CEDIFs agreed that preparing the offering document and getting it through the Securities Commission for the first time takes the longest. The initial offering document can be used a template for any subsequent offerings reducing effort and processing times for subsequent offerings.

Staff from the Securities Commission also recommended that the offering document does not contain any commitment or details on a return on the investment. This is because substantial backup information will be required to support the stated return on investment before they offer a letter of non-objection. While this makes the application process more straightforward it does not offer the investor any confidence in the likely success of the CEDIF investment.

Investor recruitment

All CEDIFs agreed that investor confidence builds up over a number of years and offerings. In some part this is likely due to the above advice from Securities Commission that a CEDIF is not able to state a return on investment in the offering document at the outset. The investor needs to see first-hand that they will receive dividends from their investment.

It is therefore important that the CEDIF clearly explains the benefits of the ETC and how it intends to use the funds raised at the outset. All CEDIFs agreed that a significant marketing effort helped to recruit investors. The designated individuals who are able to sell shares, generally CEDIF staff and Directors, should be trustworthy and of good standing within the community.

Return on investment and dividend payments

All CEDIFs agreed that a dividend should be paid to the investor, although a number of the CEDIFs interviewed have not yet done so.

One of the CEDIFs pays a regular small dividend to their investors. This is typically paid every 6 months and has ranged between 2.5% and 4.3% interest on the investment. The percentage interest was chosen in a fairly arbitrary way. They also provide an option to the investor to buy back the shares after 5 years, however investors rarely take advantage of this.

Another CEDIF pays a regular dividend to investors in line with the return to investors as described in their offering document. While stating a return on investment in the offering document helped to recruit investors it did cause substantial effort and delay with Securities Commission in the offering process as well as ongoing administration fees.

Partnering with the town

All CEDIFs interviewed expressed an interest with partnering with the town. Further conversations would be required to confirm their interest.

3.5. Financial Details

The financial success of any CEDIF depends on the project that they invest in. Further details are required on the projects before a financial analysis is possible. This section provides some basic assumptions on operational costs as well as the benefits of the CEDIF structure to the investor.

Financing requirements

The CEDIF requires a minimum amount to operate. The minimum funds raised in the offering must cover the costs of the offering activities itself. Due to timing of activities a source of funding will be required to provide these costs upfront and before they can be recovered from the CEDIF itself. We have assumed that the Town would provide these funds via a not-for-profit Community Foundation acting as an intermediary vehicle to flow start-up funds from the Town to the CEDIF. This mechanism has successfully been used in the past by other Municipalities. Alternatively, the Town may consider soliciting private interest to cover start-up costs. The latter option benefits the Town from a savings perspective and may make the business model more replicable, from community-to-community, by demonstrating strong local community buy-in in lieu of subsidizing start-up costs. However, the latter may require significant additional effort in convincing the local community of the CEDIF's merit.

The cost of the offering includes the administration, legal and financial fees as well as marketing costs. A range is provided in the offering document depending on whether the minimum or maximum amount is raised. Detailed quotes from suppliers and analysis would be required to calculate these costs.

Based on offering documents reviewed the following assumptions have been made:

Estimated cost of offering \$60,000

Estimated marketing costs of \$60,000

Estimated annual administration fees of \$10,000

At the outset, in the business planning stage the CEDIF should set criteria for investments. This would provide the CEDIF with a set of guidelines to help it make a decision on which projects it should invest in. The projected project revenue, project feasibility, key project risks and backers should be included in this list.

Opportunities

The ETC provided with the CEDIF investment means that the return on a project can be lower than normal in order to meet investors' expectations. A simple spreadsheet is provided to demonstrate this.

Outcomes

If a CEDIF is well managed with a well-respected Board of Directors and a good marketing campaign, then it is realistic to expect that it can raise close to the maximum limit of \$3,000,000.

The project will determine the return on investment and any dividends paid

Projections

Any projection must be based on the project or portfolio of projects that the CEDIF decides to invest in. Given that the projects are still fairly undefined a detailed financial analysis is not possible. A description of the benefits that a CEDIF structure provides to the investor is described below.

Equity Tax Credits

The ETC provides an initial tax credit of 35% to the investor at the time of investment and a further 20% after the initial 5 years and then 10% after year 10.

Table 1 shows the amount of ETC received, based on a maximum investment of \$50,000 at years 1, 6 and 11

Table 1 – ETC for \$50,000 investments

	ETC %	ETC received in \$
Year 1	35	17,500
Year 6	20	10,000
Year 11	10	5,000

RRSP and TFSA Eligible

The CEDIF investment is RRSP and TFSA eligible. The tax credit that an individual receives as a result of an RRSP investment depends on income

Return on Investment (ROI)

The Securities Commission recommend that a return on investment is not stated in the offering document. Substantial backup information to support the stated return on investment would be required and this would substantially slow down the processing time of the offering document.

Even so the investment is expected to have a reasonable return based on the ETC received and the project revenue. The project financial returns would determine the likely return on investment for the CEDIF investor.

Dividends

Payment of dividends should be made to the investor on a regular basis. The dividends will be set by the CEDIF staff and Board of Directors. It is important to ensure that the CEDIF continues to meet the criteria set out in the regulations for rollover credits after year 5 and 10. These are that at year 5 the market value of the CEDIF must be greater than 65% of the original book value of invested capital raised. For year 10 the market value of the CEDIF must be greater than 50% of the original book value of invested capital raised.

3.6. Risks and Mitigating Strategies

Risks of the investment itself are detailed in the CEDIF offering document. This section discusses the risks of using the CEDIF structure in general both for the Town and the investor. Risks specific to investing in each project are covered in each project section of this report.

Table 2 – CEDIF Risks and Mitigating Strategies

Risk	Mitigating measure
Overall risk to the Town of Bridgewater	
Expiration of ETC and potential changes to the CEDIF structure The ETC Act expires on February 28, 2022. After that investments are no longer eligible for the ETC. Any CEDIF offering document issued from now on must contain a risk that the investor may not be eligible for the credits in year 5 and 10 because of this.	It is likely that the CEDIF structure will continue to be available in some form. Regular updates and communication are recommended with the Department of Finance.
Lack of Town control in CEDIF MGA restrictions to municipalities investing-in and contracting-to a CEDIF. The CEDIF will act independently to the Town and appoint their own board of directors and hire their own staff.	Informally work closely with the CEDIF during set-up, inclusive of board and staff hiring processes and the development of organizational by-laws. Encourage an existing CEDIF with value-aligned goals to develop The Bridgewater Smart Energy CEDIF. Float start-up costs from the not-for-profit Community Foundation by milestone-triggered drawdowns.
Risks to the CEDIF investor	
CEDIF invests in a project that fails	Investor will receive the ETC regardless of the project CEDIF will conduct a thorough due diligence on any project. Criteria for CEDIF investments should be set at the business planning stage

	<p>Spread risk over number of projects</p> <p>Partner with experienced project developers and service providers where possible.</p>
CEDIF dissolves and doesn't apply for roll over tax credits after year 5 and 10	The CEDIF will be backed by the Town of Bridgewater which will ensure that this doesn't happen. This will be written into the contract between the Town and the CEDIF. The exact form of the contract is yet to be confirmed and is subject to the restrictions set out in the Municipal Act.
Risks to the CEDIF	
Takes too long to get offering document through securities and miss investment RRSP season	<p>CEDIF staff should allow extra time to account for the processing of the first offering document.</p> <p>CEDIF should seek advice on the first draft of the offering document before submitting it to Securities Commission.</p>
Don't raise enough funds to cover costs and investment goals	A targeted marketing campaign is required to ensure that enough money raised to cover the CEDIF operating costs.

3.7. Implementation Plan

Before establishing the CEDIF, further work is required to confirm the exact nature of the relationship between the Town, Community Foundation, and the CEDIF given the restrictions of the Municipal Act. In addition, the overall business model of the CEDIF needs to be further defined along with the projects that it will invest in. The Department of Business would be a useful resource and be able to offer advice on how the Town can meet its objectives through the CEDIF structure.

Overview of Implementation

The implementation plan for any CEDIF hangs around the investment season in January and February. The offering document should be submitted and processed in the Fall so that the 90 day offering period is open from the end of December to mid-March.

Implementation stages include:

- CEDIF incorporation and business planning
- Initial outreach and marketing
- Preparation of the application to Nova Scotia Securities Commission and Department of Finance for the ETC which includes preparing an offering document
- Securing investors once the application has been approved and the offering period is open
- Invest in energy projects
- Ongoing management of the CEDIF including annual filings, dividend payments and application for rollover credits after years 5 and 10.

Assumptions and Constraints

This plan makes several assumptions, these are:

- that the Municipality is able to establish a CEDIF that acts on the Town's behalf without having any direct control
- that the Town will fund the initial costs of the CEDIF application and staff hiring through a not-for-profit Community Foundation vehicle
- that the business model is feasible and qualifies as a CEDIF

Major Tasks

Table 3 describes the major tasks required for implementation of the CEDIF, the resources required to achieve them, the key person (s) responsible for the task and the criteria for completion.

The town has discussed partnering with an existing CEDIF in order to maximise value and make use of their experience. The steps outlined below will be the same whether the town partners with an existing CEDIF or creates a new one and develops it from ground up. Benefits of partnering with other CEDIFs is discussed later in this section.

Table 3 – Resource requirements for major tasks

Task Title and Description	Resources Required	Key Person	Criteria for Completion
<p>Business Planning</p> <p>The CEDIF will develop the business plan in consultation with the Department of Business and Finance to confirm that the business model will be eligible for the ETC. This will include assessing the best options for forming a cooperative or corporation.</p> <p>The business planning process will also identify the energy projects to invest in and conduct initial due diligence and financial analysis for them</p>	<p>Work to write and develop the Business plan</p>	<p>Project Manager</p>	<ul style="list-style-type: none"> • Business Plan complete including set criteria for investment
<p>Establish CEDIF</p> <p>The CEDIF will be incorporated and the Board of Directors appointed, articles of incorporation will establish the Board's operating procedures for the CEDIF.</p> <p>An agreement will be signed between the Town and the CEDIF setting out the CEDIFs mission and objectives.</p>	<p>Resources will be required to manage the incorporation and select and appoint the Board of Directors.</p> <p>Legal Counsel will be required for incorporation and the agreement between the town and the CEDIF.</p>	<p>Project Manager</p>	<ul style="list-style-type: none"> • Incorporated business entity • Appointed Board of Directors • Staffing in place

<p>Initial outreach and marketing</p> <p>The CEDIF will define the scope of work for the marketing effort and recruit and contract a service provider for this.</p> <p>Write a marketing plan and implement it. This would include designing and preparing material. Prior to an approved application this is restricted to discussions with individuals or in group situations with potential investors and information is limited to</p> <ul style="list-style-type: none"> • Identification of CEDC • Indication of amount of money needed to be raised • A general description of what use will be made of the money raised and • An outline of the tax incentive <p>The CEDIF may gather names of potential investors using an expression of interest form.</p>	<p>Select and recruit a marketing firm.</p> <p>Create a marketing plan that defines the information to be provided and through what media as well as what events to attend in order to reach potential investors.</p>	<p>Community Investment Manager</p>	<ul style="list-style-type: none"> • Complete marketing plan • Contracted marketing service provider • Marketing material designed and produced
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<p>Prepare application to Nova Scotia Securities Commission and Department of Finance for ETC</p> <p>Application requirements are summarised below and described in more detail on the Securities and Department of Finance website.</p> <p>The applications are processed on a first come first serve basis and can take up to 2 months, depending on the quality of the application. All existing CEDIFs agreed that the first application takes longer and so this is an important consideration for the implementation plan. Most CEDIFs work to submit their applications in the Fall so that they can be process and approved in time for the RRSP investment season in January and February.</p> <p>The application package must include:</p> <ul style="list-style-type: none"> • Application form – this is available on the Department of Finance website • Business Plan – a part of the business plans the CEDIF will identify the projects that it plans to invest in and conduct due diligence. • Offering Document – sample attached in Appendix B • Financial statements – for existing CEDIFs only 	<p>Significant resources are required to prepare an application.</p>	<p>Project Manager, Financial Expert</p>	<ul style="list-style-type: none"> • Application submitted to Department of Finance and Nova Scotia Securities Commission.
<p>Application is approved and offering period is open for investors</p> <p>As soon as the CEDIF receives approval from both the Department of Finance and Securities Commission they are able to offer investments for a period of 90 days. All investment must be made and in this timeframe. If an extension to the 90 days is required, an application must be made to the securities commission</p> <p>As soon as the offering document and marketing material is approved CEDC staff will conduct a targeted marketing campaign. This would include a series of open houses, advertisements for the offering and meetings with individuals to promote the investment opportunity.</p>	<p>Significant marketing effort. Attend community events and general outreach</p>	<p>Project Manager, Community Investment Manager, Board of Directors</p>	<ul style="list-style-type: none"> • Letter of non-objection received from Securities Commission • Certification of registration received from Department of Finance • Marketing Plan implemented

<p>Receive funds from investors and register securities and RRSP's or TFSA</p> <p>All investments received must be registered with the Department of Finance so that investors are able to receive their initial ETC of 35%. If the investment was made as a RRSP or TFSA this also must be held in a RRSP account. Canadian Workers Cooperative Funds (CWCF) provides this service for many CEDIFs.</p> <p>No later than 30 days prepare a report for the Securities Commission with the list of investors their names, addresses and telephone number plus number and purchase price of shares each has purchased and certifying that in compliance with regulations</p>	<p>Provide report to securities commission within 30 days of close of offering.</p> <p>Work with CWCF of similar to create accounts for individuals and hold funds in trust.</p>	<p>Project Manager, Financial Expert</p>	<ul style="list-style-type: none"> • All investment monies cheques deposited • RRSPs and TFSA investments registered • Submit list of investors to Securities Commission
<p>Invest in energy projects</p> <p>Through the business planning phase energy projects will be identified and due diligence conducted. Due diligence will need to be revisited before the investment is made to confirm the original findings in the business plan as a fairly long period of time would have passed and project details may have changed in that timeframe.</p>	<p>Review project details and confirm original financial criteria for the project still meets that set by the CEDIF</p>	<p>Project Manager, Board of Directors</p>	<ul style="list-style-type: none"> • Complete due diligence on energy projects. • Board resolution to approve investment • Deliver funds to energy project
<p>Pay dividends to investors</p> <p>Regular dividends will be paid to the CEDIF investors. The level and frequency at which these are paid will be set and approved by the Board of Directors.</p>	<p>Financial analysis of the project invested in will help the CEDIF determine the level and frequency of dividend payments.</p>	<p>Project Manager, Financial Expert, Board of Directors</p>	<ul style="list-style-type: none"> • Dividend payment issued to investors

Annual Filing The full corporate tax return, annual financial statements for the preceding year, details of any investment made and a notarized shareholder register showing details of all share transactions must be filed with the Securities Commission and the Department of Finance. In addition, the financial statements of the CEDIF must be reported to the investors	An accounting firm would be asked to prepare the CEDIF financial statements A lawyer would notarize the shareholder register.	Financial Expert	<ul style="list-style-type: none"> Annual filings submitted
Apply to Department of Finance for rollover tax credits in year 5 After 5 years the CEDC must apply to the Department of Finance for rollover credits to allow investors to receive 20% ETC. In order to receive this ETC the CEDIF must prepare an offering document and application again also Book value/market value ratio	Prepare application and offering document	Project Manager, Financial Expert	<ul style="list-style-type: none"> Submit offering document and apply for ETC
Apply to Department of Finance for rollover tax credits in year 10 After 10 years the CEDC must apply to the Department of Finance for rollover credits to allow investors to receive 10% ETC. Same requirement for application after year 10.	Prepare application and offering document	Project Manager, Financial Expert	<ul style="list-style-type: none"> Submit offering document and apply for ETC
Subsequent offerings As more projects are developed the CEDIF may choose to raise more funds through subsequent offerings. A CEDIF is able to raise up to \$6M in total and \$3M per offering.	A marketing effort may or may not be required depending on the success of the previous raise	Project Manager, Financial Expert	<ul style="list-style-type: none"> Submit offering document and apply for ETC

Implementation Schedule

The schedule below shows the tasks required establish and complete the first offering. This schedule does not show the annual filings, dividend payments and subsequent offerings/applications for the ETC .

	Y1-Q1	Y1-Q2	Y1-Q3	Y1-Q4	Y2-Q1	Y2-Q2
Establish the CEDIF						
Business Planning Phase						
Prepare application to Dep. of Finance and Securities Commission						
Dep. of Finance and Securities Commission Processing Time						
Outreach and Marketing						
Offering period is open						
Receive funds and register RRSPs and securities						
Invest in energy projects						

Outstanding Issues

Further work is required to resolve a number of remaining issues:

Confirm projects to invest in: most importantly the projects that the CEDIF invests in needs to be further defined. The project financial details will confirm likely funding level required and return on investment for the CEDIF.

Relationship between the Town, Community Foundation, and the CEDIF: clarification is required on what the relationship between the town, Community Foundation, and the CEDIF can be in terms of setting up new entities and further mitigating strategies ensuring that the CEDIF adheres to its mission on an ongoing basis. This includes details of the contract between the Town-Community Foundation and Community Foundation-CEDIF, as well as the level of involvement that Town staff and councillors can have in the organisations i.e. how to influence the CEDIF while being completely independent of it.

Confirm business model can qualify for CEDIF: work with Department of Business to further define the business model including a cooperative or corporation model and detailed costing for implementation.

Anticipated Outcomes from Implementation

If the CEDIF is planned and managed well then it would be able to raise the maximum amount of \$3,000,000 per offering and \$6,000,00 in total. This would maximise community ownership and enable the energy projects that meet the set criteria for the CEDIF investment.

Performance Monitoring

Annual reporting requirements set out in the CEDC regulations ensures that the investment is closely monitored. These financial statements will be used by the CEDIF to track performance and determine the dividends that can be issued to investors.

3.8. Conclusion

The CEDIF financing mechanism encourages community investment and, with careful planning and good governance can be a good investment. CEDIFs have been successfully used to help finance projects and increase their viability through the use of the ETC.

This study has highlighted several key aspects that lead to a successful CEDIF and that should be included in the business planning stage, these are:

1. **A focussed marketing campaign** - to achieve the maximum investment amount of \$3,000,000.
2. **Investing in robust projects** - the CEDIF is only as good as the project in which it invests in, before investing in a project the CEDIF would conduct a thorough due diligence and ensure that the project meets its investment criteria.
3. **A regular dividend payment to investors** – this is necessary to make the CEDIF a creditable investment vehicle.

The rules and process for establishing a CEDIF are clearly set out in the CEDC Regulations. Care should be taken to comply with these when completing the application to the Department of Finance and Securities Commission.

The Securities Commission recommend that a return on investment is not stated in the offering document this is because substantial backup information to support the stated return on investment would be required, potentially leading to delays in processing and approval of the offering document. To clearly explain the benefits of investing in the CEDIF and the associated projects to investors, without stating a return on investment, the CEDIF must outline the benefits of the ETC and how it intends to use the funds raised at the outset. The designated individuals who are able to sell shares, generally CEDIF staff and Directors, should be trustworthy and of good standing within the community.

The Equity Tax Credit Act is due to expire in February 2022, this is likely to impact the CEDC regulations which govern CEDIFs. It is therefore important to track policy and communicate regularly with the staff at the Department of Finance and Securities Commission.

The Municipal Act restricts the Town from owning another entity, having an arm's length agreement, and loaning or granting funds to a CEDIF. While an Intermediator Community Foundation may act as a vehicle to transfer start-up costs from the Town to the CEDIF, further work is required to confirm said statement. In addition, the Town needs to develop a risk-mitigating strategy to address the Town's lack of direct governance over the CEDIF.

Finally, further work is required to define the investment projects and confirm the business plan for the CEDIF.

4. Neighbourhood Retrofits

4.1. Overview

As outlined in the Key Terms and Concepts section, neighbourhood retrofits focus on targeted areas within the Town for the purpose of retrofitting numerous homes and small commercial facilities within those areas. While Bridgewater has offered a Property Assessed Clean Energy (PACE) program for 4 years, uptake has not been high enough to meet the Town's goals.

For this reason, this study focuses on the feasibility of a new model for encouraging more homeowners to improve the energy efficiency of their homes. The model we selected, based on our research and in collaboration with Bridgewater, is a simplified ESCO model designed to encourage ESCOs to implement retrofits in residential buildings, and to reduce the barriers faced by homeowners in undertaking energy efficiency projects.

To understand the model, it is first important to understand the barriers faced by homeowners and ESCOs in implementing these types of projects.

Barriers faced by homeowners

Much research has been conducted into the barriers that residents and small business owners face in undertaking energy efficiency projects. This study is not focused on an analysis of these barriers, but a general understanding of the hurdle's customers are facing will help understand how the proposed model can help alleviate some of them. These barriers are identified in Table 4. The last two columns of the table describe how the proposed model presented in section 4.2 addresses these barriers.

Barriers faced by ESCOs

ESCOs also face barriers to undertaking deep retrofits in residential properties, albeit different ones from homeowners and residents. Specifically, a traditional ESCO model involves the ESCO guaranteeing that overall energy bill savings will equal or exceed estimated savings, or a predefined percentage of estimated savings (usually around 80%). The ESCO therefore takes on the risk of the project's performance. In order to apply this guarantee, ESCOs have to closely monitor the energy usage of the buildings and a variety of parameters that affect energy demand and consumption during a number of years, under a Monitoring & Verification (M&V) protocol. To mitigate the risk for the ESCO and client, and to ensure the savings guarantee is applicable through a well-established mechanism, ESCOs enter into detailed energy performance contracts (EPCs) with extensive considerations for such elements as measuring baseline and results, changes to energy use, etc. The contracting and M&V processes are complex, with costs usually ranging from tens of thousands of dollars to a few hundreds of thousands of dollars for larger projects.

Potential energy savings from residential facilities are not high enough to warrant the investment in detailed contracting and M&V activities that are required under this model, since houses are not large enough or do not have enough energy efficiency opportunities. This is why ESCOs typically focus on large commercial and industrial facilities.

Table 4 – Market Barriers

Barrier	Description	Current Options in Bridgewater to support energy efficiency retrofits	Currently Being Addressed?	New options with the ESCO model	Addressed with ESCO Model
Lack of access to financing	Individuals may not have access to the capital required to undertake deep energy retrofits.	<ul style="list-style-type: none"> • Bridgewater PACE program • Efficiency Nova Scotia rebates and/or financing options • HomeWarming for eligible low-income customers 	Yes	N/A	Yes
Requirements for pre-retrofit capital investment	A large part of Bridgewater's housing stock consists of older homes that may need extensive upgrades (e.g. electrical upgrades, HVAC repairs, etc.) prior to the implementation of energy efficiency upgrades. Energy efficiency rebates and incentives do not apply to these situations.	<ul style="list-style-type: none"> • For low-income homes, some pre-retrofit upgrades may be eligible to be included in the province-wide HomeWarming program for low-income homeowners. For upgrades that cannot be addressed within the program, the HomeWarming service providers and Efficiency Nova Scotia will attempt to coordinate with Housing Nova Scotia where possible. • Non-low-income homeowners do not have access to programs to assist with required pre-retrofit upgrades and may elect to complete the energy efficiency upgrades without addressing underlying issues when possible. 	Partially	<ul style="list-style-type: none"> • The ESCO program could be designed to allow additional/pre-retrofit investments to be included, with the addition of time to the payback period. • Homeowners can also decide to pay the contractor for pre-retrofit upgrades outside of the program. 	Yes

Barrier	Description	Current Options in Bridgewater to support energy efficiency retrofits	Currently Being Addressed?	New options with the ESCO model	Addressed with ESCO Model
Lack of time	Individuals may not have the time to manage large-scale projects, from getting professional advice to having the measures implemented.	<ul style="list-style-type: none"> • None 	No	<ul style="list-style-type: none"> • The ESCO manages the entire project, from initial audit to final implementation. 	Yes
Lack of knowledge or information	Individuals may not have the knowledge to know what needs to be implemented, which options provide the greatest payback, or what are general benefits of energy efficiency.	<ul style="list-style-type: none"> • Efficiency Nova Scotia contact centre provides options and information, but it requires individuals to proactively reach out. • This is the same with knowledgeable contractors and ENS trade network • Low-income homeowners who are eligible for the Homewarming Program receive information, advice, and recommended approaches at no cost 	Partially, but the majority of options requires individuals to proactively reach out	<ul style="list-style-type: none"> • ESCO provides relevant knowledge and information to homeowners and builds it into the project. • ESCO recruits participants, so homeowners do not need to proactively seek out information. 	Yes
Uncertainty	Individuals may not have confidence in the estimated savings or benefits of energy efficiency options, or in the performance of energy-efficient technology.	<ul style="list-style-type: none"> • Efficiency Nova Scotia contact centre provides options and information, but individuals might not always trust their advice. • This is the same with knowledgeable contractors and ENS trade network. 	Partially, but it remains hard to validate if the information provided is accurate	<ul style="list-style-type: none"> • ESCO partially guarantees the savings; Town of Bridgewater takes on the risk for the remaining savings not being achieved. 	Yes, the participant faces no performance risks. Homeowners may still not have confidence in other benefits.

Barrier	Description	Current Options in Bridgewater to support energy efficiency retrofits	Currently Being Addressed?	New options with the ESCO model	Addressed with ESCO Model
Split incentives	In situations in which the property owner does not pay the energy bills (as in the case of many commercial properties or residential renters), there can be little financial benefit to the owner to invest in energy efficiency upgrades, and no advantage to the tenant if they will not be staying long enough to achieve the payback. In cases where the owner pays the energy bills, he often has to pass on the savings to the tenants.	<ul style="list-style-type: none"> • PACE program eliminates upfront costs for property owners. Owner needs to see advantages other than energy savings from the retrofits, like increased property value, tenant retention, etc. 	Partially (for deeper retrofits, direct install addresses split incentives for low-cost measures)	N/A	No

ESCO Neighbourhood Retrofits Model

This study focuses on ways in which an ESCO model can be modified to address homeowner and ESCO barriers in a way that encourages ESCOs to recruit residential participants and encourages homeowners to undertake deep energy efficiency retrofits. Our team initially developed two potential models: a measured savings model in which ESCOs guarantee energy savings at an aggregate level (all homes where the ESCO has implemented energy conservation measures), and a deemed savings model in which homeowners are informed of the estimated savings for each retrofit option but where savings are not guaranteed (see Appendix A for additional details).

Based on subsequent discussions with Bridgewater, we determined that a hybrid model reduced or eliminated many of the drawbacks of each model, and the risks and drawbacks included in this hybrid model were deemed to be acceptable to the Town. The model selected for further analysis is outlined in Section 4.2 below.

4.2. Description of Neighbourhood Retrofits Model

An overview of the business model is provided on Figure 2. The neighbourhood retrofits model involves an ESCO managing the complete process of upgrading the energy efficiency of participants' homes, from initial recruitment to final closure of the project. The graphic represents the steps a customer will go through from the moment they discover the program to the moment they make their last monthly payment. It also shows how other actors are involved in the process. While this model does not address all homeowner barriers to undertaking energy efficiency retrofits, it does address significant barriers and should result in greater uptake of energy efficiency projects.

Key actors

Town of Bridgewater

The town of Bridgewater will be working in partnership with the program administrator (i.e. Efficiency Nova Scotia as recommended in section 4.4) and the ESCO to ensure the program leads to the expected outcomes. The Town will also shape the mission of the program to align with Bridgewater's energy shift to a clean, efficient, secure, and affordable energy economy. Additionally, the Town will guarantee the savings of the participants in partnership with the ESCO.

Program Administrator

The program administrator will promote the program through their regular channels, manage the participant's registration to the program, coordinate the financing of the retrofits and manage the repayments.

ESCO

The ESCO will partner with the program administrator and Bridgewater to reach out to potential participants and demonstrate the value of their product. They will be responsible for securing projects with participants by providing attractive proposals to interested customers and by taking charge of the administrative process leading to the agreement between the participant and the program administrator. They will then manage and perform all the work to ensure the promised energy savings materialize.

NEIGHBOURHOOD RETROFITS

Business Model



Figure 2 – Neighbourhood Retrofits Business Model: Customer perspective

Improvements made to the property could include:

- Insulation
- Air sealing
- LED Lighting
- Heat pump installation
- Low-flow shower heads and faucets
- Heat pump water heater
- Drain water heat recovery
- Automated HVAC system controls
- Windows replacement
- Additional measures may be proposed by ESCOs in their proposals

The selection of measures to implement in each property will be based on its characteristics to maximize the benefits for the customers. In conjunction with the solar energy initiatives, the participants could also potentially participate in both programs simultaneously and benefit from virtual net meeting.

Key steps

[A Bridgewater citizen learns about the Neighbourhood Retrofit Program](#)

For Bridgewater citizens to become aware of the program and, furthermore, decide to participate, a large marketing effort will be required. The ESCO will be able to leverage program administrator's and the Town of Bridgewater's communication channels and market knowledge to promote their services and the program. The Town of Bridgewater and the program administrator will also play a large role in building the program's credibility, namely by endorsing the program and promoting it in various ways. It needs to be clear that this is a community initiative and that the ESCO is there to help the Town achieve its goals of improving energy efficiency and the quality of the housing stock.

[A Bridgewater citizen contacts the ESCO to participate in the program](#)

The ESCO will provide access to representatives over the phone for interested parties. During these calls, the sales representative will share additional information and will collect data on the property (ex.: size, age, number of floors, heating/cooling systems, etc.), its occupants (ex.: number of occupants, hours of occupancy, etc.) and their energy usage (ex.: monthly electricity consumption, etc.). This information will allow the ESCO to generate a standard proposal based on these parameters. The proposal will mainly specify estimated costs to perform the deep retrofits, estimated energy and bill savings, approximate payback period and estimated monthly payments. This proposal is then sent to the potential participant. This step is at no charge for the potential participant and is part of the standard process to recruit participants.

[A Bridgewater citizen receives and reviews the proposal sent by the ESCO](#)

Once the citizen receives the proposal, they can review it and decide if they wish to move forward with the project. An ESCO representative will follow up to make sure the proposal is well understood and answer any questions from the citizen.

[A Bridgewater citizen meets with the contractor to confirm the work and sign the contract](#)

Once the participant decides to move forward with the project, the ESCO will send a contractor to the residence to confirm the feasibility of the proposed retrofit and to validate the associated savings. Assuming all is in order, the contractor will offer to the customer to sign a contract stipulating the terms of the agreement. This contract will be conditional to the approval of the program administrator to finance the work. The program administrator will then review the proposal and contract and ensure that the estimated costs and savings are in conformity with the overarching contract between the ESCO and the Town of Bridgewater. Once they approve the contract, they will send a notice to the ESCO to start the retrofit.

If upgrade work must be completed prior to the energy efficiency upgrades being started (e.g. electrical upgrades, dealing with mould or mildew, etc.), the contractor will submit a separate quote to perform the work. This upgrade work will need to be completed prior to the participant entering the program, either by the contractor sent by the ESCO or by another contractor of the participants choice. Other energy poverty reduction programs, either offered by CMHC and Housing Nova Scotia or by the Town of Bridgewater, could be combined with this program to perform the upgrade work. Given that these additional programs cover a large portion of the upgrade work costs, the remaining cost to be paid by the participant could be included in the neighbourhood retrofit financing option. This would need to be assessed by the program administrator on a case-by-case basis to ensure the payback period does not go beyond the useful life of the energy conservation measures implemented. If it does, other financing options would need to be used.

[A Bridgewater citizen has home improved with no upfront costs](#)

The customer is informed that the program administrator approved its participation in the program. The ESCO also contacts the participant to schedule the work. The ESCO is responsible for hiring the contractors and coordinating the work. The process is transparent to the participant. As soon as the measures are implemented, the customer will see a drop in its energy consumption and, depending on which measures are implemented, an increase in its comfort level and air quality.

[A Bridgewater citizen pays a single combined utility bill](#)

Based on the signed contract, the participant will now pay a single utility bill to the program administrator for the defined duration of the agreement. The amount on the single bill will be lower or equal to the customer's utility bills for the pre-retrofit period, and will be adjusted based on the climate data of a given period and for any changes to the utilities' rates. The program administrator will use incoming funds to pay the participant's utility bills and to reimburse the financial institution that provided the loan to finance the retrofit work. Thus, the energy bills savings are used to repay the loan at no risk for the participant, as the participant keeps on paying the same monthly fee without any adjustments based on the actual energy performance of the home. In the event where the actual savings are lower than expected at an aggregate level (i.e. aggregate savings for all projects implemented by the ESCO), the ESCO would partially cover the savings shortfall (e.g. the ESCO could guarantee 80-90% of the estimated savings) and the Town will cover the remaining amount.

4.3. Market Assessment

This market assessment covers two aspects. First, it assesses the Bridgewater housing landscape and the energy poverty issue in the Town. Secondly, it compares the existing ESCO business models and evaluates how these compare to the one proposed in this report.

Bridgewater Housing Landscape

Based on the latest census conducted by the Government of Canada in 2016, there is a total of 3,610 occupied private dwellings in the Town of Bridgewater (excluding movable dwellings). The great majority of these are single-family homes and small multi-unit residential buildings, as shown in Figure 3. Of these dwellings, 57% are owned and 43% are rented. Most of these dwellings were built prior to

1980 as shown in Figure 4. Given the high average age of the residence, 7% of the dwellings need major repairs.⁹

In Bridgewater, 28% of the households spend more than 30% of their income on shelter cost. This includes the population affected by energy poverty. By definition, a household in energy poverty is a household that spends more than 10% of their income on utilities.¹⁰ Low-income households are typically more likely to face energy poverty. Over 20% of the population of Bridgewater is classified as having a low-income. Based on the estimates of the Town of Bridgewater, 38% of the households are unable to meet their basic energy and transportation needs.¹¹

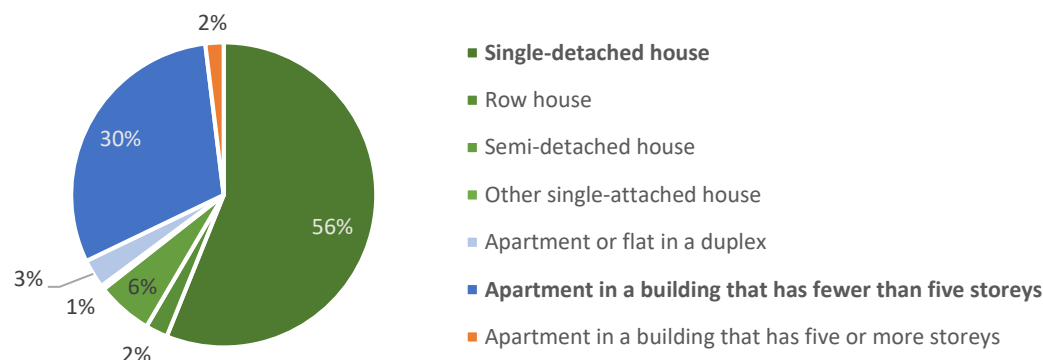


Figure 3 - Occupied private dwellings by structural type of dwelling

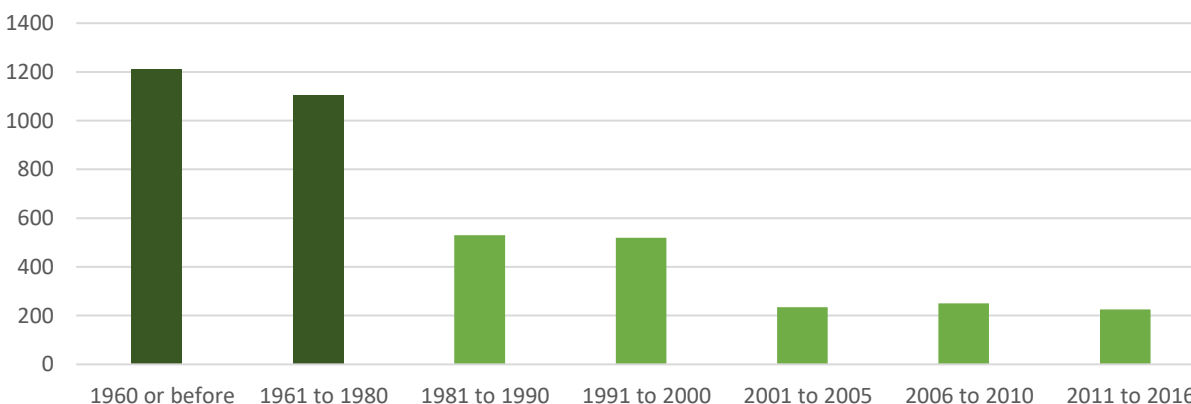


Figure 4 - Occupied private dwellings by period of construction

⁹ <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=1206004&Geo2=PR&Code2=01&SearchText=Bridgewater&SearchType=Begin&SearchPR=01&B1=All&TABID=1&type=0>

¹⁰ Market Snapshot: Fuel poverty across Canada – lower energy efficiency in lower income households, Canada Energy Regulator. <https://www.cer-rec.gc.ca/nrg/ntgrtd/mrkt/snpst/2017/08-05flpvrt-eng.html?=&wbdisable=true>

¹¹ Energy Poverty Reduction Program, Town of Bridgewater. <https://www.bridgewater.ca/document-library/sustainability/sustainable-bridgewater/1730-energy-poverty-reduction-program/file>

ESCO Services and Business Models

In a typical ESCO model, the client, usually the owner of a large institutional or commercial building, enters into an Energy Performance Contract (EPC) with an ESCO after some sort of procurement process. As most other private corporations, the ESCO reaches out to potential clients through its own business development strategies and processes. Under an EPC, the ESCO provides the client with all services related to project design, implementation, and measurement/verification of energy savings. Other services, such as technical training and communication campaigns are also common. The ESCO provides the client with a savings guarantee for all or a portion of the estimated savings, and for a predetermined number of years (up to the project's payback period). Under this guarantee, the ESCO, client or a third-party measures energy bills savings using a detailed Measurement and Verification (M&V) protocol and the ESCO has to compensate the client for any savings shortfalls, using the mechanisms detailed in the EPC. Some EPCs also include clauses where the ESCO gets some sort of reward (usually financial) if the project overperforms by a certain amount or percentage. Project financing can come from the client, through its regular borrowing arrangement (e.g. with a bank or other financial institution), and in some cases the ESCO can either arrange or provide financing.

ESCOs do not typically operate in the residential sector. The only exception we have found in North America is a company called Sealed, which operates in the state of New York. This company has developed a new type of business model that has similarities with the typical ESCO model, and that is more adapted to the residential sector. To reach out to new customers, Sealed has partnered with utilities. Interested customers can reach out to Sealed to obtain a proposal for their residence, which will include an amount of money that Sealed is willing to invest in their home in exchange for the customer paying Sealed based on the energy that is saved. Customers only pay Sealed based on the actual energy savings - if a customer doesn't save energy, Sealed does not get paid. Sealed value proposition is based on the additional comfort that these measures provide, as opposed to the energy bills savings. They only perform work on single-family homes, and they require a minimum credit score from the customers to assess their capacity to make their monthly payments once the work is completed. At its core, the business model is based on a risk assessment strategy that relies on a statistical approach to mitigate the overall risk of the portfolio of projects.

The models described previously are very different, both in the market they address and in their general business strategy. The proposed ESCO model described in this report is intended to reach a larger market with variable levels of income and education. However, it cannot address all market barriers on its own and it would benefit from other complementary tools to increase its impact on energy poverty and address the rental market.

4.4. Neighbourhood Retrofits Program Administrator Description

While ESCOs will recruit participants, assess properties, manage upgrades, and finalize projects, the ESCO Neighbourhood Retrofits model requires a program administrator. This administrator will manage the RFP process to select the ESCO, develop the simplified savings grid outlining the energy savings calculations, approve each project, conduct quality control activities, and pay the homeowner's energy utility bills and ESCO.

Based on the research conducted, the skills and capacity requirements of the administrator's resources, and the various options available and possible in Nova Scotia, our team **recommends that the Town enter into a service agreement with Efficiency Nova Scotia.**¹²

The rationale for this recommendation, as well as the specific roles, responsibilities, and other key considerations are outlined in the following sections.

Rationale

We recommend Efficiency Nova Scotia as the administrator rather than a new business entity being created for the sole purposes of administering the program for the following reasons:

- **Capacity and Expertise:** As the administrator of provincial energy efficiency programs, Efficiency Nova Scotia already has the staff, knowledge, and expertise in relevant areas such as estimating/achieving energy savings, administering energy efficiency programs, municipal programs, etc. The organization also has access to legal counsel and administrative support such as financial services, human resources, IT, and others.
 - For Bridgewater's program, many of these positions would not require full-time staff in each area, so using partial hours from Efficiency Nova Scotia is an efficient use of resources.
- **Experience Partnering with Municipalities:** Efficiency Nova Scotia has experience administering programs on behalf of municipalities, including PACE programs for Guysborough, Inverness, and Richmond County as well as Solar City in Halifax.
- **Focus on Relevant Goals for Each Entity:** Having Efficiency Nova Scotia focus on program administration will allow both Bridgewater and Efficiency Nova Scotia to focus on the areas in which they can each have the greatest impact to meet the overarching goals of this initiative:
 - Bridgewater's goals and desired outcomes, as detailed in its Smart Cities Challenge application,¹³ are focused on lifting its residents out of energy poverty. This is a critical element to the program, but one that is much larger than the ESCO contracting and implementation processes.
 - Efficiency Nova Scotia's mandate, on the other hand, is focused on ensuring energy savings are targeted, participants are recruited, and savings are actually achieved (through its EM&V procedures, third-party verification, and other processes).
 - Overall, dividing the roles to allow the Town and the administrator to each focus on its particular areas of strength and capacity will support Bridgewater's ability to achieve its end goal of reducing energy poverty in the Town.

One drawback to having Efficiency Nova Scotia, rather than of a separately created business entity, administer the program could be a loss in flexibility. In particular, Efficiency Nova Scotia has very strict regulatory requirements, so its programs will, by nature, be less nimble and flexible than Bridgewater may desire. For example, Bridgewater may be less concerned about individual projects being cost-effective than Efficiency Nova Scotia's existing programs may allow for, as long as overarching social goals are met. Similarly, Efficiency Nova Scotia is generally required to design its programs in a way that reduces "free riders" (participants who receive an incentive but would have completed the related project anyway), and Bridgewater's focus is likely to be more about supporting residents to improve

¹² The one-bill approach is currently under review by Efficiency Nova Scotia. In the event that they cannot manage the transactions between the customer and the utilities, the single-bill approach might not be possible, unless Bridgewater takes on the responsibility of managing the single-bill process.

¹³ <https://www.bridgewater.ca/town-services/planning/planning-programs/bridgewater-smart-cities>

their homes and less about participant screening. Some social goals *could* therefore be lost for the purposes of Efficiency Nova Scotia's required rigour.

However, Efficiency Nova Scotia's regulatory requirements are focused on its ratepayer-funded electricity efficiency activities. They also primarily relate to the organization's ability to provide incentives to participants, not for how it administers a particular program under an independent service agreement. Therefore, this drawback does not outweigh the benefits that having an existing, experienced organization administer the programs. This risk can also be mitigated if Bridgewater ensures its service contract with Efficiency Nova Scotia allow the Town to maintain influence and approval over the initiative, ensuring a continued focus on energy savings for the purpose of helping Bridgewater residents, not for the sake of the grid *per se*.

Business Operations

In its role as program administrator for the Neighbourhood Retrofits, Efficiency Nova Scotia's operations would be governed by a service agreement with the Town. This agreement will need to be developed, with specific requirements determined during Phase 3 of this project: the business plan stage. It will then need to be negotiated with Efficiency Nova Scotia during contracting.

However, at a high level, the organization will be responsible for the following key activities:

- Selecting an ESCO through an RFP process, including negotiation on key contract items such as definition of neighbourhood, participant eligibility, performance requirements, savings estimate, etc., in collaboration with the Town;
- Developing a simplified savings grid to enable a standardized process for calculating energy savings;
- Negotiating the contract with the ESCO;
- Supporting the ESCO with recruitment through the development of marketing materials;
- Reviewing and approving or negotiating project proposals and contracts for individual homes/small businesses;
- Calculating eligible rebates/incentives for participants that will be used to reduce the financing amounts;
- Obtaining and administering financing for the ESCO;
- Administers the repayment terms from participants, including collecting their payments, paying their energy utility bills, and making loan payments;
- Administering the ESCO contract, applying the energy savings guarantee, and generally verifying that the ESCO acts in conformity with the contract's requirements;
- Liaising and collaborating with the Town in relation to its role in making payments for the portion of energy savings not guaranteed by the ESCO if those savings do not materialize;
- Conducting quality checks;
- Administering any evaluation processes required for participants who have received rebates; and
- Reconciling the estimated savings.

Financing Operations

There are several ways in which the neighbourhood retrofits can be financed. Two key ones are outlined below:

- **CEDIF:** As outlined earlier in this report (see Section 3), a CEDIF could be used to raise funds with the purpose of financing the neighbourhood retrofits. If this option were selected, the program administrator will work with the CEDIF to obtain a loan for the program.
- **Other Financing Mechanisms:** The funding could also come from one of several sources such as banks or other lending institutions. In these options, a loan is obtained via the lending institution and transferred to the participant at a slightly higher interest rate than that for which the loan was approved (for example, 0.5-1.0%) to cover the administrator's fees. The interest rate would still need to remain at a level that is lower than what is available through the banks for most customers.

We note that financial transactions are not administered by Efficiency Nova Scotia for its existing PACE program; however, Efficiency Nova Scotia is open to considering it and willing to enter into discussions as part of business planning. Another option available is to follow the current process for PACE programs, in which Bridgewater would obtain a loan from the Nova Scotia Municipal Finance Corporation at a low interest rate. The loan could then be transferred to the participant of the program with a slightly higher interest rate, which could cover the program fees. The interest rate would still need to remain at a level that is lower than what is available through the banks for most customers. An advantage of the PACE financing is that the loan is tied to the property, thus even if the payback period for a deep retrofit is long, it can be transferred to the next property owner. The reimbursement of the retrofit would be paid via the owner's property taxes if a PACE mechanism is used. However, this financing mechanism would impact the Debt-Service Coverage Ratio (DSCR) of the Town and would need approval from the municipal council.

Customer Base

The targeted group for this initiative are homeowners and property owners in the residential and small businesses sector. Participants of all income level are admissible. For low-income participants, subsidies and monthly utility bill savings could be offered.

Revenue Sources

The Town would pay fees to the entity administering the program based on their service agreement. These fees could be included in the interest rate and paid via the savings from the participant.

Management and personnel requirements

Efficiency Nova Scotia staff working on this initiative will need to:

- Have a good working knowledge of energy efficiency retrofits;
- Be familiar with the procurement process for energy efficiency projects;
- Calculate and report the energy savings;
- Have general accounting, billing and financial skills;
- Review legal contracts with ESCOs.

As outlined earlier, Efficiency Nova Scotia is recommended as the program administrator because the organization already has staff with these skills and knowledge areas, and because full-time positions will not be needed for every area, making it inefficient for Bridgewater to create an entity to fulfill these functions.

Legal/Regulatory and operational requirements

There are few legal and/or regulatory requirements that impact Bridgewater in relation to the neighbourhood retrofits model that is being proposed. This is because the Town will not be directly involved in service delivery or ownership of any entities related to this project. Some specific exceptions, however, are highlighted below.

- **Ownership structure:** Section 66(2) of the Municipal Governance Act (MGA) provides municipalities with the ability to borrow for assets that they will own, and the Act does not allow municipalities to participate in joint ownership ventures with private partners. This means that Bridgewater cannot set up an ESCO or other business entity; however, it can enter into a memorandum of understanding (MOU) with an ESCO or entity, who can then carry out the program activities.
- **Related opportunities:** Our understanding is that Bridgewater is exploring the possibility of setting up a municipal utility. While an analysis of the utility's activities is outside of the scope of this report, we note that for the purposes of the neighbourhood retrofits initiative, our understanding is that the utility would not be able to administer the program for the Town. For example, the Province's 2014 *Electricity Efficiency and Conservation Restructuring Act* grants "the franchise holder [currently Efficiency Nova Scotia] the exclusive right to supply Nova Scotia Power Incorporated with reasonably available, cost-effective electricity efficiency and conservation activities for the purpose of this Act" (Paragraph 79B2(a))¹⁴ and limits Nova Scotia Power's ability to undertake energy efficiency activities other than those paid for through its contract with Efficiency Nova Scotia except for specified exceptions such as on its own property or for charitable purposes (Paragraphs 79I3(a-e)). While a legal opinion should be sought to confirm, we believe a Bridgewater utility serving as the entity to administer the program *may* exclude NS Power from partnering for the purposes of Bridgewater paying participants' energy bills or taking advantage of provincial incentives for energy efficiency activities.
- **Governance structure:** Because of the particular model recommended, in which Efficiency Nova Scotia is administering the program on behalf of Bridgewater, our understanding is that there are no particular governance requirements or structures to be assessed, as governance will all apply to third parties.
- **Insurance requirements:** Our understanding is that Bridgewater would not require any additional or new insurance requirements, since all activities would be undertaken by third parties. These parties (the program administrator and ESCO) would need standard Commercial Liability and other similar insurance, but we anticipate these would be the same expected of any entity with whom the Town contracts.

We note that the information provided above is not a legal opinion and should not be relied upon as such; Bridgewater should consult with its own legal team with respect to this information.

4.5. Financial Details

A financial analysis of the proposed ESCO business model was conducted to estimate the loan requirements and the potential financial exposure of the Town.

¹⁴ https://nslegislature.ca/legc/bills/62nd_1st/1st_read/b041.htm

Participation rate

We assumed a cumulative participation rate of 50% after 20 years that evolved gradually in time, reached a maximum after 10 years and slowly decreased afterward. These adoption projections are shown on Figure 5 and Figure 6.

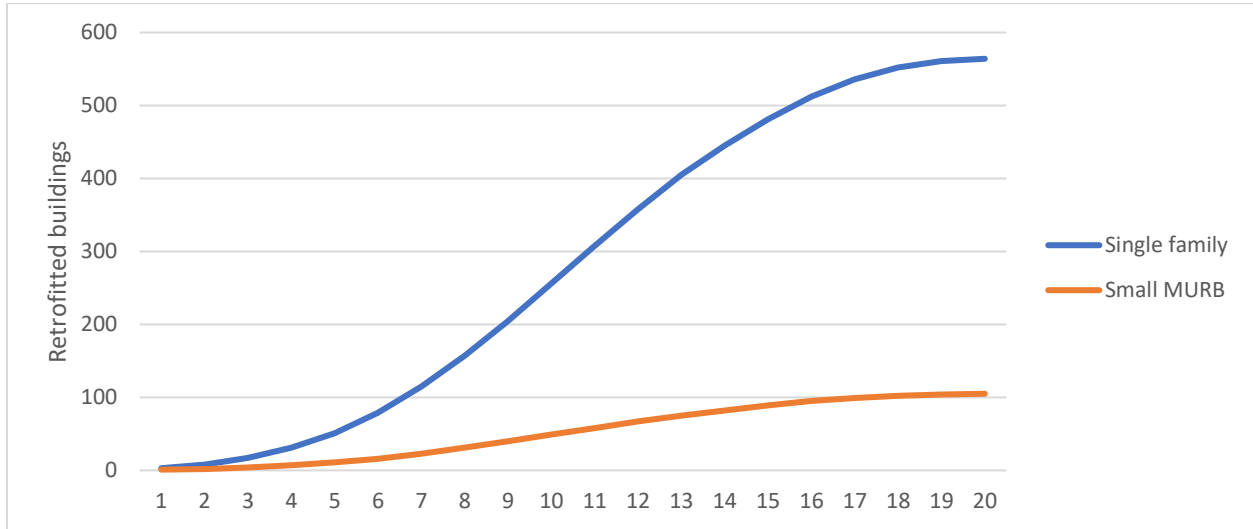


Figure 5 – Project adoption per year – Cumulative

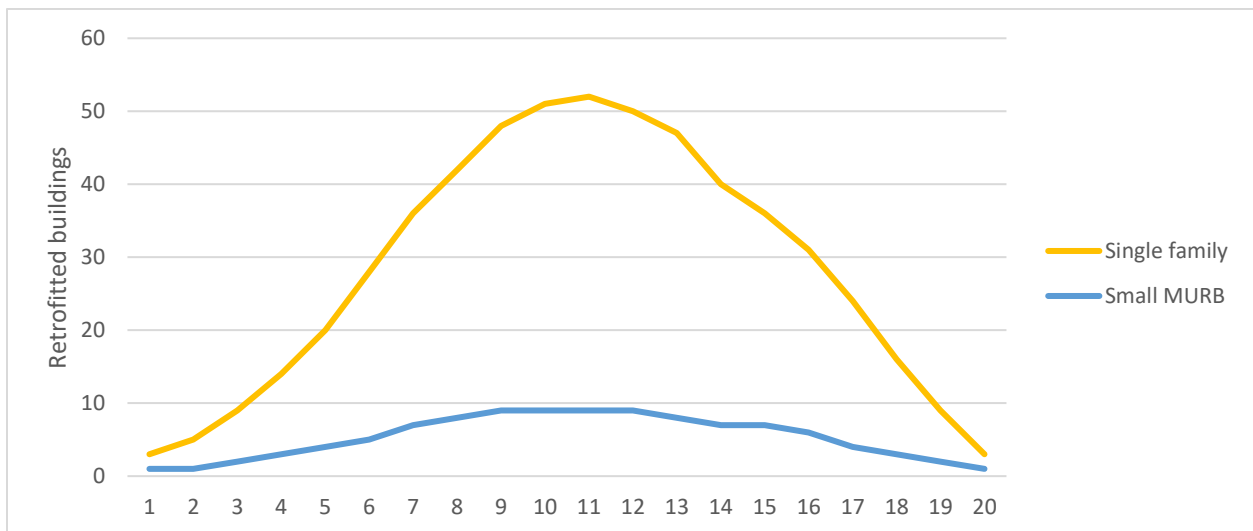


Figure 6 – Project adoption per year – new participation

The total number of dwellings in Bridgewater is estimated based on the latest Statistic Canada data available. We assumed there were on average 3 dwellings per small multi-unit residential building (MURB). Our analysis is based on a total of 2340 single-family buildings and 400 small MURBs. We estimated the number of medium MURBs in Bridgewater was negligible. We also assumed only 80% of the building retrofits were technically feasible and that only 59% of the buildings were owned.

Program Cost

The cost of retrofits is estimated to be \$15,000 for single family homes and \$20,000 for small MURBs and have a retrofit payback period of 10 years. Based on the adoption rate describe above, the costs to perform the retrofits are spread in time as shown on Figure 7. The participants will be eligible to rebates that are estimated at \$2,500 for a single family home and at \$6,000 for a small MURB.

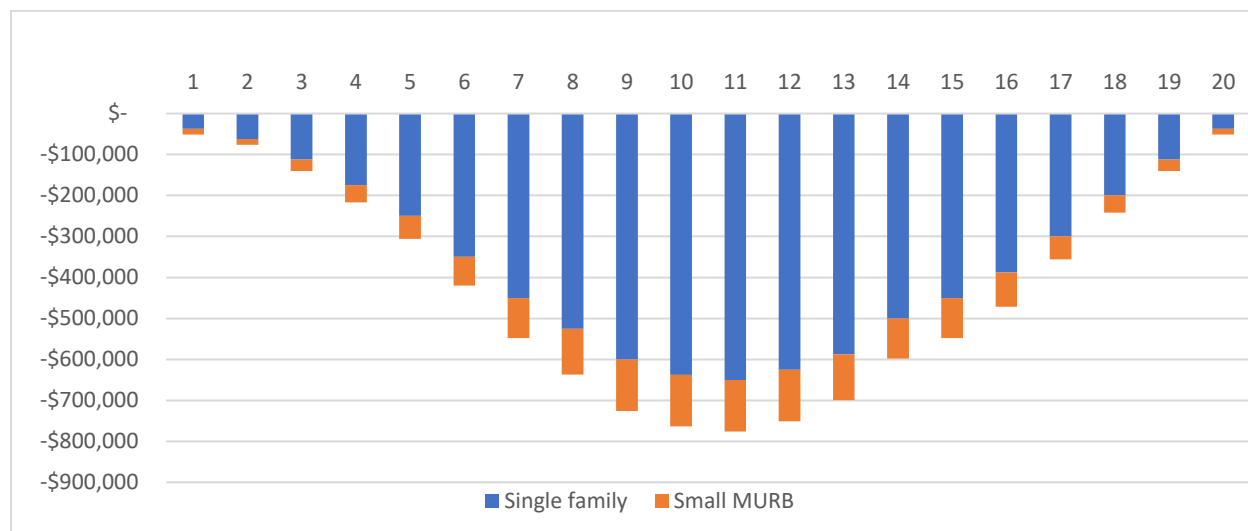


Figure 7 - Cost to perform the retrofit (without overheads) by type of dwelling

We assumed an interest rate of 5% for the loans. In addition, we assumed variable administrative costs for the application process of \$200 per single family and \$300 per small MURB paid by the participants. We also assumed fixed costs of \$20,000 per year for the program, of which \$5,000/year would be paid the Town of Bridgewater and the remaining would be spread across the participants.

The cashflow needed for this program is represented on Figure 8. Based on our assumptions, the Town of Bridgewater would need to offer loans for a total of over \$4 million.

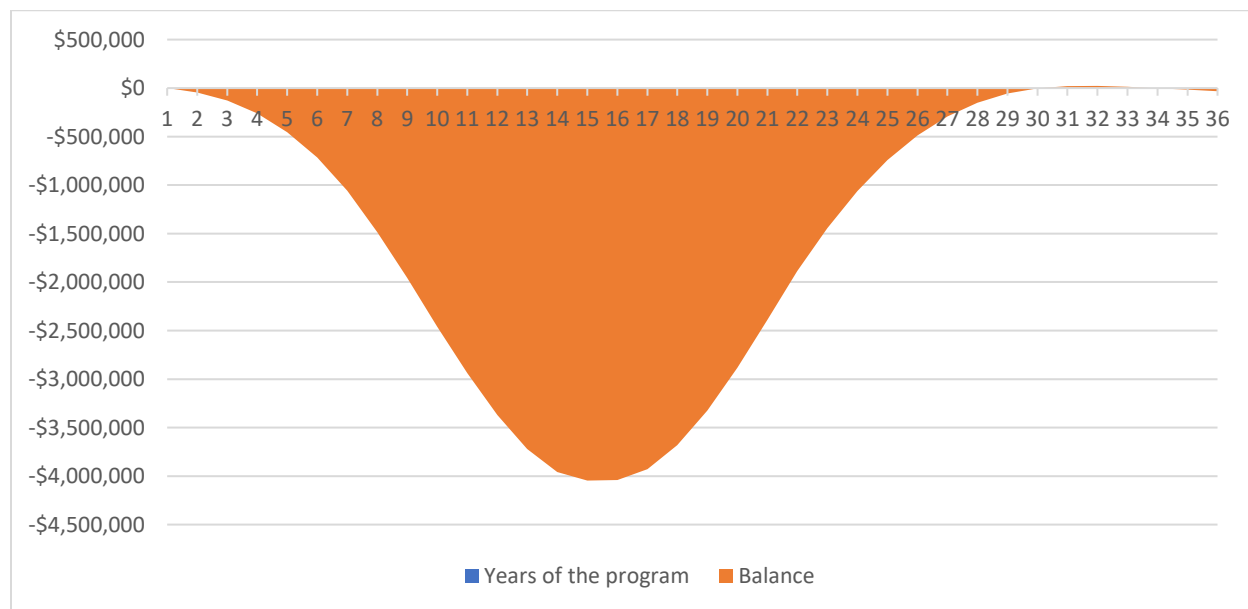


Figure 8 - Cashflow needed by program year

To make the program more attractive to the participants, we assumed that 10% of the estimated savings would go into the pocket of the participant every month. However, this increases the reimbursement period for the participant. The loan is thus spread over a longer period and interest payments become a little higher.

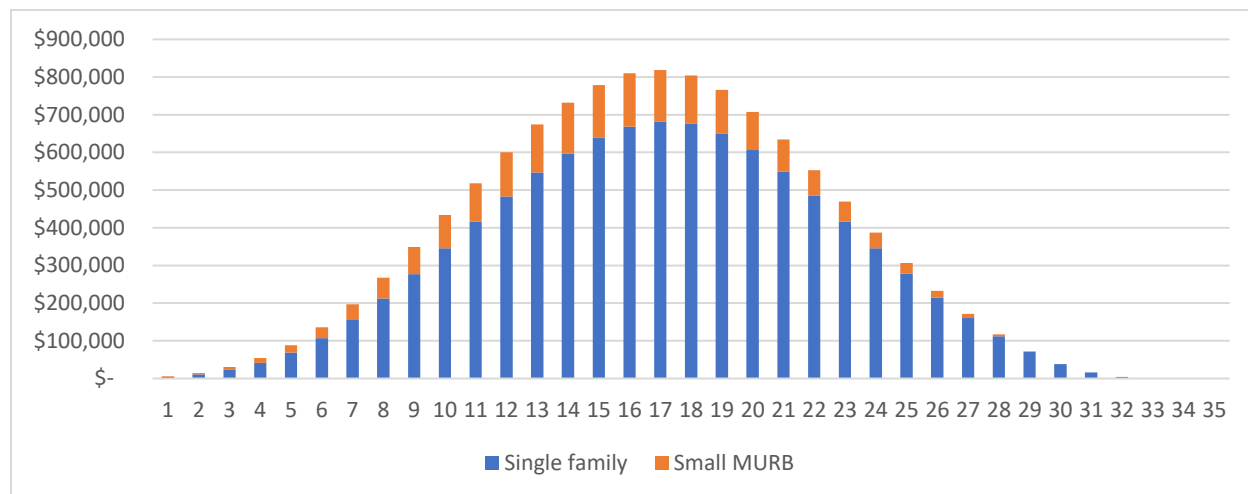


Figure 9 - Payments from savings by type of dwelling

With the interests and administrative costs, the reimbursement period becomes 13 years for a single-family dwelling and 10 years for a small MURB.

Town of Bridgewater Financial Exposure

We assume the Town of Bridgewater will cover the administrative costs for the first year, including the initial marketing campaign, up to a total cost of \$50,000 and then will cover 25% of the fixed administrative costs of the program for the following years. We also assumed a 1% payment default rate on an annual basis and 3% of unachieved savings to calculate the financial exposure of the Town in this realistic scenario. The total yearly financial exposure is presented on Figure 10. Based on these results, we estimate Bridgewater should set aside a yearly budget of \$50,000 to cover a portion of the administrative costs as well as cover the financial exposure resulting in payment default and unachieved savings.

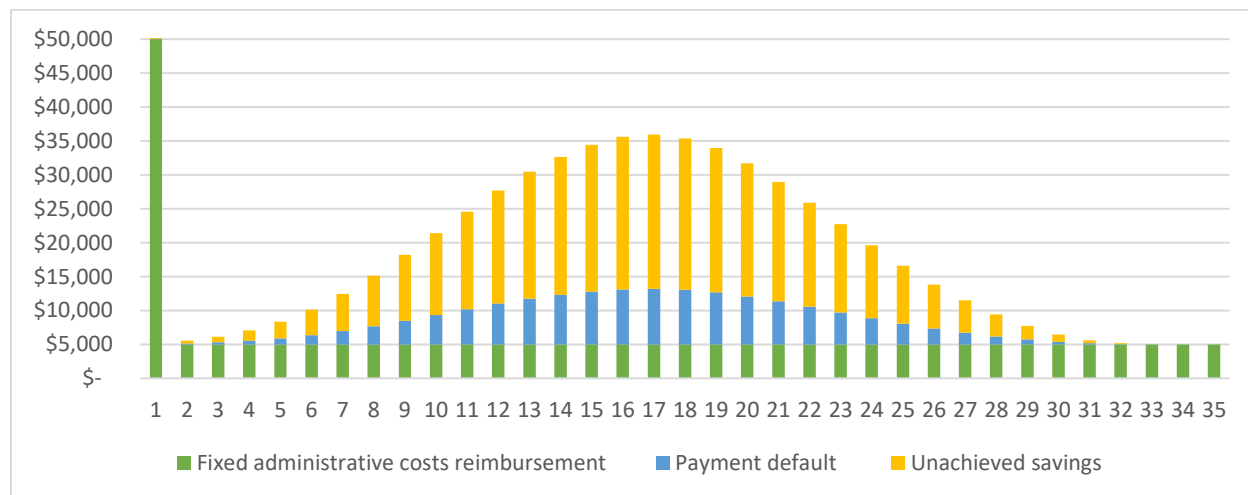


Figure 10 – Town of Bridgewater yearly financial exposure

Financial Model

The detailed model on which the analysis is based was provided in a separate file. All inputs can be modified in the future to re-evaluate the financial situation based on different assumptions.

4.6. Risks and Mitigating Strategies

We have identified three main areas of risks with this business model:

- Partnership with the ESCOs
- Market Uptake
- Financial Risks

These risks and associated mitigation strategy are detailed below.

Partnership with the ESCOs

There is a risk that the ESCOs will not want to participate in the programs. They might not see enough benefits to enter this market because, for example:

- the Bridgewater residential market is too small;
- the consumption of residential household is too variable and represents an important risk if the ESCO is to guarantee the savings;
- the business model is too complex;
- the duration of the program is too short to make it profitable;
- the program doesn't streamline the contractual and implementation processes;
- etc.

This risk can be mitigated by giving a monopoly to an ESCO to conduct the program during a certain period (minimally 3 or 4 years to allow for ramp-up time), thus giving them access to the entire market in Bridgewater, although this might still be considered small. Partnering with other municipalities in the area might make it more compelling to the ESCO. The Town could also share the risk by guaranteeing the last percent of savings. Ensuring additional complexity is not added without a good reason will also help mitigate this risk. Another way to significantly boost interest among ESCOs would be to combine work under this program with other infrastructure work that is more familiar to ESCOs. For example, the RFP could leverage community solar projects or municipal buildings retrofit by combining them into the Neighborhood Retrofit Program RFP or by giving some sort of advantage to the ESCO that is selected to implement the Neighborhood Retrofit Program.

There is also a risk on the Town's side that partnering with an ESCO is perceived as favoritism and as creating a disloyal competition with other providers of housing retrofit services in the region. This can be mitigated by opening the RFP to everyone interested in participating in the program.

Furthermore, there is a risk to partnering with a single ESCO because the program becomes dependent on them and it reduces the leverage the Town might have on them. However, the benefits of bringing the expertise of an ESCO might compensate for this risk.

Market Uptake

There is an important risk that the market barriers (as described in Table 4) remain too high to see a significant uptake in the participation rate. There already is a PACE program in place that provides

access to financing for energy retrofits and the participation level has been low in the past. Thus, there might be other important barriers. The ESCO model is partially addressing them, but the model might remain too complex, or simply might be perceived as too complex. There is also a natural resistance to change that comes into play, along with the discomfort of having construction work performed in an occupied household.

To mitigate some of the risk around the participation, large investment could be made in the marketing efforts, coming from the ESCO, the program administrator and the Town. This could increase awareness around the benefits of the program. The process should also be streamlined as much as possible to reduce the administrative burden on the participants. The ESCO would need to fill all the forms for the customer, enter into agreements with contractors and supervise the work, with minimal input from the participant.

In addition, building owners that are renting units and tenants in apartment buildings are unlikely to participate because of the split incentive barrier (see section 4.1). Additional tools such as green leases could help address that market segment.

Finally, low-income households are less likely to participate because they are typically renting. Also, the complexity of a program has a stronger impact on their participation. They are also focused on short-term benefits given their financial situation. A mitigation strategy could be to subsidize the program for low-income participants and to have a tailored marketing strategy to this segment. A portion of the monthly savings could also go directly to them as opposed to being entirely used to reimburse the loan.

Financial Risks

In order to keep individual retrofits payback as low as possible, and therefore help generate participation in the program, the financing rate needs to be kept as low as possible. Since this is a new business model with no track record in the province, there is a risk that potential lenders will perceive this as a risky investment and therefore offer financing at a higher rate. To mitigate that risk, the Town of Bridgewater could potentially guarantee the loans through property taxes and the existing PACE program or through another mechanism. Additional analysis is also needed to evaluate the best financing mechanism and potential lending partners.

In addition, there is an even larger financial risk for Bridgewater in the scenario where the Town is guaranteeing a portion of the savings. To mitigate this risk, Bridgewater should share the risk with the ESCO based on specific contractual terms. They could also consider putting in place a performance bonus to motivate the ESCO to obtain higher energy savings on their projects.

There is also a risk of not being able to cover the fixed administrative fees if the participation is too low. This risk can be mitigated through an upfront investment in the marketing of the program to promote its benefits. Higher costs than expected could also lead to a longer return on investment period that is no longer acceptable for a participant. This could even result in lower market uptake.

Given that the program targets a large market with variable levels of income, another risk is that the participants default on their payments which would create a financial burden on the Town to reimburse the loan for the participant. Similarly, the participants could change their habits and increase their consumption after the retrofit which would lead to reduced energy savings and limit the participant ability to reimburse the loan over a given period.

To cover all these risks, Bridgewater should put aside a reasonable contingency budget following a detailed financial analysis of each risk.

4.7. Additional Considerations

Partnerships

The neighbourhood retrofits projects will require or benefit from partnerships with the following key entities:

- **Efficiency Nova Scotia** for the purpose of administering the program (as explained in section 4.4) and because they administer existing programs and incentives for energy efficiency projects that should be included within the options and opportunities identified by the ESCO;
- **ESCO**: The successful ESCO proponent from the RFP process will manage and perform the retrofit work professionally, as well as guarantee the agreed-upon portion of the savings;
- **Financial institutions** to obtain lower interest rates of the loan to finance the projects (the program administrator could identify and negotiate the terms, but we anticipate the program would benefit from Bridgewater being involved and potentially leveraging its existing relationships);
- **Other municipalities** that would like to participate in the program to increase the size of the potential market and make it more interesting for an ESCO to be involved.

The inter-municipal partnership opportunity is one worth highlighting for multiple reasons. First, the model could be exported and shared with other municipalities to spread the benefits of this approach. Secondly, the program could benefit from economies of scale by having multiple municipalities working together and sharing the administrative costs. As Bridgewater continues to explore this option, a deeper analysis of partnership opportunities with neighbouring municipalities should be considered.

ESCO insurance requirements

Due to the work they are conducting in the large commercial and institutional sectors, most if not all ESCOs have insurance policies that cover general liability, automobile liability, and professional indemnity (errors and omissions). Contract with the ESCO should identify the insurance coverage that is required to perform the work, considering the potential for the ESCO to implement a large number of small projects under a single contract.

Addressing Energy Poverty

Although the proposed model addresses most challenges to face the market barriers that prevent households to conduct deep retrofit, it might not be the best approach to tackle the issue of energy poverty for low-income households. In the eventuality that the Town of Bridgewater wishes to specifically address energy poverty and low-income households, it should consider the option to directly invest in the retrofitting of the dwellings of those most in need. This investment could cover either a significant portion of the costs or all of it. A partnership with an ESCO could still be considered in this scenario. The ESCO could potentially guarantee the aggregated savings and offer a turnkey solution. This would drastically simplify the model and address the main objective of Bridgewater, which is to reduce energy poverty.

However, in the context of Nova Scotia where a large number of homes have minimal to no insulation, the energy poverty is a wider problem that does not only impact low-income households. The proposed

model can offer an interesting alternative to households that do not qualify for the HomeWarming program, but that are still in need of energy efficiency improvement to reduce their utility bills. Therefore, the proposed approach could also contribute to reducing energy poverty in the Town of Bridgewater.

Furthermore, as part of the Energy Poverty Reduction Plan, the Town of Bridgewater is investigating opportunities to stack funding and other financing options. These other programs would be complementary to the proposed neighbourhood retrofits program described in this report.

Addressing the Rental Market

As mentioned in Table 4 – Market Barriers, the split incentive remains an important barrier, even with this model. To address this market, further analysis would be required to develop a repayment mechanism that would be beneficial for both the homeowner and the renter. This was not included in the scope of this study.

4.8. Neighbourhood Retrofits Implementation Plan

This implementation plan is preliminary and will need to be revisited after the Phase 3 of this project: the business plan stage.

Overview of Implementation

We estimate the implementation of the neighbourhood retrofits program would take under 2 years. This estimate is conservative and could be compressed if the Town of Bridgewater, the ESCO and Efficiency Nova Scotia (as recommended in section 4.4 – or another program administrator) quickly come to an agreement.

During this period, these following key tasks (described below) will need to be completed:

- Select and set up the financing mechanism;
- Sign a service agreement with the program administrator;
- Prepare and launch an RFP process to select the ESCO;
- Award and negotiate the contract with the selected ESCO;
- Set up the program;
- Prepare and launch the marketing campaign.

Assumptions

Given the early stage of this opportunity assessment, the following assumptions were made to develop the implementation plan.

- The program will be administered by Efficiency Nova Scotia.
- The ESCO will agree to participate in the program.
- There will be a financing mechanism that can respond to the need of the program (acceptable risk level, interest rates and administrative requirements).

Major Tasks

Select and set up the financing mechanism

First, an in-deep assessment of all the financing mechanisms will be needed. This will lead to the formal selection of the right mechanism for this business model.

The study will need to research and identify all funding options available (ex. CEDIF, loan from the Nova Scotia Municipal Finance Corporation, loan from banks or other lending institutions, loan contracted by the ESCO, etc.), conduct a legal review of all options to ensure they are all legally feasible, weight the strengths and weaknesses of each and finally select the preferred financing mechanism for neighbourhood retrofits. Ultimately the chosen mechanism should offer the approach with the least interest costs for the participants.

Once the mechanism has been selected, the Town of Bridgewater will need to enter in a loan agreement with the lender (a financial institution or other).

Sign a service agreement with the program administrator

In parallel to the definition of the financing mechanism, the Town should initiate the discussions with Efficiency Nova Scotia to put in place a service agreement for the administration of the program. During these discussions, Bridgewater should clarify the roles and responsibilities of each entity and define the task to be performed by Efficiency Nova Scotia. The process for the financial transactions will also need to be finalized to ensure smooth operations when the program is launched. This includes, without being limited to, the option of offering the one-bill service to the participants, the payments to the ESCOs and the reimbursement of the loans. Once the general terms have been agreed by both parties, a service agreement will need to be drafted, negotiated and signed.

Prepare and launch an RFP process to select the ESCO

In partnership with Efficiency Nova Scotia, a request for proposals will be issued to obtain ESCOs propositions to participate in the program.

The RFP will offer an overview of the program, and a detailed description of the ESCO's involvement. Since it is in the best interest of the ESCO to generate as much participation in the program as possible, to absorb fixed costs and increase overall profitability, the RFP should give as much flexibility as possible in the marketing and recruitment approaches. Geographic and time limits of the ESCO's exclusivity to implement home energy retrofits should be clearly stated, and the RFP should include a description of the relevant building stock that is contained within the area, with key building parameters (as available) such as type, vintage, size, energy sources, heating system type, etc.

The RFP will include a list of defined and preapproved measures that will be included in the projects. A preliminary list of eligible measures includes the following:

- Insulation;
- Air sealing;
- Heat pumps installation;
- Low-flow shower heads and faucets;
- Heat pump water heater;
- Drain water heat recovery;
- Automated HVAC system controls;
- Window replacement.

Additional measures may be proposed by ESCOs in their proposals.

Bridgewater will need to develop a preliminary cost and savings grids for each measure that the ESCO can complete in their submission. This grid will need to include sample methodologies for calculating the savings.

ESCOs should propose the percentage of savings they would guarantee at an aggregate or neighbourhood level. Ideally, these would need to be around 80% to ensure they do not overstate estimated savings. The RFP should outline how the aggregate savings will be measured (i.e. on a neighbourhood basis and what that means, or a given number of homes, etc.). We recommend that it be geographic to ensure that ESCOs do not simply recruit high-interest or high-savings participants, but to increase participation in the program more generally. This step could also be completed during the contracting stage.

A proposal evaluation grid will be crafted, including the following criteria:

- Marketing and recruitment approach and budget (qualitative);
- Company and proposed team profile and experience (qualitative);
- Methodology, workflow and timeline for interactions with participants and program implementers, project assessment, project implementation and after sales service (qualitative);
- Supply chain partnerships (manufacturers, distributors, contractors) (qualitative);
- Costs (administrative, management, marketing, measures, etc.) and savings, using an NPV financial analysis, and incorporating the proposed level of savings guarantee in the calculation (e.g. 80%) (quantitative).

As it was mentioned a few times during interviews conducted with ESCOs, bundling the residential retrofit work with another, more conventional ESCO projects such as community solar or municipal buildings retrofits, would go a long way in attracting ESCOs to participate in the RFP by mitigating their overall risk. Potential synergies with other ESCO projects should be considered carefully by the Town of Bridgewater in the initial stage of RFP preparation.

Award and negotiate the contract with the selected ESCO

The Town and Efficiency Nova Scotia will review all proposals received and award the contract based on their procurement rules. We recommend awarding the contract to a single ESCO that covers the entire area of the Town. While multiple ESCOs could be selected, the Town's relatively small size may not hold enough residential project opportunities for multiple organizations, potentially leading to a lack of interest on the part of respondents.

The terms of the contract between the Town of Bridgewater, Efficiency Nova Scotia and the ESCO will need to be negotiated. Drafting and negotiating the contract are significant work that will have lasting effects on the program's success, and therefore this work should be planned and budgeted accordingly.

Considering the importance of this step and the amount of work that will be necessary to draft and negotiate the contract - the price tag can easily reach \$30K to \$50K or more -, the Town of Bridgewater should seek legal counsel to help them complete this task. The following elements should be addressed in the contract, but do not constitute an exhaustive list:

- Definitions and interpretations;
- Start and duration of contract;
- ESCO exclusivity over building types and territory, and period of exclusivity (option: include an option to extend the period of exclusivity based on ESCO performance);
- ESCO and subcontractor licences requirements;
- ESCO insurance and bonding;
- City permits, applicable codes and regulations;
- Acceptable delays for documents approval, and for main steps of the workflow;
- Services to be provided by the ESCO, the Town and the Program Implementer;
- Building audits requirements;
- Measure costs and/or cost structure;
- Measure savings calculation grid;
- Warranty against defects;
- After-sales service;
- Work completion approval and certificates;
- Indoor environmental conditions requirements;
- Hazardous materials handling and disposal;
- Evaluation of ESCO performance;
- Energy performance guarantee: level of guarantee, duration and application mechanisms;
- Protocol for measurement and verification of energy performance;
- Homeowners training on energy conservation measures and technologies;
- Additional work outside of predetermined list of measures;
- Payment mechanisms, approvals and holdbacks;
- Financing mechanisms, terms and conditions;
- Rebates and incentives;
- Disputes and arbitration;
- Contract termination.

Set up the program

Efficiency Nova Scotia, as the program administrator, will need to put in place all the business processes to ensure the well-functioning of the program. In addition, they will need to set up a system to collect data on the participants and track the process. Given that Efficiency Nova Scotia is administering multiple programs, they will be able to leverage existing QA/QC procedures and adapt them to this program. The reporting requirements will need to be identified and agreed upon with the Town of Bridgewater. The program administrator will also need to develop a process to validate the calculations made by the ESCOs and confirm the estimated savings are reasonable. A measurement and verification process will be created to do so, as well as a sampling methodology to identify homes that will undergo a detailed verification.

The Town of Bridgewater will need to define where and how the program information will be stored. The information systems of the Town, as well as those of the program administrator could be used. A data management approach will need to be defined during the set up of the program.

In parallel, the personnel needs will be evaluated. Recruitment and training activities will take place as needed.

Prepare and launch the marketing campaign

Finally, Bridgewater, Efficiency Nova Scotia and the ESCO will need to work together to develop a marketing strategy to recruit participants. Specific neighbourhoods or market segments could be prioritized as needed. Promotional material should be developed during this phase. All available communication channels should be assessed to identify the optimal approach for this campaign. The Town's and Efficiency Nova Scotia's existing channels should be leveraged. Once the marketing campaign is ready, it should be launched, and the participant recruitment should start. The ESCO should be actively engaged in the process of developing and rolling out the campaign.

Implementation Schedule

We estimate the implementation of the neighbourhood retrofits program would take under 2 years. The duration of each task is specified in the graphic below.

	Y1-Q1	Y1-Q2	Y1-Q3	Y1-Q4	Y2-Q1	Y2-Q2	Y2-Q3	Y2-Q4
Select and set up the financing mechanism								
Sign a service agreement with the program administrator								
Prepare and launch an RFP process to select the ESCO								
Award and negotiate the contract with the selected ESCO								
Set up the program								
Prepare and launch the marketing campaign								
Launch the program								

Outstanding issues

Prior to starting the implementation phase, the Town of Bridgewater will need to address the following questions and take a decision.

- Who will be administering the program?
- How will the payment from the participant be collected? (i.e. single bill, municipal taxes, or other); What is the reimbursement mechanism?
- How will the program be financed?
- Are there any legal issues pending? What is the pathway to meet these legal requirements?
- Can the Town legally guarantee the savings?
- Would other municipalities partner with the Town of Bridgewater on this opportunity?

- Is there additional work (such as community solar or municipal buildings retrofits) that could be combined with the neighbourhood retrofits mandate to make it more attractive to the ESCOs?

The Town of Bridgewater will also need to establish a detailed budget specifically for the neighbourhood retrofits program.

Finally, partnerships with the different actors will need to be developed.

Anticipated Outcomes from Implementation

There are multiple anticipated benefits from this proposed business model.

First of all, the Town of Bridgewater would benefit of the notoriety of having been one of the first municipalities to implement this business model to encourage the retrofitting of its housing stock. It would show the Town as a leader.

There are also important benefits for the community. Obviously, reducing energy poverty is one of the key objectives of this initiative. However, it would also benefit the community by creating work opportunities for the local contractors and suppliers. Furthermore, it could increase the property tax base through the increased value of the properties. Notwithstanding that it will also reduce the GHG emissions of the Town and make it a green town to live in.

Finally, most of the benefits go directly to the homeowner. It will undoubtedly increase the comfort of the residents and the air quality of the dwelling. It will also reduce the energy bill of the participants (when the retrofits are paid for, or even before depending on the financing strategy), as well as their insurance costs while increasing the value of their property.

4.9. Conclusion

In conclusion, we believe there are important benefits in partnering with the ESCO to lower the market barriers. This business model represents an innovative approach to address the building retrofits in the community. However, to specifically address energy poverty and low-income households, a tailored approach to this market segment would need to be developed. Furthermore, this business model still doesn't address the split incentive barrier. Other options would need to be considered, such as green leases, to address the rental market.

There is also an important financial risk for the Town of Bridgewater depending on the chosen approach to guarantee the loans and the savings. The Town should seriously analyze the financing mechanism options before making a final decision. In addition, the contract with the ESCO should be drafted with caution to ensure the terms of the contract can be met by the Town.

In addition, the Town of Bridgewater should consider opportunities to bundle the residential retrofit work with other, more conventional ESCO projects such as community solar or municipal buildings retrofits. These conventional projects are deemed less risky by the ESCOs which makes the partnership with the Town more interesting for the company. This should lead to a higher number of responses to the RFP.

Finally, large marketing efforts will be needed to ensure the participation level meet the targets of the Town. Efforts should also be made to ensure the administrative complexity of the financing and reimbursement mechanism is minimized, as an overly complex process could hinder the program.

5. Solar Garden

5.1. Overview

Bridgewater's Community Energy Investment Plan and Smart Cities Application both identify a solar garden as a potential project for the town. Because of this the Town has asked that this study examines the feasibility of a solar garden and how it could be structured to meet the town's energy objectives.

The scope of the solar garden was defined by the town as a 6MW solar project using a virtual net metering model and a CEDIF as a financing mechanism.

The size of the project was based on previous work completed for Bridgewater's Smart Cities application. The project structure was defined through a number of meetings with the Town where different models for a solar garden were presented to them and discussed. The models presented were 1) a CEDIF in partnership with a developer (similar to that used for COMFIT projects in Nova Scotia) and 2) rooftop net metered project using CEDIF to finance the equipment. These can be found in Appendix A. After reviewing these models, the Town's preferred project structure was a combination of the two as this would best provide broad access to solar energy for participating residents as well as maximising the potential for local ownership in line with their energy objectives.

In this combined model a Bridgewater resident would be able to participate in the solar project in several different ways:

1. **Purchasing shares in the project through a CEDIF and receiving dividends** – this is a proven model and was used extensively to enable community ownership in many of the wind energy Community Feed In Tariff (COMFIT) projects in Nova Scotia.
2. **Purchasing a portion of the solar garden and using virtual net metering to offset their electricity bill** – this model enables residents, who may not be able to install solar energy on their home to purchase solar panels from the solar garden and offset this against their own electricity bill through virtual net metering. This model is much like conventional rooftop net metering, but the solar panels are situated offsite from the resident's home.

A separate study (the Renewable Energy Resource Study), yet to be commissioned by the Town, will identify and assess potential locations for renewable energy projects within the town boundaries.

Project feasibility

The key finding of this study is that a 6MW solar garden is not feasible at this time. The main reason for this is that there are very limited options available to sell the electricity generated by the project. Electricity generated by renewable energy projects must be sold through a power purchase agreement (PPA) which is the contract between the project owner and the utility, Nova Scotia Power (NSPI). NSPI has no open program offering PPA's for renewable energy projects at this time.

In addition, the overall price of solar energy (solar panels and supporting infrastructure combined) is high compared to other forms of renewable energy generation. Even though the price of solar energy has rapidly decreased over the past 10 years, the overall costs of a project do not provide a compelling

business case, without substantial government subsidies, particularly in areas with lower solar resources such as Nova Scotia. For this reason, we believe that this does not meet Bridgewater's energy objective of affordability.

Furthermore, the Town of Bridgewater has little control and influence in the electricity market in Nova Scotia and it would have a limited role in determining the implementation and structure of the project since it is not in the position to be a developer or owner of a project.

This study provides a description of the solar garden project, the electricity and renewable energy market in Nova Scotia as well as a detailed evaluation of the project feasibility. Alternative options for projects that are better able to meet the towns objectives are also provided.

5.2. Description of Solar Garden Project

The solar garden would be a 6MW (AC), ground mounted photovoltaic system. A portion would be owned by virtual net metering customers and the remaining portion would be jointly owned by the CEDIF and the project developer.

The solar garden would serve all electricity customers in the utilities service area as well as the CEDIF investors by paying dividends on the investments. It would add additional renewable energy to the grid offsetting electricity generated using non-renewable sources.

An overview of the ownership model is provided in Figure 11.

The physical components of a solar garden project include the solar panels, inverters, structural components (racking), electrical components such as conductors, conduit, telecoms, protection and control equipment, switchgear, civil infrastructure which includes roads and foundations, an automatic recloser and other interconnection facilities. These all factor into the overall project cost as well as the labour costs for development, construction and operation of the project.

SOLAR GARDEN

Ownership Model

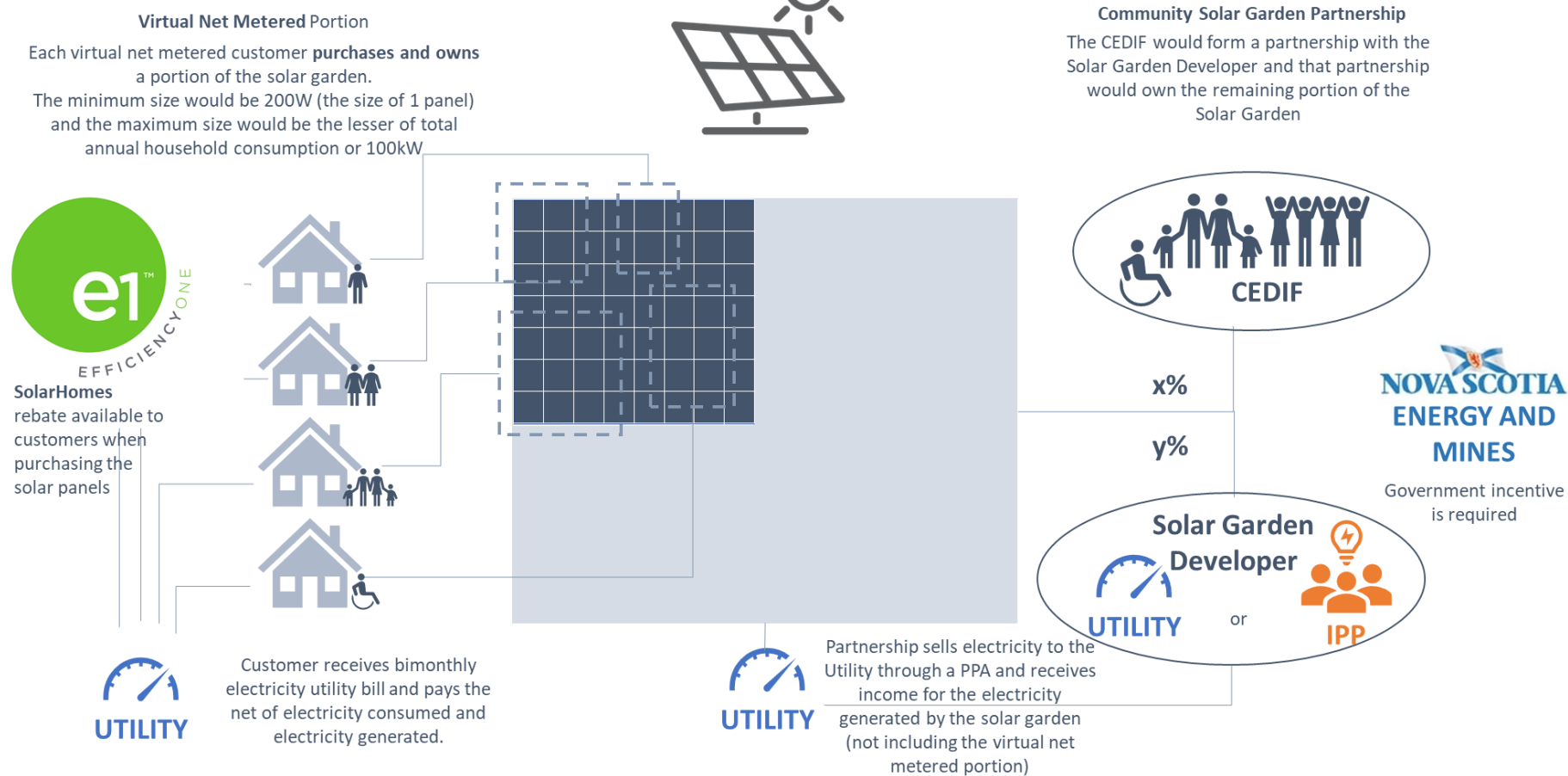


Figure 11 – Solar Garden Ownership Model

Key project development steps

Details of the typical steps, and activities associated with them, required to bring a solar garden to fruition are described below. It is important to understand these steps as different levels of risk and financing are associated with each stage of the project. This has a significant impact on when community investors should become involved in a solar garden.

Site finding - a suitable location would be identified for a solar garden by the developer or through the renewable energy study that the Town plan to commission. The developer would gain land control typically through an option to lease agreement.

Development – the developer would work to ensure that the project is feasible and obtain all building and environmental permits. All aspects required to finance the project need to be understood to a level where the project can successfully be financed. These include the solar resource, system performance, project costs and the price at which the electricity is sold as stated in the PPA.

The developer would fund the development stage of the project. Development activities include land acquisition, resource assessment, grid connection feasibility and application process, permitting (environmental and planning), equipment selection and pricing, construction design and pricing and operations pricing. The development phase is inherently high risk as roadblocks in any area (i.e.: environmental permitting, zoning, interconnection feasibility, etc.) can render investment into other development aspects of the project stranded. For example, due to the timescale of work scopes its possible for a project to complete a number of costly environmental studies only to find that the grid connection is uneconomic.

Financing – Once the development phase is complete, the developer works with a financial institution to secure debt to finance the project. Before releasing the debt for an energy project, the lender will conduct due diligence to ensure that all of the agreements and key project components are in place. Depending on the project delivery model, this sometimes requires substantial engineering spend to fully price the project, complete detailed financial modeling, size contingencies, etc.

The project is financed through a combination of equity and debt. The equity is usually between 20%-30% of the project costs would be provided by the developer and CEDIF. The debt will cover the remaining amount of the overall project costs. The level of debt provided depends on the quality of the project i.e. the electricity production, which is a function of the solar resource and how efficient the technologies used are at converting the resource into electricity. The track record and experience of the developer is also a key factor.

The source of debt provided would depend on the type of developer. For example, a large utility like NSPI would have access to different sources of debt to a small local IPP.

Construction - once financing has been secured, and all conditions of the lender have been met, construction can begin. This will be the responsibility of the developer and include building an access route to the project, clearing and preparing ground, installing foundations and conduit, building the grid connection and installing the solar panels and all control equipment. Once everything is in place, electrical testing and commissioning of all system components will be conducted.

Commercial Operation Date (COD) - this is the big day when the project is switched on and starts generating power that can be sold to the utility under the terms described in the PPA.

Operation and maintenance – The project owner is responsible for operating and maintaining the project. Operation tasks include monitoring SCADA logs and alarms, ensuring the project operates in accordance with its interconnection agreements and power purchase contract, ensuring compliance with environmental management plans if required, accounting of metered energy, land agreement payments, taxes, management of component warranty issues etc. Maintenance tasks include cleaning of panels, road and drainage maintenance, snow removal, electrical maintenance, etc.

Decommissioning – most solar projects are warranted to operate for up to 30 years and a PPA is usually for 20 or 25 years. However, the project will need to be decommissioned or replaced by newer technology.

5.3. Description of the CEDIF Structure

A detailed description of the CEDIF structure and process is provided in section 3 of this report. This section describes how a CEDIF can work in partnership with a solar garden developer to own a portion of the project.

This model is based on that used by developers to enable their wind energy projects under the COMFIT program. Many IPPs established their own CEDIFs to enable development of their COMFIT projects and in these cases, the developer and the CEDIF formed a business partnership which owned the wind energy project together.

A similar structure would be used in this case, whereby the CEDIF and developer form partnership that owns the solar garden. The CEDIF would enter the partnership and invest in the solar garden at the end of the development phase, once all of the key project components are understood and project risks have been mitigated.

The percentage ownership of the solar garden would be proportional to the amount of capital that each party put into the partnership. It should be noted that the developer would receive a premium for the high risk expenditure that they incurred in the early stages of the development stage. Revenue generated from the project (net of operating expenses, debt service costs and taxes) would be split in proportion to the percentage ownership of the project.

5.4. Description of Virtual Net Metering Project

Virtual net metering policies have been implemented in a number of jurisdictions. These policies were designed to remove barriers to residents who are not able to own solar energy for reasons described below in Table 5.

Table 5 – Barriers to participation in residential solar

Barrier to resident	Description	Addressed with a Solar Garden and Virtual Net Metering Model?
Property not suitable for solar resource or equipment	Residents property may not be suitable for solar energy in terms of orientation, shading or structural integrity	Yes, the solar garden would be located in an ideal position for solar resource
Lack of home ownership	Residents may not own their own home and therefore cannot install solar panels on their roof	Yes, the solar garden does not require the participating resident to own a home
Lack of access to financing	Individuals may not have access to the capital required to purchase solar panels.	Partially, in this model individuals will be able to get financing for the solar garden. A tailored approach should be designed to enable low income and residents in energy poverty to participate.
Lack of time	Individuals may not have the time to manage large-scale projects	Yes, the solar developer would design and implement the project
Lack of knowledge or information	Individuals may not have the knowledge to understand what the benefits of solar energy are and how long it takes to payback system costs.	Yes, the solar developer or CEDIF would provide information to describe the benefits and explain how long it takes to pay back the system costs
Uncertainty	Individuals may not have confidence in the technology or benefits of solar energy	Yes, confidence is likely to develop over time once the project has been established and residents gain experience that they can share with their neighbours.

A virtual net metering policy has not yet been implemented in Nova Scotia although the Department of Energy and Mines hope to do so.

One of the most successful markets to have implemented virtual net metering for solar gardens is that of Minnesota. Policy was introduced in 2013 and since then the state has seen a substantial growth in the implementation of solar gardens and virtual net metering. The structure described below uses Minnesota's model as an example.

A Bridgewater resident would purchase a portion of the solar garden through either a one off payment or a financing the project costs to spread payment out over a period of time. At the same time, they sign a 25 year virtual net metering contract with the utility so that the electricity that they use in their home is offset by the electricity generated by the portion of the solar garden that they now own.

The portion of the solar garden that was sold in this way could not be made available for sale to the CEDIF as described above. Having two models of ownership of a single project presents unique challenges to selling project units.

Any policy developed would establish a set of rules for virtual net metering. The rules presented below are based on Nova Scotia's current enhanced net metering policy and those developed in Minnesota.

Potential Rules for Virtual Net Metering customers

- Minimum purchase of 200W (approximate size of 1 solar panel)
- Maximum purchase is the lesser of - a size that matches household consumption (on average 8kW) or 100kW.
- Projects must have a minimum of 5 subscribers, with no one owning more than 40% of the project
- A provision will be made for low income customers
- The project units (portion of solar panels and associated equipment) will be purchased either by a one off payment or yearly lease from the solar garden developer.
- Contract term is 25 years
- Unsubscribed electricity generated is purchased by the utility at a rate to be determined

5.5. Options for Low Income Residents

A tailored approach would be required for low income residents and those living in energy poverty. We recommend that a portion of the virtual net metering project is set aside for this demographic. Options for how the CEDIF model can be utilised for those living in energy poverty is discussed in Section 3.

The major barrier to participation in this case is lack of access to capital. A number different policies have been implemented and tested in other jurisdictions. These include direct incentives to subsidise system costs, on bill financing such as that being developed by NSPI for hot water heaters and heat pumps, loan loss reserves whereby funds are held in reserve to cover loan providers if a customer defaults on a loan and revised underwriting so that access to debt is easier for people to access for people with low income. National Renewable Energy Laboratory's (NRELs) website¹⁵ describes these policies in detail as well as providing examples of where they have been implemented. The funding sources required to implement these policies most often come from government.

5.6. Market Assessment

This section focusses on the electricity and renewable energy market in Nova Scotia. It explains who the key actors are and their roles as well as the policies that are currently in place to enable new renewable energy generation.

All activities associated with electrical generation, transmission and distribution fall under the Electricity Act and Renewable Energy Regulations.

Any policy that is developed to enable new renewable energy in Nova Scotia sets out the price that the electricity is sold to NSPI for and the terms of the PPA. This is usually done through a competitive bidding process whereby all developers submit a price that they can sell their electricity for and the lowest bidders win. The COMFIT program was the only exception and in this case a set price was fixed.

¹⁵ <https://www.nrel.gov/state-local-tribal/lmi-solar.html>

Key actors

Department of Energy and Mines – the department of energy and mines administers energy policies in Nova Scotia. Any change to the legislation and policy is developed by the department including policy that enables the implementation of renewable energy projects. The department is a key stakeholder, particularly at this time when limited pathways are available to sell electricity from the project

Utilities - a utility would purchase the power generated from a project and distribute the electricity to its customers through its distribution and transmission network. In Nova Scotia utilities also develop and own energy generation projects.

The Town of Bridgewater currently falls under the service territory of **Nova Scotia Power Incorporated (NSPI)**. NSPI is the largest utility in Nova Scotia, providing 95 per cent of the generation, transmission and distribution of electricity.

Six small independent utilities also operate in Nova Scotia. They own and operate small electrical grids in the municipalities of Antigonish, Berwick, Canso, Lunenburg, Mahone Bay and Riverport. **Alternative Resource Energy Authority (AREA)** is owned by the municipal utilities of Berwick, Mahone Bay and Antigonish. Riverport Electric Light Commission is also a key customer. AREA has a mandate to further the clean technology pursuits of its municipal owners along with other municipalities in Nova Scotia.

The town of Bridgewater is also exploring the option of creating its own local utility. A detailed operational study is current underway to assess the feasibility of a establishing a new utility for the Town of Bridgewater.

Utilities and Review Board (UARB) - the UARB regulates all utilities and provides checks and balances to ensure that they act in the best interest of the rate payer. As the largest utility in the province, NSPI is heavily regulated by the UARB. This is because it has a near monopoly market position with no significant competition. Any spending by NSPI over \$250,000 must first be approved by the UARB.

Independent Power Producers (IPPs) - IPPs develop, own and operate energy projects. A number of IPPs operate in Nova Scotia. The majority of them focus their business operations on renewable energy.

Renewable Energy and Solar Energy Policies

Wind energy provides over 19% of Nova Scotia electricity needs. These projects were enabled by a number of different programs designed specially to encourage renewable energy. At this time there is no policy that enables the implementation of new renewable energy in the province.

Renewables to retail is currently the only way in which a developer is able to sell the electricity generated by a project to its customer. This framework was developed by NSPI and introduced in 2016. It uses a complex and long list of tariffs that licensed electricity retailers must pay in order to use NSPI's distribution and transmission system to wheel electricity from renewable energy projects. These combined tariffs are generally considered cost prohibitive and this framework has never been used.

Solar is a relatively new market and technology for Nova Scotia, to date solar projects have been limited to smaller residential net metered projects (less than 100kW), community buildings (limited to 75kW) and a handful of behind the meter rooftop projects (Dalhousie University and IKEA). This uptake in solar

energy has been driven by programs set in place by Nova Scotia's Department of Energy and Mines, namely SolarHomes incentive program¹⁶ and the Solar Electricity for Community Buildings Pilot Program¹⁷.

5.7. Financial Details

Before discussing the financial details of solar energy in Nova Scotia it is important to understand how the current electricity system charges are translated into our domestic electricity bills. The UARB reviews and approves NSPI rates and a clear explanation of how the rates are calculated can be found on their website¹⁸.

The residential energy charges on NSPI bill are:

- Base Charge of \$10.83/month and
- Energy Charge 15.603cents/kWh

The base charge is the minimum monthly charge that every household is subject to. The energy charge rate is based on the costs that NSPI occurs in producing and supplying the electricity. Each kWh that a customer uses is charged at 15.603cents. Of this, approximately 35% (5.5cents) is for the fuel and the remaining amount covers the other operating costs incurred by NSPI.

Existing power purchases from renewable energy projects are included in the fuel category. Costs of any new generation would be aggregated to this category as well. Nova Scotia Power have an obligation to keep fuel costs low to keep electricity prices to a minimum for customers.

Price at which electricity from Solar Projects is sold

Solar Projects greater than 100kW

The PPA price is the price at which the electricity from a renewable energy project is sold. In a competitive bid process, the PPA price is determined by the project developers. When a bid is open, this price along with other project attributes are submitted to the Department of Energy as part of a competitive RFP process whereby the most cost effective project wins.

Developers arrive at a PPA price through complex financial modelling of the project. The most important inputs in the financial model are the lifetime project costs, cost of capital, and the expected quantity of metered electricity generated by the project.

There is currently no PPA pricing data on solar projects greater than 100kW installed in Nova Scotia. Based on conversations with industry stakeholders and market knowledge the likely PPA price for solar in Nova Scotia would be substantially higher than existing fuel costs at 5.5cents/kWh and estimated pricing of wind at 4.5cents/kWh. The difference in the price between solar and wind are reflected in a

¹⁶ <https://www.efficiencyns.ca/residential/services-rebates/solarhomes/>

¹⁷ <https://novascotia.ca/solar/solar-electricity-community-buildings.asp>

¹⁸ <https://nsuarb.novascotia.ca/sites/default/files/General%20Information%20on%20Setting%20Rates%20NSPI.pdf>

2018 study conducted by the International Renewable Energy Agency¹⁹. In this study solar in the U.S. was priced at USD8.5cents/kWh compared to onshore wind at USD4.8cents/KWh. The price for wind is also supported by a recent competitive procurement in Saskatchewan where the average bid price for wind energy was 4.2cents/kWh. It should be noted that these prices are for large transmission scale projects with large economies of scale. Smaller, distributed generation projects are generally more costly per kWh generated, as they generally have much higher finance and balance of plant costs per kWh when taking into account substantially lower energy yields than large transmission connected projects. It is not possible to accurately quantify how much costly they are without detailed knowledge of specific project attributes.

Virtual Net Metering

The price at which electricity is sold for a virtual net metering project would be different to that described above. It is likely to be the same as the enhanced net metering structure whereby the customer simply gets to offset the energy charge on their electricity bill with the electricity generated by the portion of the solar project that they own i.e. 15.603cents/KWh.

Potential changes to the enhanced net metering policy in NS

NSPI are planning to submit a proposed change to the UARB for the billing structure of net metering customers in the coming weeks. They propose to add a 'Demand Charge' to net metering customers bill which will account for the time of day when the solar panels are generating versus the time of day when the electricity is consumed.

The peak demand for power in Nova Scotia is in the early evening winter months, a time when solar systems are not generating electricity. To meet this demand additional generating units are added to the grid. This generation cost is significantly more expensive than that of the non-peak hours and is currently embedded into the NSPI energy charge of 15.603cents/kWh.

By this rationale the net metered customer is currently being subsidised by other Nova Scotia rate payers as they are receiving the same price for the energy that they generated in the middle of the day as is used in the evening. The overall result of this change would be a reduction in the benefit to the virtual net metering customer. Whatever is decided for existing net metered customers will most certainly apply to any future virtual net metered project.

Cost of Solar

Given that there are no utility scale solar projects in Nova Scotia external sources were reviewed for costing information²⁰. These were mainly from the U.S. which has a more developed market but also included a CanSIA review on the Ontario market in 2017.

¹⁹ https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/May/IRENA_Renewable-Power-Generations-Costs-in-2018.pdf?la=en&hash=99683CDDBC40A729A5F51C20DA7B6C297F794C5D

²⁰ CanSIA's FIT/mFIT: 2017 Price Review https://www.cansia.ca/uploads/7/2/5/1/72513707/160802_-_cansia_submission_re_2017_fit-mfit_price_review_vf_20.pdf, Wood MacKenzie's U.S. Solar Market Insight (September 2019) and NREL's U.S. Solar Photovoltaic System Cost Benchmark 2018. <https://www.nrel.gov/docs/fy19osti/72399.pdf>

Full system cost includes the costs of solar panels, inverters, structural components (racking), electrical components such as conductors, conduit, telecoms, protection and control equipment, switchgear, civil infrastructure which includes roads and foundations, an automatic recloser and other interconnection facilities as well as the labour costs for development, construction and operation of the project.

Data sources showed that in all cases the solar panels account for less than 50% of the overall system costs.

The installed cost of solar for fixed tilt utility scale systems (>2MW) varied between USD\$0.90/W and USD\$1.06/W. The pricing for the Ontario market was higher at CAD\$2.27/W however this is likely due to the older data source and from smaller system sizes.

The cost of solar for rooftop system is substantially higher at \$2.50/W. This pricing is well understood in Nova Scotia. Recent analysis conducted by EfficiencyOne showed that that an average 9kW system would cost the homeowner approximately \$22,250 (before rebate) and have a payback of just over 10 years.

To make this a more attractive investment the SolarHomes rebate is available and is equal to \$0.85/Watt (installed DC capacity) up to 35% of eligible system costs (excluding HST) or \$8,500, whichever is less. For many systems, the rebate will equate to approximately 30% of the cost of the system.

Financial model inputs

A complex financial model is required in order to fully understand the financial aspects of a solar project. Key inputs to this model are the lifetime project costs, the electricity generated by the project and the PPA price. Other important inputs are debt service costs, desired equity return and interconnection costs. All of these inputs range widely depending on the project specifics. A simple calculation is provided below to estimate overall project cost and production. Given the early stage of the project and unknown inputs a more complex analysis is not of value.

Based on the higher of the installed solar costs above, USD\$1.06/W, a 6MW solar garden could be expected to cost approximately USD\$6,360,000 (CAD\$8,640,000 as of October 18th).

On their website, the department of energy and mines states that '*under ideal conditions, a well-sited solar array produces about 1,100 kWh every year for each kW of panels.*' It could therefore be assumed that a 6MW project would generate approximately 6,600MWh/year (or about \$460k in revenue at a PPA price of \$0.07/kWh [\$70/MWh]).

Tools such as RETScreen²¹ have been developed that can assist with a more in depth evaluation projects at early stages when so many inputs are undefined.

5.8. Evaluation of Solar Garden Feasibility

As highlighted in the overview of this section, the solar garden in its prescribed form is not feasible. The most important factor is the ability for the project owners to secure a PPA and sell the electricity

²¹ <https://www.nrcan.gc.ca/energy/retscreen/7465>

generated by the project. The section below describes options available to overcome this barrier. The point is also made that implementing a solar garden will not meet the town's objective of affordable energy due to the high project costs. Finally, this section examines the lack of control or influence that the town has on the electricity market and what role it can take to further its aims.

[Feasible route available to sell electricity generated by the project and to secure a PPA](#)

There are a limited number of potential pathways available to sell the electricity generated by the project and secure a PPA. There is also no policy in place to enable virtual net metering. Options to overcome these barriers are to:

- use Renewable to Retail policy
- negotiate directly with a utility to sell the power to them, or
- wait until policy is developed that enables developers to apply for a PPA with NSPI

[Renewables to Retail](#)

As described in the market assessment renewables to retail is complex, generally considered cost prohibitive and this framework has never been used.

[Negotiate with Utility](#)

NSPI: NSPI are working with another municipality on a pilot projects that uses the virtual net metering structure. They may be interested in working together with the town on a pilot for a community solar project.

AREA: AREA is well aligned with the town's values and energy objectives as its mandate is specifically to further the clean technology pursuits of its municipal owners along with other municipalities. The group has a deep understanding of the policy and regulatory framework within Nova Scotia and has the ability to develop, construct and operate renewable energy projects. Options for working with AREA to help meet the Town's energy objectives should be explored.

As an example, AREA already own and operate a 16MW wind farm in Ellershouse, Nova Scotia. They utilise Nova Scotia Powers transmission network to wheel the power to supply the utilities of Berwick, Mahone Bay and Antigonish. This is a complex arrangement that requires regular negotiations with NSPI and filings to the UARB.

New Bridgewater Utility: A new Bridgewater utility would be able act as the project developer and implement a solar garden or other renewable energy projects within the utilities service area. It would also be able to manage virtual net metering billing for its customers.

[Change in Legislation](#)

Two relevant policies are currently being developed by Nova Scotia's Department of Energy and Mines. If implemented, these would require a legislative change to the Electricity Act and Renewable Energy Regulations.

Policy to enable Institutions including Municipalities to purchase their electricity from 100%

renewable energy: The Federal Government of Canada recently signed a memorandum of understanding with the Province of Nova Scotia to supply 100% of their electricity use within Nova Scotia with renewable energy by 2025. To meet their needs approximately 30 to 40MWs of new renewable energy would need to be built within the Province.

The Department of Energy and Mines are currently developing the policy that would enable developers to implement new renewable energy projects and sell this electricity to the Federal Government. The process for selecting the new renewable energy projects is likely to be a competitive RFP process whereby the most cost effective projects win a PPA.

As part of this policy development the province are seeking other large electricity consumers who wish to use renewable energy to supply their electricity. This provides an opportunity for the Town of Bridgewater to meet their own municipal electricity needs with 100% renewable energy and potentially develop a project in the vicinity of the town. The policy would be limited to the electricity used by the municipal body of the town.

Department of Energy are consulting on the policy development this fall with the potential RFP for projects in late 2020 or early 2021. This timeline would enable the province to meet the federal deadline of 100% renewable energy by 2025.

The likely procurement structure for the renewable energy would be a competitive bid process. Because wind energy is a far lower cost of renewable energy this means that solar gardens are unlikely to be competitive in such a process.

Policy to enable Virtual Net Metering:

As discussed above the Department of Energy and Mines recognises that the barriers that exist to broader participation of individuals in solar energy and are hoping to develop a virtual net metering policy.

Approval to implement this policy has not yet been granted by the Minister and so there are no specific timelines attached to it.

Financial viability

As highlighted in the overview section, a solar garden does not meet the towns objective of affordability. The overall price for solar is higher than that of current generation fuels and other renewables such as wind energy and is discussed in more detail in section 5.7, Financial Details. An increase in fuel costs will lead to an overall increase in the energy charge for Nova Scotia ratepayers.

Role of the Town of Bridgewater and lack of control

One of the biggest barriers to implementation is that the Town of Bridgewater has a limited role in being able to fulfill its objectives with respect to larger energy projects, greater than 100kW. It has little or no control over policy development and project implementation. In addition, there is no obligation on a developer to partner with a CEDIF for the project.

The Town could act as a developer however it is limited by the Municipal Act that mandates that the Town have full ownership of any project. This model would not work with the CEDIF structure and therefore not achieve the Town's objective of maximising local ownership.

Landownership is one way in which to exert control on the project structure. However, this requires the town to own land that is ideal for the solar garden.

5.9. Alternate Options

Alternate options for energy projects are described below. These would meet the towns energy objectives as well as align with the aims of key stakeholders.

Projects

Pilot solar garden project for virtual net metering with a provision for low income participants

We recommend that the Town of Bridgewater work with the Department of Energy and Mines to implement a smaller pilot project for a solar garden that uses the virtual net metering structure and includes a provision for those living in energy poverty. This would provide broader participation to the existing enhanced net metering policy and explore partially how to address energy poverty issues.

The project would be smaller than that proposed, less than 1MW. This would require less capital investment and additional funding from the government of Nova Scotia. The project would be open to all residents of Bridgewater and include provisions for low income residents and those living in energy poverty. The SolarHomes incentive would be extended to virtual net metered customers who purchase a portion of the solar garden.

Provide the remaining electricity needs for Bridgewater with a cheaper form of renewable energy

While a smaller virtual net metered solar garden would meet the needs of Bridgewater residents who would like to participate in solar, it does not meet the overall electricity needs of the town of Bridgewater. To do this in a way that minimises the cost to residents we recommend that the town consider cheaper renewable energy technologies such as wind energy.

This could be realised through a project developed in partnership with AREA, who have the ability to retail electricity to Bridgewater residents or with NSPI through the policy currently being developed by the Department of Energy and Mines.

Role of the Town of Bridgewater

Building and maintaining strong relationships and partnerships with the key actors is critical to the Town's success. The town has built substantial social capital through its work in recent years and has already been very successful at getting the attention of key actors, NSPI being a good example. The town should work to strengthen these relationships and leverage them to their advantage.

Relationships between the Department of Energy and Mines, AREA and NSPI are key to implementing the towns objectives.

Advocating for policy that enables virtual net metering would help to realise the Town's long term energy objectives.

Although a new Bridgewater utility would give the town full control of the project this is potentially a very complex and expensive undertaking. Among other challenges, the new utility would have to negotiate a price for all the existing distribution assets within the new utility's service area, which would be a very public negotiation as it affects the remainder of the ratepayers and would set a precedent for future independent utility creation.

Some developers and ESCOs provide solar energy development as a service and this could be considered as an option for the town to further their expertise, should a new utility be formed.

5.10. Remaining Risks and Mitigating Strategies

Should the projects described above be successfully implemented then a number of risks remain. These risks and the mitigating measures are described below.

Table 6 – Remaining risks and mitigating measures for a Solar Garden

Risk	Mitigating measure
Risks to the Town of Bridgewater	
Investing in one project versus a portfolio. In the initial stages of development renewable energy projects are high risk and are not always feasible. Developers spread their risk by developing a portfolio of projects. In this model the town does not invest capital in the project, however it is investing substantial funds in furthering the towns energy objectives	Spread the risk between a solar garden and a wind energy project would help to mitigate this. Sharing project costs with an experienced developer also helps to mitigate this risk.
Risks to the resident participating in the project	
Investing in one project. In the initial stages of development, renewable energy projects are high risk and are not always feasible. Developers spread their risk by developing a portfolio of projects.	The CEDIF should invest in a number of different projects to spread the risk. Sharing project costs with an experienced developer also helps to mitigate this risk.
Lack of expertise and knowledge in solar energy	The CEDIF will help residents understand solar energy and the projects available to them. Working with an experienced and reputable developer who understands all of the key project components for a solar energy project will mitigate this risk.
Unknown project costs at outset	The developer will finance the early stage development costs and the CEDIF will invest later in the development stage when it can be demonstrated that the project is feasible, and costs are known.
SolarHomes incentive ending The SolarHomes incentive is a key component of the virtual net metering part of the project. This program started in June 2018 and is set for a 4 year period ending in June 2022.	The SolarHomes incentive must be secured through a contract with the Department of Energy and Mines. for the virtual net metering customers.
Potential changes to the enhanced net metering tariff as detailed in section 5.7, Financial Details	NSPI plan to file this revision in the near future and so any uncertainty on the net metering tariff is likely to be resolved by the time this project is developed

5.11. Conclusions

This study concludes that a 6MW Solar Garden isn't feasible for the Town of Bridgewater. This is because there is currently no route to secure a PPA for a solar project of this size in Nova Scotia. In addition, the cost of solar projects is high compared to that of other renewables such as wind energy.

To meet Bridgewater's needs we suggest that the Town explore the feasibility of:

- 1) a smaller solar project (<1MW) implemented as a pilot for virtual net metering that includes a provision for low income residents and those living in energy poverty. This project would be in partnership with the Department of Energy and NSPI and
- 2) supplying the remaining needs of the Town with a wind energy project either through the new policy being developed by the Department of Energy and Mines or developed in partnership with AREA.

These both reduce the overall capital costs required for the project and the virtual net metering project also provides a means to explore a structure that removes barriers and increases participation to an existing programs i.e. enhanced net metering and SolarHomes.

In order to realize these projects, the Town needs to leverage the social capital it has built over the recent years by forming strong partnerships with the key stakeholders.

6. Conclusion and Next Steps

The Verterra team worked with the Town of Bridgewater to define the business models for the energy projects; Neighbourhood Retrofits using an ESCO structure and a Solar Garden. The CEDIF structure was considered as a financing mechanism for both projects. A number of different models were presented to the Town for each project and the final models to be used in the study were selected.

The team studied the feasibility of these models, describing the business structure, the market and financial details and then went on to set out the steps for implementation. The study showed that the model selected for the Solar Garden was not feasible and so in this case alternate options were suggested.

Conclusions for the CEDIF and each project is provided in their respective sections. This section provides an overall conclusion and highlights areas where the projects cross over or are connected.

The projects crossover in several ways:

- the CEDIF can be used to fully or partially finance the neighbourhood retrofits or a solar garden granted the Town can establish satisfactory control-related mitigating strategies (note: a more comprehensive financial analysis is required for each project in order to decide if this is a suitable investment for a CEDIF) and
- solar rooftop or a solar virtual net metering project can be completed as part of the ESCO work

Throughout the study, the team referred to and made recommendations based on the four key objectives for Bridgewater's Clean Energy Investment Plan - clean, efficient, secure and affordable. Overall the Neighbourhood Retrofit and Solar Garden projects met the clean and efficient objectives by helping the community switch away from fossil fuels and by providing a greater number of efficient homes than would normally be achieved through a 'business as usual' approach.

The neighbourhood retrofit project can significantly help lower the market barriers preventing homeowners to improve the energy efficiency of their residence. Partnering with ESCO presents a great opportunity for Bridgewater to revamp its housing stock and meet their objective to reduce their citizens' dependence on expensive energy. In order to do so, the Town will need to review the available financing mechanism, including the CEDIF, to identify the best option. This chosen option should minimize the interest costs for the participants, while minimizing the financial risk for the Town. Lowering the interest cost and leveraging the ESCO model for the retrofits to be repaid by the savings on the participant energy bill also increases the affordability of the measure. Furthermore, guaranteeing the savings for the repayment of the loan provides security to the participant.

The high costs of solar do not make energy more affordable and a 6MW Solar Garden will contribute to increase energy costs for residents in the long term. A more affordable approach would be to develop a smaller virtual net metered solar garden that could enable residents who have the resources and interest to do so, purchase part of that solar garden. The balance of the town's electricity needs could then be met with a more cost effective clean technology such as wind energy. Further work on this revised approach is required to understand its feasibility.

Residents with low income and those living in energy poverty require tailored approach for both projects.

Legislative barriers currently prevent the Solar Garden from selling electricity generated from the project and securing a PPA. Potential changes to the CEDC Regulations are likely, due to the expiration to the Equity Tax Credit Act in 2022. This could result in changes CEDIF rules and process.

Further work is required on both projects to confirm the feasibility, define the project parameters and funding sources before implementation.

The partnerships that the Town of Bridgewater build and maintain are crucial to the successful implementation of their energy projects. The social capital that the Town has built through its work in recent years and through winning the Smart Cities Challenge has attracted the attention of key stakeholders. The town should leverage this to their advantage and work to strengthen these relationships.

APPENDIX A – Initial Models for Energy Financing