ENERGY POVERTY REDUCTION PROGRAM

Final Application to the
Smart Cities Challenge
$5M Prize Category

SMART CITIES CHALLENGE

ENERGIZE BRIDGEWATER

town of BRIDGEWATER

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More information:
Bridgewater.ca/SmartCities

MESSAGE FROM THE MAYOR

Mayor David Mitchell

Our community will lift its residents out of energy poverty, starting by reducing the energy poverty rate by 20% by 2025.

As Mayor of the Town of Bridgewater, that is a challenge statement that makes me proud to serve my community. The fact is, Bridgewater is ready for a massive shift toward a smart energy economy by becoming a Smart Community. Through our Energize Bridgewater program, our community has demonstrated nationally-recognized leadership in understanding and planning a pathway toward a new kind of energy economy – one where energy services are universally available and affordable, clean and efficient, and protected from supply volatility and the coming ravages of climate change.

Through our proposed solutions, we will make sure that those among us who are most vulnerable, and least able to afford the transition, are the first ones we help across the threshold. Those residents have the most to lose, and through the betterment of their lives, our community has everything to gain.

The stories shared by our community partners and residents have made it clear that energy poverty is having a profound and debilitating impact here in Bridgewater. It systematically strips as many as 40% of our residents of their dignity and damages the physical and mental wellbeing of young and old alike.

Yet, the real, lasting, and practical solutions to this problem are so close at hand that we can already see them emerging. Through this Challenge, our town will design and prototype a new model of municipally-led accessible and affordable energy management services for our community's most vulnerable residents. Dramatic improvements to housing, transportation, and community services will be driven by a self-financing investment program and a coordinated access system, all powered by connected technologies.

We've been innovative. We've been bold. We've made change happen. However, nothing we've done to date has come close to achieving the impact of our proposed Energy Poverty Reduction Program. At the same time, everything we've done to date has prepared us to make this leap.

We need help in launching this bold idea. By selecting Bridgewater as the winner in the $5 million Smart Cities Challenge prize category, Canada will support a powerful new demonstration of technology-enabled community-based problem solving that addresses both the poverty crisis and the climate crisis at the same time. Bridgewater is ready to show Atlantic Canada, and the nation, how it can be done.

David Mitchell
Mayor, Town of Bridgewater

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EXECUTIVE SUMMARY

Our community will lift its residents out of energy poverty, starting by reducing the energy poverty rate by 20% by 2025.

Bridgewater's growing need for clean and reliable energy is limited by our ability to afford it. Our estimates show that the burden of energy poverty is carried by 38% of Bridgewater households that are unable to meet their basic energy and transportation needs. Many more are at risk of falling into this category as it's expected that energy prices will continue to trend upwards. Bridgewater is approaching this issue through systematic change at a household, neighbourhood, community, and regional level by, treating access to affordable and secure energy as a requirement for healthy living. To ensure residents can live free of the constant threat of energy poverty, our program uses energy management as a smart city approach for resident empowerment.

Bridgewater envisions an Energy Poverty Reduction Program that uses data and connected technology to bring together and drive energy savings to create financial returns for households and property owners. This system also provides coordinated access to community supports for households experiencing energy poverty. And finally, a financial system that supports extensive investment in energy efficiency solutions. Bridgewater's impactful, comprehensive approach to community-based problem solving and transformational change is highly transferrable to communities across the country that are struggling with energy poverty challenges of their own. Municipalities are uniquely positioned to be at the forefront the of shifting world of energy systems, pairing data and connected technologies for community services that ensure underserved populations are the first beneficiaries of the energy transition.

1. **Vision:** why this matters, and overview of services
2. **Performance Measurement:** detailed program descriptions, deliverables, and outcomes
3. **Governance:** accountability structure, and program partners
4. **Project Management:** team members and risk management
5. **Technology:** data platforms, connected technologies, and energy solutions
6. **Data and Privacy:** how information will be used, safeguarded, and shared
7. **Engagement:** community consultations up to now, and going forward
8. **Implementation Phase Requirements:** fulfilling national expectations
9. **Financial:** costs, revenues, innovative financing solutions, and how we used the Finalist Grant

   Appendix: letters of support

TOWARD A FUTURE FREE OF ENERGY POVERTY

Bridgewater, like most communities across Canada, has a growing hunger for energy. Our energy needs are everywhere – cellular phones, warm showers, food refrigeration, heat during the frigid winters, lights, laundry, and computers. With our energy needs increasing, many households in Bridgewater are unable to afford the rising costs of this service and are having to make impossible decisions to balance monthly household budgets.

As a 'have not' province, Nova Scotia has struggled for decades with the issue of widespread poverty and low incomes. Given our region's and our community's overall economic challenges, energy insecurity adds a real and growing threat to our ability to meet our basic needs. When we asked our community partners to tell us how urgent energy poverty issues are in relation to other issues in Bridgewater, Family Service of Western Nova Scotia stated: "this may be the least talked about yet most significant and productive structural, community, and individual issue we could tackle." The challenge of energy poverty is daunting and overwhelming, yet the Town of Bridgewater is firmly convinced that it is possible to create a solution to both the poverty crisis and the climate crisis by using technology-enabled community-based problem solving.

Energy poverty isn't just lingo for Bridgewater – it is a real problem for real people. Our program team has spent considerable effort in defining this term to be meaningful to our residents, especially those who identify with its hardships. In our initial application, we **defined energy poverty using the indicator of a household spending 10% or more of its after-tax income on energy, with fuels and electricity for the home as well as transportation counting toward energy expenditures.** We maintain that this definition is accurate, but understand that energy poverty can also be so much more.

Bridgewater and its community further defines **energy poverty based on access to affordable and secure energy in their home, neighbourhood, community, and region. The greater the degree of insecurity or lack of access, the greater the risk that the household will experience energy poverty**[1] This shift in perspective lifts the burden of energy poverty mitigation from being focused solely on the individual household, toward including community and regional infrastructure and services.

With this new emphasis on risk for energy poverty, research was required to determine what exactly the risk factors are and how this affects Bridgewater's vulnerability. Table 1.1 describes the energy poverty risk factors identified by our community.

Systematic Levels of Energy Poverty Risk

Risk Level	Description
1. Household	Household-level risk factors include personal risk influences such as the energy efficiency of the home and transportation means as well as general poverty risk factors such as income, health, literacy, family supports, etc.
2. Neighbourhood	Neighbourhood-level risk factors include neighbourhood energy systems, walkable streets, transit service, etc., as well as the energy efficiency of multi-unit residential buildings (MURBs).
3. Community	Community-level risk factors include community-scale energy and transportation systems, the energy efficiency of the overall housing stock, community support services, social stigma, and whether the community has developed a coordinated response to the problem of energy poverty.
4. Broader Systems	Broader systems-level risk factors include the price of energy in the region; the availability of secure, affordable energy technologies; employment opportunities; economic diversity, etc. It also includes provincial and federal programs and policies that may remedy or exacerbate energy poverty.

Table 1.1

[1] This model of energy poverty aligns well with the Social Determinants of Health and other health risk and inequality models used by modern public health initiatives including Health Canada.

As Bridgewater gained a greater understanding of energy poverty during the final application phase, the breadth of its impact on our community became startlingly clear. Early research indicated that as much as 40% of Bridgewater's population may be experiencing energy poverty in some form. A community census was undertaken to validate residents' lived experience with energy poverty. From that census, we can confirm that 38% of residents currently experience, or are highly at risk of, energy poverty. Add to that the recent Statistics Canada report that the number of Nova Scotian children in poverty has risen from 14% in 2016 to 17% in 2017[2] and it is very clear that the problem of poverty in our community is not going away and requires urgent and responsive action.

Bridgewater is a community driven to overcome our challenges through deep engagement and innovative projects. To demonstrate our sincerity in creating real and meaningful change, Bridgewater commits itself to the following Challenge Statement:

Our community will lift its residents out of energy poverty, starting by reducing the energy poverty rate by 20% by 2025.

[2] Statistics Canada, accessed on February 28, 2019 https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1110013501

Targeted Energy Poverty Reduction Rate by Program Year

Year	2020-21	2021-22	2022-23	2023-24	2024-25	2029-30 After 5 more years
Population *(projected)*	9,031	9,156	9,211	9,266	9,320	9,583
Households Experiencing Energy Poverty *(projected, based on current 38.5% energy poverty rate)*	1,659	1,682	1,692	1,702	1,712	1,760
Number of Households Helped *(Cumulative)*	0	50	125	225	350	1,100
Energy Poverty Rate Reduction *(Cumulative)*	0%	3%	7%	13%	20%	62%

Table 1.2

With a five-year implementation horizon for the Smart Cities Challenge, the community has designed a program that will reduce the energy poverty rate in Bridgewater by 20% by 2025, while maintaining the long-term goal from the original challenge statement to lift 20% of its residents out of energy poverty within 10 years. With a $5 million grant from Smart Cities Challenge, the Town is confident that change can be realized within a single generation. And with a revised start date of 2020, the Town is eager to begin this very important work.

Based on the current and projected future population of the community, our Challenge would mean lifting 350 households out of energy poverty by fiscal year 2024-25. The community would then be on track to cut its overall energy poverty rate in half by 2028, and by as much as 62% over a 10-year timeframe (by fiscal year 2029-30). Our anticipated progress is illustrated in Table 1.2.

The Town of Bridgewater envisions a future for our community where energy poverty reduction strategies work in tandem with clean and efficient energy systems to confront energy poverty at its core – the very source of the energy itself. With assistance from the Smart Cities Challenge, we will overcome existing barriers to achieve our community vision:

By 2050, Bridgewater's green, self-supportive economy will be securely powered by clean and efficient energy systems. The community's conscious investments into energy infrastructure, equipment, training, and education will make energy affordable and accessible for all members of the community, and contribute to our town's prosperity and resilience in the face of a changing climate and world.

- Bridgewater's Energy Shift vision, Community Energy Investment Plan (2018)

Our commitment to this project will empower our community to take a leadership role in combating energy poverty, which is a daily threat to our sustained health and economic viability. The energy poverty solution is our most ambitious vision to date and we can't wait to show the rest of Canada that even small towns like Bridgewater can lead a change of this magnitude.

ENERGY MANAGEMENT AS A SMART CITY APPROACH

Households experiencing energy poverty know first-hand the critical importance of managing their energy consumption and therefore their expenses. The stories we have collected from the community have been truly stunning in this regard: we have documented families turning off their heat for days at a time in the middle of winter to be able to afford their next power bill, or going without light and powered devices at the expense of their health and wellbeing. From an energy management perspective, this has informed us that Bridgewater residents who experience energy poverty often already have well-practiced skills in energy management. What they tend to lack is energy efficient home heating systems and other infrastructure to work with, and adequate control over their home and transportation options.

> "I reduced my power bill from $120 to $60 by unplugging everything when I am not using it. I don't really use lights, only when company is over. I use my phone as a flashlight." – RESIDENT, TOWN OF BRIDGEWATER

Bridgewater's Energy Poverty Reduction Program is well matched to a smart cities approach, as it aims to restore control to our residents over their energy costs and infrastructure by leveraging the fundamental benefits that data and connected technology have to offer. Throughout this application we will reinforce how a small town can be a smart city by showcasing:

- how data can be used to create open and strong communities inclusive of the most vulnerable members and how access barriers to this data can be overcome (**See Data and Privacy chapter**);
- how data and connected technology can be a uniting force to bring together the municipality, other levels of government, government organizations, and private enterprise (See **Technology chapter**);
- how the innovation of one community can be transferable to our neighbours across the nation (see **Performance Measurement** and **Project Management chapters**);
- how connected technology enables collaboration between service providers and industry for the betterment of society (See **Governance chapter** and **Data and Privacy chapter**).

Through the program, the Town of Bridgewater will provide advanced new **energy management support services** to 2 primary clients:

1. Bridgewater households who are highly at risk of energy poverty, currently estimated at 38% of Bridgewater's population.
2. Bridgewater property owners whose properties are inhabited by households-at-risk of energy poverty. Housing energy efficiency is a key risk factor in determining whether or not a household will experience energy poverty. Groups of property owners can be clustered together to receive neighbourhood-scale energy services and solutions.

In situations where the households-at-risk own the homes they live in, the two clients are one and the

same. For a large number of households-at-risk, however, home ownership is not affordable, and rental housing is their only option. In this case, the property owner is the household's landlord. In Bridgewater, 43% of residents rent their home (Statistics Canada, 2016). We anticipate that the majority of property owners in the programwill be landlords.

As we explain in the rest of this application, the Energy Poverty Reduction Program builds on existing municipal service competencies, data systems, and infrastructure. As such, this service concept is widely replicable and transferrable to other communities where municipalities already play a critical role in community service provision.

For those experiencing energy poverty, access to the technology and data to manage their energy needs is often very limited. For the most vulnerable, interfacing with a human rather than a dashboard is the most practical way to assist with assessing their needs and solving the immediate problems caused by energy poverty. Not having or being at risk of losing their shelter, these residents will need access to a range of community, health, employment, and other services, not just services that relate to housing and transportation.

The program will establish navigators for the different system components of the Energy Poverty Reduction Program. These navigators will be human interfaces for households-at-risk, connecting them with the services they need, including the energy management services offered by the Town of Bridgewater. Coordinated Access Systems are widely replicable and transferrable to other communities. Additional information is provided in the following chapters.

INNOVATION AT THE CORE

The design of the Energy Poverty Reduction Program combines 3 innovative mechanisms to reduce risk of energy poverty:

1. Connected technologies: forming the backbone of the service concept, connected technologies provide a technological 'engine' that drives energy savings to create financial returns for the households and property owners, and streamlines client intake and access to community services.
2. Coordinated access: a social support 'engine' that keeps clients connected to the program and coordinates access to the various additional community supports households-at-risk may need.
3. Financial investment: building on Bridgewater's experience developing a fully-costed approach to energy transition, self-financing energy improvements provide a financial 'engine' that supports extensive investment in energy efficiency solutions.

Community Working Group members view a presentation at a Smart Cities Challenge workshop.

Core Design Innovations

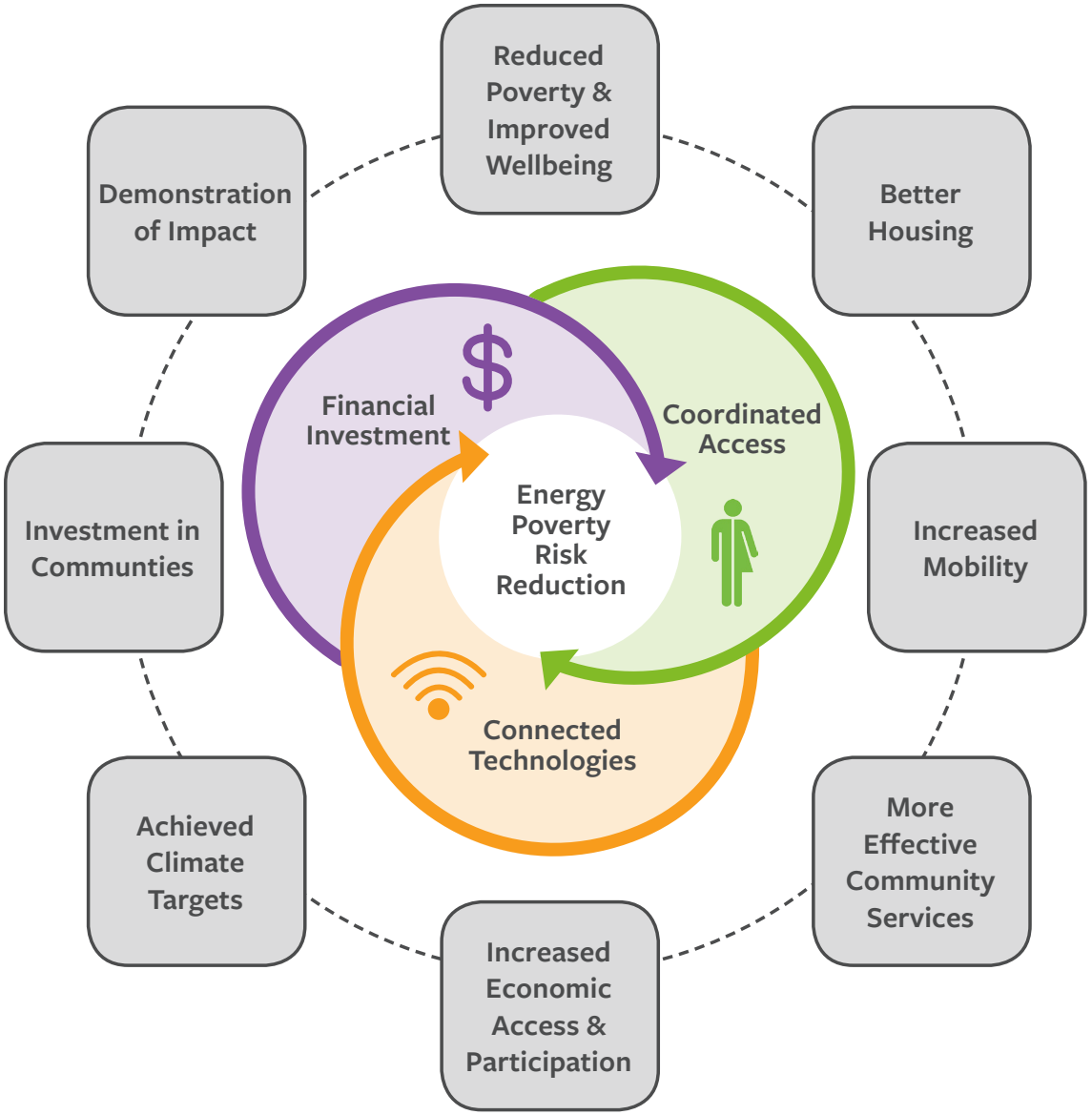


Diagram 1.1

These 3 innovations mutually enable and strengthen each other's outcomes. This synergy drives systematic and continuous improvements to housing, transportation, and community services, thereby reducing energy poverty risk and improving many dimensions of community life. These innovations and their anticipated outcomes are captured visually in Diagram 1.1.

A GREATER COMMUNITY IMPACT

Starting with our initial application, we have embarked on a deep and meaningful discussion with our community. From households-at-risk, to community service organizations, to landlords and energy utilities, the Town has listened to lived experiences in our community and developed a program that will positively impact a multitude of community needs. Consequently, our program outcomes have grown substantially. Table 1.3 summarizes the anticipated outcomes by category, and indicates their relationship to our initial application:

The expanded outcomes demonstrate a greater understanding and articulation of our Challenge to lift our residents out of energy poverty. Cumulatively, they reflect the community's urgent call for transformative change at all levels to achieve this goal. The outcomes are transferrable to other communities with very different local and regional contexts compared

Anticipated Outcomes by Category

Outcome Category	Outcomes	Relation to Initial Application (April 2018)
Reduced Poverty & Improved Wellbeing	1. Reduce energy poverty rate	Challenge statement
	2. Reduce poverty	New
	3. Improve health of residents	Outcome 6
	4. Increase residents' quality of life	New
	5. Increase residents' sense of empowerment and inclusion	New
Better Housing	6. Increase energy security for residents	New
	7. Reduce and stabilize energy expenses for residents	Outcome 4
	8. Improve relationship between tenants and landlords	New
	9. Improve residential energy management practices	New
Increased Mobility	10. Improve residents' mobility	Outcome 3
More Effective Community Services	11. Improve residents' access to community services	New
	12. Improve community service delivery efficiency and effectiveness	Outcome 7
	13. Shift community service spending toward systemic solutions	Outcome 8
Increased Economic Access & Participation	14. Increase residents' income	Outcome 8
	15. Increase residents' participation in the green economy	Outcome 8
Achieved Climate Targets	16. Reduce greenhouse gas emissions	New
	17. Shift to efficient, clean, affordable, and secure energy	New
Investment in Communities	18. De-risk affordable energy investments in the community	New
	19. Successfully fund energy poverty reduction solution	New
Demonstration of Impact	20. Demonstrate feasibility and effectiveness of program	New
	21. Inspire structural energy poverty solutions at the Provincial and Federal levels	New
	22. Inspire other communities to adopt energy poverty reduction efforts	New

NOTE: No outcomes have been lost between the initial and final applications. Outcome indicators and targets are described in detail in the **Performance Measurement chapter.**

Table 1.3

to Bridgewater. While other communities may need to make modifications to the specific indicators used to measure progress based on locally available information, the outcomes are universally meaningful, measurable, monitorable and well-suited to a smart cities approach.

APPLICATION REFINEMENTS TO BETTER ACHIEVE OUTCOMES

In order to lift our residents out of energy poverty, the design of the Energy Poverty Reduction Program has undergone significant improvement and refinement. Whereas it was originally proposed as a set of 7 interlocking sub-programs, the updated program design has been simplified into a set of 5 connected services, designed with universal transferability and application to other communities in mind.

Program services are explained in the sections that follow:

Coordinated Access System

This service provides a single coordinated intake process for program participants, with a special focus on households-at-risk who may be in need of acute and emergency services, underserved subpopulations, as well as those who can benefit from preventative services. A common assessment tool (VI-SPDAT[3] or similar) aids the intake and referral process, and encourages

uniformity within and between communities. Using a trauma-informed service provision lens and specialized training, multiple system access points and outreach services refer new and existing clients to any community services they may require, including: protective; health; social; housing and emergency shelter; transportation; financial; employment; education and training; accessibility; and other related community and government services. Among these services are the services provided by the Energy Poverty Reduction Program.

Energy Poverty Reduction Program Architecture

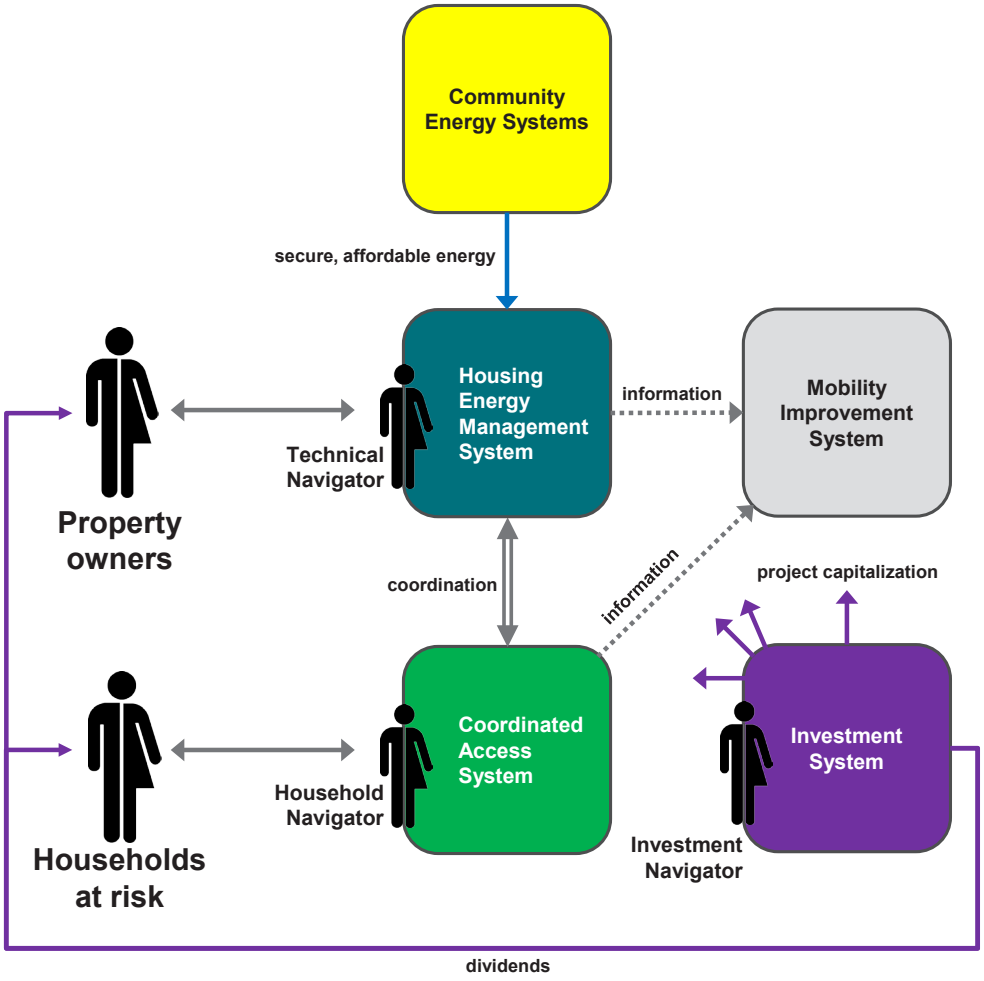


Diagram 1.2

The service consists of 2 sub-programs that are explained in detail in the **Performance Measurement chapter: Partnership Coordination, and Coordinated Access Service Provision.**

Communities that already have a Coordinated Access System in place can leverage those existing services.

Relationship to Data & Connected Technologies: we propose that this service make use of the nationally-accessible Homeless Individuals and Families Information System (HIFIS), hosted by Employment and Social Development Canada (ESDC), as its core data platform. This will facilitate data exchange with community service providers as well as the municipal data platform that will house the rest of the Energy Poverty Reduction Program. The use of this national database would also facilitate inter-community collaborations and performance metric comparisons.

[3] Developed by Org Code Consulting, this assessment tool is widely used in Canada for planning and prioritizing service provision to underserved populations particularly for housing and shelter needs. The tool is already in use in Bridgewater.

Housing Energy Management System

This service provides property owners with turn-key energy monitoring, planning, management, retrofit, and financing services. Services address retrofits to existing housing stock, as well as services and incentives to support the construction of highly efficient new housing units. The target of the program is to achieve a universal energy performance improvement of the community's housing stock of approximately 60%, and to further supplement that with an additional 30% in renewable energy generation, for a total imported energy cost reduction of 90%. Individual energy performance targets will be set for participating properties as part of the client intake process, and will be updated periodically as new energy management solutions become available.

The service consists of 3 sub-programs that are explained in detail in the Performance Measurement chapter: **Program Coordination & Administration, and Housing Retrofits and New Construction.**

The service is designed to leverage existing municipal competencies in asset management and service provision. It also enables communities to leverage and stack existing and emerging energy efficiency programs, whether those have been implemented on the municipal, provincial, or federal levels. In Bridgewater's case, the programming offered through this service will build heavily on, and significantly expand, Efficiency Nova Scotia's energy efficiency services and financial incentives aimed at improving the province's housing stock.

Relationship to Data & Connected Technologies: existing municipal property and financial management software will be used as the core data platform for this program, with the addition of an Energy Management Information System (EMIS) module, and an expansion into Real Time Operations (RTO) functionality. The EMIS interfaces with a network of connected technology points to provide the core energy management functions of energy monitoring, forecasting, and control. The system's functionality is expanded gradually over time as new energy management solutions and community energy systems come online. In Bridgewater's case, the proposed data platform is TownSuite, the Town's current municipal management software.

Community Energy Systems

Supplementing energy improvements in individual homes, this service plans and develops neighbourhood and community-scale energy systems such as solar farms, district heating systems, and microgrids. These systems feed secure and affordable energy to participating properties, and earn dividends for their investors. The service consists of 2 sub-programs that are explained in detail in the **Performance Measurement chapter: Utility Grade Service Provision, and Neighbourhood & Community Scale Energy Systems.**

Communities with their own energy utilities can leverage those existing services to deliver these functions. As community-scale energy solutions will differ based on local and regional context, specific applications need to be tailored to the needs of individual communities. In Bridgewater's case, the community is in the process of exploring the development of its own energy utility, as well as the potential procurement of utility-grade services from an existing utility in the area. Feasibility studies for the selection and implementation of community-scale energy systems are included in the first few years of the program, with a 6MW "solar garden" as the preliminary choice for community-scale energy technology in this proposal.

Relationship to Data & Connected Technologies: community-scale energy systems are powered and controlled by connected digital systems, allowing for a new generation of advanced net-metering, microgrid, and local energy market applications. These functions can effectively integrate into the

municipal property and financial management software described above.

This service receives information from the Coordinated Access System and the Housing Energy Management System to plan and implement mobility improvements based on community needs. As municipalities are typically responsible for neighbourhood and community-scale transportation systems, this service will typically integrate with and expand on existing municipal services.

The service consists of 2 sub-programs that are explained in detail in the **Performance Measurement** chapter: **Program Coordination & Administration, Transit System Improvements,** and **Active Transportation Improvements.**

Communities with their own road, trail, and public transit infrastructure would tailor this service to their own infrastructure and services, which may also include regional transportation planning. In Bridgewater's case, intra and inter-community public transit services and active transportation infrastructure improvements are the primary areas of focus, though paratransit and ride sharing services may eventually form part of the service planning model as well.

Relationship to Data & Connected Technologies: mobility improvement planning efforts are enhanced by the use of data from the Housing Energy Management System and the Coordinated Access System through the use of spatial data and transportation network routing and planning, as well as mobility indicators and feedback from clients. These functions can effectively integrate into the municipal property and financial management platform.

This service funnels funds from investors into the services described above. Program investors are categorized into (1) social value investors, which include governments and charitable organizations, and (2) financial investors seeking a return on investments from housing and community energy systems. Using creative financing tools, property owners and households-at-risk can also become investors in the system and receive dividends.

The service consists of 2 sub-programs that are explained in detail in the **Performance Measurement** chapter, and expanded on in the **Financial chapter: Municipal Capitalization System, and Financial Investment Vehicle.**

This service builds on existing municipal competencies related to budgeting and asset management. Communities that work closely with external fundraising entities can leverage those relationships to build this system, and those municipalities that are permitted by legislation to use innovative capitalization strategies (e.g. community bonds or green bonds) may make use of those capitalization opportunities as well. In Bridgewater there is no existing Financial Investment Vehicle to leverage, so the implementation of this service includes a period of feasibility assessment and organizational development. Emerging energy financing services, including Energy Services Companies (ESCOs) are anticipated to play a significant role in the capitalization of these improvements both in Bridgewater and across the country.

> "We can't judge people like 'How did you forget your child's mittens today?' when there may be water coming in their window, the landlord may not be available; they may be cold, they may be hungry."
> – COMMUNITY SERVICE ORGAIZATION

Relationship to Data & Connected Technologies: financial planning efforts and investment opportunities are calculated and driven by the robust EMIS system that forms the core function of the program's data system. Financial planning and management for the

program can effectively integrate into the municipal property and financial management software described above. External financial investment systems will rely on external data platforms. In Bridgewater's case the external platform still needs to be determined, though for planning and budgeting purposes, the MaRS Centre for Social Innovation's SVX platform is used as the placeholder system for this service.

The relationship between these revised programs and those described in the initial application are summarized in Table 1.4.

The restructuring of the Energy Poverty Reduction Program has significantly improved its implementation potential, as well as improved transferability, scalability, and replicability to other communities.

Original and Revised Program Components

Program Components As Originally Proposed (April 2018)		Revised Program Components
Theme 1: housing and transportation investments	Program A: local clean energy investment system	Investment System
	Program B: comprehensive retrofit improvement program for low-income homes and rental properties	Housing Energy Management System
	Program C: regulations and incentives for the construction of new high-energy-performing affordable rental units	Housing Energy Management System
	Program D: public transit and active transportation service and infrastructure improvements	Mobility Improvement System
Theme 2: resident engagement and capacity building	Program E: engagement program for residents*	Coordinated Access System and Housing Energy Management System
	Program F: clean tech sector trades training program for residents	N/A
Theme 3: partner collaboration and capacity building	Program G: data sharing and collaboration program for partner organizations	Coordinated Access System

Table 1.4 *Program F, the clean tech sector trades training program for residents, was found to be impractical at this time, as local trades training organizations were unable to commit to trades training outcomes and timelines. Instead, the Nova Scotia Community College has provided a letter (see **Appendix**) indicating its ongoing support for the Energy Poverty Reduction Program, and its willingness to explore integration with its Work Integrated Learning courses, the Women Unlimited program, and participating in the Coordinated Access System in order to provide information, where applicable, around training opportunities. The College continues its interest in the creation of new programming options in the areas around Green Energy and Technologies, but this will require additional study and development before the College is able to confirm its offerings.

INNOVATIONS SUITABLE FOR NATIONAL DEMONSTRATION

This high-impact, comprehensive approach to community-based problem solving and transformational change is highly transferrable to communities across the country that are struggling with energy poverty challenges. As the world shifts its energy systems, these transitions will be inherently challenging as economic disruption occurs and less affluent Canadians are saddled with the remnants of outdated or legacy energy systems, whether those are housing technologies or energy systems from the last century. Municipalities are uniquely positioned to take advantage of emerging energy systems, pairing them with data and connected technologies, and delivering robust and accountable services that improve affordability and quality of life for historically underserved populations. In this way, municipalities can play a critical new role in facilitating a transformation for our communities, especially their most vulnerable members, through the coming energy shift.

By selecting Bridgewater as the winner in the $5 million Smart Cities Challenge prize category, Canada will support a powerful new demonstration of technology-enabled community-based problem solving to its stated objectives of addressing both the poverty crisis and the climate crisis at the same time.

PERFORMANCE MEASUREMENT OVERVIEW

To support the ambitious scope and complexity of Bridgewater's Energy Poverty Reduction Program, we have developed a methodical implementation and performance measurement schedule. The following section outlines the activities and outputs, including deployment schedule and anticipated deliverables for each of the 5 systems that form the overall Energy Poverty Reduction Program: Coordinated Access; Housing Energy Management; Community Energy; Mobility Improvement; and, Investment.

An evaluation framework is proposed and detailed in Table 2.9. A logic model consisting of activities, outputs, and outcomes has been developed to guide the implementation process and allow for ongoing evaluation of program performance and quality. This logic model is illustrated in Diagram 2.1. Table 2.10 details the program outcome indicators, associated measurement methodologies and tracking systems.

Risks associated with the Energy Poverty Reduction Program are comprehensively described in the **Project Management chapter,** which also includes the risk management strategies and associated course correction checkpoints for the program.

PROPOSED PHASING AND PAYMENT SCHEDULE

As detailed in the **Project Management chapter,** progress toward our outcomes are being consistently monitored and measured. To implement the program and achieve the outcomes described above, we propose to receive Infrastructure Canada's grant contribution in 3 installments that are closely tied to the program budget. The contribution amount will cover core program costs (development, administration, and operations, minus any municipal in-kind contribution).

The Energy Poverty Reduction Program consists of a set of 5 interconnected systems that will be deployed in 4 phases; each building off each other with some overlap in the early phases. As a small community with limited resources and no ability to draw significantly from the tax base to implement the program's development, administrative, and operating costs, we propose that each contribution will be provided up-front for the next phase of work to avoid incurring project losses or debt. Therefore, the first contribution will be at the start of the project, while the second and third contributions will be tied to achieving program outputs for Phases 1 and 2, respectively. Table 2.1 describes the timing of phases, core program costs, contribution amounts and the number of households served. Households-at-risk are less likely to also be the property owner. So the number of households served will account for both the inhabitants and the property owners. Program phases:

- **Prototype Program Setup -** This phase includes partnership and governance development; detailed service and technical design; service procurement; client consultation; establishment of risk management and quality control systems and the evaluation framework; as well as a comprehensive Privacy Impact Assessment (PIA) on the detailed program design and an overarching privacy policy.

- **Prototype Program Testing & Refinement -** This phase involves a gradual ramping up of client intake; continuing design and implementation of services and technologies; and monitoring and evaluation of results. Program outcomes become measurable by the end of this phase.

- **Final Program Activation -** This phase requires the finalization of program service design and technical components; extensive documentation of program outcomes; and the development of learning materials for other communities and senior governments. The completion of the Final Program Activation phase marks the end of Smart Cities Challenge contribution agreement.

Program Phases, Core Costs, Contribution Conditions, and Households Served by Fiscal Year

Fiscal Year	2020-21 Year 1	2021-22 Year 2	2022-23 Year 3	2023-24 Year 4	2024-25 Year 5	2025-30 (5 years) Long-term
Phase	1: Prototype Program Setup					
		2: Prototype Program Testing & Refinement				
					3: Final Program Activation	
						4.Program Maturity
Core Program Costs Plus Contingency	$1.4 million	$1.25 million	$0.75 million	$0.8 million	$0.8 million	
Contribution Request	$2.65 million at start of year		$1.55 million at start of year		$0.8 million at start of year	
Proposed Contribution Conditions	None		Phase 1 outputs achieved		Phase 2 outputs achieved	
Households Served	0	50	75	100	125	750 over 5 years
Relationship to Smart Cities Challenge (SCC)	Within SCC Program & Funding					After SCC

Table 2.1

Coordinated Access Service Provision Activities and Outputs

Activity	Year 1	2	3	4	5	long term	Outputs
Detailed program design							• program design complete
Staff hiring & training							• staff hired & trained
Database setup							• data platform created
Program established and serving clients		50 clients	75 clients	100 clients	175 clients	750 clients	• Clients (households and/or property owners) served by program
IT system maintenance							• data and IT systems maintained (ongoing)

Table 2.2

- **Program Maturity -** This phase includes ongoing client intake; program evaluation and improvement as well as the integration of new and emerging community energy technologies and solutions.

Coordinated Access System

PROGRAM ACTIVITIES AND OUTPUTS

COORDINATED ACCESS SYSTEM PROGRAM ACTIVITIES AND OUTPUTS

This program pulls together the partner organizations and service providers required to design and deliver a successful Coordinated Access System. It also maintains relationships and information sharing between the partners. As a service that will be contracted out to a qualified third-party organization, the Town of Bridgewater will work collaboratively with its community partners to develop the scope of the service, and to establish quality control parameters and performance metrics. In doing so, we will work closely with experts and expert organizations in this field, including provincial and national agencies with interests and expertise in coordinated access services.

- **Partnership development:** partner agencies will be brought together and will sign a memorandum of understanding for engaging in the Coordinated Access System.

Partners will be consulted through a series of workshops on the service model, process work flow, and governance structure. Existing community collaborations to leverage include the Lunenburg County Community Hub which already brings together a wide spectrum of government and non-profit service providers in a coordinated continuum of practice to support early intervention and health promotion efforts as well as to coordinate case care.

- **Program evaluation & improvement:** partners participate in ongoing program evaluation and improvement, with key service delivery partners actively participating in the evaluation process (see Overall Program Management later in this section). Evaluation will lead to periodic adjustments to the processes, policies and procedures of the service. Evaluation processes will be led and supported by staff and will involve client feedback on a regular basis.

Third party service providers will participate in an open procurement process for the provision of this service. Starting with a request for expressions of interest and culminating in a long-term service agreement, the Town of Bridgewater and its partners will assess service providers' expertise, capacity, and ability to deliver quality services that match the desired program scope. Service provision for this program may be paired with, and enhanced through, provision of Coordinated Access Services to a larger clientele than is envisioned through the Energy Poverty Reduction Program (e.g. for clients outside of Bridgewater). However, sufficient capacity and funding will need to be evident to ensure that program quality is maintained. Client services begin in 2021-22, and increase annually for each of the 3 remaining program years until the program reaches its mature state. The program partners will work closely with the service delivery organization to ensure that program quality is maintained; that information sharing and privacy obligations are met; and the program outcomes are being achieved.

- **Detailed program design:** building on the scope of work for the procured services, the service delivery partner will undertake the comprehensive design of the Coordinated Access Service. Specialized partners may be engaged in this stage, such as the Family Service of Western Nova Scotia or the Affordable Housing Association of Nova Scotia, both of which are currently active in developing coordinated access systems for their constituencies.
- **Staff hiring & training:** qualified staff, known in this program design terminology as the "Household Navigator(s)", will be hired and trained by the service delivery organization to support program design and to deliver the coordinated access service. Staff will be Clinical Social Workers who are licensed to practice in Nova Scotia. The service delivery partner will start by hiring 1.5 FTEs, which it will be able to expand to 2 FTEs by year 4. Staff will receive training in the specific clinical and administrative functions that will be required by the Energy Poverty Reduction Program, and they will be trained to use the program's data platform.
- **Database setup:** the Homeless Individuals and Families Information System (HIFIS) is readily customizable by service providers, and will be set up with the appropriate data entry forms and reporting forms required for the Coordinated Access System. As a free service with plenty of user support, this effort will be primarily carried out in-house by the Household Navigator(s), with an allowance for technical support and equipment (e.g. tablet computers for mobility).
- **Serve clients (2021 through 2030):** client service provision involves intake by the Household Navigator(s) from multiple referral points in the community, assessment and triage using a standardized intake tool (VI-SPDAT or similar), and referral to any and all community services the household may require. The Household Navigator maintains contact with

each client, providing the level of supportive service the household requires. The Navigator maintains client information in the HIFIS database, and only shares limited information, with the client's permission, with the rest of the Energy Poverty Reduction Program.

- **IT system maintenance:** there will be ongoing maintenance of the HIFIS system database, data entry and reporting forms, and maintenance of equipment.

- **Communications & marketing:** the program partners will design and implement a Communications Strategy for the Coordinated Access System which will include the following: (1) creating a clear understanding among all partners facilitating coordination of how the Coordinated Access System will function and how to engage residents on the system; (2) roll-out and maintenance of the Communications Strategy to inform underserved populations of the system; (3) ongoing communications with partners and funders to communicate the outcomes and evaluation of the service.

Housing Energy Management System

HOUSING ENERGY MANAGEMENT SYSTEM PROGRAM ACTIVITIES AND OUTPUTS

Extensive analysis of Bridgewater's housing stock started with the Community Energy Investment Plan from 2016 to 2018. The analysis resulted in the classification of the housing stock into 32 "archetypes" based on the type, size, and age of the homes. A fully-costed retrofit program was conceptually modelled for the entire residential sector, using ambitious energy targets: greater than 50% thermal and electrical energy efficiency gains, plus the widespread addition of on-site renewables and battery storage. New construction targets were set at Net Zero Ready (NZR) or Net Zero (NZ), which the Government of Canada has established as long-term targets for the national Building Code.

The housing stock model was refined for the Energy Poverty Reduction Program. It adjusted the energy performance targets for retrofits to 60% efficiency improvement coupled with an additional 30% on-site or neighbourhood renewable energy generation. It also updated the capital costs for retrofits which were sourced from recent case data from local and provincial energy retrofit programs including the Clean Net Zero and Affordable Multi Unit Pilot programs. Connected technology solutions for both retrofits and new construction were added, and a redistribution of the housing archetypes based on extensive community surveying to identify the housing stock most affected by energy poverty was undertaken. All client properties will have access to the following energy management improvements, as long as they meet technical and financial feasibility criteria:

- On-site or neighbourhood renewable energy generation (solar hot water + solar PV)
- Highly efficient mechanical systems (targeting air source heat pumps)
- High levels of ceiling, basement and wall insulation, as well as a high degree of air sealing
- Energy efficient and smart appliances
- LED lighting
- Energy monitors, smart thermostats, and other connected technologies
- Energy management education and training

The housing infrastructure improvements function as the technical backbone of Energy Poverty Reduction Program. Energy efficiencies gained by the infrastructure improvements will be measured and monitored via the connected technology solutions discussed in detail in the **Technology chapter.** Energy and climate benefits calculated through our custom housing stock improvement model estimate 4.8 GWh of energy and 2.5 kilotonnes of greenhouse gas emissions (GHG) reduced by 2024-25, with an additional reduction of 10.1 GWh of energy and 5.9 kilotonnes of GHG emissions reduced by 2029-30 (cumulative).

- **Partnership development:** partnerships will be established with key players in the energy and housing landscape, including Efficiency Nova Scotia, Nova Scotia Power, the South Shore Housing Action Coalition, and a number

Housing Energy Management System: Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Staff hiring & training							• staff hired & trained
Technical navigation services for clients							• technical navigation & support services provided
Detailed program design							• program design complete
Database setup - municipal enterprise resource planning (ERP) system							• data platform created
Database setup: energy management information system (EMIS)							• data platform created
IT system maintenance							• data and IT systems maintained (ongoing
Plan & implement retrofits and new construction		45/5	68/7	91/9	114/11	682/68	• units retrofitted/units constructed
Service & supplier procurement & coordination							• services & suppliers procured in cohorts (phase 2 onward) • performance management or procured services & suppliers (phase 2 onward) • dialogue and capacity building with related industries (phase 2 onward)
Community engagement							• clients consulted on design (phase 1) • clients consulted on prototype test (phase 2) • ongoing consultation with clients (ongoing)
Program administration							• program administration services delivered (ongoing)
Program evaluation & improvement							• program outputs and outcomes evaluated, and program improvements made (ongoing)

Table 2.3

of government agencies. Key among partner activities is the sharing of information related to energy solutions and costs. Partners may participate in the program Steering Committee, support the development, implementation, and evaluation of the program, and may provide services under contract to the program or the program's clients.

- **Staff hiring & training:** staffing for the program will consist of the following:
  - 1.5 FTE positions for the "Technical Navigator(s)" who will be technical staff with training and experience in building science and energy efficiency and at least one of whom will be a professional Engineer licensed to practice in Nova Scotia. Staff will receive training in the program's administrative and technical systems, and ongoing professional development related to community-based energy management services and large scale community energy systems.
  - 1 FTE position for an Information Systems Specialist who will support the design and management of the program data platforms including the Energy Management Information System (EMIS). Staff will receive training in related data management systems: TownSuite, EMIS, and Real Time Operations systems.

- **Technical navigation services for clients:** services will be provided by the Technical Navigators to participating property owners. Services will begin with client intake and property registration, and depending on the property owner's needs, can involve a comprehensive suite of services including planning and assessment; monitoring and targeting; measurement and verification; performance verification; performance contracting; troubleshooting/ fault detection; risk monitoring and control; contractor coordination (turn-key services); auditing; financial planning; and energy management education services. Services will cater both to retrofits as well as to new construction.

- **Detailed program design:** led by program staff and guided by the program partners, a detailed program design will incorporate best practices in community-scale energy efficiency programming, with an eye to achieving deep energy retrofits and highly efficient new construction. Informed by leading programs in the region, from across Canada, and internationally, attention will be focused on ensuring program accessibility for clients, mitigating problems commonly faced by landlords, and on making use of emerging connected technologies such as smart submeters and smart thermostats to achieve desired energy efficiencies and related household energy savings.

- **Database setup - municipal enterprise resource planning (ERP) system:** we will work with our municipal data platform provider, TownSuite, to set up the Enterprise Resource Planning (ERP) system backbone to support the program. The ERP is described in detail in the **Technology chapter.**

- **Database setup - energy management information system (EMIS):** complementing the development of the ERP is the development of the EMIS module of the data platform. The module will interface with the ERP and provide the core energy monitoring and planning functionality of the program. Due to its complexity, the development of the core functionality of the EMIS will fully span Phases 1 and 2. The EMIS and its associated advanced functions (including real time operations systems) is described in detail in the **Technology chapter.** Technical risk involved with designing and deploying the EMIS system has been identified as a significant program risk, justifying the need for this time and effort. This is discussed in the Risk Management Section of the Project **Management chapter.**

- **IT system maintenance:** ongoing maintenance and licensing fees associated with the data platforms described above, and maintenance of equipment.

- **Service & supplier procurement & coordination:** the Technical Navigators will issue periodic calls for contractors and suppliers, collectively known as Energy Service Providers. Management of those procurements and contracts will require ongoing effort. Supply chain risk involved with procuring these services has been identified as a significant program risk, justifying the need for this time and effort.

- **Community engagement:** the Technical Navigators will be involved in engagement and consultation efforts with program clients (households-at-risk as well as property owners) both to inform program design and prototyping as well as for ongoing program evaluation.

- **Program administration:** administration of the program will involve ongoing program management, monitoring, reporting and human resource development.

- **Program evaluation & improvement:** partners participate in ongoing program evaluation and improvement, with

key service delivery partners actively participating in the evaluation process (see Overall Program Management later in this section). Evaluation will lead to periodic adjustments to the processes, policies and procedures of the service. Evaluation processes will be led and supported by staff, and will involve client feedback on a regular basis.

- **Communications & marketing:** we will design and implement a Communications Strategy for the Housing Energy Management System which will include the following: (1) developing a marketing strategy to engage property owners and households-at-risk in the program, which will likely involve branding the program without the use of the term "energy poverty"; (2) roll-out and maintenance of the Communications Strategy to inform all clients of the service; (3) ongoing communications with partners and funders to communicate the outcomes and evaluation of the service.

RETROFITS AND NEW CONSTRUCTION

The Town of Bridgewater will engage partners to create a common vision informed by the community for the development of affordable, green, and accessible housing in Bridgewater. The Town will conduct a housing needs assessment to identify demographics, gaps in housing provision and existing housing stock. The Town will undertake steps to incorporate policies into Town plans to ensure affordable and energy efficient homes are a council priority. Regulatory structures and incentives will be put in place in accordance with recommended actions outlined in Bridgewater's Community Energy Investment Plan (2018). The Technical, Investment, and Household Navigators will provide service coordination for homeowners and those in housing need to access programs available through the Housing Energy Management System, Financial Investment Vehicle, and Coordinated Access System.

The Town will take several actions to incorporate policies, create regulatory incentive frameworks, and enable financing opportunities to ensure that retrofit and new construction meets the energy efficiency and affordability targets of our application. First, the Town's Municipal Planning Strategy (2014) will be amended to include policies for housing energy efficiency targets laid out in the Town's Community Energy Investment Plan (2018). This may include creating a specific energy efficiency overlay zone to incent retrofits, upgrades and building to higher standards than the current building code requires. Further polices will be added in support of mixed tenure, affordable housing congruent with existing policies for supporting the construction of a range of higher density, mixed-use infill development in the Town's core. The Town's criteria for evaluating proposals for land use by-law amendments and development agreements will be amended to ensure that staff and Council shall consider the energy efficiency and affordability of housing when making decisions.

As per the Town's Community Energy Investment Plan (2018) additional policies outside of the land use planning documents will be pursued. These include:

- Maintain and expand annual financing limits for Property Assessed Clean Energy Financing to incentivize property owners to build to a higher energy efficient standard, and explore opportunities to expand program eligibility to include multi-unit residential, commercial, and institutional buildings.
- Establish incentives to support and encourage highly energy efficient building practices for residential development.

In Nova Scotia, the responsibility for affordable housing lies with the provincial government through Housing Nova Scotia. Municipalities do not have a legislated requirement, but a societal expectation to provide for the needs of their residents and community. Bridgewater Town Council identified the need to play a stronger role in providing affordable housing well

before the development of the Energy Poverty Reduction Program. But it did not have the broad community support for or deep understanding of the relationship between housing infrastructure, energy management and overall poverty to go beyond general policies of smart growth, residential infill and densification. Catalyzed by this deeper understanding of energy poverty, Council may develop policies to actively attract and support the development of affordable, energy efficient housing. This may include policies to facilitate the sale of town-owned land to a non-profit housing body for less than market value; and, to limit municipal taxes and/or fees for properties owned by a company or corporation established for the purposes of non-profit housing services.

The housing retrofit program will serve all major housing types in the community, including single detached, semi-detached, mobile home, and multi-unit resident buildings (MURBS). The Town's Community Development staff and the Technical Navigators will play a critical role in communicating these opportunities to property owners early in the development phase.

Community Energy Systems

COMMUNITY ENERGY SYSTEMS PROGRAM ACTIVITIES AND OUTPUTS

The development of utility grade services, either directly by the Town of Bridgewater, or procured through a third-party provider, has been selected as the most practical and economical pathway toward neighbourhood and community scale energy system development in Bridgewater. The activities described in Table 2.4 will be initiated by our technical project team (Project Coordinator, Technical Navigators, and Investment Navigator), with the support of externally-procured consultation and engineering services.

- **Technical resource assessment:** expanding on the preliminary work completed through the Community Energy Investment Plan, a detailed technical review of energy consumption and various energy generation sources (solar, wind, hydro etc.) will be assessed. This process will involve independent analysis of various renewable resources, and the cost to produce energy. Paramount to this step will be assessing fit between consumption patterns and renewable generation technologies, as poorly matched generation and consumption patterns can lead to technical and financial inefficiencies, and increase the requirement of energy storage.

- **Municipal utility detailed service design:** the first step of investigating and establishing a Municipal Utility Grade Service will be to establish the scope and design frame of this approach. In general, utility grade service can involve the generation, distribution and sales of electricity, data collection and assessment, and integration of connected technology such as demand control, sensors and energy storage. This first step will involve both a technical and a legal /regulatory review to define scope, best practices and to specific regulations and applications required.

- **Municipal utility setup and/or service procurement:** the most important part of this scope will be facilitating agreement with the incumbent utility, Nova Scotia Power. While the scope of utility service provision can vary significantly, there will always have to be a significant interaction with NS Power at the point of interface. This discussion would include such items as transmission and distribution system access, top up and spill provisions, emergency response, grid ancillary services and administration. The commercial terms of this agreement will have a major impact on the financial variability of power generation and sales in the community. An additional aspect to this set up process is determining the entity that performs this service. Three options exist: (1) expand existing municipal utility, (2) new stand-alone new municipal utility, and (3) a public-private partnership (P3)

arrangement for service provision to a municipal utility.

- **Legislative and regulatory approval process:** while the regulatory process is defined, agreements will have to be in place with NS Power in order to proceed with any certainty through the application process. Of the three types of service noted above, only the generation and distribution of electricity is currently contemplated by the *Public Utilities Act*. Value added services through data and control of connected technologies such as demand control and energy storage would not require the regulatory process of establishing a municipal utility.

- **Database setup:** as detailed in the **Technology chapter,** the Energy Management Information System will be set up in such a way as to ensure future compatibility with community energy systems. While detailed IT integration in this regard cannot be completed until the time the specific technology is installed, a number of important functional components need to be prepared in the EMIS to enable this integration down the road.

- **Utility grade service management:** once all of the above is complete, Bridgewater will be in a position to offer utility grade energy services. With careful attention to financial considerations as discussed in the **Financial chapter,** work can begin in capitalizing the utility and providing service.

Community Energy Systems: Utility Grade Service Provision Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Technical resource assessment							• community-wide energy generation feasibility study complete
Municipal utility detailed service design							• utility grade services designed
Municipal utility setup and/or service procurement							• municipal utility established
Legislative & regulatory approval process							• legislative & regulatory approvals achieved
Database setup							• data platform created
Utility grade service management							• municipal utility services delivered (ongoing)

Table 2.4

SOLAR GARDEN DEVELOPMENT

The development of a community-owned "solar garden" has been selected as the preliminary technology for the neighbourhood-scale energy system for the Energy Poverty Reduction Program, as early assessments have suggested that such a system would lend itself well to delivering the outcomes proposed under this program. However, the final selection of the energy technology will be contingent on the outcome of the technical resource assessment described on the previous page. We are anticipating approximately 6MW of Community Solar Garden to be built in the first 5 years of our program. This will start in year 3, and supply the remaining load from the Housing Retrofit homes as well as 75-200 additional customers per year from the community. Each annual addition of solar generation capacity would be financed, so that payments made by the customers would cover the loan on the project. More detail on this and ownership structures can be found in the in the **Financial chapter.**

Conceptual design: a detailed assessment of the size and scale of the solar community garden would first be conducted. It would grow annually as more retrofits are completed. This stage

would also consider if additional community participation to that of the neighbourhood retrofits could be considered. The end result of this stage should be a detailed financial proforma for each year's installation, along with the cumulative cashflows of the facility.

Fundraising & financing: this stage will span the project schedule from start to operation. Different types of financing will be available at different stages of project development. The various contracts with customers for the sale of power from the facility will be the key asset upon which the community entity can raise the equity and debt investment for the project. More information is available in the **Financial chapter.**

Community consultation: early and open transparency regarding project location, timelines, construction and environmental impact will be essential to this project's social acceptance. Open house style engagements have proven to work well with previous renewable energy projects in Nova Scotia of a similar scale (ie. COMFIT, SolarCity).

Detailed engineering design: once the concepts and project financing are established, detailed engineering design will take place. This will involve geotechnical, structural, and electrical design. There are many firms with local representation that have experience in design projects of similar sizes, and public procurement of these services will take place.

Permitting: permitting requirements for the project will include municipal, electrical utility and any additional environmental permissions.

Procurement: procurement will take place in stages as solar garden components are funded over 3 consecutive years. The market for renewable energy equipment is well established in Canada and globally. Costs can vary over time due to market efficiencies and changes in tariffs. Delivery schedule is usually tied to the placement of a firm order and can range from three months to two years, though for a smaller solar project 1-2MW in size at a time it is expected be on the shorter end of that timeframe. Placing an order for equipment will also require deposits to be paid.

Construction: the solar garden would be ground mounted with power generated collected to common points and connected to the NS Power electrical system. Major scopes of work for construction would be: (1) supply of panels and related equipment, (2) civil/roads, (3) structural (foundations and racking), electrical installation, and commissioning/testing. It is common that many of these scopes be combined into a generation contractor agreement, or an Engineer, Procure, Construction (EPC) contract.

Community Energy Systems: Solar Garden Development Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Conceptual design							• conceptual design complete
Fundraising & financing							• financing & funding targets achieved
Community consultation							• community consultants complete
Detailed engineering design							• detailed engineering design complete
Procurement							• services & suppliers procured
Permitting							• permits achieved
Construction							• construction complete
Database & IT systems setup							• IT systems installed
Commissioning							• commissioned
Operation & maintenance							• maintained (ongoing)

Table 2.5

Database & IT systems setup: all modern community scale energy generation systems come with internet addressable controls systems. It will be important to ensure that data from this system can be integrated to the Town's EMIS. Generally, this interaction is undertaken with the solar technology provider.

Commissioning: the designer and installers of the solar garden will take on performance risk of the installation, to help make sure that the solar garden performs properly before the Town and the project investors accepts the installation in to operation.

Operation & maintenance: modern solar energy systems come with 25 year warranties on panels, and 10 years+ on other components such as racks and inverters. The community solar garden will contract for spare parts provisions and maintenance service provision, as well as for operational oversight.

Mobility Improvement System

MOBILITY IMPROVEMENT SYSTEM PROGRAM ACTIVITIES AND OUTPUTS

This service receives client mobility information from the Housing Energy Management System through the Technical Navigators, and from the Coordinated Access System through the Household Navigators, and uses it to plan and implement transportation improvements in the community. Implementation of improvements must be approved by Town Council through annual budgeting processes, and if approved are implemented by the Bridgewater Transit system and Engineering Department. While the program is focused on transit and active transportation modes at this time, future integration with rideshare and paratransit services is a real possibility that would be further enhanced through the planning functionality provided by this program.

- **Detailed program design:** planning staff will work with community partners to finalize the program scope and develop its technical methodologies. This will take place over a two-year timeframe to ensure integration with the overall program data platform, and to involve the first year of program clients directly in the design process.

- **Partnership development:** partnerships will be established with key players in the transportation and accessibility landscape, including members of the Bridgewater Active Transportation Committee, a standing Committee of Council with strong ties to community service providers.

- **Database setup:** the municipal enterprise resource planning components of the municipal data platform will be expanded to include a Client Mobility Application module. This will link with the existing Land Management GIS module to enable transportation planning through the use of spatial data from other parts of the system. Specifically, the civic addresses of program clients will be linked with transit and active transportation routing maps, and made to perform transportation planning calculations, including walking distance to the nearest bus stop and sidewalk or trail network. Mobility indicators are tracked by neighbourhood, with the goal of seeing improvement over time as enhancements are made.

- **IT system maintenance:** ongoing maintenance and licensing fees associated with the data platforms described above, and maintenance of equipment.

- **Community engagement:** staff will be involved in engagement and consultation efforts with program clients (households-at-risk as well as property owners) to inform program design and prototyping as well as for ongoing program evaluation.

- **Communications & marketing:** we will design and implement an

Mobility Improvement System: Program Coordination & Administration Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Detailed program design							• program design complete
Partnership development							• partnership established
Database setup							• data platform created
IT system maintenance							• data and IT systems maintained (ongoing)
Community engagement							• clients consulted on design (phase 1) • clients consulted on prototype test (phase 2) • ongoing consultation with clients (ongoing)
Program administration							• program administration services delivered (ongoing)
Program evaluation & improvement							• program outputs and outcomes evaluated, and program improvements made (ongoing)

Table 2.6

improved Communications Strategy for the community's transit and active transportation systems, which will include the following: (1) developing a marketing strategy to engage residents in the program, which will build on engagement recommendations from the renewed Active Transportation & Connectivity Plan; (2) roll-out and maintenance of the Communications Strategy; (3) ongoing communications with partners and funders to communicate the outcomes and evaluation of the service.

- **Program evaluation & improvement:** partners participate in ongoing program evaluation and improvement, with key service delivery partners actively participating in the evaluation process (see Overall Program Management later in this section). Evaluation will lead to periodic adjustments to the processes, policies and procedures of the service.

TRANSIT SYSTEM IMPROVEMENTS

Bridgewater Transit has been operating successfully since 2017. As a new municipal service, improvements to transit routing and service delivery have been occurring on a regular basis. The transit service can benefit substantially from the enhanced planning functionality provided through this program.

Transit service improvement planning includes: making periodic routing adjustments, improving transit service accessibility, quality improvement measures, improvements to communications and marketing systems, and the integration of connected technology functions to the bus service. Already, a GPS locator in the bus allows for real-time tracking of the bus for the public. Additional service and communication enhancements based on connected technologies may include the development of client notification, survey, and complaint functions, as well as opportunities to provide real-time transit information to service providers including agencies that support under-served residents. Transit improvements are subject to Council approval on an annual basis. Transit service improvements will be documented and evaluated on an ongoing basis.

ACTIVE TRANSPORTATION IMPROVEMENTS

Active transportation planning and evaluation efforts can benefit substantially from the enhanced planning functionality provided through this program. Active transportation improvements will build on the recommendations and solutions provided through Town's Active Transportation and Connectivity Plan, which was developed in 2008 and which will be comprehensively renewed in 2019.

The nature of AT infrastructure improvements will depend entirely on the neighbourhoods that

are selected for priority improvement. A budget has been proposed that represents approximately double the Town's current annual budget for these annual improvements. The budget allows for a combination of neighbourhood-based AT improvements, such as the installation of new sidewalks, replacement or upgrade of existing sidewalks, improved crosswalk paint and accessibility infrastructure, the addition of lighting in underlit areas, and making improvements to the Town's trail systems. AT improvements are subject to Council approval on an annual basis. Improvements will be documented and evaluated on an ongoing basis.

MUNICIPAL CAPITALIZATION SYSTEM

This system provides core financial budgeting and capitalization services to the other program services. It is responsible for "specialized finance" stacking, assembling project opportunities and outcomes, and reporting to funders. It interfaces closely with the Financial Investment Vehicle, which brings additional private investment into the program. This program is explained in detail in the **Financial chapter** of this proposal.

- **Detailed program design:** program design will be carried out primarily by the Investment Navigator with the support of the program partners. Program design ensures that both the municipal capitalization system and the financial investment vehicle systems work cohesively and with fluidity. In order to do so, workflows and timelines need to be well-established. Focus groups and a gap analysis will determine the missing capacity to deliver on investment system outcomes, and controls designed to ensure operations do not derail.

- **Database setup:** the municipal database is to be defined and created in parallel with the detailed program design. The municipal enterprise resource planning platform will allow this financial budgeting and reporting functionality. Database requirements will be clearly articulated to the development team, and the developer and Town will correspond throughout the development process. The developer will receive a list of necessary components, and a testing team composed of various stakeholders, both internal and external to the Town, will be sourced to test its functionality.

- **Staff hiring and training:** staffing for this service will consist of 1 FTE position for the "Investment Navigator" who will have training and experience in financial management, analysis, and budget development, with preference given to someone with a background in large scale project finance and investment and an interest in the clean tech-sector and project-aligned social values. Staff will receive training in the program's administrative and technical systems, and ongoing professional development related to community-based financial planning services.

- **Partnership Development:** partnerships will be developed with three key groups: funders, investment vehicle services, and community capacity building organizations. The Investment Navigator will approach federal, provincial, and philanthropic funders to ensure robust funding streams are explored. Investment vehicle service partners are needed to set up and deliver the external investment vehicle described below. Community capacity building partners include local credit unions that are willing to act as financial literacy support organizations for program clients. Partners may participate in the program Steering Committee, and will support the development, implementation, and evaluation of the program.

- **Project financial planning:** on an ongoing basis, staff will calculate funding requirements for projects defined and projected by the Energy Poverty Reduction Program, and pool together project components into capitalizable groupings that are attractive

to traditional, community, and specialized investors. This budgeting exercise will be facilitated by partnership opportunities established through partnership development activities and will rely on the database module developed for the program. Dynamic data sharing with the Financial Investment Vehicle is a key activity throughout the planning stage.

- **Plan, confirm and administer funding (2021 through 2030):** once specific projects are identified and pooled into groups, the Investment Navigator seeks specific funders to commit to those investment raises, until funding targets are met. Understanding that most funders operate on annual budgets, a recurring approach to raising specialized sources of capital will be undertaken. Annual administrating tasks include updating the database and reconciling accounts.

- **Reporting to funders:** reporting will be automated to the greatest extent possible to allow for real-time monitoring of project outcomes specifically pertaining to funding obligations. It is expected that each source will require different reporting criteria and on different schedules. These activities will be administered by the Investment Navigator.

Investment System: Municipal Capitalization System Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Detailed program design							• program design complete
Database setup							• data platform created
Staff hiring & training							• staff hired & trained
Partnership development							• partnership established
Project financial planning							• project financial planning completed (ongoing)
Plan, confirm, and administer funding 2021-30		$1.71	$2.28	$3.03	$3.83	$25.82	• millions raised in project funding from specialized investors
Reporting to funders							• project reporting needs satisfied (ongoing)
IT system maintenance							• data and IT systems maintained (ongoing)
Program evaluation & improvement							• program outputs and outcomes evaluated, and program improvements made (ongoing)

Table 2.7

- **IT system maintenance:** ongoing maintenance and licensing fees associated with the data platforms and maintenance of equipment.

- **Program evaluation and improvement:** partners participate in ongoing program evaluation and improvement, with key service delivery partners actively participating in the evaluation process (see Overall Program Management later in this section). Evaluation will lead to periodic adjustments to the processes, policies and procedures of the service. For example, it is expected that new technologies, financing mechanisms, and funding sources will evolve throughout the 10-year program and arrangements that were once not well suited may become more feasible over time. Evaluation processes will be led and supported by the Investment Navigator, and will involve client feedback on a regular basis.

FINANCIAL INVESTMENT VEHICLE

This program complements the Municipal Capitalization System but is external to the Town of Bridgewater, with services procured through

an existing or new organization. The program is responsible for traditional financing (inclusive of community investments), cash disbursements through outcome-data shared by the municipal capitalization system, investing in energy poverty reduction program assets, and reporting to investors. This program is explained in detail in the **Financial chapter** of this proposal.

Investment System: Financial Investment Vehicle Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Investment vehicle organization creation and/or service procurement							• investment vehicle organization created
Administration & Reporting							• administration & reporting services delivered (ongoing)
Plan, sell, and administer investment raise 2021-30		$0.74	$7.69	$9.0	$8.86	$10.78	• millions raised in project financing from financial investors

Table 2.8

- **Investment vehicle organization creation and/or service procurement:** an organization that provides the best value to the Town and the Energy Poverty Reduction Program is procured. Target services include: the ability to set up community-based investment vehicles and organizational structures (see **Financial chapter** for details) the capacity to source traditional and community financing, adherence to appropriate best practices, and utilization of a comprehensive data-security and privacy plan. A unique organizational structure must be incorporated, appropriate bylaws must be drafted, and a governance structure that aligns with the Town's needs must be set up. Once sourced or built, an agreement with the Town must be drafted and executed. To support this service procurement process, financial investment vehicle and investor-related service delivery partnerships will be explored early in the partnership development process. For the purpose of this application the MaRS Centre for Impact Investing, whose SVX platform connects investment opportunities with impact investors, is being considered as a useful template for this service.

- **Administration and reporting:** Reporting should be automated to the greatest extent possible and allow for real-time monitoring of project outcomes specifically pertaining to what the funding source needs to access. It is expected that each traditional source will require different reporting criteria and varying schedules. These activities and the deployment of funds will be administered by the organization with data shared between the Municipal Capitalization System and the Financial Investment Vehicle.

- **Plan, sell, and administer investment raises (2021 through 2030):** activities are dependent on the two financing streams: traditional and community. Both require separate offering terms, due diligence activities and marketing narratives. The organization will be responsible for sourcing traditional debt investments paired with equity raises. These raises will be enhanced through third-party data and connected technology applications. Raising funds involves the development of a marketing strategy, inclusive of buying cycle projections, an elevator pitch and lead nurturing strategies. Investor onboarding activities continue throughout the "raise" and "manage" cycle and include subscription processing, and investor and financial institution correspondence. Monitoring investor satisfaction is a key component to ensuring investment raises are sustainable year-to-year. Additional information is provided in the **Financial chapter.**

EVALUATION MODEL

In the Energy Poverty Reduction Program, there are multiple stakeholders and partners, a need to make quick decisions, prototyping of new programs, and high levels of uncertainty. Developmental evaluation is appropriate for this type of work because the governance and management team are ready and willing to test new approaches and make changes along the way to reach the goal of energy poverty reduction. Using these evaluation methods will allow the opportunity to blend qualitative and quantitative reporting.

As the evaluation process will be in tune with the evolving program dynamics, achievements, and struggles, it also plays an important role in the design and implementation of the program's risk management strategy and associated course correction checkpoints, which are described in the **Project Management chapter.**

Overall Program Management: Evaluation Framework

Phase	1: Prototype Program Setup	2: Prototype Program Testing & Refinement	3: Final Program Activation	4: Program Maturity
Ongoing Project Evaluation Priorities		• Continuous reflection of role clarification • Partner relations • Guiding principles • Project structure	• Quality of learning cultures • Existing and new project teams • Responsiveness • Moments of innovation	
Phase-Specific Evaluation Priorities	**Design by Core Team** • Partners – clarification of roles • Identify and build relationships with individual champions • Identify expertise of identified partners • Identify guiding principles and clarity of project charter • Leverage historical experiences • Establishment of project structure • Encouraging and identifying innovations in project design	**Early Changes** • Highlight new and emerging leadership • Consider internal and external creative tensions • Revisit guiding principles • Review lessons learned • Review and adapt project structure • Document innovations from prototyping • Consider emerging risk • Scaling project • Anticipate blocks to progress	**Systems Changes** • Revisit guiding principles • Review and adapt project structure • Leverage learned innovations • Establishment of ongoing project charter • The establishment of ongoing structure	**Population Changes** • New partners: funding, human resources, skills, leadership. • Operationalize the innovations
Desired Outcomes	• Project charter providing useful guidance • Core team/participants report feeling engaged in project • Systems to direct the project are established and useful	• New collaborations consistent with Guiding Principles are established • New funding and financing opportunities are identified • The practical usefulness of data collection systems are improved	• New resident and partner-informed programs and process are developed • New volunteer and agency leadership is engaged • Local collaborations to sustain impact post project are established	• Reducing Energy Poverty is considered a local 'movement' rather than a project • Residents pulled out of energy poverty are championing the impact • Local agencies, institutions and organizations are supporting counterparts in other jurisdictions to make changes to decrease EP.
Evaluation Outputs for Infrastructure Canada	• Phase 1 output report. Key output target: program governance, management, and evaluation systems in place	• Phase 2 output report • Phase 2 preliminary outcomes report	• Phase 3 output report. Key output target: Phase 3 program outputs and outcomes evaluated • Phase 3 final outcomes report	• Phase 4 output and outcomes reporting not applicable to Infrastructure Canada under this funding agreement

Table 2.9

Energy Poverty Reduction Program Outcomes Logic Model

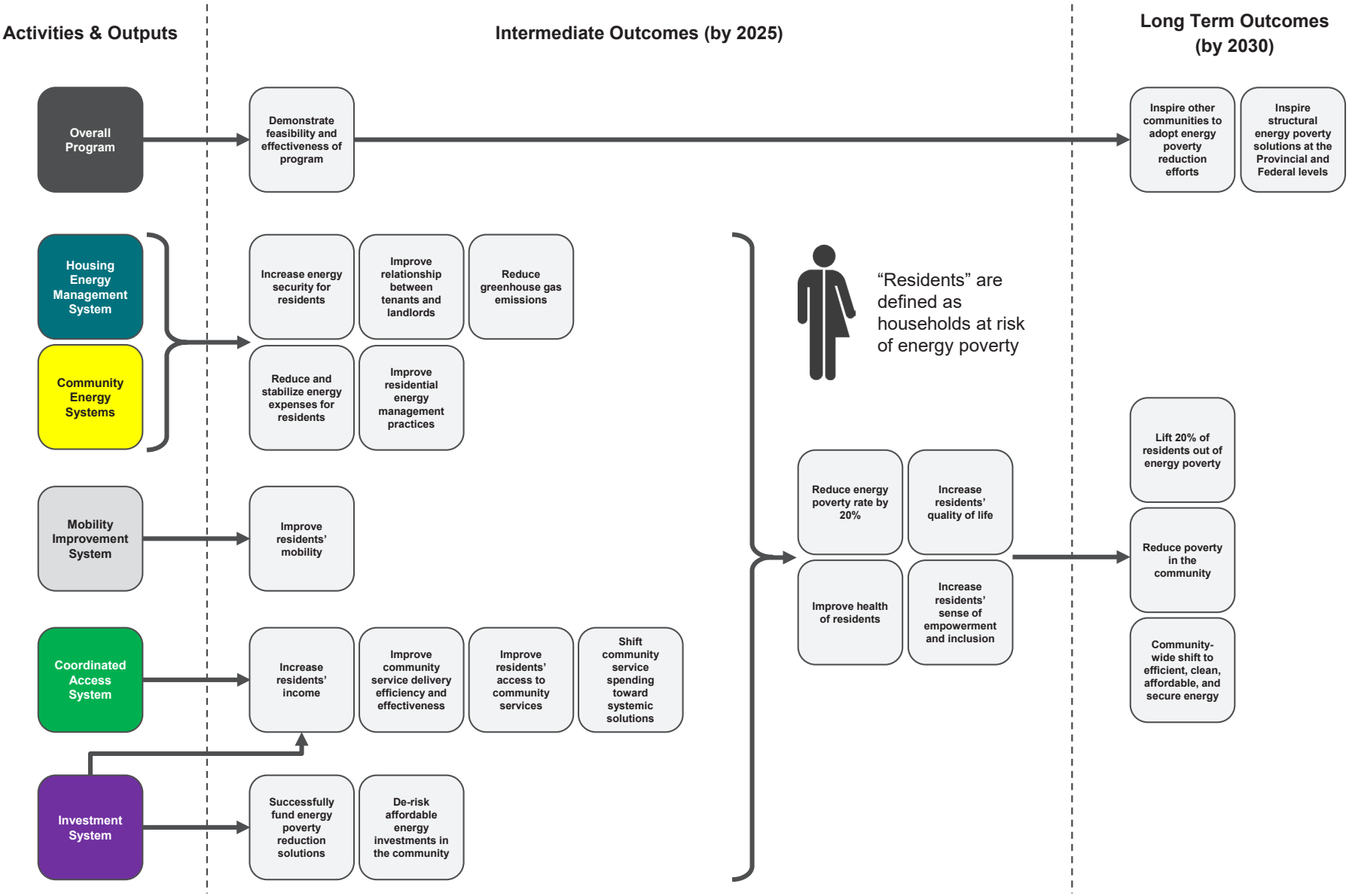


Diagram 2.1

PROGRAM OUTCOMES AND INDICATORS

The program activities and outputs described in the preceding section are expected to result in a set of 22 intermediate and long-term outcomes that benefit the program clients, program stakeholders, the community as a whole, the environment, and ultimately communities beyond Bridgewater. Diagram 2.1 summarizes the Energy Poverty Reduction Program outcomes logic model. Outcomes displayed in the "intermediate outcome" section of the Diagram 2.1 will be demonstrated by 2025. While the benefits of these outcomes will continue to accrue past the Smart Cities Challenge program an additional set of 5 long-term outcomes are displayed in the final section of the chart, indicating our community's continued benefits from the program.

Indicators chosen for each outcome are meaningful, measurable and monitorable via data collected through the program itself, through regular community-wide surveys or from Statistics Canada census information.

Program Outcome Indicators and Associated Measurement Methodologies, Sources, and Tracking Systems

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Reduced poverty & improved wellbeing	1. Reduce energy poverty rate	Percent of households living in energy poverty	2018-19	38.5% (1,613 of 4,194)	2024-25	30.6% (1,362 of 4,452) = 20% rate reduction	Percent of households who self-report spending more than 10% of after-tax income on energy for the home and transportation and currently experiencing energy poverty. Measured through bi-annual community-wide survey. Percentages are based on projected future household growth as calculated in the Community Energy Investment Plan, with a basis in the 2016 Census.	Bi-annual community-wide Housing, Energy, and Transportation survey, to be conducted in 2028-29. Data stored on municipal platforms.	Overall Program
					2029-30	14.4% (660 of 4,577) = 62% rate reduction			Overall Program
	2. Reduce poverty	Percent of households living in core housing need	2016-17	27.9% (1,135 of 4,075)	2026-27	Decrease from baseline	Percent of households living in core housing need. A household is said to be in 'core housing need' if its housing falls below at least one of the adequacy, affordability or suitability standards and it would have to spend 30% or more of its total before-tax income to pay the median rent of alternative local housing that is acceptable (meets all three housing standards).	Census data (Statistics Canada). Target year will use 2026 Census.	Overall Program
	3. Improve health of residents	Amount of time program clients are able to meet their thermal comfort needs at home	Property intake year	Average property intake value	2024-25	Increase from baseline	Number of days per year that homes inhabited by program clients are sufficiently heated or cooled to a minimum level necessary for physical wellbeing. Subtracts the number of days that the temperature in main living area drops below 16 degrees C (threshold for respiratory illness) and 12 degrees C (threshold for cardiovascular illness), or above 27 degrees C (threshold for heat related illness) for a sustained period while occupants are home. Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system reports aggregated home temperature data. Data stored on municipal platforms.	Housing Energy Management System

Table 2.10

CONTINUED

PERFORMANCE MEASUREMENT

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Reduced poverty & improved wellbeing	3. Improve health of residents	Thermal comfort of program clients	Client intake year	Average client intake score	2024-25	Increase from baseline	Overall thermal satisfaction over the past year, based on a scale from 1 (very dissatisfied) to 10 (very satisfied). Self-reported assessment by client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Energy poverty-correlated population health index	2020-21	To be determined	2024-25	Improvement from baseline	Customized index of population health indicators to be designed and monitored by the Nova Scotia Health Authority using deidentified health system data. See letter of support.	Information to be collected and analysed by Nova Scotia Health Authority.	Coordinated Access System
	4. Increase residents' quality of life	Satisfaction of life in general for program clients	Client intake year	Average client intake score	2024-25	Increase from baseline	Satisfaction of life in general on a scale from 1 (very dissatisfied) to 10 (very satisfied). Self-reported assessment by client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
	5. Increase residents' sense of empowerment and inclusion	Frequency of social contact for program clients	Client intake year	Average client intake score	2024-25	Increase from baseline	Percentage of time in the past year that the client reports contact 'once a week or more' with relatives and/or friends. Self-reported assessment by client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Sense of belonging for program clients	Client intake year	Average client intake score	2024-25	Increase from baseline	Sense of belonging to the local community on a scale from 1 (very weak) to 10 (very strong). Self-reported assessment by client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
	6. Increase energy security for residents	Amount of time program clients are able to meet their home energy needs	Property intake year	Average property intake value	2024-25	Increase from baseline	Number of days per year that homes inhabited by program clients are sufficiently powered, heated, or cooled to a minimum level necessary for physical and mental wellbeing. Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system issues alert on days that the home is unpowered or minimal thermal comfort levels are not met. Data stored on municipal platforms.	Housing Energy Management System

Table 2.10

CONTINUED

PERFORMANCE MEASUREMENT

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Better Housing	7. Reduce and stabilize energy expenses for residents	Spending on shelter by program clients	Client intake year	Average client intake value	2024-25	Decrease from baseline	Total annual spending on shelter by program clients (as applicable: rent, mortgage, insurance, property tax, maintenance, utilities, and energy contracts). Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Affordability of housing energy costs	2018-19	37.4%	2024-25	Decrease from baseline	Percent of households who self-report having difficulty affording their home energy costs. Measured through bi-annual community-wide survey. Percentages are based on projected future household growth as calculated in the Community Energy Investment Plan, with a basis in the 2016 Census.	Bi-annual community-wide Housing, Energy, and Transportation Survey, to be conducted in 2024-25. Data stored on municipal platforms.	Overall Program
		Cost of home energy for participating properties	Property intake year	Average property intake value	2024-25	Decrease from baseline	Annual cost of all energy types consumed by homes inhabited by program clients, adjusted for annual climatic variability (heating degree days). Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system reports aggregated home energy consumption and cost data. Data stored on municipal platforms.	Housing Energy Management System
	8. Improve relationship between tenants and landlords	Level of trust between tenants and landlords - tenant perspective	Client intake year	Average client intake value	2024-25	Increase from baseline	Perception of trust in the landlord based on a scaled rating system on a scale from 1 (very low level of trust) to 10 (very high level of trust). Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Level of trust between tenants and landlords - landlord perspective	Property intake year	Average property intake value	2024-25	Increase from baseline	Perception of trust in the tenant(s) based on a scaled rating system on a scale from 1 (very low level of trust) to 10 (very high level of trust). Self-reported assessment from client property owners or their property managers. Performance measured through change from baseline, pooled by property cohort (intake year).	Property owner survey facilitated by Technical Navigator. Initial intake, followed by periodic updates. Data stored on municipal platforms.	Housing Energy Management System
	9. Improve residential energy management practices	Cost savings resulting from energy management practices for participating properties	Property intake year	Average property intake value	2024-25	Increase from baseline	Total annual cost savings as compared to baseline energy consumption resulting directly from energy management practices (manual + automated) as calculated by home energy monitoring & control system. Accompanied by a property owner & tenant survey on energy conservation practices that is used to illustrate / educate opportunities for improved energy management. Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system reports aggregated home energy savings data. Property owner survey & tenant facilitated by Technical Navigator. Initial intake, followed by periodic updates. Data stored on municipal platforms.	Housing Energy Management System

Table 2.10

CONTINUED

PERFORMANCE MEASUREMENT

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Increased Mobility	10. Improve residents' mobility	Community-wide transit ridership	2018-19	27,000 annual riders	2024-25	43,000 annual riders	Daily average transit ridership. Includes all passenger types.	Ridership counted hourly by bus drivers. Data stored on municipal platforms.	Mobility Improvement System (MIS)
		Mobility self-assessment rating by program clients	Client intake year	Average client intake value		Increase from baseline	Ease of mobility based on a scale from 1 (very low mobility) to 10 (very high mobility). Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Affordability of transportation energy costs	2018-19	25.5%	2024-25	Decrease from baseline	Percent of households who self-report having difficulty affording their transportation energy needs. Measured through bi-annual community-wide survey. Percentages are based on projected future household growth as calculated in the Community Energy Investment Plan, with a basis in the 2016 Census.	Bi-annual community-wide Housing, Energy, and Transportation Survey, to be conducted in 2024-25. Data stored on municipal platforms.	Overall Program
More effective community services	11. Improve residents' access to community services	Level of satisfaction with access to community services for program clients	Client intake year	Average client intake value	2024-25	Increase from baseline	Satisfaction with access to community services based on a scaled rating system on a scale from 1 (very dissatisfied) to 10 (very satisfied). Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
	12. Improve community service delivery efficiency and effectiveness	Self-assessment rating by Coordinated Access System partners	2020-21	To be determined	2024-25	Increase from baseline	Self-assessment rating using Coordinated Access System (CAS) Scorecard Guide which is a 23 question self-assessment tool to assist communities to take a snapshot local progress towards a quality Coordinated Access System.	Annual survey of coordinated access system partners facilitated by Household Navigator. Data stored on Coordinated Access System service provider server.	Coordinated Access System
	13. Shift community service spending toward systemic solutions	Percent of resources spent making emergency energy payments on behalf of clients, compared to other areas of support	2020-21	To be determined	2024-25	Decrease from baseline	Percent of annual dollars spent making emergency energy payments on behalf of clients, compared to other areas of support, for all service organizations that provide emergency energy funding for program clients.	Annual survey of coordinated access system partners facilitated by Household Navigator. Data stored on Coordinated Access System service provider server.	Coordinated Access System

Table 2.10

CONTINUED

PERFORMANCE MEASUREMENT

Outcome Category		Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Increased economic access & participation	14. Increase residents' income	Earnings from participation in energy systems by program clients	2020-21	To be determined	2024-25	Increase from baseline	Total annual dividends and other cashflow paid out to self-identified program clients from local energy investments.	Annual report on community investors produced by Financial Investment Vehicle. Data stored on Financial Investment Vehicle platform.	System
	15. Increase residents' participation in the green economy	Earnings from employment in the clean tech sector by program clients	Client intake year	Average client intake value	2024-25	Increase from baseline	Annual earnings from employment in the clean tech sector. Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
Achieved Climate Targets	16. Reduce greenhouse gas emissions	Greenhouse gas emissions from participating homes	Property intake year	Average property intake value	2024-25	Increase from baseline	Number of days per year that homes inhabited by program clients are sufficiently powered, heated, or cooled to a minimum level necessary for physical and mental wellbeing. Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system reports aggregated home energy consumption and emissions data. Data stored on municipal platforms.	Housing Energy Management System
	17. Community-wide shift to efficient, clean, affordable, and secure energy	Achieve the goals of the Community Energy Investment Plan	2016-17	2016 performance values	2024-25	Decrease from baseline	Key performance metrics articulated in the plan include: (1) community-wide energy consumption, (2) community-wide greenhouse gas emissions, (3) community-wide spending on energy, (4) community-wide investment in energy improvements, and (5) job creation resulting from energy investments. Implementation of the Energy Poverty Reduction Program will contribute strongly toward achieving these outcomes.	Annual indicator update by Planning & Recreation Department staff, and update of CEIP model and targets every 5 years. Data stored on municipal platforms.	Overall Program
Investment in communities	18. De-risk affordable energy investments in the community	Investment leverage ratio of capital improvement projects funded by the program	2020-21	To be determined	2024-25	To be determined	The ratio of all public instruments versus private sector investment in the program's capital projects (housing, transportation, and community energy systems). As both the costs of the public instruments as well as the energy investments occur over time, the present value of the costs and investments are used to calculate the investment leverage ratio. It is currently unclear what investment leverage ratio would be considered ideal for the program. This metric will be investigated during the program design stage.	Annual indicator update by Investment Navigator. Data stored on municipal platforms.	Investment System

Table 2.10

CONTINUED

PERFORMANCE MEASUREMENT

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Investment in communities	18. De-risk affordable energy investments in the community	Carbon abatement cost of capital improvement projects funded by the program	2020-21 Property intake year	To be determined	2024-25	Decrease from baseline	The present value of the incremental costs of the energy project investments divided by the greenhouse gas emission reduction potential. Reported as dollars per tonne of carbon abated. Climate change mitigation indicator. This metric will be investigated during the program design stage.	Annual indicator update by Investment Navigator. Data stored on municipal platforms.	Investment System
	19. Successfully fund energy poverty reduction solutions	Funding and investments toward the program	2018-19	$250,000 Smart Cities Challenge finalist grant	2024-25	$45.7 million	Total funding and investments in energy poverty reduction program, including local investments and stacked funding (e.g. grants, rebates, etc.).	Annual indicator update by Investment Navigator. Data stored on municipal platforms.	Investment System
	20. Demonstrate feasibility and effectiveness of program	Achievement of program outcomes	2018-19	No outcomes achieved	2024-25	Phase 3 outcomes achieved, positive evaluation by partners and participants	Achievement of program outcomes, and evaluation by partners and participants. Measured though comprehensive evaluation process for program partners and participants.	Annual indicator update by program managers. Data stored on municipal platforms.	Overall Program
Demonstration of impact	21. Inspire structural energy poverty solutions at the Provincial and Federal levels	Government policies or programs have been influenced by the Energy Poverty Reduction Program model	2018-19	No reported instances yet	2029-30	Increase from baseline	Number of senior government articles of legislation, policies, or programs that have been definitively influenced by the Bridgewater program. Measured through information sharing with Provincial and Federal governments.	Annual indicator update by program managers. Data stored on municipal platforms.	Overall Program
	22. Inspire other communities to adopt energy poverty reduction efforts	Other communities in Canada have been influenced by the Energy Poverty Reduction Program model	2018-19	No reported instances yet	2029-30	Increase from baseline	Number of other communities in Canada that attribute all or part of their energy poverty reduction efforts to the Bridgewater program. Measured through information sharing with other communities.	Annual indicator update by program managers.. Data stored on municipal platforms.	Overall Program

Table 2.10

GOVERNANCE STRUCTURE

As a municipal service, the Energy Poverty Reduction Program falls under Bridgewater Town Council's oversight, and under management of the Chief Administrative Officer (CAO). Final design and implementation of the program will be the responsibility of the Community Development Department, with a number of related functions taking place through other departments. The following elements are proposed within the governance and management structure:

- **Energy Poverty Reduction Program Steering Committee:** a formal Committee of Council that will provide advice to Council and staff on the design and implementation of the program. The Steering Committee will assist with maintaining community partnerships, and participate in program evaluation and quality review. It will participate, as appropriate, in client dispute resolution through an ombudsperson, and meet periodically with a Client Advisory Circle to receive client feedback. It is envisioned as a 6-10 member group, consisting of key program partners from the local community sector as well as regional organizations with expertise in energy and housing, such as Efficiency Nova Scotia. A member of Town Council will also sit on the Committee. Committee members do not receive compensation for their role through the Town, though some members may be paid staff from other organizations. The Committee will be resourced and supported by Town staff who coordinate and implement the program. A Terms of Reference for the Committee will be developed, and the Committee positions will be filled as one of the earliest activities in Phase 1.

> "Collaborating as a group to help solve problems is often much more effective than organizations trying to do it on our own."
> – COMMUNITY SERVICE ORGANIZATION

- **Ombudsperson:** clients whose complaints about the program are not able to be resolved by program management may escalate their complaint to the Ombudsperson. This person is charged with representing the interests of program clients by investigating and addressing complaints. The Ombudsperson is recommended by the Steering Committee, and will be an external, independent expert with knowledge of the program. They will receive compensation for their work on a per diem basis. A role description for the Ombudsperson will be developed during Phase 1.

- **Client Advisory Circle:** prospective, current, and past clients of the program are recruited to participate in this advisory structure to provide periodic feedback to the Steering Committee and the program management team. The Client Advisory Circle is consulted on matters related to program design and implementation, quality, accessibility, affordability, fairness, and overall impact of the program. As the program clients include both households-at-risk as well as property owners, the Client Advisory Circle will represent both. Client Advisory Circle members receive a per diem to cover their participation, to reduce the risk that financial barriers will prevent effective participation. A Terms of Reference for the Client Advisory Circle will be developed as one of the earliest activities in Phase 1.

- **Technical Advisory Circle:** an ad-hoc working group that supports the program management team in the design and implementation of the program. The Technical Advisory Circle provides voluntary, independent, expert advice and project support to Town staff. A Terms of Reference for the Technical Advisory Circle will be developed as one of the earliest activities in Phase 1.

- **Program Coordinator:** the Community Development Department will put its staff

in charge of the overall coordination of the program. The Energy Poverty Reduction Program Coordinator reports to Senior Manager and through the CAO to Town Council. This staff is also the main resource to the Steering Committee. As this coordination role is critical to all components of the program, the job description(s) for staff will be developed and/or updated, and any necessary hiring completed before Phase 1 begins.

- **Municipal Program Management:** day-to-day management of the 4 linked municipal services (the Housing Energy Management System, Community Energy Systems, the Mobility Improvement System, and the Investment System) will fall to municipal staff. Activities within each program will be a combination of staff effort and procured third-party services. Technical Navigators and an Investment Navigator provide services both to program clients and to program managers, while an Information Systems Specialist provides data management services within the program. Quality control and evaluation is carried out by staff, in partnership with the Steering Committee. Full descriptions of these positions will be developed before Phase 1 begins, and any necessary hiring will commence as one of the earliest activities of Phase 1.

> "It would help so that we wouldn't have to scurry around, one call request for assistance requires 8 other calls; if we would just network it would make it easier."
> – COMMUNITY SERVICE ORGANIZATION

A Bridgewater resident views an exhibit on energy poverty at a Smart Cities Challenge Open House.

- **The Coordinated Access System** will be managed by a third-party service provider with its own management and governance systems. Household Navigators are employed by the service provider. A partnership or service agreement defines the relationship between the Town and the external organization, as well as the responsibilities of both parties. See the **Performance Measurement Chapter** for a more detailed description of the service procurement process and anticipated timelines.

- **The Financial Investment Vehicle,** a sub-component of the Investment System, will be managed by a third-party service provider with its own management and governance systems. A partnership or service agreement defines the relationship between the Town and the external organization, as well as the responsibilities of both parties.

  See the **Performance Measurement chapter** for a more detailed description of the service procurement process and anticipated timelines.

The relationship between most of the governance and management structures described above are illustrated in the following in Diagram 3.1.

Program Governance and Management

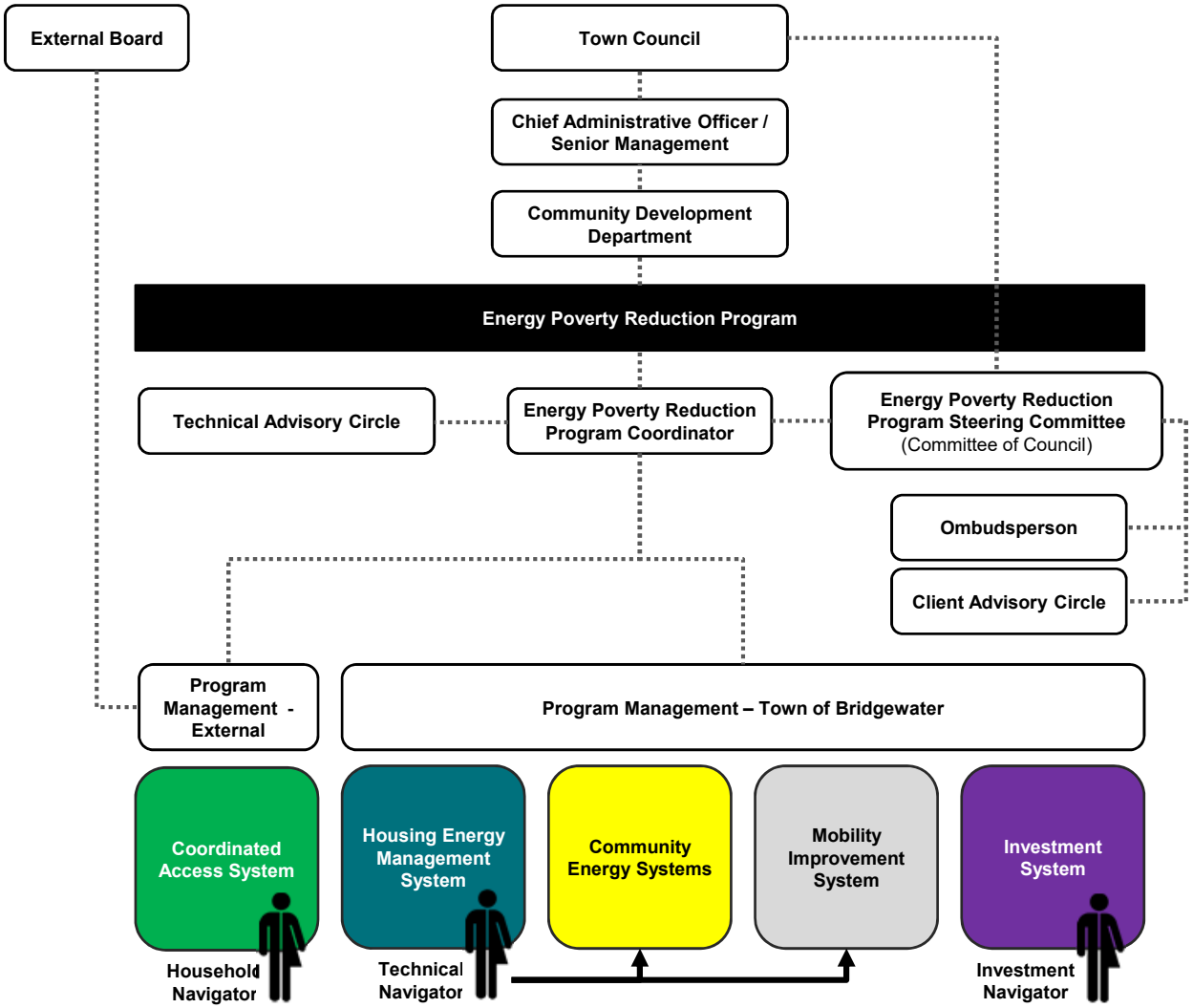


Diagram 3.1

EVALUATION, RISK MANAGEMENT, AND QUALITY CONTROL

Program staff will lead ongoing monitoring and reporting of program outputs as well as outcome indicators throughout all phases of the program. Monitoring and reporting responsibilities are divided by program, as defined in the **Performance Measurement chapter.** Performance measurement for activities that fall under "overall program management" are the primary responsibility of the Energy Poverty Reduction Program Coordinator, with the support of the Steering Committee. Annual reports will be generated for all program services, and shared widely with program stakeholders including Bridgewater Town Council. In its reports, staff will ensure that all identifying personal and business information is reported in aggregate unless express permission is given to share the information publicly.

See the **Engagement chapter** for information on how the program will maintain evaluation engagement with all its stakeholders.

All structures and members within the program governance and management system also have defined roles to play in the program's risk management and quality control processes. While risk management and quality control oversight ultimately rests with Bridgewater Town Council

and the Chief Administrative Officer, the lead role for ongoing risk management and quality control activities will be delegated to program staff throughout all phases of the program. The risk management framework and quality control processes, including program governance risks, are described in the **Project Management chapter.** These activities will involve all other structures and members on a periodic basis, with additional involvement as needed. Key among these will be the Energy Poverty Reduction Program Steering Committee, which will be kept informed of emerging risk and quality control issues, and consulted on mitigation strategies.

PARTNER COMMITMENTS

We are pleased to report that a large and diverse group of program partners and supportive organizations have pledged their support for Bridgewater's proposed program. Partner commitments are described below, grouped by program service:

HOUSING ENERGY MANAGEMENT SYSTEM AND COMMUNITY ENERGY SYSTEMS

- **Green Power Labs –** Committed to the development and integration of the Energy Management Information System, engineering and integration of the real time operations (RTO) system, general technology development, and support and operations in the Town of Bridgewater up to 2030.
- **Efficiency Nova Scotia -** Committed to partnering on detailed program design and delivery of the Housing Energy Management System. This includes the provision of energy efficiency services and financial incentives for retrofits and new construction. Advisory support is provided through the Energy and Financing Working Group.
- **TownSuite Municipal Software –** Expressed interest in exploring the expansion of existing municipal software with the addition of an energy management information system (EMIS) module, with the eventual expansion into real time operations (RTO) functionality. Supportive of exploring the possibility of the enterprise resource planning (ERP) system backbone to support the program and develop the Client Mobility Application module.
- **Clean Foundation -** Committed to the provision of expertise, service delivery and design for the residential energy efficiency retrofit program. Clean Foundation will share data, and related financial and technical learnings of a recently piloted Net Zero retrofit program in Bridgewater.
- **Nova Scotia Power -** Nova Scotia Power will support access to the AMI and the Green Button initiative, offer financing for heat pumps for home retrofits, and provide support for connected technology solutions and applications, as well as expertise for charging stations for electric public transport.
- **St. Mary's University – Faculty of Science –** Committed to the provision of significant contributions in collaboration with Green Power Labs towards Big Data Management, Data Science, Machine Learning, and other aspects of Artificial Intelligence of the project.
- **Dalhousie University – Faculty of Computer Science -** The Smart City Research initiative of Dalhousie University is committed to partnering with Bridgewater to implement the Energy Poverty Reduction Program by providing advisory support. Advisory support is provided through the Energy and Financing Working Group.
- **Nova Scotia Department of Energy and Mines –** Committed partner on the implementation of the Community Energy Investment Plan and the Energy Poverty Reduction Program. Advisory support is provided through the Energy and Financing Working Group.
- **Affordable Energy Coalition –** Continued efforts to influence provincial policy and programs to further support energy poverty reduction efforts and inspire other communities to adopt Bridgewater's model. Further aid in knowledge sharing on how to best work with landlords in implementing energy retrofits.
- **Housing Nova Scotia –** Committed to exploring a partnership for upgrade

referrals and continuing to provide up to date information on programs, funding, and housing stock. In addition, exploring a relationship to monitor and reduce the energy consumption of public buildings.

- **Ecology Action Center –** Committed to providing program education, advocacy, and engaging landlords in the proposed retrofit program.
- **Quality Urban Energy System of Tomorrow (QUEST) –** Prepared to disseminate program information to other municipalities through a Municipal Energy Learning Group and the QUEST NS Buildings Working Group. As one of five regional advisors for the Partners for Climate Protection program, QUEST will share replicable aspects of this program widely within the country. Committed to providing advisory support through the Energy and Financing Working Group.

MOBILITY IMPROVEMENT SYSTEM:

- **Nova Scotia Community Transportation Network –** Committed to promoting Bridgewater's transportation model to other rural communities in Nova Scotia and strengthening the network of relationships between non-traditional for-profit and non-profit community-based transportation providers.
- **Bridgewater Active Transportation Advisory Committee –** Committed to advising the town in its efforts to become an active transportation-supportive community, including putting an AT lens on town infrastructure, programs, policy and projects, and increasing partnerships promoting active transportation.

INVESTMENT SYSTEM:

- **New Dawn Enterprises –** Committed to potentially partnering with the Town of Bridgewater to establish a centralized CEDIF platform if it is selected as a community-investment tool. Advisory support is provided through the Energy and Financing Working Group.
- **Energy Services Association of Canada (ESAC) –** Members are committed to engaging in a competitive tendering process to demonstrate innovative ways to work with and be an integral part of Bridgewater's Smart City vision.

COORDINATED ACCESS SYSTEM:

- **Freeman House in association with Family Services of Western Nova Scotia –** Committed to partnering with the Town to administer the Coordinated Access System, provide guidance and support for system setup, on-going operations, communications, and in-kind support through staffing.
- **Nova Scotia Health Authority –** Committed to championing work within their networks and among community members through a Coordinated Access System, working with experts to develop an energy poverty index using health system data, and facilitating collaboration with other NSHA programs.
- **Nova Scotia Community College, Lunenburg Campus -** Committed to providing education and training opportunities through the Work Integrated Learning Programs, partnering with their Women Unlimited program to help showcase women in non-traditional trades and technology workplaces, integrating into a Coordinated Access System, and ultimately exploring the creation of new programming opportunities in the areas around Green Energy and Technologies.
- **South Shore Housing Action Coalition -** Prepared to support the program in an advisory capacity, engage its broad spectrum of members, and to support and facilitate the sharing of information about the project.
- **Service partners** committed to continued project engagement for the planning of a measurable, manageable and effective Coordinated Access System, and acting as referral and outreach agents, in the promotion, enhancing, and navigation of community resources through the system. These partners include: **Society St. Vincent de Paul; The Ark and Support Services Group;**

Second Story Women's Center; Lunenburg County YMCA; United Way Lunenburg County; Salvation Army Bridgewater, N.S; South Shore Family Resource Center; Big Brothers, Big Sisters of South Shore; Be the Peace Institute; Bridgewater and Area Lions Club; Bridgewater Law Office (Nova Scotia Legal Aid); Nova Scotia Works; Bridgewater Food Bank; Family Support Center; Souls Harbour Rescue Mission, Bridgewater; SchoolsPlus; Small World Learning Center.

OVERALL PROGRAM SUPPORT

- **Halifax Regional Municipality –** Committed to sharing information on climate change related initiatives.
- **Government of Nova Scotia –** Committed to supporting the Town as a climate change leader.

Letters of support confirming all these commitments are provided in the Appendix. Additional letters of support that are confidential in nature because they contain sensitive market information are provided in the Confidential Annex.

DATA AND INFORMATION GOVERNANCE

Data and related infrastructure, along with the technologies and services for the Energy Poverty Reduction Program are key to the success, transferability and replicability of the program. Data governance must ensure that digital solutions both improve the liveability and wellbeing of the households-at-risk of energy poverty, and also meet democratic, privacy, and quality standards appropriate for a project of this scale.

At the core of municipal data governance lies the question of what communities can do in order to manage data in the best interest of their community members and the stakeholders at large without jeopardising privacy and security, and the potential business opportunities that lie within municipal data sets. This eventually leads to a fundamentally new form of public-private partnerships with data as the instrument. In developing this Energy Poverty Reduction Program, we have begun to develop a data governance policy which will need further refinement in the early stages of the program development. This needs to be undertaken in conjunction with the technology and data platform development process. This is discussed in further detail in the **Data and Privacy chapter.**

To develop a strong municipal data governance system for our Energy Poverty Reduction Program, the Town will be carefully considering the following questions and working with our community partners and participants to determine how we will manage the great deal of data and information sharing that is inherent in a smart cities approach.

- What strategies and approaches do communities need to follow to enable third-parties to share their data with the Town of Bridgewater?
- How can the Town remain the decision maker about data usage in public-private partnerships or in data-driven projects that impact the common good?
- What are the lines of decision making and how can the Town create transparent systems that show the existing trade-offs between public and private interests?
- What resources and skills are needed in Bridgewater to moderate data-related decision making?
- How can communities successfully initiate and steer pilot projects on municipal data?
- How do communities ensure ownership of the data in public contracts?
- What data should be provided as open data by the Town and how can communities arrive at a decision about this?
- How can communities embed their policy requirements in municipal data platforms?

The **Data and Privacy chapter** provides preliminary responses to the above questions. Additional work needs to be done during the detailed program design process to fully develop the Energy Poverty Reduction Program data governance framework. Concerns about data are detailed in the risk management section in the **Project Management chapter.**

COMMITMENT TO INNOVATION AND ENERGY POVERTY REDUCTION

Over the past decade, the Town has been an active partner in multi-sectoral initiatives around topics as diverse and complex as food security, affordable housing, youth retention, health services planning, seniors safety, transportation, gender-based violence prevention, alcohol harm reduction, economic development, and a variety of community development initiatives.

The implementation of our ground-breaking Community Energy Investment Plan (2018) remains Town Council's key area of focus, and holds a priority status in the Town's Economic Development Action Plan (2018). The Town has publicly affirmed its commitment to implementing a broad spectrum approach to energy transition and energy poverty alleviation, including the new and innovative solutions that participation in the Smart Cities Challenge has helped us to identify and design.

PROJECT MANAGEMENT CAPABILITY

The Town of Bridgewater has worked hard to expand its highly qualified staff team to the point where it can confidently manage the detailed design and set up of the Energy Poverty Reduction Program. Initial lead staff on this file will include:

- Tammy (Crowder) Wilson, CAO. Tammy has over 20 years' experience in municipal government. She has worked on energy projects including wind energy and anaerobic digestion projects under the Nova Scotia's COMFIT program. She has also facilitated a partnership with the private sector to see landfill material turned into a marketable commodity and increase landfill diversion. Tammy has led the regionalization of some municipal services along the south shore, including participating in the development of several municipal corporations.
- Jessica McDonald, Director of Community Development. Jessica spent over a decade coordinating multi-sectoral environmental policy initiatives and programs for the Province of Nova Scotia. In Bridgewater, her accomplishments include stewarding the design and implementation of the Town's ambitious Pijinuiskaq Park and King Street streetscape enhancements, and overseeing the development of its first fixed route public transit service.
- Leon de Vreede, Sustainability Planner. Leon has managed the Town's sustainability program for over 10 years. Specializing in innovative planning, program design, and community engagement practices, Leon's work has been recognized by the Province of Nova Scotia through an inaugural Clean Climate Leader award in 2015, and by the Federation of Canadian Municipalities through his designation as a PCP Local Climate Change Hero in 2016. Leon will function as Program Coordinator for the proposed program.
- Greg Goubko, Energy Finance & Development Coordinator. Greg has spent the past 4 years working at the Toronto Renewable Energy Co-op/Tapestry Community Capital as the Community Investment Manager. He has recently joined the Town of Bridgewater to help with the implementation of the Community Energy Investment Plan and the Smart Cities Challenge project. He brings a wealth of knowledge related to community financing and local investment.
- Myles Cornish, On-Site Energy Manager. Myles is a Professional Engineer, working for Bridgewater under contract for Efficiency Nova Scotia. Aided by his extensive network throughout the Efficiency Nova Scotia organization as well as to external trade partners, Myles brings the core engineering expertise to the table that is needed to design and implement the infrastructure solutions proposed by the program.

Project management decisions will be made by the Director of Community Development and the CAO, and key decisions that affect town services (e.g. selection of technology partners, and key program design considerations) will be brought to Council for direction. The Steering Committee

will review all project documentation (including staff-generated reports, RFPs and Terms of Reference, and consultant and legal reports) and provide feedback and guidance to staff throughout the process.

PROGRAM DEPLOYMENT

Lifting our residents out of energy poverty is an ambitious outcome outcome, which will many activities and deliverables along the way. A detailed discussion of the program activities and outputs (deliverables) are contained in the **Performance Management chapter** and includes a comprehensive list of indicators to help us measure and monitor our progress. Resource assessment for each element of the Energy Poverty Reduction Program is also discussed in that chapter. This includes details on program design, staffing, technology, partner and stakeholder engagement, procurement processes and needs, legislative and regulatory approvals, database and technology needs, administration, communications and evaluation. Costs associated with each program area, including the proposed use of the Finalist Grant, is provided in the **Financial chapter,** Tables 9.1 through 9.14. Strategies for engagement with partners, stakeholders, and target clients for the program are discussed in the **Engagement chapter.** This includes strategies for ensuring that our program is designed to be meaningful, fair and impactful for the broad range of residents who find themselves struggling to pay their energy bills in the face of all the other household priorities and hurdles.

The Energy Poverty Reduction Program consists of a set of 5 interconnected systems that will be deployed in 4 phases; each building off each other with some overlap in the early phases.

1. **Prototype Program Setup -** This phase includes partnership development; detailed service and technical design; service procurement; client consultation; a comprehensive Privacy Impact Assessment (PIA) on the detailed program design and an overarching privacy policy.

2. **Prototype Program Testing & Refinement -** This phase involves a gradual ramping up of client intake; continuing design and implementation of services and technologies; and monitoring and evaluation of results. Program outcomes become measurable by end of this phase.

3. **Final Program Activation -** This phase requires the finalization of program service design and technical components; extensive documentation of program outcomes; and the development of learning materials for other communities and senior governments. The completion of the Final Program Activation phase marks the end of Smart Cities Challenge contribution agreement.

4. **Program Maturity -** This phase includes ongoing client intake; program evaluation and improvement as well as the integration of new and emerging community energy technologies and solutions.

Program Deployment Phases and Households Served by Program Year

Program Year	2020-21	2021-22	2022-23	2023-24	2024-25	Total
Phase	1: Prototype Program Setup					
		2: Prototype Program Testing & Refinement				
				3: Final Program Activation		
						4.Program Maturity
Households Served	0	50	75	100	125	750 over 5 years
Relationship to Smart Cities Challenge (SCC)	Within SCC Program & Funding					After SCC

Table 4.1

> When people are in a crisis, they need manageable steps to be able to navigate the system of services.
> – RESIDENT, TOWN OF BRIDGEWATER

Table 4.1 describes the timing of phases and the number of households served. As stated early on in the project overview, households-at-risk are less likely to also be the property owner. So the number of households served will account for both the inhabitants and the property owners of the properties they inhabit.

The extended period of prototyping, evaluation and improvement ranging from fiscal year 2021-22 to 2024-25 has been purposefully planned in recognition of the complexity of the program and the need for frequent review and adjustment of goals and solutions. This approach to prototyping is in line with smart cities approaches that revolve around continuous learning and feedback cycles using program metrics and client and partner evaluation.

This approach has also been selected to support a robust risk management process that will ensure program risks and challenges arising from program activities, outputs, and outcomes are mitigated in real time and that emerging risks are being identified before they create problems. In particular, 4 key program risks will be continuously assessed and mitigated through this phased deployment:

- Program uptake risk: uncertainty as to the willingness of households-at-risk and property owners to participate in the program
- Financial risk: uncertainty in program costs and sources of funding and investment
- Technical risk: uncertainty in database development timeframes and functionality
- Supply chain risk: uncertainty in the availability of skilled labour to complete the envisioned infrastructure improvements

The project risks and mitigation strategies are comprehensively discussed in the next section of this chapter.

Risk Management Framework

Project risks and their respective mitigation strategies related to all other chapters in this application are fully described in this section. As described in the **Performance Measurement chapter,** the Energy Poverty Reduction Program will measure the progress toward its outputs and outcomes through an iterative process of design, prototyping, and evaluation. This approach will ensure that program risks and challenges arising from program activities, outputs, and outcomes are being mitigated in real time. It also supports the program's governance, evaluation, and quality control needs.

Notes from a discussion at a Smart Cities Challenge workshop.

Connecting these elements is the program's risk management framework, which consists of the following components:

- an analysis of program risks
- a set of overarching risk management strategies
- a series of course correction checkpoints and risk mitigation options for the program

ANALYSIS OF PROGRAM RISKS

Table 4.2 identifies significant program risks based on the theme of specific chapters within this application, as well for the overall program. Risk probability and risk impact are both measured on a relative scale of 1 (low), 2 (moderate), and 3 (high).

Risk Assessment by Program

Risk Category	Risk	*Risk Probability	*Risk Impact	Description of Impact	Risk Summary	Monitoring & Reporting on this Risk
Overall Program	Smart Cities Challenge grant not achieved	3	3	Lack of funding for program development. Program unlikely to be implemented as proposed, and/or over much longer timeframe.	Significant risk, not easily mitigated	Proposal evaluation by Jury
	Substantial economic downturn affects overall ability to secure financing & funding	1	3	Lack of program funding. Program may need to be implemented over much longer timeframe.	Significant but unlikely risk, partially mitigatable	Investment System
	Program fails to lift residents out of energy poverty, or affect systemic change as envisioned	2	3	Affects program targets, performance measures, and ability to meet outcomes.	Significant risk, partially mitigable	Overall Program Management
	Program is too complex for clients, partners, and service providers to navigate or maintain	2	2	Affects ability of clients/partners/service providers to navigate program structures and processes. Reduces client, partner, and service provider participation rate. Delays program implementation. Adds to program cost. Affects program targets, performance measures, and ability to meet outcomes.	Moderate risk, partially mitigatable	All program services
Performance Measurement	Performance indicators cannot be measured as expected	2	1	Affects performance measurement and outcomes monitoring.	Minor and mitigatable risk	All program services
	Actual energy poverty rate is different than currently understood (38.5%)	2	2	Affects program targets, performance measures, and ability to meet outcomes. May not be able to be measured accurately.	Moderate but mitigatable risk	Overall Program Management
Governance	There is insufficient capacity/interest by program partners to maintain effective program governance & evaluation	1	2	Program implementation responsibility rests too heavily on Town of Bridgewater. Community champions lacking. Reduced program uptake. Reduced program quality.	Moderate but unlikely risk	Overall Program Management
	Client or partner makes complaint that is unable to be resolved	2	2	Additional strain on program resources & management. May escalate into legal or regulatory action against program. Affects public perception of program.	Moderate but mitigatable risk	All program services and Ombudsperson
Project Management	Contractor & supply chain capacity is lower than anticipated	3	3	Delays program implementation. May affect program quality. Likely to increase program costs.	Significant risk, not easily mitigated	Housing Energy Management System, Community Energy Systems, and Mobility Improvement System
	Key service delivery partner defaults on contract or experiences loss in capacity to carry out responsibilities	1	3	Delays program implementation. May affect program quality. May increase program costs. May lead to client/partner dissatisfaction as a result of interrupted service.	Significant but unlikely risk, partially mitigatable	All program services
	Regulatory, cost, and project management uncertainty in deployment of development and financing structures	3	2	Program design cannot be finalized until development and financing structures are confirmed. Affects cost and project management assumptions, as well as procurement and partnership design. Creates overall program uncertainty. Lack of resolution within reasonable timeframe affects program targets, performance measures, and ability to meet outcomes.	Moderate risk, partially mitigatable	Investment System and Community Energy Systems

PROJECT MANAGEMENT

Risk Category	Risk	*Risk Probability	*Risk Impact	Description of Impact	Risk Summary	Monitoring & Reporting on this Risk
Project Management	Challenges finding or retaining qualified staff to manage the program	1	2	May delay program implementation or affect program continuity. May affect program quality. May increase program costs. May lead to client/partner dissatisfaction as a result of interrupted service.	Moderate but unlikely risk	All program services
Technology	Legislative & regulatory barriers prevent deployment of community energy solutions or delay their deployment	2	2	Delays project implementation. Affects program targets, performance measures, and ability to meet outcomes. May result in energy affordability and security goals not being met.	Moderate risk, partially mitigatable	Community Energy Systems
	Technical assessment/due diligence studies of community energy systems yield unfavorable results or take longer than anticipated	2	2	Delays project implementation. Affects program targets, performance measures, and ability to meet outcomes. May result in energy affordability security goals not being met.	Moderate but mitigatable risk	Community Energy Systems
	Development of core data platform solutions is more technically complex, costly, or time-consuming than anticipated. Scope creep.	2	3	Delays program implementation. May affect program quality. Likely to increase program costs.	Significant risk, not easily mitigated	All program services
	Anticipated data platform partners not interested in participating	2	2	Delays program implementation. May affect program quality. Likely to increase program costs. May result in interoperability challenges.	Moderate risk, partially mitigatable	All program services
	Technological disruption causes dramatic change in cost or ability to implement planned technological solutions	1	2	Effects generally unknown - may enhance or hinder program implementation, including costs and ability to meet outcomes.	Moderate but unlikely risk	All program services
Data and Privacy	A data security breach occurs in one or more data platforms	1	3	May compromise client and partner data, including personal and corporate information. May result in program shutting down operations to address security breach. May erode trust in the program and affect the program's ability to attract clients and service providers, affecting program outcomes.	Significant but unlikely risk, partially mitigatable	All program services
	Program participants' concerns about privacy are not satisfied, leading to low uptake rates/negative publicity	1	2	May affect the program's ability to attract clients and service providers, affecting program outcomes.	Moderate but mitigatable risk	All program services and Ombudsperson
	Program partners are unable or unwilling to share all or part of anticipated data	2	2	May affect program's ability to track clients, partners, and outcomes indicators. May affect program quality.	Moderate risk, not easily mitigated	All program services
	A data platform experiences a service delivery problem or unexpected failure	1	3	May result in program shutting down operations temporarily. May erode trust in the program and affect the program's ability to attract clients and service providers, affecting program outcomes. May affect program quality. May increase program costs. May lead to client/partner dissatisfaction as a result of interrupted service.	Significant but unlikely risk, partially mitigatable	All program services
Engagement	Program delays or challenges result in negative publicity in community and beyond	1	2	May affect the program's ability to attract clients and service providers, affecting program outcomes.	Moderate but mitigatable risk	All program services

PROJECT MANAGEMENT

Risk Category	Risk	*Risk Probability	*Risk Impact	Description of Impact	Risk Summary	Monitoring & Reporting on this Risk
Engagement	Program is ineffective at reaching clients who are most in need	2	2	Program outcomes not achieved. Energy poverty rate not reduced as quickly as anticipated. Negative publicity may affect the program's ability to attract clients and service providers, further affecting program outcomes.	Moderate risk, partially mitigatable	Housing Energy Management System and Coordinated Access System
	Program uptake (households-at-risk) is lower than anticipated	1	2	Program outcomes not achieved. Service contract thresholds not reached. Energy poverty rate not reduced as quickly as anticipated.	Moderate but unlikely risk	Coordinated Access System
	Program uptake (property owners) is lower than anticipated	2	3	Program outcomes not achieved. Service contract thresholds not reached. Energy poverty rate not reduced as quickly as anticipated.	Significant risk, not easily mitigated	Housing Energy Management System
	Program uptake in general is higher than anticipated	2	2	Additional strain on program resources and management. Dissatisfaction in community if waiting list grows.	Moderate but mitigatable risk	Housing Energy Management System and Coordinated Access System
Financial	Legislative & regulatory requirements are not met or delayed, including expectations around regulatory changes	2	2	Delays project implementation. Affects program targets, performance measures, and ability to meet outcomes. May result in energy affordability and security goals not being met.	Moderate risk, partially mitigatable	All program services
	Major regulatory change causes disruption to program	1	2	Effects generally unknown - may enhance or hinder program implementation, including costs and ability to meet outcomes.	Moderate but unlikely risk	All program services
	Program costs are higher than anticipated. May arise from currency risk	2	3	May make housing, transportation, and community energy system improvements unattainable or only partially attainable. Increases demands on funding/financing. Delays program implementation. May affect program quality.	Significant risk, partially mitigable	All program services
	Funding from financial investors lower than anticipated	2	3	May make ROI components of program unattainable or only partially attainable. Increases demands on non-investor funding. Delays program implementation. May affect program quality.	Significant risk, not easily mitigated	Investment System
	Funding from social investors (government, foundations) lower than anticipated	2	3	May make non-ROI components of program unattainable or only partially attainable. Increases demands on debt financing. Delays program implementation. May affect program quality.	Significant risk, not easily mitigated	Investment System
	Home energy savings are lower than anticipated as result of inaccurate estimates	1	3	Affects cashflow of property owners and possibly tenants. May not achieve poverty reduction outcomes. May make poverty issues worse. Negative client experience. Affects public perception of program.	Significant but unlikely risk, partially mitigatable	Housing Energy Management System
	Home energy savings are lower than anticipated as result of insufficient funding	2	2	Affects cashflow of property owners and possibly tenants. May not achieve poverty reduction outcomes. Affects public perception of program.	Moderate risk, not easily mitigated	Housing Energy Management System
	Home energy savings are lower than anticipated as result of conventional energy prices being lower than anticipated	1	2	Affects cashflow of property owners and possibly tenants. May not achieve poverty reduction outcomes. May make poverty issues worse. Negative client experience. Affects public perception of program.	Moderate but mitigatable risk	Housing Energy Management System

Risk Category	Risk	*Risk Probability	*Risk Impact	Description of Impact	Risk Summary	Monitoring & Reporting on this Risk
Implementation Phase Requirements	Collaboration with First Nations communities is less robust than expected	2	1	Missed opportunity for reconciliation, partnership, economic development, and cultural exchange.	Minor risk, not easily mitigated	All program services
	Diversity targets not met for recruitment, training, and procurement as per Community Employment Benefit (CEB) reporting	2	1	Inequitable distribution of community economic benefits. Missed opportunity to build program strength by learning from disaffected segments of the community.	Minor and mitigatable risk	All program services
	Legislative & regulatory requirements are not met or delayed, including expectations around regulatory changes	2	2	Delays project implementation. Affects program targets, performance measures, and ability to meet outcomes. May result in energy affordability & security goals not being met.	Moderate risk, partially mitigatable	All program services
	Major regulatory change causes disruption to program	1	2	Effects generally unknown - may enhance or hinder program implementation, including costs and ability to meet outcomes.	Moderate but unlikely risk	All program services

Table 4.2

RISK MANAGEMENT STRATEGY 1: ESTABLISH CORE RISK MANAGEMENT STRUCTURES & PROCESSES

During the first year of the program (fiscal year 2020-21) a set of 7 program structures and processes will be put in place to establish an overall risk management process.

- Governance Structure & Commitments: establish an effective program governance structure as described in the **Governance chapter.** Effective risk management across all risk areas begins with strong governance. Effective governance requires long-term commitments from key program partners as they participate in key roles on the Energy Poverty Reduction Program Steering Committee.
- **Management Structure & Capacity:** establish an effective program management team with the capacity to implement the program, as described in the **Governance chapter** and earlier in this chapter. Qualified staff working under diligent oversight by Bridgewater Town Council and the Chief Administrative Officer will ensure that a broad range of program risks are minimized by having outputs achieved effectively and on budget. Management relationships with external organizations, in particular for the Coordinated Access System and the Financial Investment Vehicle, will reduce program risk through strong service contracts and/or partnership agreements, with responsibilities, deliverables, and timelines clearly defined.
- **Evaluation Process:** Phase 1 of the program will start with the program evaluation process already active, so that the process can support the program setup work from the very beginning, allowing staff and program partners to identify, communicate, and manage any and all program risks as they emerge. Effective and timely performance tracking mitigates risk through the early identification of areas where program deliverables are falling short or experience implementation delays, allowing for course corrections. Year 1 of this process will also involve the review of program indicators so that adjustments can be made to performance measurement methodologies and targets. The evaluation process and the program outputs and

outcomes it will measure are described in the **Performance Measurement chapter.**

- **Communications System:** ensuring timely and effective communications between program governance, program management, program partners, and program clients mitigates program risk by reducing opportunities for misunderstanding, speeding up processes, and maintaining cohesion across the multiple service areas. Detailed communications strategies will be developed for program services with high community engagement and marketing needs. Program communication will ensure cautious and transparent communication with residents on their rights related to sharing data, who will be able to see their data, and how it will be stored. Strong communication regarding the confidentiality of participants' sensitive information will be ensured to maintain trust with participants and ensure that at-risk, and vulnerable populations are insulated from potential risks for sharing sensitive information when accessing services. Program communications are the responsibility of all program managers, and are overseen by the Program Coordinator.

- **Quality Control / Quality Assurance Process:** The system to maintain the standards of the Energy Poverty Reduction Program consist of a three-level hierarchy of controls. The first level, and closest to the client, consists of an Ombudsperson and a Client Advisory Circle. These roles relate to communicating client experiences directly to the program governance and management teams, and resolving client complaints, program quality concerns, and program impact deficiencies. They are further described in the **Governance chapter.** If quality control has not been assured via the first-level supports, then issues can escalate to the Program Steering Committee where authority to make program decisions to ensure ongoing quality will be granted in the Terms of Reference. If quality control concerns exist after this second-level support, concerns can be directly expressed to the Town Council, who maintains the ultimate authority over all municipal programs.

- **System Gap Analysis Review Process:** Through the evaluation framework, emergent risks are continuously monitored across all program areas. Among these, a key risk relates to a lack of program accessibility. This is mitigated by continuously asking about whether client and stakeholder needs are being met, or whether people are 'falling through the cracks' as a result of system gaps. System gaps are also mitigated through regular contact with the Client Advisory Circle, which provides a direct channel for program clients to communicate unmet needs.

- **Privacy Review Process:** To ensure all privacy related precautions are met and data and privacy breaches are mitigated, the entire program will be evaluated from a privacy perspective through the completion of a comprehensive PIA coupled with an overarching Privacy Policy. To ensure both documents are adequate and adhere to standard privacy practices the Town will consult with privacy experts throughout the first year of the program and for all aspects of the program design.

These structures and processes will be designed, implemented and evaluated by the program management team as part of the delivery of outputs related to Overall Program Management. Major risk management checkpoints for this strategy are 6 months into year 1 (October 2020), and 11 months into year 1 (February 2021). These timeframes allow critical course corrections to be made through the risk mitigation options available at each stage (see below).

RISK MANAGEMENT STRATEGY 2: CONFIRM FEASIBILITY OF PROGRAM

Each program service will undergo a detailed feasibility reviews 6 months before the end of Phase 1 (October 2021), and 6 months before the end of Phase 2 (October 2023), so that overall program feasibility can be assured by Phase 3 (Final Program Activation). Completing feasibility checks, and making any necessary course corrections, also helps ensure that Phase 1 and Phase 2 outputs can be achieved on time. As a risk mitigation strategy, feasibility will be assessed based on 9 areas of program performance.

These feasibility assessments will be completed by the program management team, and will allow critical course corrections to be made through the mitigation options available at each stage (see Table 4.2).

RISK MANAGEMENT STRATEGY 3: ESTABLISH CONTINUOUS MONITORING & IMPROVEMENT SYSTEM

Following the successful completion of Phases 1 and 2, risks related to program feasibility will have been assessed and mitigated, and the program will transition through Final Program Activation (Phase 3) into Program Maturity (Phase 4). This transition will require an amended risk management strategy, which is to deliver these risk management functions through a system of continuous monitoring and improvement.

Program Feasibility Assessment and Criteria

Feasibility Assessment	Feasibility Assessment Criteria
Client Participation	• Client participation rates are sufficient to meet program objectives and performance measures • The program sufficiently meets client satisfaction and needs • The program is sufficiently accessible to intended clients
Service Costs	• Current and future service costs are sufficiently known to enable service delivery planning and contracts • Service costs are within tolerable thresholds to meet program objectives and performance measures
Service Capitalization	• Current and future revenue sources are sufficiently known to enable service delivery planning and contracts • Revenue sources are within tolerable thresholds to meet program objectives and performance measures • The program sufficiently meets funder and investor satisfaction and needs
Data Availability	• Data governance processes and agreements meet partners' and clients' needs • Sufficient data is available to enable service delivery planning and contracts • Key partners and service organizations are able to share sufficient data to meet program objectives and performance measures
Data Platform Setup	• Data platforms have the minimum functionality required to achieve program objectives and performance measures • Data platforms have sufficient oversight, quality control, and security in place to meet partners' and clients' needs
Technical Solutions	• Energy management solutions are sufficiently known to enable service delivery planning and contracts • Performance of energy management solutions is sufficiently measurable to meet program objectives • Energy management solutions are sufficient to meet program objectives and performance measures • Energy management solutions sufficiently meet client satisfaction and needs
Supply Chain & Procurement	• Procurement processes for program services and products results in adequate value and contractual security to meet program objectives and performance measures • Program service providers and product suppliers have sufficient capacity to meet program objectives and performance measures over the long term • Procured services and products meet partners' and clients' needs
Regulatory Limitations	• Current and future legislation and regulations are sufficiently known to enable service delivery planning and contracts • Legislation and regulations enable program services to meet program objectives and performance measures
Program Impact	• Program outcomes and indicators are sufficiently measurable to understand program impact • Program outcomes are achieved • Program impact is defined holistically, and current and emerging gaps in program impact are reevaluated on a regular basis

Table 4.3

This system will be designed in full during Phase 3, and will likely retain a number of risk management, quality control, and performance measurement elements from Phases 1 and 2, as well as additional elements to address emerging risk issues. The continuous monitoring and improvement system will be carried out by the program management team, and will work in

conjunction with the core risk management structures & processes defined in the first risk management strategy.

PROGRAM COURSE CORRECTION CHECKPOINTS AND RISK MITIGATION OPTIONS

The primary program course correction checkpoints discussed above allow the program management team to implement risk mitigations to improve service design and delivery should the program experience feasibility challenges or fall short on its performance expectations. Depending on the severity of risks identified through risk management and quality control activities, mitigation options may include the following:

- **Change program outputs –** revising program activities and deliverables may address a wide variety of risk, quality, and performance needs.

- **Reduce data platform functionality –** as a major source of program risk, the cost and technical complexity of the data platform may be need to scaled back in scope in order to achieve a minimum viable product (MVP) that is manageable while still achieving program outcomes.

- **Change performance indicators –** altering indicators may more effectively or more practically measure progress toward program outcomes.

- **Change partners –** program partners and service providers may be unable to achieve program deliverables, share data, or participate as meaningfully as originally intended. Finding new partners may allow the program to better meet its outcomes.

- **Increase supply chain capacity –** a major source of program risk, service provider and product supplier capacity may be insufficient to meet the significant needs of the program. Issuing stable long-term contracts, requiring capacity building activities as part of contracts, collaborating with regional trade networks and training programs, and advocating for government policies that increase trade sector capacity may all be necessary to bolster the quality and capacity of program suppliers and service providers.

- **Improve communications –** as insufficient client uptake is a major program risk, altering communication strategies may be required. Improved communications may also be necessary to attract greater interest from funders and investors.

- **Increase funding –** as a town with a very limited ability to draw additional resources from its tax base, Bridgewater lacks the means to put substantial program dollars on the table should funding levels be insufficient to meet program needs. Should program revisions described above yield insufficient risk reduction or quality improvement, or fail to build the necessary program capacity, additional funding sources may be needed to achieve program outcomes. This may result in program implementation delays.

- **Lobby for regulatory change –** municipalities are created and regulated by legislation. If any regulatory impediments or barriers are discovered, we may need to lobby to the provincial and federal governments for change, which can take time and may lead to delays in program delivery and or achievements.

- **Change outcomes –** as a last resort, program outcomes may need to be shifted to become more manageable, or abandoned altogether, if other mitigation options cannot allow the program to achieve the outcomes while also resolving program risks and quality issues.

Table 4.4 provides a preliminary assessment of the risk mitigation options that may address program risk and quality concerns at key course correction checkpoints.

Program Feasibility Assessment and Criteria

Risk Management Strategy		Course Correction Checkpoint(s)	Risk Mitigation Options								
			change program outputs	reduce data platform functionality	change indicators	change partners	increase supply chain capacity	improve communications	increase funding	lobby for regulatory change	change outcomes
Establish Core Risk Management Structures & Processes	Governance Structure & Commitments	October 2020 and February 2021				x					
	Management Structure & Capacity		x	x					x		x
	Evaluation Process		x		x						
	Communications System		x								
	Quality Control / Quality Assurance Process		x								
	System Gap Analysis Review Process		x		x	x	x	x	x	x	x
Confirm Feasibility of Program	Client Participation	October 2021 and October 2023	x					x	x		x
	Service Costs		x	x			x		x		x
	Service Capitalization		x					x	x		x
	Data Availability				x	x				x	
	Data Platform Setup		x	x					x		x
	Technical Solutions		x								x
	Supply Chain & Procurement		x				x				x
	Regulatory Limitations		x							x	x
	Program Impact		x		x				x		x
Establish Continuous Monitoring & Improvement System		To be determined	x	x	x	x	x	x	x	x	x

Table 4.4

Project Continuation After Smart Cities Challenge

Continuation After Smart Cities Challenge Smart Cities funding will create the prototype for the Energy Poverty Reduction Program and will ultimately demonstrate the feasibility and value of this initiative continuing over the long term.

Our dedication to energy poverty reduction is evidenced in the **Performance Measurement** and **Financial chapters,** where program considerations for years 6 through 10 are described. Commitment for Town Council's ongoing role in Bridgewater's energy future was proclaimed on January 8, 2018 with the formal adoption of the 32-year Community Energy Investment Plan.

ENERGY POVERTY REDUCTION THROUGH CONNECTED TECHNOLOGY PLATFORMS

From streamlining client intake, to enriching investment tools, to improving energy flows, connected technology plays a crucial role in all aspects of the Energy Poverty Reduction Program. A central feature of the program design is to empower households-at-risk by providing them with control over their home energy options through building upgrades that measure and monitor usage so that they can actively manage and control their energy costs.

Emerging connected technologies for household energy management built on the internet of things (IoT), big data and intelligent energy management systems are fundamentally changing the practices of households and their daily, monthly and annual energy budgets.

Evidence suggests that energy security is a significant stress factor for households-at-risk. There are cascading negative effects of missing payments on energy bills that result in financial impacts critically affecting all aspects of household life. The ability to optimize energy supply and consumption and to deliver energy reserves such as stored electrical power on demand, particularly in emergency situations, is an emerging requirement directly attributable to connected "smart" technologies and distributed energy resources.

Such technology includes smart thermostats for residential houses and smart thermal optimization for multiunit residential and municipal buildings as well as connected clean technology solutions for energy generation such as residential microgrids, virtual community loads and power plants and electricity micro market management.

At a high-level, this connected technology solution is based on three energy management "pillars" that are interoperable with one another and are all housed within an **energy resource planning platform:**

- An advanced **enterprise resource planning (ERP) system** for municipalities to ensure their housing and mobility assets are integrated with existing applications to support the households-at-risk in the community and will rely heavily on the diligent use and interoperability with the Energy Management Information System (EMIS) and Real Time Operations (RTO) system.

- an **energy management information system (EMIS)** focusing on housing energy management and community energy systems and solutions that will enable energy data monitoring and analytics. The EMIS will operationalize the efficiency of foundational and advanced applications related to energy productivity for the households-at-risk, and broader municipal energy efficiency programs. The EMIS is fully connected to the ERP system to ensure fluidity of information without compromising accuracy.

- a **real time operations (RTO) system,** enabled through supervisory control and data acquisition (SCADA) and energy management system (EMS) solutions, that will leverage the value of the program assets and coordinate its controls in real time. The RTO system is a crucial component to minimizing energy use and maximizing efficiencies, and represents the final stage of the energy resource planning platform development once the municipal ERP system and EMIS are deployed and in operation.

These pillars will enhance the experience of households, sustain optimal levels of performance and reduce the costs of household energy use. The coordinated connected technology solutions focused on the buildings where households-at-risk live will make their homes highly efficient, more comfortable, healthier places to live. In addition to direct benefits, households will be empowered by having greater control of their energy use while encouraging household interactions and knowledge sharing.

ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM

Enterprise resource planning (ERP) systems are packaged application software suites that support the common business processes, functions and data for the systems of record in an enterprise. The ERP is the system of record - the authoritative source of data that any stakeholder in an enterprise can reference to support their activities. The ERP achieves this by enabling the flow of information across the organization, in end-to-end business processes, through a comprehensive set of interconnected systems modules. Modules can be utilized in different combinations, presenting unique ERP options to meet different administrative, management, operational, analysis and reporting needs. This element of the data platform can be replicated and scaled according to local conditions.

Bridgewater's existing municipal ERP is TownSuite Municipal Software. The platform is used for finance, asset management, land management, human resources, eBilling, and customer service functions. This modified data platform would house the three pillar systems and will be operated in connection with the external Coordinated Access System data platform (HIFIS) as well as an external Financial Investment Vehicle dealing with traditional and community investors. An early conceptual diagram of the integration of the municipal ERP, EMIS, and RTO functionality is provided in Diagram 6.1.

Dialogue with Townsuite has suggested that the Energy Poverty Reduction Program can be built onto this ERP but a full assessment of functionality options, development requirements, and timelines is needed to establish an agreement.

> "A one stop shop aided by technology for navigation of services would dramatically improve access to services for clients."
>
> - COMMUNITY SERVICES ORGANIZATION REPRESENTATIVE

ENERGY MANAGEMENT INFORMATION SYSTEM (EMIS)

To provide community energy management support services and achieve the outcomes of the Energy Poverty Reduction Program, it will be necessary for the Town to collect and monitor energy data, and to manage energy information on behalf of participating program clients. This functionality is achieved through the addition of the energy management information system (EMIS). The EMIS will provide relevant information to households-at-risk, property owners, and municipal departments, enabling them to improve the energy performance of their assets. The EMIS will operationalize the municipality's energy management objectives and provide an efficient means to audit and depict Energy Poverty Reduction Program outcomes.

The principal objectives of the EMIS proposed in the program is to support the municipality's energy management programs through:

- A comprehensive operations, sustainability and planning information system
- Visualizing and understanding the consumption of various types of energy through a set of energy dashboards and other analysis-based tools
- Quantifying energy use of individual home, buildings or processes
- Early detection of poorly performing buildings, systems or processes
- Reporting functions including auditing and the ability to identify performance trends

These functions, and their relationship to client homes and other community energy assets, are visualized in Diagram 6.2.

Features of the EMIS in the EPR system include a user focused web-based dashboard, the storage of data in a usable format, the calculation of effective targets for energy use, and comparison of actual consumption with these targets. Elements include sensors, energy meters, hardware and software, which may already exist as process and business performance monitoring systems.

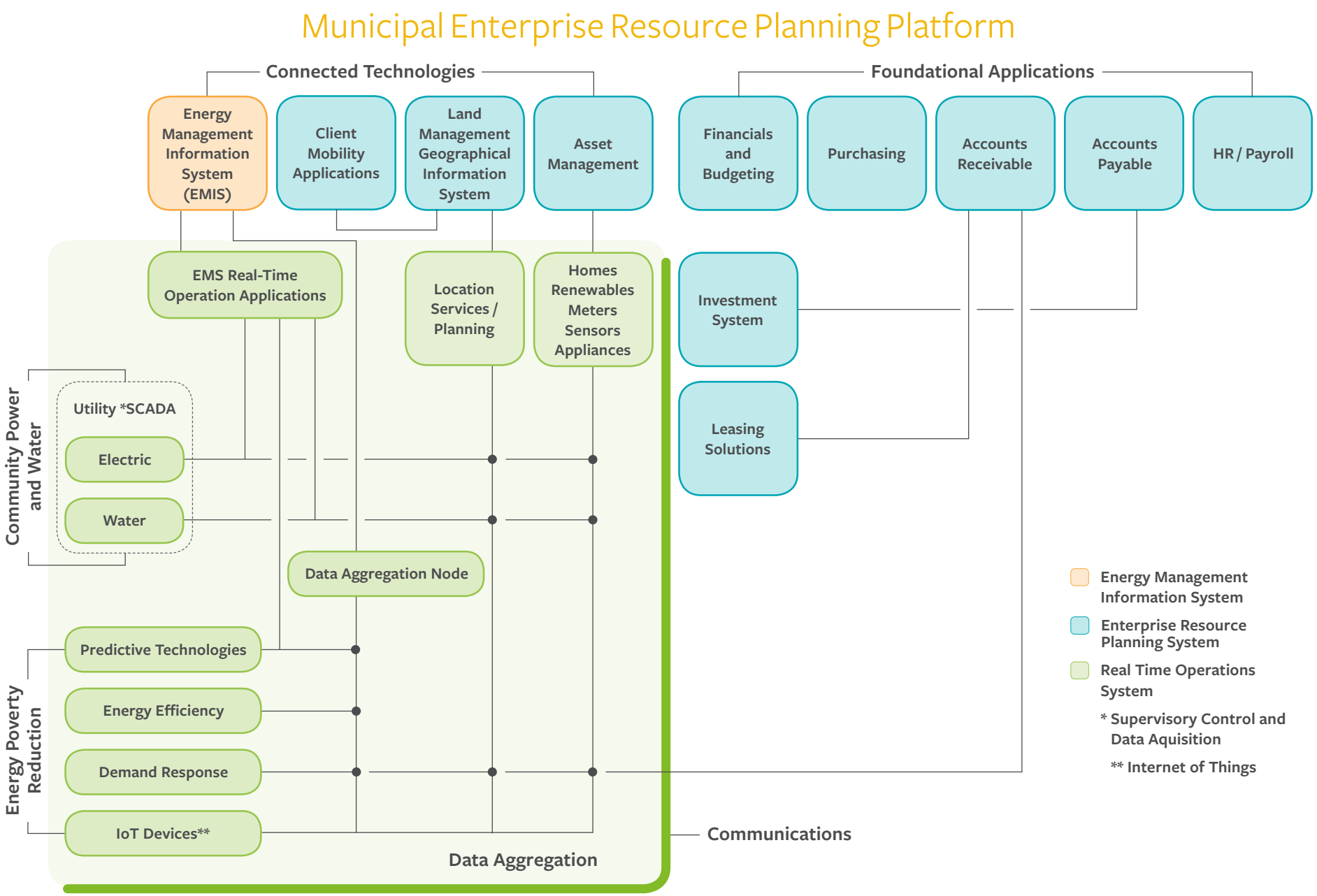

Municipal Enterprise Resource Planning Platform
Connected Technologies
Foundational Applications
Energy Management Information System (EMIS)
Client Mobility Applications
Land Management Geographical Information System
Asset Management
Financials and Budgeting
Purchasing
Accounts Receivable
Accounts Payable
HR / Payroll
EMS Real-Time Operation Applications
Location Services / Planning
Homes Renewables Meters Sensors Appliances
Investment System
Leasing Solutions
Community Power and Water
Utility *SCADA
Electric
Water
Data Aggregation Node
Energy Poverty Reduction
Predictive Technologies
Energy Efficiency
Demand Response
IoT Devices**
Communications
Data Aggregation
Energy Management Information System
Enterprise Resource Planning System
Real Time Operations System
* Supervisory Control and Data Aquisition
** Internet of Things

Diagram 6.1

Energy Management Information System Overview

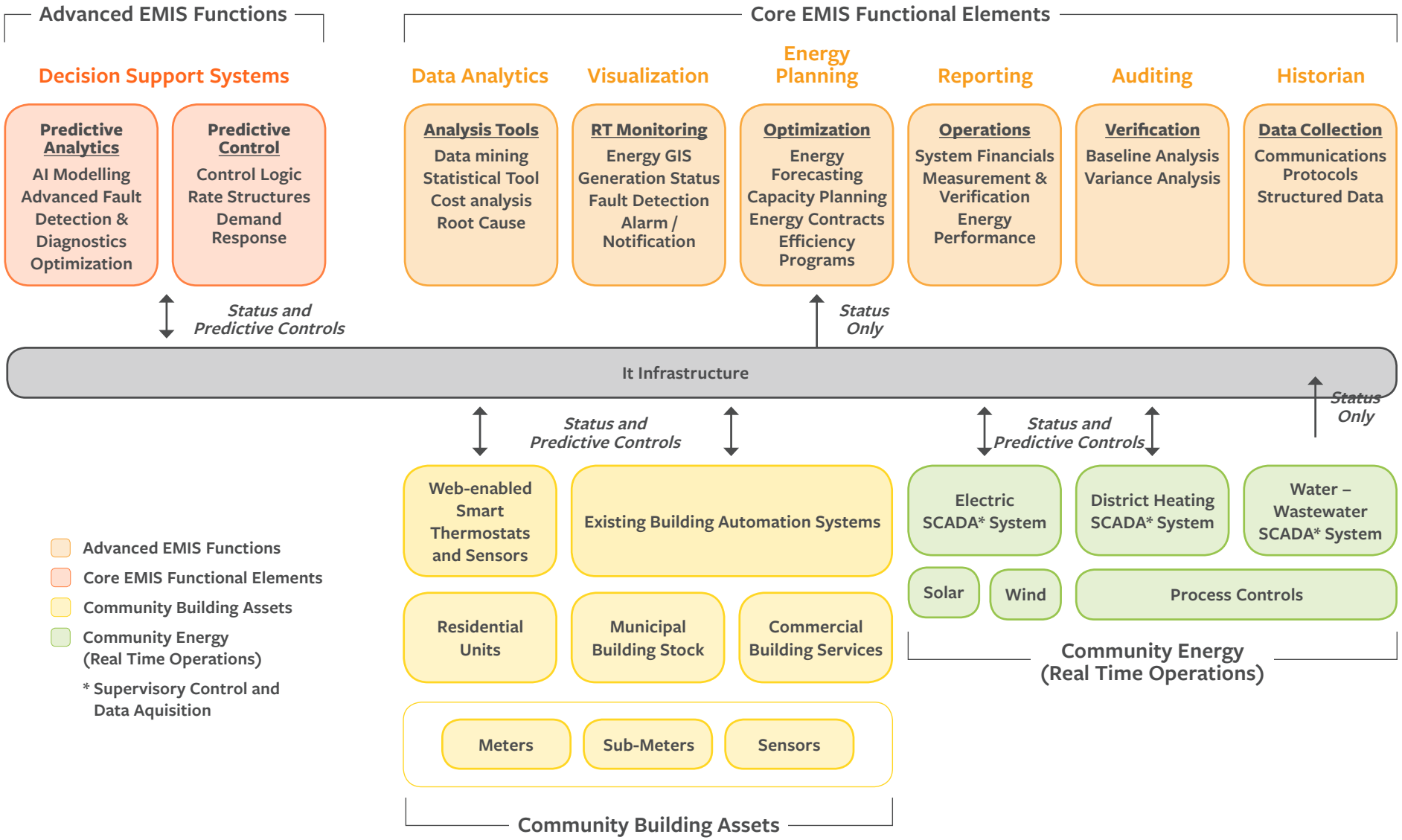


Diagram 6.2

EMIS functionality relies on the following three components:

- **Monitoring:** the EMIS coordinates the monitored data flow from all existing real estate and energy assets. It includes energy use, generation and storage for each of the project assets in energy units - expressed in kilowatt hours (kWh) and/or gigajoules (GJ) - as well as carbon footprint - expressed in tonnes. It also includes related energy costs and the costs of energy improvements. Finally, the EMIS also includes exterior environmental conditions such as ambient weather and interior environmental conditions such as room temperature and humidity. To visualize the project outputs and results, the EMIS intends to have a comprehensive dashboard as a key program tool. It also has an advanced historian to archive compressed data without overloading the server.

- **Descriptive Analytics:** a performance and auditing tool that analyzes historical data to define the reasons for past performance successes and/or failures.

- **Predictive/Prescriptive Analytics:** an advanced analytics component that leverages real time operations (RTO) controls of energy assets and utility resources. It combines real time energy data with external data on any scale, which allows it to estimate the future energy consumption patterns of a single home, a multi-unit residential building, a neighbourhood energy system, or even the Energy Poverty Reduction Program or community as a whole. Prescriptive analytics goes beyond predicting future outcomes by suggesting beneficial energy management actions and showing the implications of each decision option.

REAL TIME OPERATIONS (RTO) SYSTEM

The real time operations (RTO) system leverages the value of the program assets and coordinates its controls in real time. The RTO system becomes active at the final stage of the program development when the core operations of its municipal enterprise resource planning system and energy management information system are deployed and in operation. The RTO system leverages the operations of the household and community energy assets in real time thus bringing additional hourly, daily, monthly and annual value to the community.

The two key parts of the RTO system are the supervisory control and data acquisition (SCADA) and the energy management system (EMS).

Supervisory Control and Data Acquisition

SCADA is a category of software application programs and hardware devices for process control. These systems gather data in real time from remote locations in order to control equipment and conditions. SCADA is used in power plants, power distribution, as well as in oil and gas refining, telecommunications, transportation, and water and waste control.

SCADA systems allow the community to:

- control distributed energy resources and industrial processes locally or at remote locations
- monitor, gather, and process real-time data
- directly interact with devices such as sensors, heating ventilation and air conditions (HVAC) equipment, photovoltaic (PV) generators, and more through human-machine interface (HMI) software
- record events into a log file

SCADA systems offer important functionality for the Energy Poverty Reduction Program's more advanced operations as they help to maintain efficiency, process data for smarter decisions, and communicate system issues to help mitigate downtime.

Energy Management System

The main goals of sustainability in the grid revolve around economic operation, reliability, and environmental impact. One of the main advantages of the energy management system

(EMS) is that it can supply households with electricity and guarantee the reliability and intelligence of the power system.

The EMS can receive supervisory control signals based on requirements of the main grid. The system's operation policy depends on the ownership structure, connection status and market model.

The major reasons for the RTO-enabling energy management systems are as follows:

- accommodates intermittent distributed energy resources such as solar panels or energy storage in the grid
- reduces grid operation cost and emissions, thereby increasing energy efficiency
- improves grid stability, reliable fault ride-through and seamless mode transitions making the entire system more resilient

RTO - Energy Management Cycle

The RTO energy management cycle, presented in Diagram 6.3, illustrates the power of RTO functions when they work together to reduce energy poverty. This cycle forms the heart of the data and connected technology-driven energy performance improvement process, as communications between smart systems increase energy savings and energy generation. This enhances financial returns, enabling further investments in energy solutions.

CONNECTED TECHNOLOGY APPLICATIONS FOR ENERGY POVERTY REDUCTION

Connected energy technology applications are the practical on-the-ground solutions that work in unison with the data platforms described in the previous sections, and whose functions are enabled and enhanced through those platforms. These applications have a common purpose in reducing energy costs and increasing energy security for Bridgewater residents. They fall into 2 categories: connected energy efficiency solutions and connected clean energy solutions.

CONNECTED ENERGY EFFICIENCY SOLUTIONS

These are digital controls that use advanced analytics to generate energy savings:

- Smart Appliances: a smart appliance is connected to other devices or networks via wireless protocols such as Bluetooth, Wi-Fi, 3G, etc., that can operate to some extent interactively and autonomously. Smart appliances utilize modern computer and communications technology to make functions faster, cheaper and more energy-efficient.

Real-time Operations Energy Management Cycle

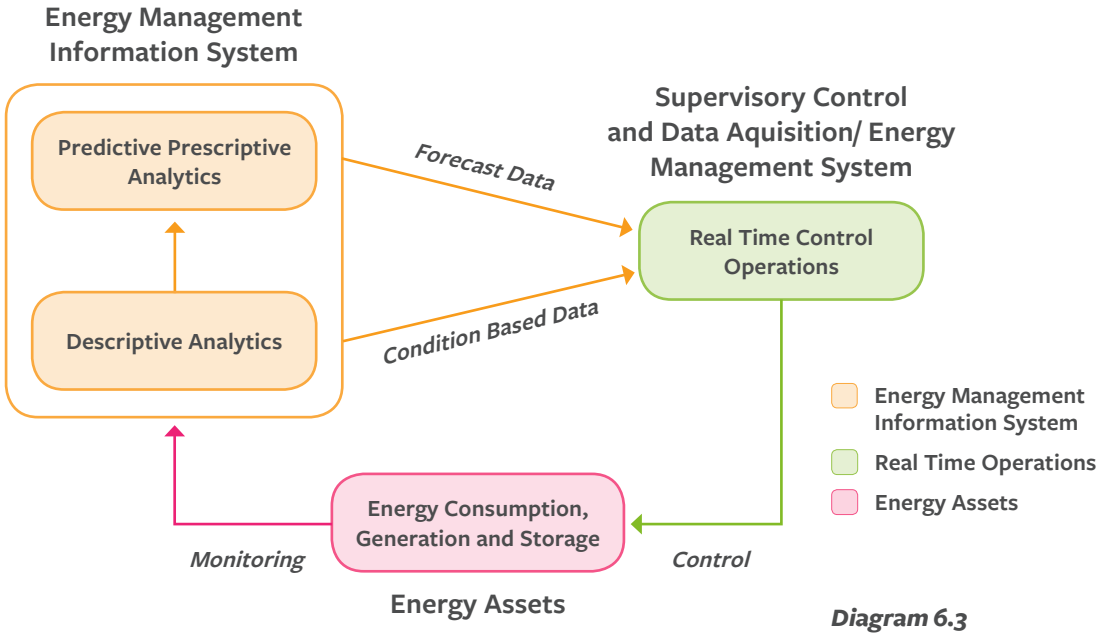


Diagram 6.3

- **Smart Thermostats and Smart Meters for Households:** smart thermostats and smart meters form a two-stage approach to the connected technology strategy. When coupled with advanced analytics and artificial intelligence, smart thermostats can be networked or clustered together in the community to participate in a broader energy management control system.

- **Smart Thermal Optimization:** smart thermal optimization for multi-unit residential buildings (MURBs) improves the efficiency of a building's energy use by anticipating and reacting to the changing weather conditions and requirements for heating and cooling in real time. Because weather and heating/cooling loads can vary significantly throughout the day, the impact of intelligent prediction is significant. This allows for reducing building heating and cooling energy costs by on average by 10% to 25% while improving tenants' thermal comfort.

CONNECTED CLEAN ENERGY SOLUTIONS

Electricity grids are experiencing a major transformation. Connected technologies improving energy efficiency of electrical loads (such as buildings and electric vehicles) and distributed energy resources (like solar PV and energy storage) make grid operations increasingly complex. They also maximize the potential of clean, robust and flexible power grids in a low carbon future. The following connected clean energy solutions allow for the development of residential microgrids, which has a transformative impact on the power grid:

- **Residential Solar PV for Households:** residential solar PV systems can supply households-at-risk with clean, reliable and affordable electricity. When enabled with connected technology, they help coordinate the household's electricity use with the rooftop solar energy generation potential.

- **Combining Solar PV and Storage:** adding energy storage to a grid-connected PV system allows households-at-risk to store surplus solar energy for use later in the day, and provides a back-up power supply in the event of a power outage, thereby increasing energy security.

- **Predictive Energy Management (PEM) for the Community:** an emerging connected technology for reducing energy use for heating, ventilation and air conditioning (HVAC) of houses and buildings while enabling on-site solar energy generation and storage to provide auxiliary services to utilities in real time. It features coordinated supervisory predictive control of energy consumption, on-site generation, storage and ancillary services for hosting utilities. PEM promises to be a flexible distribution system infrastructure that promotes increased levels of distributed renewable energy generation and enables improved control and automation on the electricity distribution grid. The PEM solution also provides flexibility within smart grid implementation to support future innovative applications, such as energy storage, and incorporate principles of modularity, scalability and extensibility into smart grid planning.

FEASIBILITY ASSESSMENT

The feasibility of the connected technology solutions discussed above, has been confirmed by the research done in this final application development stage. Town of Bridgewater and our Townsuite Municipal Software service provider have experience and expertise with advanced ERP systems. We can confirm that key features of the software are well known, understood and tested in the municipality.

The EMIS Planning Manual and Tool[4] and the Canadian Industry Partnership for Energy Conservation (CIPEC), as well as EMIS practices and documentation have been reviewed by our technical team. The NRCan's EMIS approach is

[4] Developed and tested by Natural Resources Canada

based on innovative energy management and strong experience in the industry and makes the proposed EMIS completely feasible for the Town of Bridgewater, and a new standard for municipalities in Canada. The key innovation in the Energy Poverty Reduction Program is related to high resolution predictive analytics and its focus on improving lives of at risk households rather than those who can afford it.

The real time operations (RTO) system for the Town of Bridgewater is based on digital SCADA coupled with energy management systems (EMS). These systems are used in many industries throughout Canada and abroad, thereby strengthening the program's ability to be replicable and scalable. Based on a review carried out by the program's technical team the proposed digital SCADA/EMS combination is highly feasible for municipal utility applications.

OPEN TECHNOLOGY PRINCIPLES AND ARCHITECTURE

One of the major inhibitors to the adoption of connected technology in smart buildings and smart cities has been the lack of interoperability between different building systems. The program's connected technology solution ensures that all connected devices are speaking the same language, allowing them to 'talk' to each other and exchange information.

Adopting open protocols for houses and buildings, such as LonWorks or ASHRAE's open-source BACnet, allows all systems to communicate in a common protocol language. These common protocol languages define the arrangements under which devices and systems interact and communicate with each other.

One key advantage of open standards architecture and open protocol systems is that they enable the integration of new devices and internet of things (IoT) sensors and systems, as long as these devices also communicate using an open protocol language. A building that adopts open architecture standards is, therefore, effectively 'future-proofed' against vendor-generated proprietary constraints through the international standard EN62402 Obsolescence Management Safeguards. Thus, new functions and devices can be easily installed when enabling technologies are developed. This is further supported by our commitment to a local workforce that will be trained to implement and operate the technologies and systems going forward.

GENERATING INTELLECTUAL PROPERTY

The program will generate intellectual property (IP) for the community and the households-at-risk related to social and technical navigation, solutions, services, and related connected technology. The program team recognises that free access to, and reuse of, these open licences is an essential part of making the program replicable to other communities and the Town is committed to sharing IP so long as privacy is not compromised.

The program will support the distribution of connected technology IP through:

- the release of IP for connected technology using open licences or other relevant instruments - while respecting intellectual property rights - so that no restrictions or charges are placed on the re-use of the information for non-commercial or commercial purposes, save for exceptional circumstances;
- the release of IP for connected technology using application programming interfaces (APIs), where appropriate, to ensure easy access to the most regularly updated and accessed connected technology; and
- encouraging innovative uses of our IP for connected technology through mentoring for its users nationally and internationally.

TECHNOLOGY IMPLEMENTATION PLAN

TECHNOLOGY IMPLEMENTATION TIMELINE

The timeline for the program's connected technology solution is described in Table 6.1.

STANDARDS AND GUIDELINES

Enterprise resource management, EMIS, SCADA/EMS, and connected technology guidelines and standards will be communicated to, coordinated with, and confirmed by connected technology partners, vendors and energy service providers to ensure full technology interoperability where necessary.

These standards and guidelines will also be discussed with and confirmed by the connected technology partners, vendors and energy service providers to ensure and guarantee the replicability and scalability of program during the Smart Cities Challenge timeframe, toward 2030, and beyond.

The following standards and guidelines have been thoroughly reviewed for consideration:

- Canadian Standard on Enterprise Resource Planning Systems
- ISO 50001 Energy Management Systems Standard
- The International Society of Automation - Standard ISA112 SCADA Systems
- International Electrotechnical Commission - IEC 61968 Standards Based Integration for Distribution Management System
- Natural Resources Canada - Energy Savings Toolbox
- Natural Resources Canada - Energy Management Information System

ROLES AND RESPONSIBILITIES OF TECHNOLOGY PARTNERS

The program team over the finalist proposal phase has built strong relationships with a variety of connected technology solution partners and has communicated accessibility and usability of the connected technology solutions to the households-at-risk, community energy owners/operators, energy service providers, investors, and other stakeholders that support their uptake and acceptance in the program. This allows the program team to keep confident in the commitments of the partners during the program timeframe and towards the community's long-term objectives, to ensure the value to the households-at-risk and to the municipality, and to enable and train the municipal and community services' workforce. These partners are identified in the **Project Management chapter.**

Technology Implementation Plan: Energy Poverty Reduction Project Connected Technology Solution Timeline

Relationship to Smart Cities Challenge (SCC)	**Within SCC Program & Funding**			**After SCC**
Phase	1: Prototype Program Setup	2: Prototype Program Testing & Refinement	3: Final Program Activation	4: Program Maturity
Timeframe	2020-2022 (2 years)	2021-2024 (3 years)	2024-2025 (1 year)	2025-2030 (5 years)
Municipal Enterprise Resource Planning (ERP) System	Definition and Deployment of Modifications to Existing ERP Module	Definition and Deployment of EMIS Connectivity	Full Operation	Full Operation
Energy Management Information System (EMIS)	Definition and Deployment (houses)	Development and Deployment (MURB) RTO Monitoring/ Analytics Integration	Full Operation	Full Operation
Real Time Operations (RTO) System	Municipal RTO System Design	Deployment and Testing (houses, MURB and municipal buildings) Community Energy Integration	Full Operation	Full Operation

Table 6.1

DATA AND PRIVACY

The Town of Bridgewater proposes that the use of data and connected technology will catalyze energy related activities and outcomes. The data platforms selected will apply industry best practices to secure highly sensitive data collected from the Coordinated Access System, Municipal Enterprise Resource Planning (ERP) platform, Community Energy Systems, and Investment Systems. Further, it will defend against security breaches and protect personal information and privacy. Through continuing Energy Poverty Reduction Program efforts, Bridgewater will demonstrate to the community a commitment to responsibly managing data through its lifecycle with security and privacy considerations addressed.

ENERGY POVERTY REDUCTION DATA

DATA TYPES AND SOURCES

The Energy Poverty Reduction program expects to process data related to the following groups: household, property/asset, energy efficiency solutions and services, and investors.

TYPES AND METHODS OF DATA PROCESSING

The types and methods of data processing in the program include collection, generation, analysis, storage, and transmission of important data related to existing foundational ("legacy") technologies and connected technologies.

- **Open data:** this is all data that is (a) non-privacy-restricted and non-confidential, (b) produced with either public or private resources and (c) made available without any restrictions on its usage or distribution. The municipal methodologies to manage open data are an open data portal and an open data policy.
- **Personal information, personal health information, and non-personal information** (as defined in *FOIPOP act*): this is data that is restricted and/or licensed and requires permission to be published or distributed; it includes data held privately because its value has not yet been identified. The municipal instruments to manage private data are data security and privacy policies, procedures, legislation and regulations, as well as authentication and access controls.
- **Commercial data:** these are all types of licensed data with a financial value for use and distribution. Commercial data may be produced with either public or private resources. The municipal instrument to manage commercial data are data security and privacy policies, procedures, legislation and regulations, contracts, licenses, data transaction platforms, and data policies and principles.

The program's data platform concept also enables re-use and re-distribution of data, as well as derivative production, archiving, and preservation of data that reflects the entire data lifecycle in the Energy Poverty Reduction Program's design. This includes individual data related to households-at-risk processed in the Coordinated Access System, energy poverty reduction solutions and services data as well as energy use, generation and storage and environmental data processed in the municipal enterprise resource planning (ERP) platform, investments and other related data processed by the Investment Systems.

DATA USE

Accurate and timely data disseminated through technologies described in the **Technology chapter** is a crucial component to all 5 systems defined in the VISION chapter for the following reasons:

- **Community Energy Systems:** Energy produced by these systems credit participating household energy use.
- **Housing Energy Management Systems:** Energy use from the household level down to the appliance level define energy savings and promote it through demand-side-management and analytics.

DATA AND PRIVACY

- **Coordinated Access Systems:** Data stored in the system streamlines Town and community service organization operations.

- **Mobility Improvement Systems:** Data shared through the above systems allow Town Planning and Operations to increase the ability of at-risk residents meet their mobility needs.

- **Investment Systems:** Energy savings and production earnings need to pass to investors in accordance to investment offerings.

DATA SECURITY

In alignment with the philosophy of "privacy by design", the program has applied focused efforts to integrate data security and privacy considerations into the project design; this was particularly important for the households-at-risk but is valued by all stakeholders.

The Town of Bridgewater and/or contracted proponents will control and own all data collected using the program's data platform including any modifications, improvements, and derivatives of such data. The data is personal and confidential and will not be disclosed or made available unless approved by the Town of Bridgewater. This data will be assessed using a Threat and Risk Assessment methodology prior to holding any live data.

IDENTIFICATION OF RISKS

Through the development of this application, we have been progressing with the identification of risks and the development of appropriate mitigating strategies for data management of the households at-risk of energy poverty. This includes completion of a preliminary Privacy Impact Assessment as part of this proposal.

ENERGY POVERTY REDUCTION DATA PLATFORM

CONCEPT

The Energy Poverty Reduction data platform will harvest the data generated by energy efficiency and clean energy solutions for households-at-risk, inform decision-making of households, the municipality and the stakeholders, and will advance and improve the performance and application of the connected technologies used. The Energy Poverty Reduction Program will also leverage its resources to build and maintain in-house analytics. The Town will develop an Energy Management Information System (EMIS) to collect, process and analyze the data provided.

STRUCTURE

The Town of Bridgewater sees the program's data platform as a leading smart city platform ensuring interoperability of/integration with existing federal, provincial and community data platforms and has identified high quality candidates for these functions.

> "We understand that data and connected technologies can tremendously benefit cities or small communities enabling the discovery and more in-depth understanding of the needs of the local population"
> – DALHOUSIE UNIVERSITY PROFESSOR

The data platform will include three major components: Coordinated Access System, Municipal Enterprise Resource Planning (ERP) platform and Investment Platforms.

The Coordinated Access system is planned to allow community organizations and service providers to collect and manage personal and personal health information on clients who are housing-insecure or homeless. This data platform will reside outside of the Town's municipal services and be used by community partners for the Coordinated Access System that would support households at risk.

The connected technology solutions enabled through the ERP platform will coordinate the households and the municipality's real estate and energy assets and energy solutions. This will be a split internally- and externally-accessed platform providing all necessary analytics and controls data for real time and planning/reporting operations.

There will be an internal and external investment platform orchestrated by an Investment Navigator. Community and traditional investment data will be housed in a secure database, abiding to federal and provincial rules and regulations hosted by an organization procured by the town.

FUNCTIONALITY

The data platform provide the following functions:

- **Acquisition/Interconnection:** These provide data capture mechanisms from the collection systems.
- **Data/Knowledge:** These support data processing, adding value and transforming information into knowledge.
- **Interfacing:** These enable access to information at different levels.
- **Service support:** These coordinate all the possible services involved in each action developed out of interoperability functions.
- **Security and management:** These provide horizontal functionalities such as audits, monitoring and security.

Two key interfaces allow for communication between the above group of functions:

- **Acquisition:** This interface with the program data platform enables information collection from the external elements.
- **Interoperability:** This interface with the program data platform enables communication with external data providers and the third-party computation systems.

INTEROPERABILITY WITH CONNECTED TECHNOLOGY SOLUTIONS

DATA SERVICE PLATFORMS ENABLED BY CONNECTED TECHNOLOGIES

The Energy Poverty Reduction Program data platform will have access to different information sources, share resources, analyse capacity and coordinate services, usually based on predictive analysis. The concept referred to as "horizontality" is to be applied to the program. Through "horizontality" information from various sources interact with one another in order to provide streamlined services and operations.

INTEROPERABILITY WITH DATA SERVICE PLATFORMS

Data service platforms enabled with connected technologies provide various services in specific areas. These service platforms (known as "verticals") are provided by supervisory control and data acquisition (SCADA) or more complex platforms. Most of the time these platforms are independent and do not share resources, or they do so sparingly.

The introduction of the program's data platform will enable the integration and optimization of vertical service platforms and facilitate the exchange of information and resources between these vertical service platforms. On one hand, the resources and systems used by the vertical platforms supporting the same functions can be pooled and on the other hand, the information that is stored and processed by one vertical platform can be used by the others, enabling the generation of cheaper, more valuable and more complex services.

Vertical platforms will be integrated with the program's data platform in two ways. They can be deployed inside the program or can be integrated using open interfaces, in which case the processes and resources required by the vertical platform could not be deployed inside the Energy Poverty Reduction program.

Open interfaces are required to interconnect the program's data platform with other municipal platforms enabling other systems to interoperate with the program more efficiently. In the integration process some resources, such as data source, can be shared. Since the services can access more data sources, it is possible to create new services and improve those that already exist. Predictive analysis is also facilitated, because more data sources are accessible.

The program's data platform could interoperate with external providers' platforms, and its interfaces are required to be adapted. The adaptation of these interfaces will depend on the type of platform.

DATA PLATFORM SECURITY

The Town of Bridgewater will control and own all data collected by the Energy Poverty Reduction Program data platform including any modifications, improvements, and derivatives of such data. The data is personal and confidential, and thus will not be disclosed or made available unless approved by the Town of Bridgewater. At all times the program's data platform and related technologies must be compliant with all applicable privacy legislation provincially. Cyber management is examined in further detail in the preliminary Privacy Impact Assessment (PIA).

NETWORK SECURITY

The network provider will take a number of steps to ensure the security of their networks. A dedicated team of security professionals will focus on network security and security governance. This will include, but is not limited to, multiple levels of security such as service security authentication mechanisms, secure access to client locations/sites, change control validations/ processes/policies and network monitoring tools/ applications/audits. This will be confirmed through the completion of a Threat and Risk Assessment. The Office of the Information and Privacy Commissioner for Nova Scotia (OIPCNS) has outlined the importance of designating a Chief Security Officer who is responsible for security: IT system maintenance and security, security awareness, ensuring digital and physical security, etc. for both the program and municipality. The Town will act on this recommendation as part of the detailed program design.

RESILIENCY

The Energy Poverty Reduction data platform will ensure the ongoing operation of services according to established service level agreements. These services may require availability 24x7 and a service level of over 99.9% annually. Providers may offer solutions complying with these requirements.

CYBER THREATS MANAGEMENT

Cyber threats to the program's data platform will be addressed through cybersecurity scanning and tests in the Platform, for threats such as malware, phishing, spear phishing, lost or stolen devices, distributed denial of service.

OPEN DATA AND BIG DATA STRATEGIES

THE OPEN COMMUNITY

The municipality's need for transparency and accountability has always been seen as fundamental by the Town of Bridgewater. The community is very supportive of the Open Government Partnership (OGP) created in 2011 and having Canada among its 75-member countries.

OPEN DATA FOR THE ENERGY POVERTY REDUCTION PROGRAM

The Town will make certain data types open to public stakeholders through online portals. This will come at no cost to the user and a standard license to allow re-use and distribution may apply.

Municipal data, like any data collected by public institutions, are subject to privacy legislation for personal information and other restrictions which limit it being made public (e.g. intellectual property).

The program defines the data spectrum including closed data (internal access), shared data (with group-based access) and open data (with public access and open to everyone).

The program data management addresses important Open Data strategy development related to high resolution environmental data and data analytics, public housing and mobility data and data analytics as well as public data on energy efficiency and clean energy solutions and services for the Bridgewater community.

COMMITTING TO G8 OPEN DATA CHARTER: BEST PRACTICES

The EPR project is committed to all 5 Open Data Charter[5] best practice principles, in accordance with Federal and Provincial legislation and regulations.

BIG DATA STRATEGIES

Big data that is collected through the Energy Poverty Reduction Program will allow municipal policies makers to make decisions based on real information, enabling them to further improve energy performance, related energy use, mobility and transportation decisions, etc.

PERSONAL DATA AND INFORMATION PRIVACY

PERSONAL INFORMATION FOR ENERGY POVERTY REDUCTION

The Smart Cities Challenge approach uses real-time and actionable data to inform the operation of community-wide systems and services. The Energy Poverty Reduction Program demonstrates the inclusion of measures to protect personal information and privacy and respects the fair information principles.

Personal information is data about an "identifiable individual." It is information that, on its own or combined with other pieces of data, can be used to identify a specific individual. In some circumstances, information that may appear to be non-identifiable may still qualify as personal information if there is a risk of re-identification. See Preliminary PIA for *FOIPOP act* considerations.

Health information in the Energy Poverty Reduction Program can include, items as defined by Nova Scotia's PHIA act. See Preliminary PIA for PHIA act considerations.

The program's information will be combined and analyzed with data from different sources and could become identifiable personal information. To mitigate this risk, the program team will seek to de-identify personal information at the earliest opportunity, and always pursue the least privacy-invasive options wherever possible. See the Preliminary PIA for further details surrounding data consent, data sharing opt-out options, server locations, data ownership and governance, safeguards and transparency.

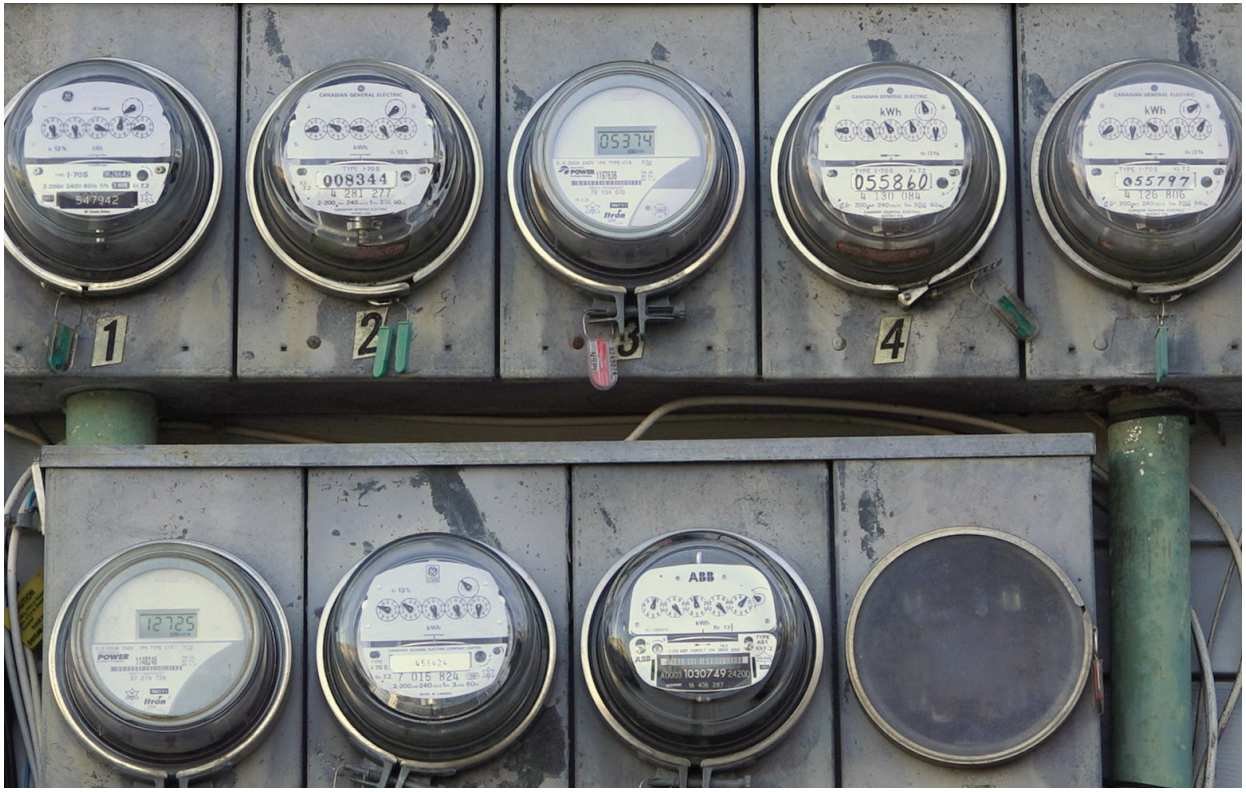
HOMELESS INDIVIDUALS AND FAMILIES INFORMATION SYSTEM (HIFIS)

The Homeless Individuals and Families Information System (HIFIS) software is owned by Service Canada which it shares nationally with communities to assist services delivery agencies track and report on their efforts, ultimately supporting vulnerable households; those who are homeless or at risk of being homeless. The HIFIS system is undergoing upgrades to a cloud-based system allowing for fluid information sharing between services organizations. Individuals seeking homeless related services, through local service providers, no longer have to repeat their stories multiple-times to each party, as their HIFIS profile is now shared amongst services organizations granted the client provides consent. Two service organizations within the Town currently use HIFIS (Freeman House and Second Story Women's Centre), and it's expected this number will grow as the newest iteration rolls out.

Through attending a HIFIS training session, correspondence with community service organizations, dialogue with the Affordable Housing Association of Nova Scotia (AHANS), and examining research that suggests energy poverty contributes to housing insecurity, the Town has identified HIFIS as being a key component to the Energy Poverty Reduction program. One has the ability within HIFIS to create unique fields and surveys, for specific programs, which can be partitioned off from other community service programs and organizations at the household's request. The Town will create its own survey and fields for the purposes of tracking program outcome indicators.

[5] G8 Open Data Charter: Technical Annex https://opendatacharter.net/g8-open-data-charter/

DATA AND PRIVACY



Energy meters on the side of an apartment building.

This data platform would reside outside of the Town's municipal services and an agreement would need to be established between the municipality (or to be determined service organization) and AHANS, who has a contract with Service Canada, or Service Canada itself. This would allow our household indicators to be stored on AHANS's HIFISNS Network host (Canada Web Hosting) which meets Federal Government security standards.

The Office of the Information and Privacy Commissioner for Nova Scotia (OIPCNS) has outlined their concerns related to HIFIS . These concerns include creating a more robust view of a household through information gathered by the program and potentially Federal government access to this information. The Town will address these concerns through a Privacy Impact Assessment (PIA) as outlined in the Preliminary PIA.

PRELIMINARY PRIVACY IMPACT ASSESSMENT

To support the selection and design of a comprehensive data management system, the Town of Bridgewater developed a preliminary privacy impact assessment (PIA) for the Energy Poverty Reduction Program. The PIA includes a map depicting all of the program's anticipated data flows for the key project activities: Intake, Service Delivery, and Monitoring and Analytics and qualified their associated security and privacy risks. While developing the preliminary PIA the Town of Bridgewater staff actively consulted with the Office of the Information and Privacy Commissioner (OIPC) of Nova Scotia to ensure that the program design conforms with all applicable privacy laws and best practices. Project staff also worked with the Town's Finance Department and the Municipal Joint Services Board (MJSB – IT Services) to ensure that project IT needs can be met and are compatible with existing services and infrastructures.

Through the PIA, the Town of Bridgewater demonstrates that relevant privacy authorities were consulted, and their guidance was considered during the program and application development. The PIA reviews and supports the Energy Poverty Reduction Program's compliance with relevant municipal, provincial/territorial, and federal privacy regimes.

ENGAGEMENT ACTIVITIES UNDERTAKEN TO DATE

INITIAL APPLICATION PHASE: JANUARY – APRIL 2018

We looked to the public to teach us about energy poverty, their experiences, core concerns, and suggestions on how a Town strategy could reduce energy poverty. Feedback from over 200 residents reinforced public support for reducing energy poverty. The submission of the Town's initial application to Smart Cities Challenge, and its eventual selection as a Finalist, was met by enthusiastic support from the community and our stakeholders, a support that has continued to grow continuously over the course of the Final Application development phase.

FINAL APPLICATION PHASE: JUNE 2018 – MARCH 2019

We produced a comprehensive Community Engagement Plan that identified the project's primary stakeholders and identified the outcomes of the program that were relevant for each group. For each group, it planned a schedule of engagement activities, complete with desired engagement outcomes. The Community Engagement Plan was implemented through the following activities:

1. Energy Poverty Research Program

This program sought to document and better understand the lived experience of energy poverty. It included the following:

Interviews: 20 interviews were conducted, consisting of 12 women and 8 men with a broad age distribution of 18 – 65 and over; 75% of interviewees were renters, 10% lived in affordable housing, and 15% owned their home; and 12 participants received income assistance and 8 did not.

Focus Groups: 57 individuals participated in the focus groups, consisting of 38 females, 16 males, and 2 transgendered females; 45 renters and 11 owners; and 50% of participants were on income assistance.

Key Findings:

- Many individuals living in energy poverty have developed energy management strategies for dealing with their energy burden;
- Several demographics are more at-risk for energy poverty including: single mothers, African Nova Scotians, seniors, and those with health conditions and disabilities;
- Energy poverty has a severe impact on a household's ability to spend on other essential goods and services, forcing trade-off decisions on food, health, and entertainment;
- Residents are highly supportive of long-term community-based solutions which provide greater access to quality housing, affordable energy, and greater mobility options.

The research program provided the opportunity to build early relationships with our eventual clients and include our learning into the program design. To promote involvement, the Town offered an honorarium of $20/hour for program participants.

2. Engagement of Community Stakeholders

Workshops. A series of 8 workshops involved open discussion on almost every component of our application. Over 30 organizations have been represented at workshops, with over 140 representatives in attendance. Some of the key learning outcomes that were achieved through the workshops include:

- Service organizations with a diverse range of mandates identified energy poverty as one of their clients' key challenges and a core service priority;
- Service organizations endorsed addressing the systematic causes of energy poverty;
- Data and connected technology solutions were identified as essential to increasing collaboration and efficiency of resource allocation for service organizations.

Interviews: We undertook 15 one-hour interviews with representatives of partner organizations. From these interviews we learned that:

- Partners have insufficient resources to address the basic energy, housing, and transportation needs of their clients;
- Partners are supportive of a coordinated access system for their clients;
- Spending on energy related services constitutes a large portion of many organization's budgets;
- To reduce costs, there needs to be a shift from spending on emergency services to preventative services.

3. Engagement of the Public at Large

The Town involved a substantial number of individuals by utilizing a range of in-person and online engagement activities.

Youth Video Documentary: The Town worked with the HeartWood Center for Community Youth Development, the Department of Community Services, and Picnic Studios to bring together a video team comprised of 5 youth-at-risk from Bridgewater and area. The youth team created a video documentary called *Living in Energy Poverty* which was premiered at an Open House on January 17, 2019. Parts of the footage was incorporated into the Town's 5-minute Smart Cities Challenge video pitch. The documentary has received regional recognition for how it captured the lived experience of energy poverty and was featured in a CBC Nova Scotia article about energy poverty in Bridgewater.

Community-Wide Paper Survey: A paper survey yielded a total of 585 responses, representing 15% of Bridgewater households. Important program information received through the survey included:

- 38.5% of respondents said that they had difficulty affording energy costs and spent more than 10% of their after-tax income on energy and transportation costs. This indicator will act as a baseline to track our energy poverty rate as part of program performance and measurement.
- Responses were tracked by housing type and neighbourhood, which informed the mix of housing ages, forms, and heating systems used to inform this proposal's financial outcomes and energy analysis.

Thematic Surveys: We received a total of 278 responses from 4 different thematic surveys, covering housing; transportation; health; finances; and employment and training. Some of the key findings from the surveys include:

- 74% of respondents stated that they had faced difficulty paying rent, energy bills, or transportation in the last five years;
- Middle income households can also suffer from energy poverty.

Social Media: Town staff routinely engage residents using social media to answer questions, and provide further information related to the Energize Bridgewater and Smart Cities Challenge programs.

Video and Image Media: 10 videos were produced to document the Town's workshops with partners, engagement with residents, and illustrated the Town's application. This content was shared over the Energize Bridgewater and Town of Bridgewater social media pages. An interpretive exhibit was created that featured quotes shared by participants from interviews and focus groups. The exhibit has been displayed in four locations across town to initiate further engagement with the community on energy poverty.

Open Houses: On January 17, an open house was held for the public at large that premiered the youth video documentary described above. On March 29, a final open house will explain the community's final application to the public.

ENGAGEMENT PRINCIPLES GOING FORWARD

The design of the community engagement approach for the Energy Poverty Reduction Program is founded on 5 principles:

1. **Consideration of full-spectrum needs:** engagement efforts will be designed based on an integrated understanding of the needs and aspirations of program clients and partners. This ensures that their voice matters, and that emerging risks and challenges are addressed in a timely fashion. Design and evaluation of engagement efforts will consistently refer to the broad set of desired program outcomes.

2. **Inclusion and accessibility:** these principles will continue to inform the design of the program. Ongoing efforts to understand the needs of clients, use a trauma-informed lens for service design and delivery, evaluate which voices are not being heard, and challenge assumptions and stereotypes, will help meet inclusion goals. The accessibility of the program will also constitute an important evaluation criterion for program partners, in particular the Coordinated Access System and the Housing Energy Improvement System.

3. **Empowerment:** the central purpose of the program is to enhance energy management capability for program clients and throughout the community. This principle extends toward ensuring that program clients have a say in program design, delivery, and evaluation. It is operationalized through engagement structures such as the Client Advisory Circle and the role of the Ombudsperson, continuous feedback from clients and partners, and the use of connected technologies to better access information and communicate needs. For program partners, it means participation in the program governance structure, and through ongoing feedback and evaluation processes.

4. **Consent:** obtaining informed consent to receive program services and to share data is critical for fostering trust and encouraging participation. The Town and its service delivery partners must ensure that clients are appropriately informed about the services that they will be receiving, as well as their rights and responsibilities as clients.

5. **Navigation support:** the provision of extensive navigation services is necessary to help clients overcome difficulty in navigating community and government support systems and bureaucracies. The Household Navigator, working through the Coordinated Access System embodies this principle for households-at-risk, as do the Technical Navigator and Investment Navigator roles for property owners and investors, respectively.

PROGRAM CLIENTS, STAKEHOLDERS, AND ENGAGEMENT TOOLS

Energy Poverty Reduction Program stakeholders are described below, along with engagement objectives and tools that have been tailored to their needs:

Households at Risk of Energy Poverty

Currently estimated at 38.5% of Bridgewater's population, these residents are a primary client of the program. Engagement objectives and tools:

1. ***Ensure that clients' voices and needs are heard as part of the program design and evaluation.*** Engagement activities include representation on the Client Advisory Circle, active participation in program design through focus groups, interviews, surveys, and service testing, and through feedback from program partners who serve these clients.

2. ***Connect clients to the community and energy services they require.*** Engagement activities will be driven by the Coordinated Access System and its Household Navigators. It will provide high quality, accessible services that are designed specifically with an eye to serving the broad range of needs and levels of urgency experienced by households-at-risk. In delivering coordinated access services,

clients will be educated on their options, rights and responsibilities in sharing their personal data. A Communications Strategy will be developed to attract clients.

3. ***Empower clients to better manage their energy systems.*** Engagement activities will include the provision of energy management services for clients who are also homeowners, and referral of landlords to these services if the clients are renters. A home energy 'dashboard' will be provided to clients, with an ever-growing set of energy management solutions as those become available from the evolving Energy Management Information System and community energy systems. Clients receive energy management training to build their skills and knowledge, and to share with other clients those energy management practices that they have already developed and refined.

Property Owners

Bridgewater property owners whose properties are inhabited by households-at-risk of energy poverty are a primary client of the program. Engagement objectives and tools:

1. ***Ensure that clients' voices and needs are heard as part of the program design and evaluation.*** Engagement activities are the same as for households-at-risk.
2. ***Connect clients to the technical solutions they require.*** Engagement activities will be driven by the Housing Energy Management System and its Technical Navigators. High quality, accessible services will be provided, with attention to the needs of landlords to help them overcome split incentive issues that often complicate energy improvement efforts. Clients will be educated on their options, rights and responsibilities in sharing their personal and property data. A Communications Strategy will be developed to attract program clients.
3. ***Empower clients to better manage their energy systems.*** Engagement activities are the same as for households-at-risk.

Investors

Program capitalization will be achieved by attracting and retaining investments from specialized funders, as well as traditional and community investors. Engagement objectives and tools:

1. ***Ensure that investors' voices and needs are heard as part of the program design and evaluation.*** Engagement activities will centre around direct outreach during the program design and prototyping phases to ensure that program outputs, outcomes, and financial returns represent adequate value for investment.
2. ***Achieve investments for the program.*** Engagement activities will centre around continuous outreach, marketing, and reporting to investors. Investors will learn about investment opportunities and their benefits, including the ability to leverage further funding, and to reduce long-term costs to these agencies through efficiency gains that come from coordinated housing improvements and community services provision. Traditional and community investors require detailed financing prospectus documents to attract their investment interest. Maintaining investor relationships is a key activity for the Investment Navigator and the Financial Investment Vehicle.

Service Delivery Partners

Program governance and service delivery will involve multiple levels of relationships with project partners and service providers. Engagement objectives and tools:

1. ***Develop a strong and committed partner network.*** Engagement activities will involve building on existing relationships with essential program partners such as Efficiency Nova Scotia,

TownSuite Municipal Software, the South Shore Housing Action Coalition, Family Services of Western Nova Scotia, and others. Stakeholders will continue to advise on goals, metrics, data needs and benefits, use cases for data, budget, policy, operations, end-user needs, and program governance. Partners will be invited to apply to the Energy Poverty Reduction Program Steering Committee and Technical Advisory Committee to support the program's governance and advisory functions as described in the **Governance chapter.** Broad participation from community partners will be required to design the Coordinated Access System and to provide access points throughout the community. Led by the Program Coordinator, ongoing evaluation processes with partners will ensure continued engagement.

2. ***Maintain program quality and manage risks.*** Once program services have started, engagement activities will revolve around quality control and evaluation. All service delivery partners will be involved in the processes described in the **Project Management chapter.** This will extend to engagement with regional trade networks and supply chain capacity building.

Acadia First Nation

The Town of Bridgewater is in Kespukwitk (Land Ends) on the unceded territory of the Mi'kmaw. Acadia First Nation (AFN) is the Mi'kmaw Nation within whose territory Bridgewater is located. Guided by the Community Engagement Plan, Bridgewater Town Council issued a formal expression of interest in 2018 to initiate government-to-government relations with AFN. The Town will **continue to develop this relationship.** Engagement activities will focus on cultural exchange, knowledge transfer, and the identification of partnership opportunities for energy-related initiatives that achieve mutually beneficial outcomes.

Senior Government and Other Communities

The Province of Nova scotia and the Government of Canada have jurisdiction over legislation, regulations, policies, and programs that influence energy poverty risk factors for Bridgewater residents as well as for other communities. Engagement objectives and tools:

1. ***Inspire positive change across the Province and the country.*** Engagement activities will be centred on knowledge transfer and advocacy, so that energy poverty solutions developed in Bridgewater can achieve broader systems-level impact. Participation in the Smart Cities Challenges offers a powerful platform to do so.
2. ***Inspire energy poverty reduction actions in other communities.*** Engagement activities will be centred on knowledge transfer. The Town will also use its regional networks and its membership in the Federation of Canadian Municipalities to achieve these ends.

General public

The community of Bridgewater at large, plus surrounding communities, will have ongoing interest in the program, and receive direct and indirect benefits from it. Engagement objectives:

1. Openly communicate program outcomes and benefits to the community.
2. Receive feedback on broader program benefits and outcomes.

MONITORING AND EVALUATION

The evaluation processes described in the **Performance Measurement chapter,** and the quality control and risk management processes described in the **Project Management chapter** will ensure that that outputs and outcomes associated with stakeholder engagement are monitored and evaluated on an ongoing basis. Program risks associated with engagement efforts are identified in the **Project Management chapter.**

IMPLEMENTATION PHASE REQUIREMENTS

MODERN TREATY OBLIGATIONS AND DUTY TO CONSULT WITH INDIGENOUS GROUPS

The Town of Bridgewater received confirmation through the Nova Scotia Office of Aboriginal Affairs that The Town is not required to consult with the First Nations in this province at the application stage of this project. The Town has consulted with Acadia First Nations based on Duty to Consult principles and as a good governance practice in accordance with the *Government of Nova Scotia Policy and Guidelines: Consultation with the Mi'kmaq of Nova Scotia*. The Town intends to undertake further consultation and build a partnership with Acadia First Nations regardless of the outcome of the application.

COMMUNITY EMPLOYMENT BENEFIT

The Town will be participating in the Community Employment Benefit Initiative. In order to do so, the Town will create a Community Employment Benefit policy to guide training, hiring, and procurement processes. The policy will result in a revision to our existing HR and Procurement Policies which do not yet include the principles of the Community Employment Benefit Initiative.

The Town will identify employment and procurement opportunities for three groups targeted by the initiative soon after the funding decision is made. Through feedback we received in consultation of residents and partner organizations, the Town is already aware of several groups who could be identified for employment and procurement opportunities.

> "No one individual can be held accountable, but we can hold a community accountable."
> – RESIDENT, TOWN OF BRIDGEWATER

The Town will adhere to the following plan in the selection of the employment and procurement opportunities:

1. The Town will consult with community partners to come to a consensus on the needs of employment and procurement opportunities for the inclusion of those who are traditionally underrepresented.
2. A needs assessment will be undertaken to identify employment opportunities.
3. The town will develop partnerships for resident recruitment through partner organizations.
4. Measurable indicators will be created to monitor progress.
5. Dispute resolution mechanisms will be drafted.
6. A reporting framework will be created.

CLIMATE LENS ASSESSMENT

The Town of Bridgewater is not required to undertake a Climate Lens Assessment for the purposes of this application because we are in the $5 million prize category. Even so, a key focus of the Town's application is on a reduction in GHG emissions. The Town quantified and set targets for GHG emissions reductions of 80% by 2050 in our 2018 Community Energy Investment Plan (CEIP). The Plan provides guidance for many climate mitigating project outcomes and details their climate impacts. The Town was one of only two communities in Atlantic Canada who submitted to the Carbon Disclosure Project (CDP) in 2018 and received an overall score of B, higher than the regional and global averages.

Community stakeholders watching a presentation at a Smart Cities Challenge workshop.

IMPLEMENTATION PHASE REQUIREMENTS

> The project will draw on a wide array of partners and stakeholders who are working at the ground level on poverty reduction, transportation, and employment to identify opportunities for shared solutions.
>
> – COMMUNITY SERVICES ORGANIZATION REPRESENTATIVE

OTHER APPLICABLE LAWS, REGULATIONS AND POLICIES

FEDERAL POLICY

- **Reaching Home: Canada's Homelessness Strategy** Bridgewater's proposed outcomes for the provision of affordable, secure housing is closely aligned with *Canada's Homelessness Strategy*. The Town will utilize Employment and Social Development Canada's Homeless Individuals and Families Information System (HIFIS) software as the data platform for our Coordinated Access system.

- **A Place to Call Home: Canada's National Housing Strategy (2018)** Our project aligns with the Government of Canada's National Housing Strategy with activities aimed at providing preventative actions for reducing homelessness, helping households to find suitable housing and ensuring housing remains affordable.

- **Opportunity for All: Canada's First Poverty Reduction Strategy (2017)** Our project aligns with the Government of Canada's commitment to reducing poverty by 50% by 2030. In many ways, the Town's Energy Poverty Reduction Program mirrors the approach being taken nationally but with a more specific focus on the energy element of poverty and a course of action that is meaningful, measurable and monitored.

PROVINCIAL LEGISLATION AND POLICY

- **Municipal Government Act** As a municipal unit will operate in accordance with legislation laid out in the Nova Scotia Municipal Government Act and related regulations.

- **Housing Act** The Town of Bridgewater will develop policies in accordance with the legislation.

- **Building Code Act** The Housing Energy Management System within the Energy Poverty Reduction Program will adhere, at minimum, to the requirements set out in the Act and related regulations.

- **Access by Design 2030 Achieving an Accessible Nova Scotia:** The Town is aligned with the Act's acknowledgement that accessibility is a human right and through our Mobility Improvement System.

- **The 2005 Environmental Goals and Sustainable Prosperity Act (EGSPA)** Our proposal aligns with goals on sustainable prosperity, such as emission reduction, energy efficiency programs, climate change adaptation and improving the Province's environment and economy for future generations.

- **Nova Scotia's Electricity Plan 2015-2040** Our conforms with key themes of Nova Scotia's Electricity Plan to ensure stable electricity prices for residents, create innovative energy systems that promote customer control, integrate systems, and increase the value of renewable energy resources in home heating and transportation.

- **A Housing Strategy for Nova Scotia (2013)** Our aligns with and supports the Province of Nova Scotia's goal to ensure that Nova Scotians can find the housing choice that's right for them and their families, at a price they can afford, in a healthy, vibrant community that offers the services, supports and opportunities they need.

INTRODUCTION

For Bridgewater to lift 20% of its residents out of energy poverty in 10 years, $89.8 million dollars needs to be invested into the community. The $5 million prize of the Smart Cities Challenge is just a fraction of the overall cost but is the catalyst that will enable the Town to make this bold step forward to ensure no family is left behind. It is also an investment in the shift required to achieve a clean, efficient, affordable and secure energy future for our community.

By the end of the Smart Cities Challenge program in 2025, our community will have been the recipient of $45.7 million worth of investments in housing, transportation, community energy systems, and community services. As Table 9.1 indicates, that will increase by another $44.1 million over the next 5 years as the program matures through years 6-10. The large majority of these investments relate to 'hard' costs and come with financial returns (labeled "with ROI" in the tables and charts in this chapter). By undertaking strategic de-risking activities, and leveraging the power of connected technologies such as home energy monitoring systems, Bridgewater will be able to bundle these investment opportunities and make them attractive to a diverse group of investors. Pooled capital implements the energy poverty reduction solutions described in the previous chapters, which systematically lifts Bridgewater residents out of energy poverty. These capitalization activities are explained in detail later in this chapter.

To deliver on these opportunities, the Energy Poverty Reduction Program will incur $5.42 million in core operating costs over the first 5 years. These costs consist of program development, operations, and administration. They can be offset by the $5 million Smart Cities Challenge grant, which acts as a catalyst that allows the community to leverage the additional $40.3 million over that same timeframe, an investment leverage ratio of 1:8 for the grant. The remaining core operating cost can be achieved with an in-kind contribution of $420,000 from the Town of Bridgewater. As indicated in Table 9.2, 2.6% of the Smart Cities Challenge grant would be held in reserve as a contingency. If unused, this amount can help subsidize home energy improvements for program participants.

> "Through our proposed solutions, we will make sure those among us who are most vulnerable and least able to afford the transition, are the first ones we help across the threshold. Those residents have the most to lose and through the betterment of their lives, our community has everything to gain." – MAYOR MITCHELL

Energy Poverty Reduction Program Total Costs by Activity for Each Program Year

Program	Activity	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Sub-Totals	Program Development	$1,295,000	$700,350	$128,778	$130,710		$2,254,838		$2,254,838
	Program Operations & Administration	$207,500	$624,225	$691,539	$750,274	$890,219	$3,163,756	$4,385,043	$7,548,799
	Capital Planning & Improvements- No ROI		$1,185,013	$1,452,617	$1,905,749	$2,366,841	$6,910,219	$14,693,023	$21,603,242
	Capital Planning & Improvements- With ROI		$1,731,945	$9,199,368	$11,015,163	$11,442,793	$33,389,270	$25,012,945	$58,402,215
	Total	$1,502,500	$4,241,533	$11,472,302	$13,801,896	$14,699,852	$45,718,084	$44,091,010	$89,809,094

Table 9.1

Capitalization by System for Each Program Year

System	Capitalization by Program Year					
	2020-21	2021-22	2022-23	2023-24	2024-25	Total
Overall Program Management	$157,500	$139,563	$131,354	$133,324	$214,926	$776,666
Housing Energy Management System - Operations	$422,500	$406,000	$282,024	$305,861	$197,679	$1,614,064
Community Energy Systems	$387,500	$185,238	$43,785	$44,441	$45,108	$706,071
Mobility Improvement System	$83,750	$54,556	$14,166	$14,378	$14,594	$181,444
Investment System	$225,000	$274,050	$146,807	$162,080	$177,778	$985,716
Coordinated Access System	$120,000	$157,325	$92,720	$109,796	$127,364	$607,205
Contingency (2.6%)						$128,834
Total	$1,396,250	$1,216,731	$710,855	$769,881	$777,449	$5,000,000

Table 9.2

A detailed breakdown of all program costs, including the line items that make up the core operating costs, are described in detail in the tables that follow in this chapter.

FINANCIAL CONTROLS AND STANDARDS

The accounts of the Town of Bridgewater are kept and reported on in accordance with Generally Accepted Accounting Principles adopted for Nova Scotia Municipalities as defined in the Financial Reporting and Accounting Manual (FRAM) prescribed by the Minister of the Department of Municipal Affairs and as outlined in the Canadian Public Sector Accounting Standards. The Town undergoes an annual external audit by a Registered Municipal Auditor as defined in Section 457 of the Nova Scotia Municipal Government Act. The accounts for the Energy Poverty Reduction Program, as a program of the Town of Bridgewater, will adhere to these same financial controls and standards.

In accordance with municipal accounting principles, projected program expenditures by the Town of Bridgewater are inclusive of municipal net of HST. To account for general inflation, conservative cost escalation of 1.5% per year has been built into each year of the program, starting with 0% inflation in fiscal year 2020-21, and increasing by 1.5% per year, compounded annually.

COST OF SERVICES

COORDINATED ACCESS SYSTEM

Estimated service costs for the Coordinated Access System are presented in Table 9.3. Cost assumptions were developed in consultation with community partners who are familiar with the delivery and cost of community support services. In particular the local delivery of housing support services by Family Services of Western Nova Scotia was used as the basis of the Coordinated Access Service Provision. As the Homeless Individuals and Families Information System (HIFIS) is a free service, database set up costs relate to the design and programming of data entry templates and reports by program staff. Service costs to clients were calculated using an annual cost per client of approximately $600 per year, plus inflation. These services are projected to be delivered by 1.5FTE (full time equivalent) social workers for the first three years of the program, and by 2.0FTE social workers from 2023-24 onward. These program staff also account for the majority of the program design, partnership development and coordination, and program evaluation and improvement work. In-kind provision of office space has not been accounted for in this model, as we assume that service providers will be able to provide those needs.

Cost of Services for Coordinated Access System

Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Partnership Coordination	Partnership development	Program Development	$20,000	$10,150				$30,150		$30,150
	Partner coordination	Program Operations & Administration		$10,150	$10,302	$10,457	$10,614	$41,523	$55,505	$97,027
	Program evaluation & improvement	Program Operations & Administration	$20,000	$20,300	$20,605	$20,914	$21,227	$103,045	$111,009	$214,054
Coordinated Access Service Provision	Detailed program design	Program Development	$50,000	$50,750				$100,750		$100,750
	Staff hiring & training	Program Development	$10,000	$10,150				$20,150		$20,150
	Database setup	Program Development	$10,000	$10,150				$20,150		$20,150
	Serve 2021-22 clients	Program Operations & Administration		$30,450				$30,450		$30,450
	Serve 2022-23 clients	Program Operations & Administration			$46,360			$46,360		$46,360
	Serve 2023-24 clients	Program Operations & Administration				$62,741		$62,741		$62,741
	Serve 2024-25 clients	Program Operations & Administration					$79,602	$79,602		$79,602
	Serve 2025-30 clients	Program Operations & Administration							$499,600	$499,600
	IT system maintenance	Program Operations & Administration		$5,075	$5,151	$5,228	$5,307	$20,761	$27,752	$48,514
	Communications & marketing	Program Operations & Administration	$10,000	$10,150	$10,302	$10,457		$51,523	$55,505	$107,027
Sub-Totals	Program Development		$90,000	$81,200				$171,200		**$171,200**
	Program Operations & Administration		$30,000	$76,125	$92,720	$109,769	$127,364	$436,005	$749,371	**$1,185,376**
	Total		$120,000	$157,325	$92,720	$109,769	$127,364	$607,205	$749,371	**$1,356,576**

Table 9.3

HOUSING ENERGY MANAGEMENT SYSTEM – FINANCIAL SUMMARY

Estimated service costs for the Housing Energy Management System are presented in Table 9.4. Cost assumptions were developed in consultation with community partners and with energy service providers including Efficiency Nova Scotia and Clean Foundation, who deliver related programs in the Bridgewater area. Data platform development and maintenance costs were assumed to involve the development of the main components of the Municipal Enterprise Resource Planning platform and the Energy Management Information System (EMIS), and calculated based on market information from Bridgewater's current Municipal Enterprise Resource Planning provider, TownSuite, and from industry sources. Technical navigation services for clients and service and supplier procurement and coordination costs are calculated at $500 and $250 per client per year, respectively, plus inflation. These services are projected to be delivered by 2.0FTE (full time equivalent) technical staff plus 1.0FTE information technology staff. These program staff also account for the majority of the program design, partnership development and coordination, community engagement, program administration, and program evaluation and improvement work, and provide a share of their services to the other program service areas. Capital planning and improvement costs for housing retrofits and new construction are detailed in Tables 9.4, 9.5, 9.6, and 9.7.

Housing Energy Management System

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Program Coordination & Administration	Partnership development	Program Development	$30,000	$20,300				$50,300		$50,300
	Partner coordination	Program Operations & Administration		$10,150	$10,302	$10,457	$10,614	$41,523	$55,505	$97,027
	Staff hiring & training	Program Development	$20,000					$20,000		$20,000
	Technical navigation services for clients	Program Operations & Administration		$25,375	$38,633	$52,284	$66,335	$182,628	$416,334	$598,961
	Detailed program design	Program Development	$100,000	$50,750				$150,750		$150,750
	Database setup - municipal enterprise resource planning (ERP) system	Program Development	$75,000	$76,125				$151,125		$151,125
	Database setup - energy management information system (EMIS)	Program Development	$125,000	$126,875	$128,778	$130,710		$511,363		$511,363
	IT system maintenance	Program Operations & Administration	$40,000	$40,600	$41,209	$41,827	$42,455	$206,091	$222,018	$428,109
	Service & supplier procurement & coordination	Program Operations & Administration		$12,688	$19,317	$26,142	$33,168	$91,314	$208,167	$299,481
	Community engagement	Program Operations & Administration	$10,000	$10,150	$10,302	$10,457	$10,614	$51,523	$55,505	$107,027
	Program administration	Program Operations & Administration	$10,000	$20,300	$20,605	$20,914	$21,227	$93,045	$111,009	$204,054
	Program evaluation & improvement	Program Operations & Administration	$20,000	$20,300	$20,605	$20,914	$21,227	$103,045	$111,009	$214,054
	Communications & marketing	Program Operations & Administration	$20,000	$20,300	$20,605	$20,914	$21,227	$103,045	$111,009	$214,054
Housing Retrofits	Plan and implement 2021-22 home retrofits			$2,434,427				$2,434,427		$2,434,427
	Capital Planning & Improvements-No ROI			$844,988				$844,988		$844,988
	Capital Planning & Improvements-With ROI			$1,589,439				$1,589,439		$1,589,439
	Plan and implement 2022-23 home retrofits				$3,701,176			$3,701,176		$3,701,176
	Capital Planning & Improvements-No ROI				$1,296,023			$1,296,023		$1,296,023
	Capital Planning & Improvements-With ROI				$2,405,153			$2,405,153		$2,405,153

CONTINUED

$ FINANCIAL

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Housing Retrofits	Plan and implement 2023-24 home retrofits					$4,947,188		$4,947,188		$4,947,188
	Capital Planning & Improvements-No ROI					$1,760,400		$1,760,400		$1,760,400
	Capital Planning & Improvements-With ROI					$3,186,789		$3,186,789		$3,186,789
	Plan and implement 2024-25 home retrofits						$6,373,615	$6,373,615		$6,373,615
	Capital Planning & Improvements-No ROI						$2,238,416	$2,238,416		$2,238,416
	Capital Planning & Improvements-With ROI						$4,135,200	$4,135,200		$4,135,200
	Plan and implement 2025-30 home retrofits								$37,089,975	$37,089,975
	Capital Planning & Improvements-No ROI								$14,006,937	$14,006,937
	Capital Planning & Improvements-With ROI								$23,083,038	$23,083,038
New Construction	Plan and implement 2021-22 home retrofits			$127,281				$127,281		$127,281
	Capital Planning & Improvements-No ROI			$5,075				$5,075		$5,075
	Capital Planning & Improvements-With ROI			$122,206				$122,206		$122,206
	Plan and implement 2022-23 home retrofits				$180,866			$180,866		$180,866
	Capital Planning & Improvements-No ROI				$7,212			$7,212		$7,212
	Capital Planning & Improvements-With ROI				$173,655			$173,655		$173,655
	Plan and implement 2023-24 home retrofits					$236,031		$236,031		$236,031
	Capital Planning & Improvements-No ROI					$9,411		$9,411		$9,411
	Capital Planning & Improvements-With ROI					$226,619		$226,619		$226,619

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
New Construction	Plan and implement 2024-25 home retrofits						$292,809	$292,809		$292,809
	Capital Planning & Improvements- No ROI						$11,675	$11,675		$11,675
	Capital Planning & Improvements- With ROI						$281,134	$281,134		$281,134
	Plan and implement 2025-30 home retrofits								$1,894,434	$1,894,434
	Capital Planning & Improvements- No ROI								$75,536	$75,536
	Capital Planning & Improvements- With ROI								$1,818,898	$1,818,898
Sub-Totals	Program Development		$350,000	$274,050	$128,778	$130,710		$883,538		**$883,538**
	Program Operations & Administration		$100,000	$159,863	$181,577	$203,907	$226,866	$872,213	$1,290,555	**$2,162,768**
	Capital Planning & Improvements- No ROI			$850,063	$1,303,235	$1,769,811	$2,250,091	$6,173,199	$14,082,473	**$20,255,671**
	Capital Planning & Improvements- With ROI			$1,711,645	$2,578,808	$3,413,408	$4,416,334	$12,120,195	$24,901,936	**$37,022,130**
	Total		$450,000	$2,995,620	$4,192,398	$5,517,836	$6,893,291	$20,049,144	$40,274,964	**$60,324,108**

Table 9.4

A heat pump condenser on the side of a home.

HOUSING ENERGY MANAGEMENT SYSTEM – HOUSING RETROFITS

Table 9.5 provides the estimated breakdown of the 318 target homes to be served through the Housing Retrofit program. Homes are divided into 13 common 'archetypes', defined by the combination of building form, sub-type, age, and type of heating system. Archetypes are defined in detail in Bridgewater's Community Energy Investment Plan. The combination of archetypes represents as closely as possible the housing type distribution of Bridgewater households who reported living in energy poverty in a community-wide survey issued early in 2019. Actual participation rates may vary from this distribution, depending on program enrolment.

> "Social investing is giving both the community and traditional investors a choice to invest in social outcomes that are of interest to them."
> – COMMUNITY SERVICE ORGANIZATION

Number of Retrofits by Housing Archetype for each Program Year

Year			2020-21		2021-22		2022-23		2023-24		2024-25		Years 1-5 Total	Years 6-10 Total	Grand Total
Form	Type	Age	Electric	Oil	Electric	Oil	Electric	Oil	Electric	Oil	Electric	Oil			
Multi Unit	converted	new	0	0	1	1	2	2	3	2	3	3	17	35	52
Multi Unit	converted	old	0	0	0	0	1		2	2	1	1	7	20	27
Multi Unit	purposebuilt	new	0	0	2	2	3	3	4	4	5	6	29	55	84
Multi Unit	purposebuilt	old	0	0	1	2	3	2	3	3	4	4	22	46	68
Semi Detached	large	new	0	0	1	1	1	1	1	2	2	2	11	26	37
Single Detached	small high	new	0	0	2	2	3	3	4	4	5	5	28	60	88
Single Detached	small high	old	0	0	1	2	2	2	3	2	4	3	19	40	59
Single Detached	medium low	new	0	0	2	3	3	4	5	4	6	6	33	70	103
Single Detached	medium high	new	0	0	3	2	4	4	5	5	7	6	36	76	112
Single Detached	medium high	old	0	0	1	1	1	1	2	1	2	2	11	26	37
Single Detached	large low	new	0	0	3	3	5	4	5	6	7	7	40	83	123
Single Detached	small low	new	0	0	1	1	2	2	3	1	3	3	17	40	57
Mobile	N/A	N/A	0	0	4	3	5	5	7	7	8	9	48	105	153
Total			**0**		**45**		**68**		**91**		**114**		**318**	**682**	**1000**

Table 9.5

Table 9.6 provides a breakdown of the capital planning and improvement costs for the 318 homes that are projected to enroll in the Housing Retrofit program. Unit costs for most line items, including those with and without any financial return on investment (ROI) were estimated based on existing housing retrofit programs including the Clean Energy Financing, Clean Net Zero, and HomeWarming programs. Smart thermostat, smart submeter, and home energy dashboard costs were estimated by energy consulting firm Green Power Labs.

An old Bridgewater home converted into a multi-unit residential apartment building.

$ FINANCIAL

Cost of Services for Retrofit Activities by Program Year

Retrofit Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Assessment & Planning	No financial ROI		$228,375	$350,277	$475,784	$604,977	*$1,659,412*	*$3,785,659*	**$5,445,071**
Contractor Administration	No financial ROI		$114,188	$175,138	$237,892	$302,489	*$829,706*	*$1,892,829*	**$2,722,536**
Temporary Displacement Cost	No financial ROI		$45,675	$70,055	$95,157	$120,995	*$331,882*	*$757,132*	**$1,089,014**
Deferred Maintenance Costs	No financial ROI		$456,750	$700,553	$951,567	$1,209,954	*$3,318,825*	*$7,571,317*	**$10,890,142**
Lighting	With financial ROI		$3,654	$5,604	$7,613	$9,680	*$26,551*	*$54,354*	**$80,905**
Appliances	With financial ROI		$91,350	$140,111	$190,313	$241,991	*$663,765*	*$1,358,851*	**$2,022,616**
Deep Retrofit - Thermal	With financial ROI		$616,460	$942,810	$1,238,920	$1,613,273	*$4,411,463*	*$8,998,855*	**$13,410,318**
Solar Domestic Hot Water	With financial ROI		$159,863	$245,194	$333,049	$423,484	*$1,161,589*	*$2,377,989*	**$3,539,577**
Solar Photovoltaic	With financial ROI		$635,390	$945,747	$1,247,494	$1,629,193	*$4,457,824*	*$9,040,649*	**$13,498,473**
Smart Thermostat	With financial ROI		$59,885	$90,660	$121,822	$157,082	*$429,448*	*$902,636*	**$1,332,085**
Smart Submeter + Home Energy Dashboard	With financial ROI		$22,838	$35,028	$47,578	$60,498	*$165,941*	*$349,703*	**$515,645**
Total			**$2,434,427**	**$3,701,176**	**$4,947,188**	**$6,373,615**	**$17,456,406**	**$37,089,975**	**$54,546,381**

Table 9.6

Number of Newly Constructed Homes by Housing Archetype for each Program Year

Year	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
New Construction - Row Homes	0	5	7	9	11	32	68	**100**

Table 9.7

> My experience right now, our home is not fit for anyone to be in, I have two small children who live there, my kids are sick non-stop, and we can't afford to move.
>
> – BRIDGEWATER RESIDENT

HOUSING ENERGY MANAGEMENT SYSTEM – NEW CONSTRUCTION

Table 9.7 provides the estimated breakdown of the 32 target homes to be served through the New Construction program. Homes are estimated to uniformly be row homes. Actual participation rates may vary from this distribution, depending on program enrolment.

Table 9.8 provides a breakdown of the capital planning and improvement costs for the 32 homes that are projected to enroll in the New Construction program. Unit costs for line items are incremental costs above the cost of construction to building code. Sources of cost information is the same as for the Housing Retrofit program.

Cost of Services for New Construction Activities by Program Year

New Construction Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Assessment & Planning	No financial ROI		$5,075	$7,212	$9,411	$11,675	*$33,373*	*$75,536*	**$108,908**
Incremental Cost increase - Lighting	With financial ROI		$406	$577	$753	$934	*$2,670*	*$6,043*	**$8,713**
Incremental Cost increase - Appliances	With financial ROI		$10,150	$14,423	$18,822	$23,350	*$66,745*	*$151,071*	**$217,817**
Incremental Cost increase - Envelope - Thermal	With financial ROI		$50,750	$72,116	$94,111	$116,750	*$333,727*	*$755,356*	**$1,089,083**
Incremental Cost increase - Solar Domestic Hot Water	With financial ROI		$17,763	$25,241	$32,939	$40,862	*$116,804*	*$264,375*	**$381,179**
Incremental Cost increase - Solar Photovoltaic	With financial ROI		$35,525	$50,481	$65,878	$81,725	*$233,609*	*$528,749*	**$762,358**
Incremental Cost increase - Smart Thermostat	With financial ROI		$5,075	$7,212	$9,411	$11,675	*$33,373*	*$75,536*	**$108,908**
Incremental Cost increase - Smart Submeter + Home Energy Dashboard	With financial ROI		$2,538	$3,606	$4,706	$5,837	*$16,686*	*$37,768*	**$54,454**
Total			**$127,281**	**$180,866**	**$236,031**	**$292,809**	**$836,987**	**$1,894,434**	**$2,731,421**

Table 9.8

COMMUNITY ENERGY SYSTEMS

Estimated service costs for the Community Energy Systems are presented in Table 9.9. Cost assumptions were developed in consultation with energy development consultants, in particular engineering consultants Roswall Inc. Costs are 100% external to the organization – no staffing is included in these figures as program staffing that supports this service is in part already included through the Technical Navigator positions, and in part is discounted from the cost model. Data platform development and maintenance costs were assumed to be incremental to development of the main Municipal Enterprise Resource Planning platform and the Energy Management Information System (EMIS), and calculated based on market information from Bridgewater's current Municipal Enterprise Resource Planning provider, TownSuite, and from industry sources. Construction of the 6MW of solar garden capacity was costed at $2.20, $2.00, and $1.80 per installed watt for 2022-23, 2023-24, and 2024-25 respectively, inflated according to the number of years past 2020-21.

MOBILITY IMPROVEMENT SYSTEM

Estimated service costs for the Mobility Improvement System are presented in Table 9.10. Cost assumptions were developed in consultation with Town of Bridgewater public transit and active transportation planning, engineering, and operations staff. Data platform development and maintenance costs were assumed to be incremental to development of the main Municipal Enterprise Resource Planning platform and the Energy Management Information System (EMIS), and calculated based on market information from Bridgewater's current Municipal Enterprise Resource Planning provider, TownSuite, and from industry sources. Program design, partnership development, community engagement, program administration, and program evaluation and marketing services are projected to be delivered by 0.25FTE (full time equivalent) transportation planning staff. Capital planning and improvement costs for public transit improvements are based on current operating data, and costs for active transportation improvements are based on current infrastructure construction costs.

Cost of Services for Community Energy Systems by Sub-Program for each Program Year

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Utility Grade Service Provision	Community-wide energy generation feasibility study	Program Development	$175,000					$175,000		$175,000
	Municipal utility detailed service design	Program Development	$100,000					$100,000		$100,000
	Municipal utility setup and/or service procurement	Program Development	$50,000	$101,500				$151,500		$151,500
	Legislative & regulatory approval process	Program Development	$20,000	$20,300				$40,300		$40,300
	Database setup	Program Development	$50,000	$20,300				$70,300		$70,300
	Utility grade service management	Program Operations & Administration		$50,750	$51,511	$52,284	$53,068	$207,613	$277,523	$485,136
Solar Garden Development	Conceptual design	Capital Planning & Improvements- No ROI		$65,975				$65,975		$65,975
	Fundraising & financing	Capital Planning & Improvements- No ROI		$20,300	$20,605	$20,914		$61,818		$61,818
	Community consultation	Capital Planning & Improvements- No ROI		$15,225	$15,453			$30,678		$30,678
	Detailed engineering design	Capital Planning & Improvements- No ROI		$101,500				$101,500		$101,500
	Procurement	Capital Planning & Improvements- No ROI		$20,300				$20,300		$20,300
	Permitting	Capital Planning & Improvements - With ROI		$20,300	$20,605			$40,905		$40,905
	Construction	Capital Planning & Improvements - With ROI			$6,522,689	$7,523,330	$6,872,561	$20,918,580		$20,918,580
	Database & IT systems setup	Capital Planning & Improvements - With ROI			$77,267	$78,426	$79,602	$235,295		$235,295
	Commissioning	Capital Planning & Improvements - With ROI					$53,068	$53,068		$53,068
	Operation & Maintenance	Capital Planning & Improvements - With ROI					$21,227	$21,227	$111,009	$132,236
Sub-Totals	**Program Development**		$395,000	$142,100				$537,100		**$537,100**
	Program Operations & Administration			$50,750	$51,511	$52,284	$53,068	$207,613	$277,523	**$485,136**
	Capital Planning & Improvements- No ROI			$223,300	$36,058	$20,914		$280,271		**$280,271**
	Capital Planning & Improvements- With ROI			$20,300	$6,620,561	$7,601,756	$7,026,459	$21,269,075	$111,009	**$21,380,084**
	Total		$395,000	$436,450	$6,708,130	$7,674,953	$7,079,527	$22,294,060	$388,532	**$22,682,592**

Table 9.9

Cost of Services for Mobility Improvement System by Sub-Program for each Program Year

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Program Coordination & Administration	Detailed program design	Program Development	$20,000	$20,300				$40,300		$40,300
	Partnership development	Program Development	$10,000					$10,000		$10,000
	Database setup	Program Development	$50,000	$20,300				$70,300		$70,300
	IT system maintenance	Program Operations & Administration		$10,150	$10,302	$10,457	$10,614	$41,523	$55,505	$97,027
	Community engagement	Program Operations & Administration	$5,000	$5,075	$5,151	$5,228	$5,307	$25,761	$27,752	$53,514
	Program administration	Program Operations & Administration	$2,500	$2,538	$2,576	$2,614	$2,653	$12,881	$13,876	$26,757
	Communications & marketing	Program Operations & Administration	$5,000	$5,075	$5,151	$5,228	$5,307	$25,761	$27,752	$53,514
	Program evaluation & improvement	Program Operations & Administration	$10,000	$10,150	$10,302	$10,457	$10,614	$51,523	$55,505	$107,027
Transit System Improvements	Plan and implement 2021-22 transit improvements	Capital Planning & Improvements- No ROI		$20,300				$20,300		$20,300
	Plan and implement 2022-23 transit improvements	Capital Planning & Improvements- No ROI			$20,605			$20,605		$20,605
	Plan and implement 2023-24 transit improvements	Capital Planning & Improvements- No ROI				$20,914		$20,914		$20,914
	Plan and implement 2024-25 transit improvements	Capital Planning & Improvements- No ROI					$21,227	$21,227		$21,227
	Plan and implement 2025-30 transit improvements	Capital Planning & Improvements- No ROI							$111,009	$111,009
Active Transportation Improvements	Plan and implement 2021-22 AT improvements	Capital Planning & Improvements- No ROI		$91,350				$91,350		$91,350
	Plan and implement 2022-23 AT improvements	Capital Planning & Improvements- No ROI			$92,720			$92,720		$92,720
	Plan and implement 2023-24 AT improvements	Capital Planning & Improvements- No ROI				$94,111		$94,111		$94,111
	Plan and implement 2024-25 AT improvements	Capital Planning & Improvements- No ROI					$95,523	$95,523		$95,523
	Plan and implement 2025-30 AT improvements	Capital Planning & Improvements- No ROI							$499,541	$499,541
Sub-Totals	**Program Development**		$80,000	$40,600				$120,600		**$120,600**
	Program Operations & Administration		$22,500	$32,988	$33,482	$33,985	$34,494	$157,449	$180,390	**$337,838**
	Capital Planning & Improvements- No ROI			$111,650	$113,325	$115,025	$116,750	$456,749	$610,550	**$1,067,299**
	Total		$102,500	$185,238	$146,807	$149,009	$151,244	$734,798	$790,940	**$1,525,738**

Table 9.10

Cost of Services for Investment System by Sub-Program for each Program Year

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Municipal Capitalization System	Detailed program design	Program Development	$50,000	$50,750				$100,750		$100,750
	Database setup	Program Development	$50,000	$20,300				$70,300		$70,300
	Staff hiring & training	Program Development	$10,000					$10,000		$10,000
	Partnership development	Program Development	$20,000	$20,300				$40,300		$40,300
	Project financial planning	Program Operations & Administration	$30,000	$30,450	$30,907	$31,370	$31,841	$154,568	$166,514	$321,082
	Plan, confirm, and administer 2021-22 funding	Program Operations & Administration		$35,525				$35,525		$35,525
	Plan, confirm, and administer 2022-23 funding	Program Operations & Administration			$36,058			$36,058		$36,058
	Plan, confirm, and administer 2023-24 funding	Program Operations & Administration				$36,599		$36,599		$36,599
	Plan, confirm, and administer 2024-25 funding	Program Operations & Administration					$37,148	$37,148		$37,148
	Plan, confirm, and administer 2025-30 funding	Program Operations & Administration							$194,266	$194,266
	Reporting to funders	Program Operations & Administration		$15,225	$15,453	$15,685	$15,920	$62,284	$83,257	$145,541
	IT system maintenance	Program Operations & Administration		$10,150	$10,302	$10,457	$10,614	$41,523	$55,505	$97,027
	Program evaluation & improvement	Program Operations & Administration	$10,000	$10,150	$10,302	$10,457	$10,614	$51,523	$55,505	$107,027
Financial Investment Vehicle	Investment vehicle organization creation and/or service procurement	Program Development	$50,000	$50,750				$100,750		$100,750
	Administration & Reporting	Program Operations & Administration	$15,000	$15,225	$15,453	$15,685	$15,920	$77,284	$83,257	$160,541
	Plan, sell, and administer investment raise 2021-22	Program Operations & Administration		$25,375				$25,375		$25,375
	Plan, sell, and administer investment raise 2022-23	Program Operations & Administration			$38,633			$38,633		$38,633
	Plan, sell, and administer investment raise 2023-24	Program Operations & Administration				$52,284		$52,284		$52,284
	Plan, sell, and administer investment raise 2024-25	Program Operations & Administration					$66,335	$66,335		$66,335
	Plan, sell, and administer investment raises 2025-30	Program Operations & Administration							$416,334	$416,334
Sub-Totals	**Program Development**		$180,000	$142,100				$322,100		**$322,100**
	Program Operations & Administration		$55,000	$142,100	$157,109	$172,537	$188,392	$715,138	$1,054,636	**$1,769,774**
	Total		$235,000	$284,200	$157,109	$172,537	$188,392	$1,037,238	$1,054,636	**$2,091,874**

Table 9.11

INVESTMENT SYSTEM

Estimated service costs for the Investment System are presented in Table 9.11. Cost assumptions were developed in consultation with investment industry experts and investment platform providers including Tapestry Community Capital and MaRS Centre for Social Innovation. Data platform development and maintenance costs were assumed to be incremental to development of the main Municipal Enterprise Resource Planning platform and the Energy Management Information System (EMIS), and calculated based on market information from Bridgewater's current Municipal Enterprise Resource Planning provider, TownSuite, and from industry sources. Program design, partnership development, project financial planning, funding efforts, reporting to funders, and program evaluation and improvement are projected to be delivered by 1.0FTE (full time equivalent) financial staff.

OVERALL PROGRAM MANAGEMENT

Estimated service costs for Overall Program Management are presented in Table 9.12. Cost assumptions were developed based on prior experience with program design and management. Program governance, management, risk management and quality control, and performance measurement and evaluation are projected to be delivered by 1.5FTE (full time equivalent) program staff.

Cost of Services for Overall Program Management by Sub-Program for each Program Year

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Program Governance, Management, and Evaluation	Program governance setup	Program Development	$50,000					$50,000		$50,000
	Program governance	Program Operations & Administration		$20,300	$20,605	$20,914	$21,227	$83,045	$111,009	$194,054
	Program management setup	Program Development	$50,000					$50,000		$50,000
	Program management	Program Operations & Administration		$50,750	$51,511	$52,284	$53,068	$207,613	$277,523	$485,136
	Program risk management & quality control setup	Program Development	$50,000					$50,000		$50,000
	Program risk management & quality control	Program Operations & Administration		$50,750	$51,511	$52,284	$53,068	$207,613	$277,523	$485,136
	Phase 1 performance measurement & evaluation	Program Development	$50,000	$20,300				$70,300		$70,300
	Phase 2 performance measurement & evaluation	Program Operations & Administration		$40,600	$51,511	$52,284		$144,395		$144,395
	Phase 3 performance measurement & evaluation	Program Operations & Administration					$132,670	$132,670		$132,670
	Phase 4 performance measurement & evaluation	Program Operations & Administration							$166,514	$166,514
Sub-Totals	**Program Development**		$200,000	$20,300				$220,300		**$220,300**
	Program Operations & Administration			$162,400	$175,138	$177,765	$260,034	$775,338	$832,568	**$1,607,906**
	Total		$200,000	$182,700	$175,138	$177,765	$260,034	$995,638	$832,568	**$1,828,206**

Table 9.12

CAPITALIZATION OF SERVICES

CAPITALIZATION BY SOURCE

Service capitalization is projected to be achieved from three distinct funding streams:

1. **No investor:** non-debt and non-grant revenues consist of user fees and in-kind or donated services, material, and labour. User fees apply to the Housing Energy Management System and represent a combination of property owner up-front investment into their own property, and payment of administration fees to sustain program operations. User-pay ratios for home energy improvement programs in Nova Scotia range from 0% (HomeWarming Program) to around 50% (Clean Net Zero) with the majority of energy retrofits programs capitalizing upwards of 80% of program costs. However, there are no existing programs that provide greater than $20,000 in financing or funding for single family homes, and only limited program dollars for multi-unit buildings. User fees apply to the Investment System as administration fees can be leveraged on investment raises. In-kind material and services can be expected for the Coordinated Access System and Housing Energy Management System as there is ample opportunity to fundraise for these services within the local community.

> People have to make difficult decisions about what to pay, phone, energy bill, arrears, there is difficulty about what to pay for at each point in time, which is compounded in the winter, it impacts their social well-being and mental health.
>
> – COMMUNITY SERVICE ORGANIZATION

2. **Financial investor:** capital raises from investors that require dividends or interest to be generated from their investments, which means that financed activities must generate a positive return on investment (ROI). ROIs apply to community energy systems and ROI components of housing retrofits and new construction. Overall program management may need to charge an administrative fee to cover expenses once Program Maturity (Phase 4) is reached. Financial investors also includes energy performance contractors.
3. **Specialized investor:** funding from organizations that do not expect a financial return on their investment and instead expect to achieve social impact or other public benefit. Includes issuers of loan guarantees, provincial energy rebates and incentives, philanthropic charitable and non-profit funding, Provincial and Federal government funding including the Smart Cities Challenge, and municipal funding and in-kind contributions.

A Bridgewater resident views an exhibit on energy poverty at a Smart Cities Challenge Open House.

Capitalization projections by service area are provided in Table 9.13. Projections are separated into years 1-5 (within the Smart Cities Challenge timeframe) and years 6-10 (Program Maturity). Further explanations on capitalizations projections by program service are provided in the following sections.

Capitalization by Source

Capitalization Source		Coordinated Access System		Housing Energy Management System		Community Energy Systems		Mobility Improvement System		Investment System		Overall Program Management		Total	
		Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10
No investor (direct cost recovery)	User fees	0%	0%	14%	15%	0%	0%	0%	0%	0%	47%	0%	0%	6%	15%
	In-kind or donated services, material and labour	0%	25%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%
Financial investor expecting full financial ROI	Financial investors	0%	0%	25%	25%	95%	89%	0%	0%	0%	0%	0%	36%	57%	24%
Specialized investor not expecting financial ROI	Loan guarantees & forgivable loans	0%	0%	3%	3%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%
	Provincial energy rebates	0%	0%	18%	21%	0%	0%	0%	0%	0%	0%	0%	0%	8%	19%
	Philanthropic, charitable, and non-profit funding	0%	25%	0%	1%	0%	0%	0%	0%	0%	0%	0%	18%	0%	1%
	Smart Cities Challenge	100%	0%	9%	0%	3%	0%	25%	0%	95%	0%	78%	0%	11%	0%
	Provincial/Federal government funding	0%	50%	26%	30%	1%	0%	22%	38%	0%	47%	0%	18%	12%	30%
	Municipal funding & in-kind	0%	0%	1%	0%	0%	11%	54%	62%	5%	5%	22%	28%	2%	2%
Total		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 9.13

Coordinated Access System Capitalization Sources

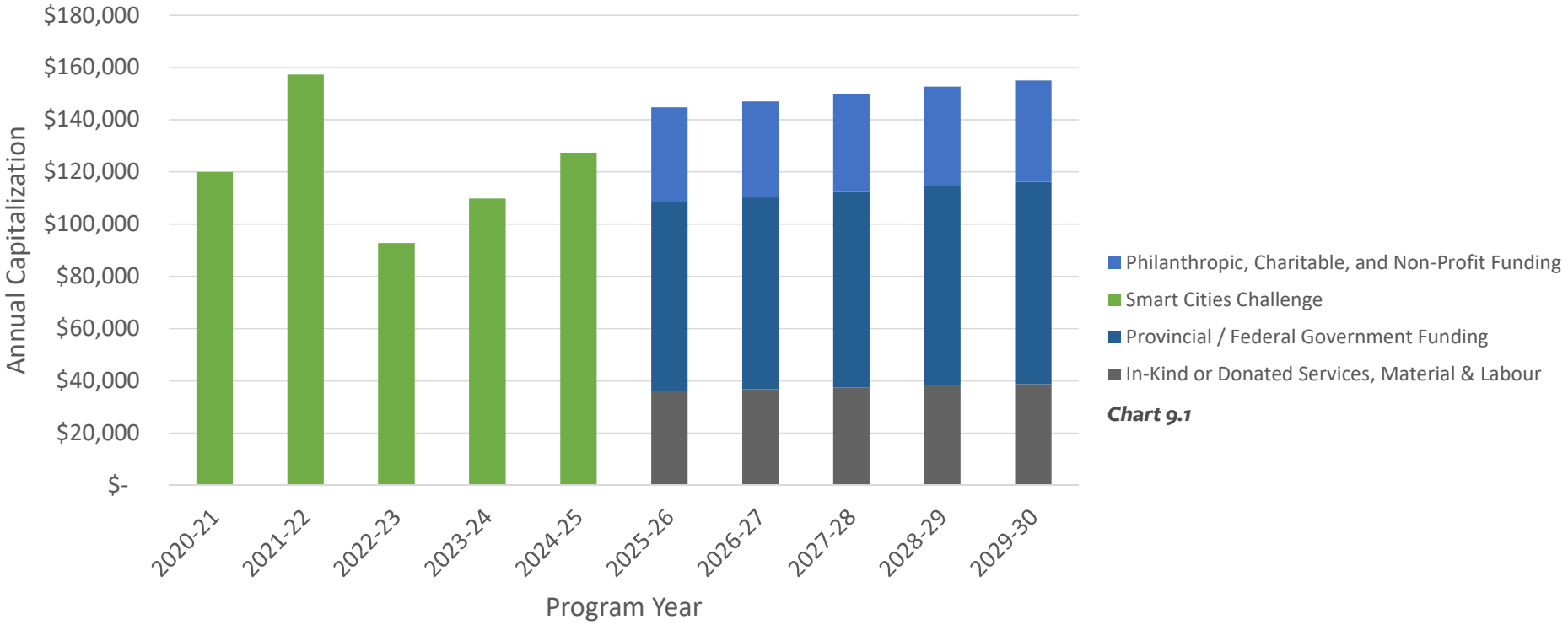


Chart 9.1

As seen in Chart 9.1, we propose that the Coordinated Access System receive 100% of its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to $607,205. This allows the program to be designed and prototyped with little to no financial risk to it, thereby allowing it to demonstrate its value to the community and to other funders, while protecting services for its clients for a 5-year duration. After the Smart Cities Challenge timeframe, service funding would be expected from in-kind or donated services (25%), senior government grant funding (50%) and philanthropic or charitable funding (25%). As a community service with no own-source revenue potential, government and charitable funding would be required to sustain the service over the long term. Our proposition is that the public benefit conferred by the service in saved health care, protective services, legal, and social service costs through mitigated social harms would far outweigh the cost of funding the service, thereby supporting this social investment on rational macroeconomic grounds.

> So much money can be saved upfront by providing coordinated access to service
>
> – COMMUNITY SERVICE ORGANIZATION

Housing Energy Improvement System Capitalization Sources

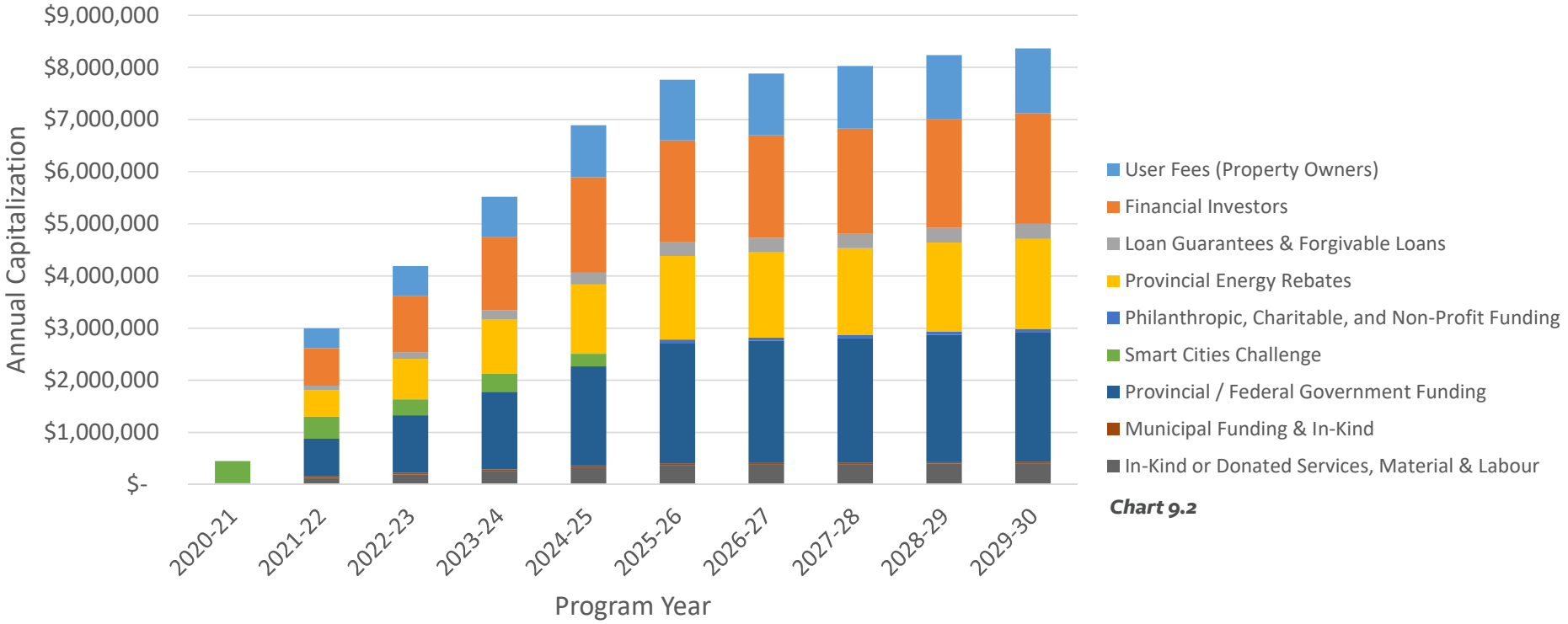


Chart 9.2

As seen in Chart 9.2, we propose that the Housing Energy Improvement System receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to $1,614,064 and represents the most substantial use of the grant, with a large focus on data platform development. Starting in year 2 (2021-22), early prototyping begins with participating property owners, enabling the stacking of other funding and financing sources.

The service is able to make use of a blend of financial investments and specialized funding, which accounts for its unique capitalization potential. Substantial specialized funding exists to support the program, in the form of energy efficiency rebates from Efficiency Nova Scotia and solar install rebates from the Province (modelled at a conservative total of $10,000 per participating home). The Province also provides specialized funding for deferred maintenance improvements to low income homes, and capitalizes improvements to Housing Nova Scotia's public housing stock, unit costs for which are included in this calculation. Financial investors are projected to find favourable investment opportunities by contributing around 25% of the capital improvements that create a direct return on investment. Accounting for some allowance for forgivable loans, loan guarantees, and in-kind funding through community fundraising for low-income housing improvements, the remaining 15% of capital is projected

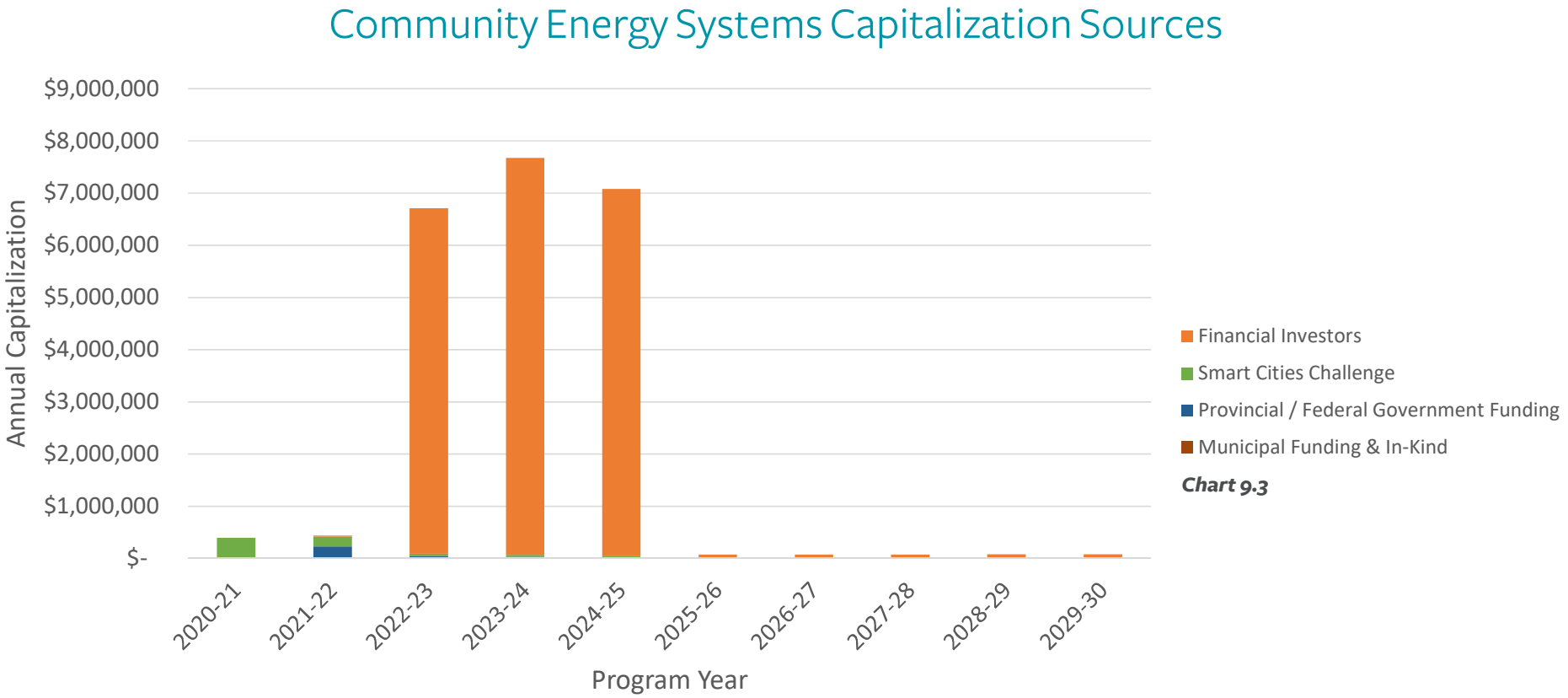


Chart 9.3

to come from property owners as a combination of own funds and administrative fees. After the Smart Cities Challenge timeframe, service capitalization ratios would be expected continue as before, but without the Smart Cities grant.

As seen in Chart 9.3, we propose that the Community Energy Systems receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to $706,071. Additional de-risking funds are projected to come from senior levels of government, which have already funded Bridgewater's community energy initiatives and have indicated continued interest in doing so. Other than some municipal in-kind contribution for program administration, 100% of remaining capital would be sourced from financial investors who could receive ongoing interest payments and/or dividends on their energy investment.

Smart Cities Challenge Open House.

Mobility Improvement System Capitalization Sources

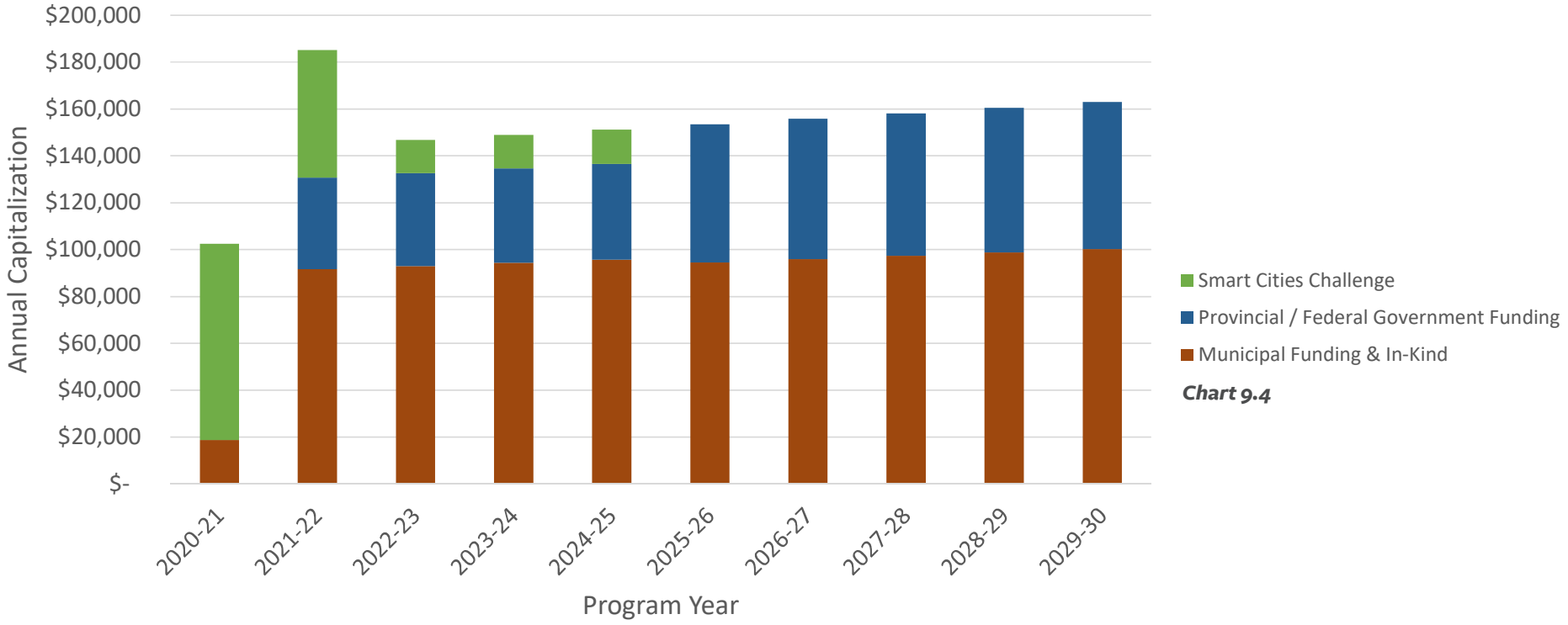


Chart 9.4

A shared bike lane on a residential street in Bridgewater.

After the Smart Cities Challenge timeframe, it is anticipated that the development of community energy systems would continue, with a similar patterns of capitalization: government de-risking activities followed by private-sector investment.

As seen in Chart 9.4, we propose that the Mobility Improvement System receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to $181,444. As the Town of Bridgewater's transit and active transportation systems fall under municipal purview, and investments in these systems typically do not yield financial returns, government funding is required to maintain service improvement efforts. Bridgewater has been successful in achieving transportation funding from the Province in recent years, and expects that 25-40% of transportation capital can come from these sources in the long run.

Investment System Capitalization Sources

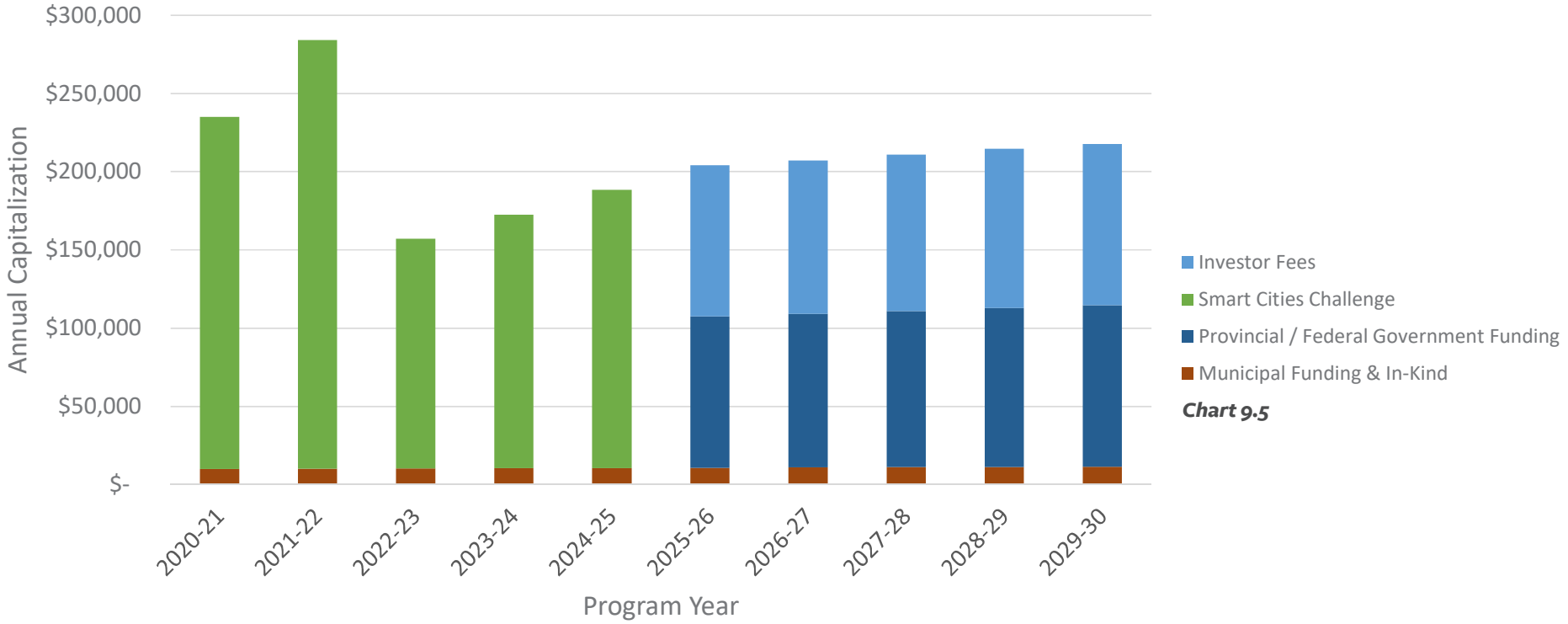


Chart 9.5

A contractor marks lines on a board of rigid insulation.

As seen in Chart 9.5, we propose that the Investment System receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to $985,716, representing 95% of costs, with municipal in-kind providing the remainder. This pattern would continue for the 5 years of the Smart Cities Challenge. After that timeframe, service funding is projected to come from a combination of senior government funding to provide core operating funding to the system, supplemented with user fees collected from investors and funders.

> "I asked for weather-stripping and all my landlord did was take it from their door and put it on mine."
>
> – BRIDGEWATER RESIDENT

Overall Program Management Capitalization Sources

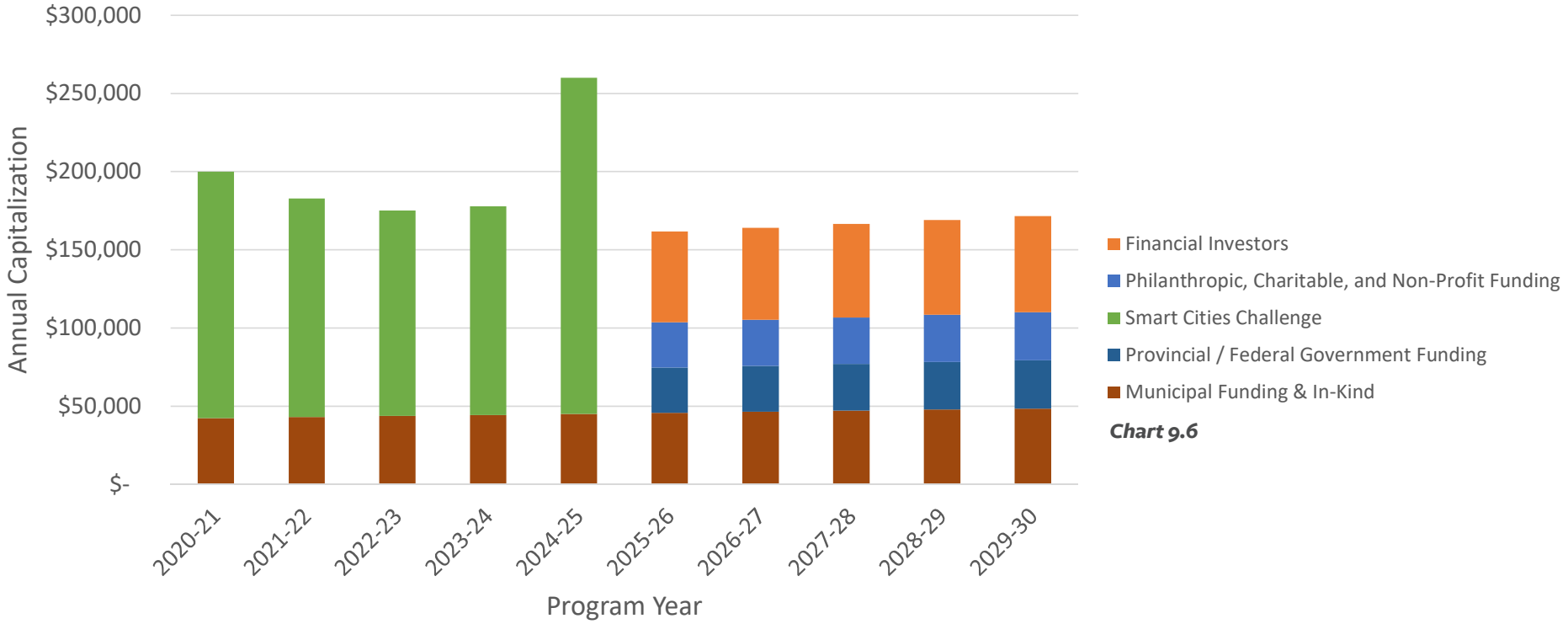


Chart 9.6

As seen in Chart 9.6, we propose that Overall Program Management receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to $776,666, representing 78% of costs, with municipal in-kind providing the remainder. This pattern would continue for the 5 years of the Smart Cities Challenge. After that timeframe, service funding is projected to come from a combination of municipal, senior government, and philanthropic funding, with and opportunity to explore subsidization by financial investors.

> Last year power bill skyrocketed, you have to find ways, I paid rent and energy bill and put everything else on credit
>
> – BRIDGEWATER RESIDENT

A Bridgewater resident reads a quote from an exhibit on energy poverty at a Smart Cities Challenge Open House.

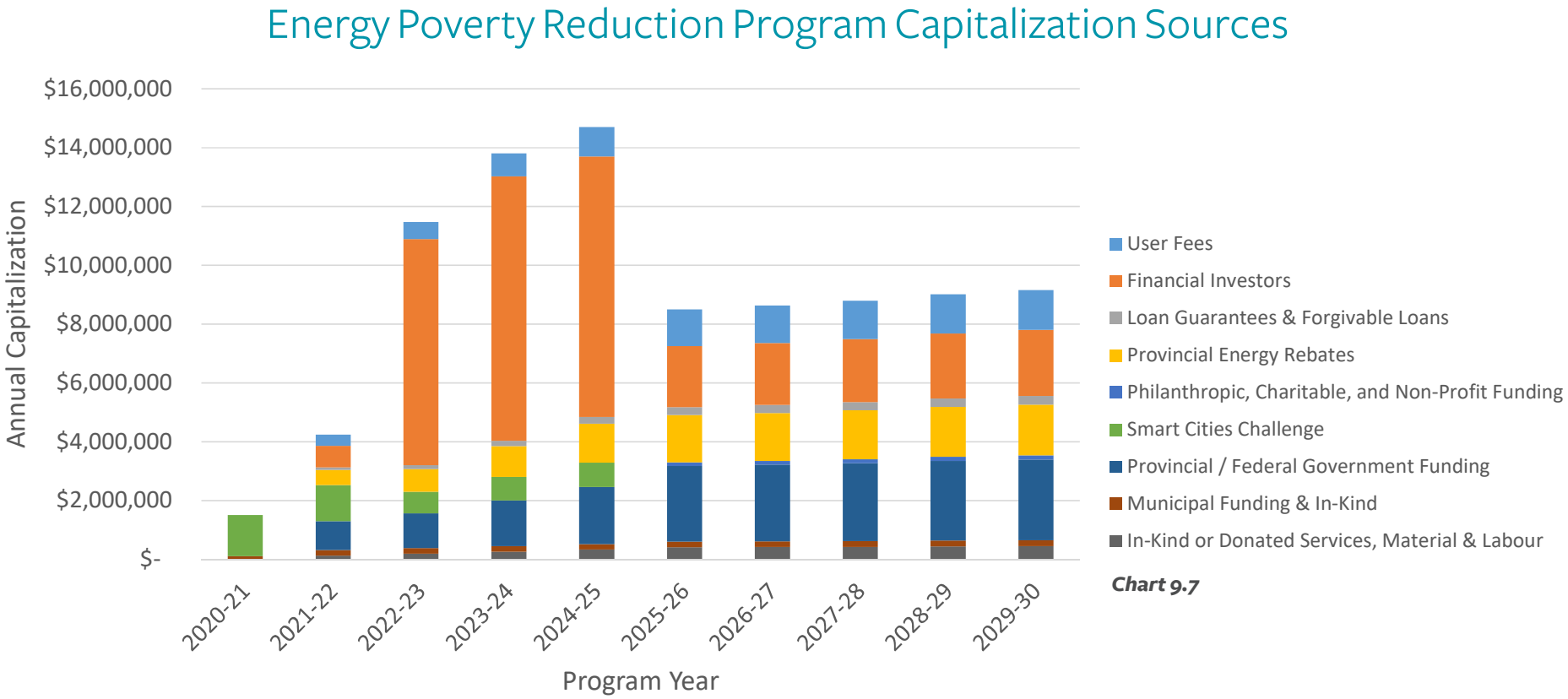


Chart 9.7

In summary, as seen in Chart 9.7, the Smart Cities Challenge grant would fund $5 million (11%) of the Energy Poverty Reduction Program in years 1-5. A diverse set of projects, with a large share of improvements that generate a positive return on investment, enables the stacking of funding and financing sources for years 2 onward. We proposed that this is a sustainable funding model for a town or a rural community, and that this same capitalization concept can be deployed throughout the Canadian context to achieve the program objectives presented in this application.

Capitalization Strategies

Community energy projects typically require upfront capital expenditures resulting in competing priorities, investment risks, layers of operating and ownership entities, all captured within a convoluted business model. Fortunately, as the world transitions to a clean energy economy and technology catches up with societal demand, financing mechanisms are evolving to support low carbon initiatives, and communities across the globe are beginning to share resources, learning experience, and innovative models.

The Town aims to further the aforementioned financial advancements by introducing a replicable model that uses existing tools and

considers access barriers. The financing model is designed to maximizes existing resources and does so through an investment system composed of two fluid and close-knit sub-systems. The first being the municipal capitalization system, which is an internal Town application, ideally housed in TownSuite, with budgeting characteristics at its core. The municipal capitalization system is responsible for "specialized finance" stacking, assembling project opportunities and outcomes, sharing the opportunity with its counterpart system, and reporting to specialized financing proponents. The other system, the financial investment vehicle is external to the Town, through an existing or ground-up organization. The financial investment vehicle is responsible for traditional financing, inclusive of community investments, cash disbursements through outcome-data shared by the municipal capitalization system, investing in energy poverty reduction program assets, and reporting to investors.

An important component of the municipal capitalization system, and the Energy Poverty Reduction program as a whole, is utility grade service provision. A Bridgewater energy utility, or municipal-based utility grade services, will decentralize electricity disbursement, streamline the selling and buying of electricity to local stakeholders through self-service, and could mitigate the dependency on local energy markets if based on renewables. Being able to set optimized electricity tariffs would positively impact the rate of return. This program enhancing structure is enabled through legislation and aligns with the global movement of decentralizing a utility as a means to introduce renewables into the grid. This trend has a successful track record of deployment in the USA through the Community Choice Aggregation model and throughout regions of Europe.

The investment system is also supported by a community owned financing vehicle, which not only provides adequate pools of financing, but also provides socio-economic value to the community. A co-operative (co-op) structure provides its members with a democratic voice in the entity's decision-making processes. The co-op will own shares in a Community Economic Development Investment Fund (CEDIF) organization, and the coupling of these two symbiotic entities are responsible for financial investment vehicle operations. This model allows for at-risk participation, at-risk dividend-returns and is the vehicle that secures debt-financing and equity contributions from pools of local and national investors.

Early conversations with potential funding proponents suggest there is a wealth of interest in participating in the energy poverty reduction program due to the returns generated. Investor enthusiasm is further stimulated by the social returns, which align with their organization's mission. These conversations are reinforced by the current trend of impact investing growth which doubled in size between 2017 and 2018. Costs without a return on investment are not feasible expenditures for the Town to incur without 3rd party intervention. Thus, strategic partnering with social-value investors are essential to the program's success. Fortunately, there are a wealth of value-aligned resources at the Town's disposal whose relationships will be leveraged through shared goals and outcomes.

To explain the investment system engine, we'll first provide a high-level Investment System overview, then review its two major constituents: the Municipal Capitalization System and the Financial Investment Vehicle and all their intricacies. With these components defined at a high-level, we'll then examine Investment System activities, which provides an overview of the 4 major investment handling stages: planning, intake, delivery, output.

Due to the depth of funding resources, it is also important to define the hierarchy of senior and subordinated resources as a risk-mitigating exercise. Fundamental considerations are then summarized in the conclusion. With these systems defined, it is possible to design an

Investment System schedule which highlights itemized activities and outputs throughout the 10-year Energy Poverty Reduction Program. These are broken down by investment sub-system: Municipal Capitalization System and Financial Investment Vehicle.

INVESTMENT SYSTEM OVERVIEW

The Investment System is composed of two sub-systems which act as the engines that fuels the energy poverty reduction project. The primary reason for this separation is directly linked to current legislation and the resulting inability to house all operations under one roof while still achieving the desired outcomes, as accentuated in the following section, Financial Investment Vehicle. There are 4 dynamic stages in the investment system's architecture which fit within the context of a Nova Scotian community, but is replicable nationally using tools and resources available within other provincial jurisdictions. At a high-level, both systems will interact with one-another and the Energy Poverty Reduction projects in a circular fashion.

In summary, both investment systems have a pool of investment resources. As Energy Poverty Reduction projects are defined, the energy poverty reduction portfolios are packaged into investible opportunities through the municipal capitalization system and shared with the *financial investment vehicle*. Both systems pool their resources to fund energy poverty reduction projects, and upon the development of revenue-generating systems, returns and/or reports are disbursed to each system and their pool of investors as outlined in agreements or offering prospectuses.

MUNICIPAL CAPITALIZATION SYSTEM

Municipalities must adhere to Municipal Government Act legislation. As such, the Town itself is limited to borrowing from the Municipal Finance Corporation capped by a debt service coverage ratio, and can only fund projects that it will own 100% of. Thus, off-book financing and diligent partnership agreements drive what is referred to as the "specialized and municipal funding streams". These streams are separated into 4 groups:

1. **Energy Solution Contracts**
   - **a.** Incentives: through organizations like Efficiency Nova Scotia
   - **b.** Savings Backed Agreements: through Energy Service Companies
2. **Social Value**
   - **a.** Senior government: provincial and federal
   - **b.** Charitable: donating organization
3. **Municipal**
   - **a.** Through the municipal-based utility from the Municipal Finance Corporation
4. **User Fees**
   - **a.** Amortizing mechanisms such as Property Assessed Clean Energy (PACE) programs
   - **b.** Upfront deposits

Municipal Capitalization System

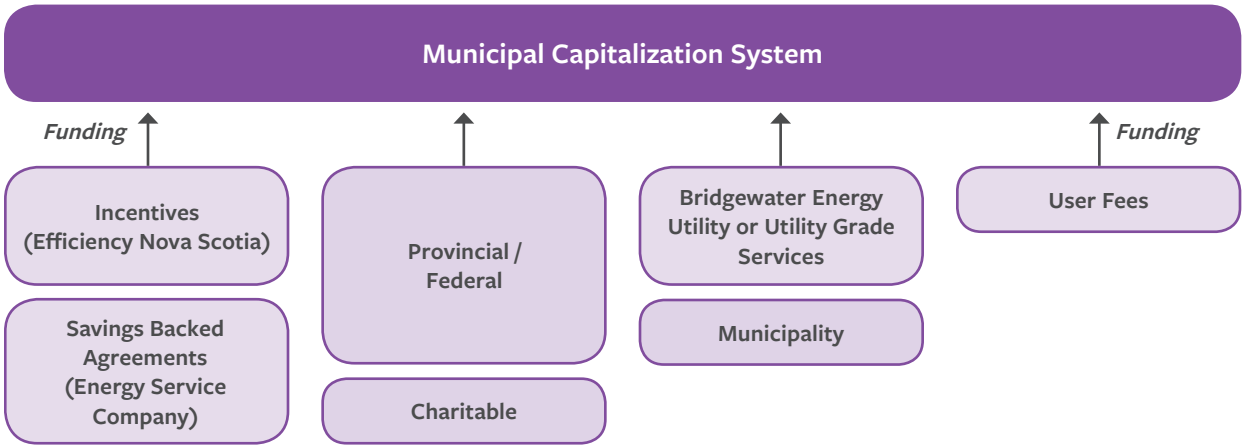


Diagram 9.1

Energy Solution Contracts
Two key players will provide the Town with specialized funding through energy service contracts: Energy Service Companies and Efficiency Nova Scotia.

Energy Service Companies
Energy Service Company ventures have a proven track record of success. These companies have the capacity to execute on large scale ventures, and the risk is placed on the Energy Service Company rather than the property owner or municipality. Although contract negotiations are complex, Energy Service Companies may bid on the retrofit projects and the Town can secure a contract with the most attractive terms (amortization, interest rates, leverage). Energy Service Companies will be procured through a request for proposal process, and the winning proponent will finance and undertake retrofit developments and are paid back through guaranteed energy savings. As a result of economies of scale, the larger the Energy Service Company project scope the more attractive the terms.

Efficiency Nova Scotia
Efficiency Nova Scotia is a province-based, non-profit, energy efficiency utility which provides its customers with energy solutions through rebates on efficiency-based technologies. Through contractual agreements with Efficiency Nova Scotia, the Town can secure assets and services at a discount.

Social Value Investors
To cover the costs of line items with no return on investment, the Town must secure funding from sources who expect no financial return but are motivated by social outcomes instead Through the Income Tax Act, the Town is granted the authority to issue official receipts that can be used for charitable expenses for income tax purposes. This will appeal to donors contributing funds to the energy poverty reduction program. The Town envisions support from the federal and provincial government and arms-length government organizations such as the Canada Mortgage and Housing Association, whose 10-year, $40-billion national housing strategy plan aligns perfectly with the Town's Energy Poverty Reduction program.

Municipal
In Nova Scotia, municipalities are granted rights to become a wholesale electricity customer under the Electricity Act. This gives the Town of Bridgewater the ability to establish its own municipal-based energy utility, or procure utility grade services, through which it will provide electricity to customers in the town. This could offer significant benefits for Bridgewater, and

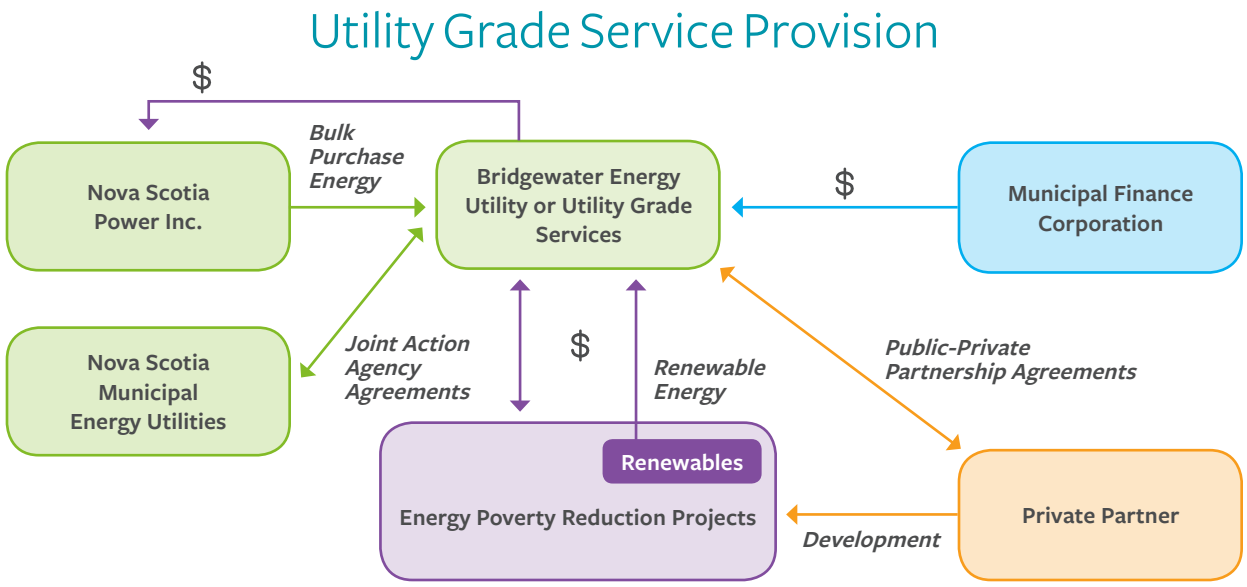


Diagram 9.2

possibly the surrounding communities seeking to accelerate renewable energy and energy efficiency initiatives. An emerging trend of clustering utilities will also be explored further: the idea of combining utility services to optimize operations through interconnectivity while generating additional sources of revenue and/or decreasing existing utility costs. Diagram 9.2 below provides an overview of key municipal-based energy utility actions, and a summary of the infographic's components follows.

Nova Scotia Power Inc. | Renewables | Bulk Purchase Energy | Renewable Energy

The Town will procure its energy needs from the development of local renewable energy sources within the portfolio of energy poverty reduction projects and through bulk purchases of electricity from Nova Scotia Power Inc. Bulk purchasing will reduce costs to the Town's residents and energy imports will reduce over time through the development of local renewable energy sources.

Public-Private Partnership Agreements | Private Partners | Development | Nova Scotia Municipal Energy Utilities| Joint Action Agency Agreements

Partnering with a private entity through a Public-Private-Partnership agreement / Alternative Financing and Procurement may provide the Town with the capacity to build and operate a public utility or procure utility grade services. The Town can leverage its favorable relationships with other Nova Scotia municipal energy utilities to form a Joint Action Agency. Joint Action Agencies are a tool that municipal distribution utilities can use to accomplish their goals of reliable, safe and low-cost electric supply and services to their communities in an efficient and effective manner. Shared costs and mutual support make the effort manageable and provide an effective interface to the ever-growing complexity of the electric power supply industry.

Municipal Finance Corporation

In Nova Scotia, Municipal energy utilities are regulated by the Nova Scotia Utility and Review Board. Pursuant to the Public Utilities Act, the Utility and Review Board exercises general supervision over all electric utilities operating as public utilities within the Province. This authority includes setting rates, tolls, charges, and regulations for the provision of service and approval of capital expenditures in excess of $250,000. Debt incurred by a municipal utility through the Municipal Finance Corporation, must be guaranteed by the municipality and is reviewed by the province on a case-by-case basis. A business case, third party consultant reports to validate risks and assumptions, as well as required reserve funds are reviewed for borrowing consideration.

User Fees

Property Assessed Clean Energy (PACE) financing programs allows homeowners to finance energy efficiency, renewable energy and other eligible improvements on their buildings using private sources of capital. PACE programs are enabled through legislation and authorized at the local government level. Municipalities may directly administer residential PACE programs, or via public-private partnerships with one or more PACE administrators.

Two PACE programs are operating in Bridgewater: (1) Clean Energy Financing, financed through a municipal Local Improvement Charge via a Municipal Finance Corporation loan and secured through a property lien. (2) The Clean Net Zero pilot project is administered by Clean Foundation and financed in part through the Municipal Finance Corporation and in part through the LaHave River Credit Union. Both promise a 1:1 savings-to-debt ratio, to ensure that the homeowner remains cashflow neutral or positive.

It is envisioned that property owners enrolled in the energy poverty reduction program will incur some of the retrofitting costs. Whether this is through the aforementioned amortizing PACE structure, or simply an up-front contribution is still to be determined.

Financial Investment Vehicle

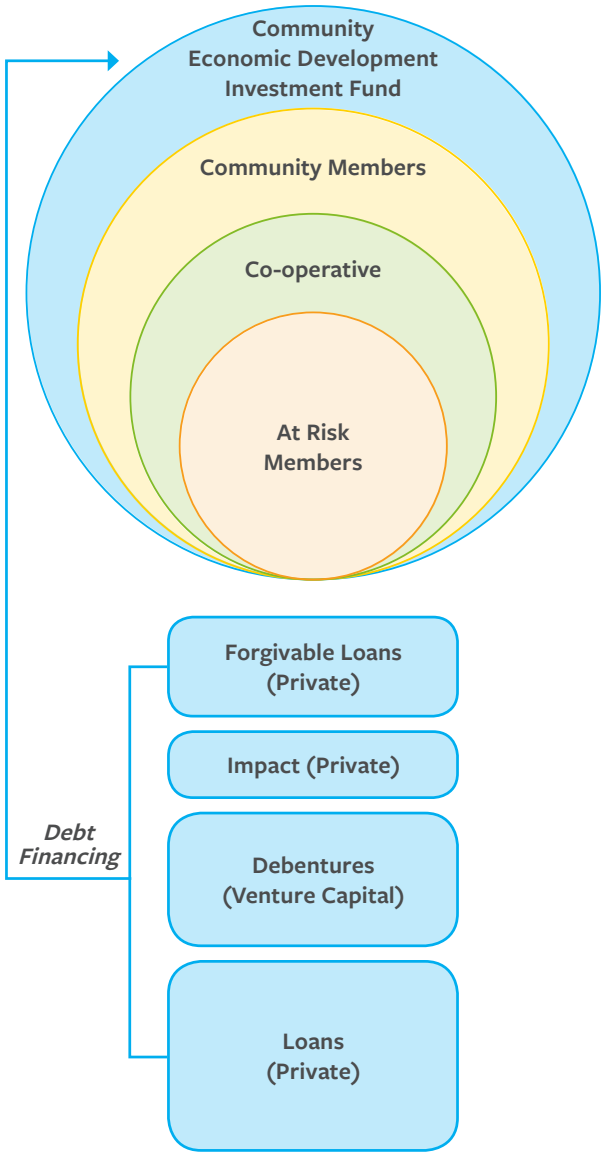


Diagram 9.3

Conclusion

The Municipality will act as the administrator of the 4 steams of funding and the collective activities and responsibilities create the foundation of the municipal capitalization system.

FINANCIAL INVESTMENT VEHICLE

An engine external to the municipality, not restricted to the Municipal Government Act, is required to exploit traditional and community forms of financing. To maximize the benefits of this structure, the Town will include a community-favouring organizational governance structure to allow for at-risk participation and community investments. The three major components to the traditional and community Financial Investment Vehicle are:

1. Community Economic Development Investment Fund (CEDIF)
2. Co-operative (Co-op)
3. Traditional Financing Sources

Community Economic Development Investment Fund (CEDIF)

CEDIFs are pools of capital which is raised from individuals through the sale of shares by for-profit entities to invest in projects. CEDIFs provide a mechanism for accessing local capital so that residents can directly invest in their communities. CEDIFs have had a history of success, a strong legal and regulatory framework paired with considerable support from the Province of Nova Scotia. This community-centric entity will allow for community members to participate in local infrastructure investments. This entity is the cornerstone mechanisms that will secure traditional forms of financing (debt), community financing (equity) and is structured to be the parent company of a co-operative.

Co-operative (Co-op)

A Co-op, such as an owner's co-op, will own a determined number of shares within the CEDIF entity. At-risk community members will be provided with co-op memberships and shares in the co-op. This set-up allows for this often-forgotten sub-section of the community to be given a voice through the democratic nature of a co-op. If carefully structured, the at-risk demographic will also receive dividend disbursements as a result of share-ownership through energy savings incurred through the energy poverty reduction program. That is, whatever is remaining after other financing proponents are paid their pre-determined dividends and interest/principal contractual obligations.

Traditional Financing Sources

The CEDIF will secure debt through traditional funding sources including, but not limited to, forgivable loans, impact investors, venture capital debentures, and traditional loans such as long-term-debt financing.

Conclusion
The CEDIF will act similar to that of a special purpose vehicle, although it will not be considered a municipal arm's length entity. Securing traditional financing while allowing for community investments and at-risk participation create the foundation of financial investment vehicle.

INVESTMENT SYSTEM ACTIVITIES

Diagram 9.4 displays the dynamic activities of the Investment System, providing an overview of the 4 major investment handling stages: planning, intake, delivery, and output as summarized below.

Planning

- **ID projects:** The Town's Energy Management Information System identifies investible community energy system and houses energy management system portfolios.
- **Data Sharing - Energy Management Information System, Municipal Capitalization System:** The Energy Management Information System shares portfolio data with the Municipal Capitalization System, which refines this information to source capitalization streams.
- **Agreements Procured:** The Municipal Capitalization System determines the best-value coupling of specialized and municipal funding streams and approaches these proponents to secure agreements, both long and short term.
- **Data Sharing - Municipal Capitalization System, Financial Investment Vehicle:** The Municipal Capitalization System shares project financing requirements with the Financial Investment Vehicle.
- **Institutional Prospectus:** The Financial Investment Vehicle generates institutional prospectuses and signs contracts with traditional investors whom provide the best value for the Town.
- **Community Prospectus:** The Financial Investment Vehicle generates a CEDIF prospectus with terms that aligns with the Town's needs yet is attractive to community investors.
- **As Risk Shares:** Co-op and membership shares are issued to at-risk community members participating in the Energy Poverty Reduction program.

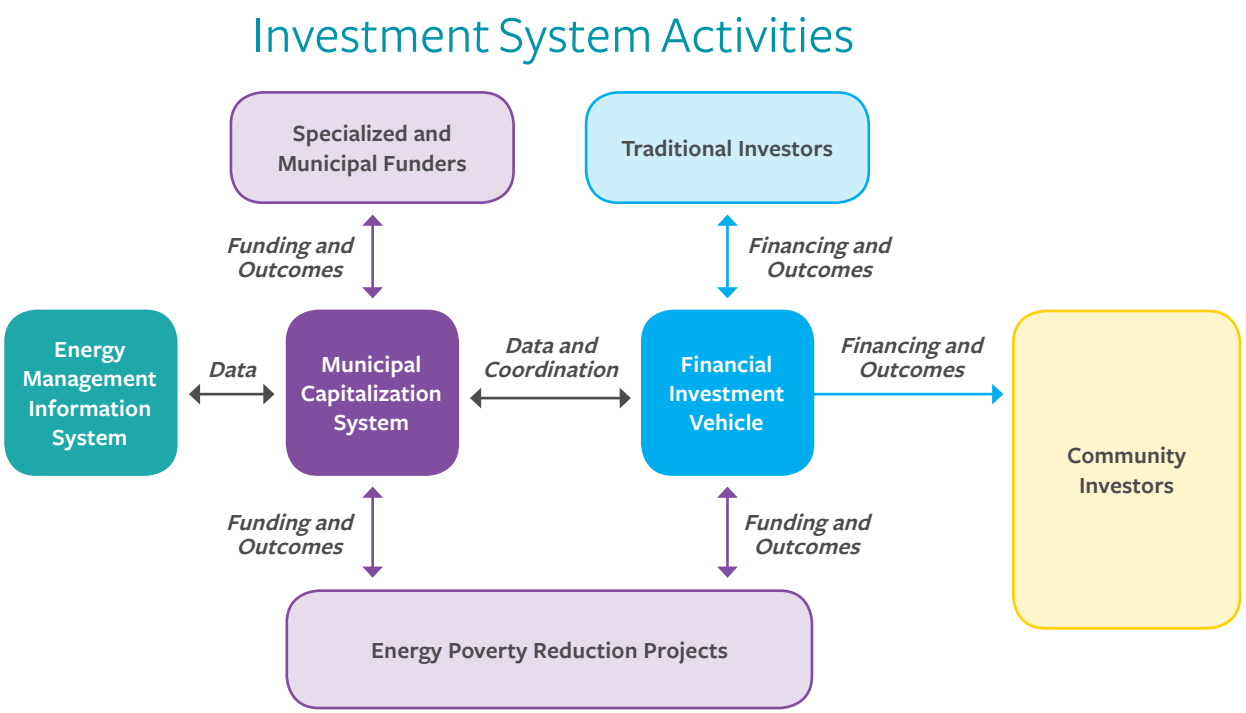


Diagram 9.4

Intake

- **Funding and Contributions:** The Municipal Capitalization System receives funding and resource contributions from specialized and municipal funders.
- **Institutional Investments:** Institutional investments flow to the Financial Investment Vehicle from a variety of traditional investor sources with specified terms attached.
- **Community Investments:** CEDIF investments flow from the community investors to the Financial Investment Vehicle.
- **Data Sharing - Financial Investment Vehicle, Municipal Capitalization System:** The Financial Investment Vehicle and the municipal capitalization system share funding contributions with one another.
- **Data Sharing - Municipal Capitalization System, Energy Management Information System:** The Municipal Capitalization System shares cumulated funding information with the Energy Management Information System to match funding to initial requirements.

Delivery

- **Data Sharing - Energy Management Information System, Municipal Capitalization System:** The Energy Management Information System and the Municipal Capitalization System confirm capitalization costs match procured funding.
- **Data Sharing - Municipal Capitalization System, Financial Investment Vehicle:** The Municipal Capitalization System confirms funding distribution requirements with the financial investment vehicle.
- **Funding:** Both the Municipal Capitalization System and the Financial Investment Vehicle contribute their pre-determined funding amounts to the Energy Poverty Reduction systems, whereby there is no return on investment on management systems, a marginal return on investment on mobility systems, and a significant return on investment on community energy and housing energy management systems.
- **Data Sharing Energy Poverty Reduction Systems, Energy Management Information System:** Energy Poverty Reduction program outcomes flow to the Energy Management Investment System, which tracks performance results.

Outputs

- **Data Sharing - Energy Management Investment System, Municipal Capitalization System:** Energy Management Investment System performance and outcome data is shared from the Energy Management Information System to the Municipal Capitalization System.
- **Reporting, Energy Savings and Profit:** The Municipal Capitalization System reports outcomes to funders on a pre-determined schedule as outlined in contractual agreements. Energy saving are reconciled with applicable proponents such as Energy Service Companies.
- **Data Sharing - Municipal Capitalization System, Financial Investment Vehicle:** The Energy Poverty Reduction system performance and outcome data is shared from the Municipal Capitalization System to the Financial Investment Vehicle.
- **Reporting and Institutional Disbursements:** The financial investment vehicle disburses interest and principal payments accompanied by any outcome reporting requirements defined in the executed contracts.
- **Reporting and Community Dividends:** The Financial Investment Vehicle issues dividends and tax statements to CEDIF investors. Any additional revenue is passed through the CEDIF to the at-risk co-op members and shareholders.

HIERARCHY OF SENIOR AND SUBORDINATED RESOURCES

In the event that any component of the Energy Poverty Reduction Program defaults, it is important to determine the seniority of capital. Although it is too early in the investment design phase to define orders of subordinated debt, some generalizations can be made. For example,

charitable and senior government bodies would have no expectations if the projects are to default, while debentures such as venture capital would expect default disbursements prior to forgivable private loans. These details will be outlined in all funding agreements and are to be presented in an identical manner from one parties' prospectus to another.

INVESTMENT SYSTEM CONCLUSION

The Investment System relies heavily on accurate data flows, meticulous contract negotiations, and timely cash disbursements. If diligently integrated with connected technologies, there would be fluidity with dataflows that would enable this cyclical engine to allow for sustainable project development. Although certain components, such as CEDIFs, are region specific, it is possible to substitute this tool with one found in similar jurisdictions. For example, community bonds could provide the community financing component of this model in Ontario. Finally, in detailing the system's characteristics, one must consider the best accounting practices for each component and ensure all nodes are able to share data compatibly, and without delay, from one party to another.

USE OF FINALIST GRANT

Our community greatly appreciates having been awarded $250,000 through the Smart Cities Challenge Finalist Grant. The grant has allowed us to achieve program design innovations that would otherwise simply not have been possible. The proposed use of the finalist grant, from our original application, is described in Table 9.14.

The Town intended to leverage $250,000 of grant funding with $54,000 in in-kind support (through staffing) to achieve a total project value of $304,000. Following the completion of the Final Application, the revised use of finalist grant can be viewed in Table 9.15.

Proposed Use of Finalist Grant for Initial Application

Priority Area Capitalization Source	Smart Cities Finalist Grant	Town of Bridgewater In-Kind	Total Value
Priority 1: increase capacity & knowledge	$50,000	$20,000	**$70,000**
Priority 2: engage community	$45,000	$7,000	**$52,000**
Priority 3: refine approach to technology & data	$65,000	$5,000	**$70,000**
Priority 4: refine service delivery approach	$85,000	$20,000	**$105,000**
Priority 5: create final proposal	$5,000	$2,000	**$7,000**
Total	**$250,000**	**$54,000**	**$304,000**

Table 9.14

Variances between the budgeted use of the Smart Cities Challenge Finalist Grant and projected actual costs are explained as follows:

- **Priority 1:** underspent by $17,054 as capacity building costs were shifted from contract work to in-kind work (staffing). Reflected in increased in-kind contribution for this priority area.
- **Priority 2:** overspent by $20,031 due to a greater level of community engagement activity than originally envisioned, including the production of youth-at-risk documentary on the subject of energy poverty, and a robust communications strategy.
- **Priority 3:** overspent by $26,522 due to a greater need for technology, data flow, and privacy impact assessment than originally anticipated. In-kind costs (staffing) were captured under priority 1.
- **Priority 4:** underspent by $30,410 due to a lower need for professional resources (legal counsel, consultants) for project partner engagement. Budget set aside for partnership contract development was unused. In-kind costs (staffing) were captured under priority 1.
- **Priority 5:** overspent by $911 due to higher than anticipated professional costs in developing the Final Application. In-kind costs (staffing) were captured under priority 1.

$ FINANCIAL

Actual Use of Finalist Grant

Priority Area	Smart Cities Challenge Finalist Grant				In-Kind Contributions			Total Value
	Consultants	Resources	Staffing	Sub-Total	Town of Bridgewater	External Partners	Sub-Total	
Priority 1: increase capacity & knowledge		$6,050	$26,896	**$32,946**	$45,156		$45,156	**$78,102**
Program staffing			$26,896	$26,896	$45,156		$45,156	$72,052
Energy poverty research contracts for local organizations		$6,050		$6,050				$6,050
Priority 2: engage community	$48,621	$16,410		**$65,031**		$7,000	$7,000	**$72,031**
Honoraria participants in interviews and focus groups		$2,500		$2,500				$2,500
Community-wide paper survey		$5,748		$5,748				$5,748
Communications Plan development and implementation	$23,621	$1,872		$25,492				$25,492
Youth video documentary	$17,000			$17,000		$7,000	$7,000	$24,000
Hosting public events		$6,290		$6,290				$6,290
Facilitation support for interviews, focus groups and events	$8,000			$8,000				$8,000
Priority 3: refine approach to technology & data	$91,522			**$91,522**				**$91,522**
Project consultant - data & connected technologies	$44,217			$44,217				$44,217
Project consultant - preliminary Privacy Impact Assessment	$23,543			$23,543				$23,543
Project consultants - energy, cost, and emissions modelling support	$23,762			$23,762				$23,762
Priority 4: refine service delivery approach	$30,940		$23,650	**$54,590**				**$54,590**
Project consultant - evaluation	$1,740			$1,740				$1,740
Project consultant - project development and capitalization	$29,200		$23,650	$52,850				$52,850
Priority 5: create final proposal	$5,911			**$5,911**				**$5,911**
Final application editing	$2,000			$2,000				$2,000
Final application layout	$3,911			$3,911				$3,911
Total	**$176,993**	**$22,460**	**$50,546**	**$250,000**	**$45,156**	**$7,000**	**$52,156**	**$302,156**

Table 9.15 Note: all dollar figures include municipal net of HST. Note also that due to the ongoing costs associated with completing the final application, and the time required to receive and process invoices, project costs reported in this table are projections up to March 31, 2019. Actual expenses will be available after that date.

APPENDIX: LETTERS OF SUPPORT

The Town of Bridgewater received letters of support from the following people and organizations for our Smart Cities Challenge Finalist application:

1. Affordable Energy Coalition
2. Affordable Housing Association of Nova Scotia
3. Be the Peace Institute
4. Big Brothers, Big Sisters of South Shore
5. Bridgewater Active Transportation Advisory Committee
6. Bridgewater and Area Lions Club
7. Clean Foundation
8. Dalhousie University - Faculty of Computer Science
9. Ecology Action Centre
10. Efficiency Nova Scotia / EfficiencyOne
11. Energy Services Association of Canada
12. Family Services of Western Nova Scotia
13. Green Power Labs
14. Housing Nova Scotia
15. Lunenburg County Seniors Safety Program
16. Lunenburg County YMCA
17. Halifax Regional Municipality
18. New Dawn Enterprises Limited
19. Nova Scotia Community Transportation Network
20. Nova Scotia Department of Energy and Mines
21. Nova Scotia Health Authority
22. Nova Scotia Power
23. Nova Scotia Works
24. Nova Scotia Community College – Lunenburg Campus
25. Quality Urban Energy Systems of Tomorrow
26. RNDT Development
27. SchoolsPlus
28. Second Story Women's Centre
29. Small World Learning Centre
30. Society St. Vincent de Paul
31. Souls Harbour Bridgewater
32. South Shore Family Resource Association
33. South Shore Housing Action Coalition
34. St. Mary's University - Department of Mathematics and Computing Science
35. The Ark and Support Services Group
36. The Honourable Mark Furey, MLA Lunenburg West
37. The Honourable Steven McNeil, Premier of Nova Scotia
38. The Salvation Army, Bridgewater Corps
39. TownSuite Municipal Software
40. United Way Lunenburg County

These letters are appended in alphabetical order as presented above.

Affordable Energy Coalition

Association of Community Organizations for Reform Now (ACORN)

Adsum for Women and Children

Antigonish Emergency Fuel Fund

Antigonish Women's Resource Center

Community Advocates Network

Community Society to End Poverty

Dalhousie Legal Aid Service

Ecology Action Centre

Every Woman's Centre, Sydney

Face of Poverty Coalition

North End Community Health Centre

Nova Scotia Public Interest Research Group

Society of Saint Vincent de Paul

Transition House Association of Nova Scotia

Women's Centres Connect!

2209 Gottingen St.

Halifax NS B3K 3B5

902-454-1656 t

or 902.423.8105 t

902.422.8067 f

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000,
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury panel,

This is a letter confirming the full support and confidence of the Affordable Energy Coalition in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge Finalist.

Section 1:

The Affordable Energy Coalition

The Affordable Energy Coalition is a group of Nova Scotian organizations and individuals whose mission is to work with community groups, the non-profit sector, government and business to

1. Ensure universal access to electricity;
2. Eradicate fuel poverty in Nova Scotia;
3. Represent the interests of low-income Nova Scotians regarding energy issues.

The Affordable Energy Coalition advocates for better electricity regulation and for better efficiency programs to help low income households with their "energy burden", the percent of their income they spend on energy.

Energy poverty impacts on Bridgewater residents

Energy poverty has a vital impact on the 40% of Nova Scotians with the lowest incomes throughout the province and especially the lowest 20%, including in Bridgewater. A household is in energy poverty when it spends more than 6-8% of its income on electricity and heat (*or 10% of its income on household and transportation energy*). In 2011 (the latest figures available) the lowest quintile of Nova Scotian households (about 78,000 households) spent an average of 11.8% on home energy compared to the average among all NS households of only 3.8% of income. The second lowest quintile spent an average of 6.6%. This means that most of the lowest quintile experience energy poverty and many in the 2nd lowest do as well.

Recent research has also demonstrated that about 55% of low income Nova Scotian households are renters. It is important that renters be assisted as well as homeowners to effectively address energy poverty.

In our advocacy, we at AEC view energy poverty from a human rights perspective.

The NS Human Rights Act Section 5 (1) titled "Prohibition of discrimination", says: **No person shall in respect of (a) the provision of or access to services or facilities…. discriminate against an individual or class of individuals on account of**

(h) age;
(i) race;
(j) colour; …
(m) sex;
(o) physical disability or mental disability; …
(q) ethnic, national or aboriginal origin;

Electricity services and heating as a service derived from other energy sources are vulnerable to cutoff due to unpaid bills associated with low incomes and energy poverty, disproportionately affecting individuals in the above categories. This amounts to a violation of the human rights of those individuals, contrary to NS law.

We also see energy poverty as one of the social determinants of health. Improved energy services for low income households improves health outcomes by reducing excruciating choices between paying for heat and power vs. food or medicine. Improved energy services also lead to more comfortable homes and lives.

Resources AEC puts into energy poverty reduction in Bridgewater:
Members of the AEC work directly with low income Nova Scotians to help them with arrears and electricity disconnections and to prevent such problems from occurring, including in Bridgewater.

Our advocacy led to approval of 2 pilot programs operated by Efficiency NS to encourage landlords serving low income households to substantially improve the energy efficiency of their buildings. We continue to play a lead role in helping to make those pilot programs a success. Both pilots are now expected to become permanent programs in the near future. They are and will be available to landlords serving low income households in Bridgewater just as in other parts of the province.

Bridgewater's Energy Poverty Reduction Program
The value of Bridgewater's proposed comprehensive approach cannot be overstated. It would ensure that Bridgewater tenants receive the full benefits of the 2 province wide rental efficiency programs that we have helped to set up. It would facilitate our volunteer work aimed at making these programs successful.

The coordinated access system, household navigator and technical navigator are best practices that research has shown are required to secure the participation of low income households and of landlords serving low income tenants, who often struggle with financial and organizational capacity.

Low income households that AEC serves in Bridgewater would be enabled to participate in efficiency programs that would otherwise be beyond their financial or organizational capacity.

The savings that this proposal will engender will reduce the likelihood of low income households facing emergency loss of heat or power, which leads to many additional problems. Reduced energy costs make households far less prone to "heat or eat" dilemmas, in which households must at times choose between healthy food and heat and power – or medications and heat and power. Retrofits also make homes more comfortable. In all of these ways, improved energy services will improve the health of the low income population in Bridgewater.

Bridgewater's Consultation efforts

As a provincial organization we have not directly participated in Bridgewater's local community consultations. However we have provided our views and information to Bridgewater staff in direct communications with them.

Our members have years of community development experience and the Town's multiple avenues of local consultation have been admirable and consistent with our understanding of good practice in engaging low income and marginalized households in their design of the Energy Poverty Reduction Program.

Section 2:

Collaboration among community organizations and landlords in Bridgewater as well as the Town's community services and energy technical advisory service will ensure low income residents secure the help they need both with immediate solutions to energy bills they cannot afford and longer term solutions to reduce those bills to an amount they can afford. This will reduce the liklihood that a household will only benefit from limited actions taken independently by the various service providers and will reduce the chances of low income households "falling through the cracks" and continuing to experience energy poverty problems. Working relations among all the providers will improve as staff and volunteers work together more frequently. If low income households receive the type of help they can really benefit from, their lives will improve. In a small way, the Coalition encourages just such collaboration but the Town's proposal will be much more comprehensive and pragmatic at the local level.

Sharing information through data collection and connected technology will facilitate the collaboration described above; will enable more ideas and actions to assist with transportation to be generated, tested and implemented; and will enable landlords to gradually improve their energy management and tenant cooperation as technical

solutions are implemented. Building management and tenant behaviour have a big impact on energy savings as well as comfort and overall satisfaction.

One of the most exciting things about this model is that after it has been developed and refined in practice, it will be usable by other NS communities and communities across the country.

This proposal is in keeping with Bridgewater's long term energy vision and ongoing energy efficiency and renewable efforts which have already paid off with large savings and have built a solid reputation for Bridgewater around NS. The Town of Bridgewater recently received the national Small Municipal Trailblazer award at the 2018 Globe Climate Leadership Awards for reducing the town's energy use by 23%. The Community Energy Investment Plan that was approved by the town in January 2018 shows a comprehensive far sighted approach to continued energy efficiency and innovation. We believe these 2 events demonstrate a very effective team is in place in Bridgewater who we have full confidence in. Leon De Vreede's leadership is a vital component of this.

Section 3:
The 3 outcomes that are most aligned with the Affordable Energy Coalition's goals are the central one of reducing energy poverty in Bridgewater; influencing provincial policy and programs to further support energy poverty reduction efforts; and inspiring other communities to adopt what is successful in Bridgewater.

We will work persistently in pursuit of these goals by

1. working with Efficiency NS and the NS Department of Energy to further develop their rental efficiency programs for landlords serving low income households;
2. encouraging them to experiment with high performance energy retrofit programs for low income rental buildings, including investigating the possibility of a creating an Energie Sprong system in NS (based on a Dutch program of that name);
3. encouraging them to improve standards for efficiency in new low income housing to the point where all new low income rental housing is net zero energy; and
4. encouraging the province to adopt a Universal Service Program approach to energy poverty, which would ensure that after retrofits have been done, costs are subsidized so that household's energy costs are limited to 8% of income, excluding transportation costs, as has been pioneered in the US, in Ontario and in a small way by one of our members in Antigonish.

Bridgewater would be the perfect place for the province to test some of these ideas in cooperation with the Energy Poverty Reduction Program.

Practically, we can offer assistance in how best to work with landlords in implementing energy retrofits. We expect the rental efficiency pilot programs operated by Efficiency NS to create a very useful, detailed template in how best to work with the varying kinds of landlords that serve low income households.

> Jurisdictions across North American have grappled with how best to work with landlords given the "split incentives" between landlords and tenants. Efficiency NS' pilot rental programs are leading edge in creating innovative, detailed solutions to this problem. Bridgewater's proposal is well thought out and in keeping with best practices in working with low income households and landlords.

We can also offer advice on how to improve financial assistance to low income households to reduce the likelihood of repeated loss of energy services on an emergency basis.

> AEC will pursue all of these initiatives in keeping with our goal of improving the provision of essential energy services as a human right.

Conclusion:
The Affordable Energy Coalition has formally approved supporting this application and playing a role in helping the Town's efforts in reducing energy poverty. We are excited by the prospect of assisting with Bridgewater's initiative. Winning the Smart Cities Challenge grant would be a vital step toward fulfilling Bridgewater's enlightened goal of reducing energy poverty in their community. We look forward to working with them on this goal.

Yours sincerely,

Brian Gifford
Chair
Affordable Energy Coalition

Affordable Energy Coalition

AFFORDABLE HOUSING
ASSOCIATION OF NOVA SCOTIA

February 26th, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of the Affordable Housing Association of Nova Scotia (AHANS) in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Our organization has been administering Service Canada's Homelessness Partnering Strategy funding in rural Nova Scotia since 2013. In our work with local service providers who support the homeless and other vulnerable populations find and sustain affordable housing and in upgrading, we have come to understand that success in ending homelessness will be dependent on being inclusive, multi-sectoral and multi-disciplinary.

Our organization is becoming increasingly aware of the impacts that energy poverty has on households in Nova Scotia. In our work we hear recurring stories of unpayable energy bills resulting in housing insecurity. The local support organizations we work with are routinely called upon to aid in paying off energy bill arrears so that individuals can remain in their home, or that homeless individuals can be successfully rehoused. For this reason, ensuring energy security of Nova Scotians is key to solving widespread housing challenges.

AHANS is responsible for the management of the HIFISNS Network. The Homeless Individuals and Families Information System (HIFIS) software is owned by Service Canada which shares it nationally with communities to assist services delivery agencies track and report on their effort to house and support vulnerable households; those homeless or at risk of being homeless. AHANS has an agreement with Service Canada to use the software and Canada Web Hosting is our HIFISNS Network host.

We would like to express our full support for the Town of Bridgewater to utilize the HIFIS data platform, and our associated HIFISNS Network, for their proposed Coordinated Access System. The Town's work will be well-supported by an active network of local partners and their existing Community Hub which

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Halifax NS B3L 4P8
902-406-3274

will be an effective precursor to the creation of a full Coordinated Access System. Several local organizations partnering with the Town on the Smart Cities Challenge project are already part of the HIFISNS Network. The increasing trend of HIFISNS implementation is essential in using data and connected technology to reinforce service organization collaboration and empower those who are most underserved. AHANS is a proponent of the adoption of HIFISNS in rural settings and views it as an effective way to ensure broad spectrum access to community services for underserved populations.

Bridgewater's decision to use a Coordinated Access System model with HIFISNS software ensures the transferability of the program to communities across Canada, particularly in underserviced rural areas. Our organization is interested in providing several forms of support for Bridgewater's Coordinated Access System including administrative assistance in mapping out system partners and services, sharing our learnings from the use of HIFIS, and aiding in data analysis and evaluation.

Our organization is highly supportive of Bridgewater's vision to reduce energy poverty and is excited to commit to partnering with the Town in their implementation of an innovative Energy Poverty Reduction Program.

J. D. Graham
Executive Director

Suite 221A 6169 Quinpool Road
Halifax NS B3L 4P8
902-406-3274

Be the Peace Institute

PO Box 459 Mahone Bay, N.S. B0J 2E0 902 624-8011

www.bethepeaceinstitute.wordpress.com

February 20, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

Dear Smart Cities Challenge Jury:

Please accept this letter in support of the Town of Bridgewater's application to the Smart Cities Challenge. Bridgewater has been not only an early adopter, but a leader in Nova Scotia and Atlantic Canada in considering renewable energy for both its town properties, and also its residents. As one of the few growing towns in rural Nova Scotia, this innovative approach has drawn widespread recognition and excitement. There is no question in our minds, with the human and social capital and level of expertise Town personnel have developed in this area, that they will be successful in implementing the town's Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Our organization is a community based non-profit serving Lunenburg and Queens Counties, focused on addressing gender-based violence. We know that when women leave an abusive relationship they often find themselves in dire financial straits and insecurity of many kinds, (housing, energy, food) and even more so if they have children. We also know that for many people in rural communities, especially without a consistent and comprehensive public transportation system, underemployment is an issue. Even full-time employment at minimum wage leaves many in energy and housing poverty. With aging and inadequate housing stock, this puts many people at risk for health and mental health issues, conflicts with the law, and homelessness.

Bridgewater's Energy Poverty Reduction Program will be of incredible value to this almost 40 % of our population who live at risk, offering so many more options for those most vulnerable, including children and youth who may fall through the cracks of traditional systems.

The Town has made a truly remarkable and successful effort at consultation as part of their community engagement strategy and Energy Poverty Research Program, effectively including both the direct voices of the most vulnerable people living in energy and housing poverty, and also the dedicated service providers who help them grapple with the daily challenges of survival. Our residents have been extremely forthcoming about their struggles and hopes through interviews, focus groups and a community video. Many of the stories are quite simply, heartbreaking. All the voices and perspectives have contributed to the design of a responsive Energy Poverty Reduction Program that has the potential to address, in innovative ways, a wide range of very serious needs.

Through the consultation process it has become clear that services need to be integrated, collaborative across silos, accessible and non-judgmental in order to truly serve those most in need. The process has unearthed the bright lights in our communities who are already doing great service work, and the potential for partnerships to offer wrap-around services to people with complex challenges. The Town of Bridgewater's contribution to the vision of energy and housing sustainability and health through data and connected technology, will strengthen community partnerships and empower those most at risk. We believe it is an exciting model, replicable in other jurisdictions, especially rural communities facing similar challenges. There is a great deal of community pride in Bridgewater's leadership and expertise in innovating for local solutions to the housing and energy crises faced by many, not only here, but across Canada. And we know the ripple effects of the Energy Poverty Reduction Program will greatly enhance the quality of life here on the South Shore for everyone.

We believe what the Town of Bridgewater is doing to address these social and environmental issues is a stellar example of a can-do, will-do attitude so desperately needed in our world. We are proud of the effort and will continue to partner in any way we can to contribute to its success.

With unwavering support,
Sue Bookchin, MPH, BSN

Sue Bookchin

Executive Director
Be the Peace Institute

Big Brothers Big Sisters

February 21, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury panel,

This is a letter confirming the full support and confidence of Big Brothers Big Sisters of South Shore in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Big Brothers Big Sisters of South Shore provides quality mentoring programs to children and youth in Lunenburg and Queens Counties, Nova Scotia, and we centrally located in the town of Bridgewater. By pairing young people with supportive role models, we help to improve their wellbeing, overcome obstacles, and find future success. Our participants come largely from low-income households and families who might struggle financially or socially; through our work we recognize the urgency of energy poverty and the harmful effects it can have on families, children, and the community as a whole, and we fully support the development of the Energy Poverty Research Program for this reason.

In developing this Program, the Town has worked hard to break down silos, connect community groups and services, and include marginalized voices in each discussion. Local groups, particularly those who work with vulnerable populations and those directly affected by energy poverty, have been included in every step of the project. In developing ideas for local energy solutions, the Town has worked closely with residents, businesses, nonprofit organizations, educational institutions, and other government agencies, and has demonstrated its commitment to shared and community-led initiatives for poverty reduction. Through interviews, focus groups, surveys, and other methods of data and story collection, the Town has been able to hear the voices of groups historically left out of important discussions, which is an important and empowering aspect of the Energy Poverty Research Program.

Through each of its outcomes, a community-wide energy poverty initiative will change the lives of Bridgewater residents. We feel that one of the largest barriers for many families is knowledge of available resources and the challenge of connecting with them; the proposed Coordinated Access System, however, will drastically improve this issue as families will get quick access to help, simple communication, and ease of navigation through a coordinated system. This outcome affects lives in a wide variety of ways, as knowledge and access are truly key to overcoming the barriers faced by vulnerable populations. Coordinated access will lead to improved housing conditions, improved mobility, new economic opportunities, and empowerment of marginalized groups; there is no end to the number of societal improvements that can be made through this Program, and we are supportive of each of the outcomes outlined in the program plan.

Big Brothers Big Sisters of South Shore is confident in the Town's vision to reduce energy poverty. We believe that this program will translate to life-changing impacts on the lives of Bridgewater residents, Nova Scotians, and ultimately all Canadians, and we are excited to be part of this outstanding initiative.

Sincerely,

Jennifer Meister
Acting Executive Director/Mentoring Coordinator
Big Brothers Big Sisters of South Shore

Bridgewater Active Transportation Advisory Committee

February 26, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Bridgewater Active Transportation Advisory Committee in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Our committee is a standing committee of the Town of Bridgewater, comprised of various town denizen volunteers, town staff and stakeholder organizations, including members from the Nova Scotia Health Authority, School Advisory Councils, the Department of Communities, Culture and Heritage, the larger Municipality and local business. Our mandate is to support and advise the Town in its efforts to become an active transportation-supportive community, including putting an AT lens on town infrastructure, programs, policy and projects in building an environment and increasing partnerships promoting AT. Active transportation for us includes encouraging a paradigm shift toward choosing methods other than single vehicle use to access our beautiful town, including more walking, biking and use of public transit. This in turn, improves our fitness and health, while reducing pollution and automobile congestion.

Energy poverty impacts Bridgewater residents by inhibiting access. Those residents who face the financial consequences of having to choose between paying for adequate household warmth and other necessities are significantly disadvantaged. They in turn can often not afford methods of transportation to access shopping, medical appointments and education facilities, and are further disadvantaged, often failing to maintain job security. It becomes a systemic cycle of hindrance with far reaching inequitable consequences, including declining health and unemployment.

Several of our committee members were pleased to have participated in the Town's consultation efforts in preparation for the Smart Cities Challenge grant application. Not only did participation provide the opportunity to learn how multifaceted is this issue, but it also inspired by sharing the dedication many individuals and groups have to unravelling the inequitable effects energy poverty has upon our citizens. The success of this project will come from a multi-disciplinary approach, involving people and groups with many varied circumstances and backgrounds. Certainly, the Town's many meetings and workshops coordinated for the Smart Cities Challenge have demonstrated the benefits of involving a diversity of voices so that many perspectives are represented in addressing solutions. As many can attest, it is wonderful to have an altruistic vision of how great it would be..., but practical solutions require coordinated efforts, and without synchronization, often well-intended efforts can work at cross-purpose to others equally well-intentioned. The committee is confident that the Town's program design with a coordinated access system will address this and provide the important navigation to best facilitate the access to programs required of our citizens most in need.

Our committee believes an approach to active transportation is a key component to improvement of lifestyle overall. We agree that it is particularly important that the Town has included in its outcomes for the Smart Cities Challenge the improvement of residents' mobility, which in turn is directly related to improving access to community services. Isolation is significantly detrimental to the health of individuals, families and communities. The seemingly simple fact of getting out and about, seeing your neighbours and enjoying interacting with others in the community leads to a vitality and a cooperative spirit which strengthens us all. From a practical perspective, improved mobility is equally important in regards to obtaining the necessities of living well, such as getting groceries, attending medical appointments, taking children to school and maintaining employment. Our committee is keen to continue aiding our Town in these regards.

We are convinced that by reducing the limiting factor of energy poverty from the equation, we will experience greater success in generating a paradigm shift, encouraging a culture of normalizing active transportation as the preferred method of enjoying travelling within our community and larger environment. It is an exciting time to live in Bridgewater with such a momentum afoot. The Town is developing a plan which will not only benefit us, but can be easily mirrored in other communities, from villages to urban settings, from Canada to the world.

We hope you agree.

Yours respectfully,

Siobhan Doyle
Chair
Bridgewater Active Transportation Advisory Committee.

Bridgewater and Area Lions Club
1787 Hwy 10, West Northfield
NS B4V 5C1

February 27, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of [*your organization's name*] in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The Bridgewater and Area Lions Club serves the residents of the town of Bridgewater and surrounding communities. Like all Lions Clubs we work to improve the lives of community members and meet their needs as requested. We have been active in this community since 1956. We have noted a sharp increase in the number of requests for assistance with heating oil and electrical heating costs. We have had to increase our budget line for this area to meet this increase which impacts all areas of the lives of our community members who seek our support.

The Energy Poverty Reduction Program illustrates the need for more of our citizens to be able to adequately heat their homes. This winter has been extremely cold and taxes our ability to provide for the needs of those who contact us. We hear stories of families who have run out of oil and are heating their homes by turning on their electric ovens, which of course drives up their electrical bills, thus impacting their ability to purchase heating fuel.

Any reduction in the need to provide funding for heating would allow us to assist our families with other requests such as groceries, medical supplies and trips to hospitals for treatment, rental assistance, clothing and many other needs. Families need to know that they can comfortably heat their homes. Many of our clients have low, or inadequate incomes which fail to provide for their energy needs. The available low-income housing tends to be older, poorly insulated and energy draining buildings. Our clients are trapped in a cycle of being unable to heat their homes properly and in a manner that fits their budgets.

It is fortunate and timely that the Town of Bridgewater has taken on this challenge. Community charitable organizations face a decrease in volunteers and are constantly fundraising to meet the needs of their clients. We are competing for every dollar with sports organizations, churches, schools and other organizations. Listening to, and hearing the voices of struggling families, seniors and singles brings these concerns to the forefront. The partnerships formed by their proposed program will allows organizations to work together to meet the community needs while ensuring that dollars raised for these projects will be used efficiently and effectively. The increased understanding of the problem can only move us forward to develop solutions. We believe that the framework developed through this process is easily transferable and necessary as we are aware that our sister clubs across Canada are all struggling to meet the energy needs of community members.

The Bridgewater and Area Lions Club is committed to meeting the needs of the community that we serve. The needs are increasing. We will continue to focus on meeting the immediate heating needs of our clients while working with the Project to examine how we can assist with energy affordability and improved housing conditions in Bridgewater. This will take many hands and we are willing to assist.

Bill Bruhm
Bill Bruhm, President
Bridgewater and Area Lions Club

Foundation Clean
Inspiring Environmental Change
126 Portland • Dartmouth • NS • B2Y 1H8 • Phone: (902) 420-3474

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

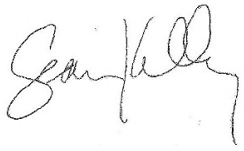
This letter is to confirm the full support and confidence of the Clean Foundation (Clean) in the Town of Bridgewater (Bridgewater) to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist. Clean is a non-profit, non-governmental environmental organization with a mission to provide individuals and communities with the means, knowledge, and opportunity to make responsible environmental choices. Our energy efficiency department provides program management, training and technical services to help reduce energy poverty.

Clean is developing a Clean Climate Action project in partnership with rural municipalities and the Nova Scotia Department of Energy and Mining, funded by the Federation of Canadian Municipalities. The outcome of this project is to increase the capacity, knowledge and skills necessary to address greenhouse gas (GHG) emissions reductions in those communities. Bridgewater has been a leading innovator in developing local energy solutions and their continued work with Smart Cities provides an excellent model that can be transferred not only to these municipalities in Nova Scotia, but across Canada as well.

Clean has partnered with Bridgewater on Property Assessed Clean Energy (PACE) financing programs, including Clean Energy Financing and Clean Net Zero (two turnkey residential retrofit programs). Clean also administers the HomeWarming program, a low income residential retrofit program in partnership with Efficiency Nova Scotia. Through Bridgewater's effective consultation efforts Clean has been able to provide input for the design of their Energy Poverty Reduction Program. The continued focus on collaboration in Bridgewater's application through coordinated access and connected technologies will strengthen community relationships and empower those that are most at-risk of experiencing energy poverty.

Given Clean's past and present partnerships with Bridgewater, our expertise in residential energy efficiency retrofit programs, as well as the learnings from our Clean Net Zero pilot program, we would be happy to provide support on Bridgewater's Program. Specifically, we would be happy to provide support on outcomes relating to their Housing Energy Management System involving service delivery and design of the retrofit program. Clean is assured in Bridgewater's vision to reduce energy poverty and we are excited to partner with them on implementing their Energy Poverty Reduction Program.

Sincerely,



Sean Kelly
Director of Energy Programs, Clean Foundation

DALHOUSIE UNIVERSITY

Faculty of Computer Science
6050 University Avenue
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Tel: +1 902 494 1986, Fax: +1 902 492 1517
email: paulovich@dal.ca

February 25, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewaters Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Dalhousie University Smart City Research Group in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Founded in 1818 in Halifax, Dalhousie is a member of the U15 group of leading research-intensive universities in Canada and is the largest research university in the Maritimes. The Smart City Research Group is a recent initiative of the Dalhousie's Faculty of Computer Science and is a focal point for research involving technologies to improve the way data is used to improve population wellbeing. The initiative mandate is to promote collaborative and interdisciplinary research in all aspects of smart cities. We understand that data and connected technologies can tremendously benefit cities or small communities enabling the discovery and more in-depth understanding of the needs of the local population, very aligned with the Towns Energy Poverty Reduction Plan primary objective.

It is the understanding of our research initiative that the critical element for putting the smart city concept in practice is data integration, which is in the core of the Bridgewater's plan. Through properly integration, different community stakeholders can share information, substantially improving how decisions are made and the transparency of the process. The result is to give voice to sectors of a city/town that could be otherwise marginalized, empowering people that are typically out of the decision-making process, who are, in the case of Bridgewater, those that are most at-risk of energy poverty. An idea that could be potentially extended to other communities at Nova Scotia, or even across Canada, to address different local problems beyond the energy-poverty issue.

We firmly believe that in this data-driven world, initiatives such as the Towns Energy Poverty Reduction Plan of Bridgwater have the potential to have a significant impact on the population

wellbeing, allowing different stakeholders to work together and to make more informed decisions. The Smart City Research Group of Dalhousie University is excited to be part of this initiative, and we are committed to partnering with Bridgewater to implement the Energy Poverty Reduction Program.

Sincerely,

Fernando V. Paulovich, Ph.D.
Associate Professor & Canada Research Chair in Data Visualization
Head of the Visual Analytics & Visualizaton Lab
Faculty of Computer Science
Dalhousie University

Ecology Action Centre

tel. 902.429.2202 2705 Fern Lane,
fax. 902.405.3716 Halifax, NS, B3K 4L3

February 28, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Ecology Action Centre in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The Ecology Action Centre (EAC) is a member-based environmental charity in Nova Scotia. We take leadership on critical environmental issues from biodiversity protection to climate change to environmental justice.

Energy poverty is a serious issue in Nova Scotia, especially in smaller towns like Bridgewater. All climate solutions need to address the day-to-day concerns of your average citizen, and that includes the affordability of energy bills. Unless we use alleviating energy poverty as an opportunity to tackle climate change, it remains a barrier to climate action. We trust and support Bridgewater's efforts to reduce energy poverty in their community.

The EAC delivers energy efficiency workshops for landlords and property managers that could be helpful for Bridgewater's Energy Poverty Reduction Program. We would be more than happy to support Bridgewater by delivering workshops tailored to their community and various stakeholders within their community. The Town of Bridgewater has done excellent work consulting with inside and outside the community stakeholders. Not only did Bridgewater staff call us for conversations about energy efficiency and environmental policy advice, but they shared their research with us so that our programs could benefit and grow from their learnings as well. This demonstrates the immense impact that Bridgewater's Energy Poverty Reduction Program will have on other communities in Nova Scotia and beyond. There are very few other small communities who are so innovative and successful in their endeavours to construct clean energy solutions for their community. Bridgewater has not only lead the way but creates tools and resources for other communities to follow their lead. We have even promoted Bridgewater's efforts to European communities looking to improve their energy plans, through an international knowledge exchange project called SECURE (Smart Energy Communities in the Northern Periphery of Europe).

The Town of Bridgewater understands that energy poverty requires turnkey solutions that are easy to use and cut through the silos slowing down effective community solutions. Bridgewater has spent years supporting various community stakeholders and buildings relationships. This means that their

Ecology Action Centre

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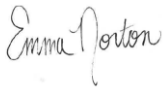
community has faith in the town and their solutions, and the Town is clear about what different stakeholders in the community have to offer, and also what they need.

Our work strives to find the intersection between environmental and social. It is those who live under the poverty line and those that struggle with energy poverty that will suffer the first and worst due to climate change. As such, we are especially interested in Bridgewater's outcomes that relate to improved energy affordability, improved housing conditions, inclusion and empowerment of marginalized and vulnerable families, and increased energy efficiency. The EAC is most able to contribute to the environmental aspects of Bridgewater's project.

We have the utmost confidence in the Town of Bridgewater. They have demonstrated some of the most tangible visionary leadership in all of Nova Scotia, across Canada, and even throughout the world. We are proud of the work they have done and look forward to seeing what they accomplish in the next decade. We are excited to support the Energy Poverty Reduction Program through workshops and partnership when it is helpful to their program.

Sincerely,
Emma Norton



Energy Conservation Coordinator, Ecology Action Centre

EfficiencyOne
230 Brownlow Avenue, Suite 300 Dartmouth,
Nova Scotia, Canada B3B 0G5
efficiencyone.com
Tel: 902 470 3500
Fax: 902 470 3599
smacdonald@efficiencyone.com

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000 - 85 Sparks Street
Ottawa, Ontario K1A 0A3

To the Smart Cities Challenge jury panel,

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist Application

This letter confirms the full support and confidence of EfficiencyOne to partner in the delivery of the Town of Bridgewater's Energy Poverty Reduction Program as a Smart Cities Challenge finalist. EfficiencyOne is a leader in the design and delivery of energy efficiency programs and services and the current holder of the Efficiency Nova Scotia franchise, making it Canada's first energy efficiency utility. Efficiency Nova Scotia offers services to help Nova Scotian households, businesses, non-profits and institutions achieve lower energy costs. To date, over 278,000 Nova Scotians have participated in efficiency programming, saving $165M annually and reducing the province's electrical load by 10%.

The Town of Bridgewater is the leader among Nova Scotian municipalities in developing and implementing local energy solutions. Through Efficiency Nova Scotia services, nearly 5,000 projects have taken place in homes and businesses in Bridgewater, saving more than $1 million annually on energy bills. Despite the great work that has already been accomplished, two in five Bridgewater residents experience energy poverty.

Through the Energy Poverty Reduction Program and the community-wide Energize Bridgewater initiative, the Town of Bridgewater is at the outset of one of the most ambitious energy projects ever undertaken in Nova Scotia. This project will significantly improve the circumstances of those who are risk for energy poverty. EfficiencyOne will provide advice, information and financial assistance to support the following outcomes of the Smart City Challenge application:

- reduce and stabilize energy expenses for residents;
- improve residential energy management practices; and
- increase energy security for residents.

Furthermore, EfficiencyOne is committed to partnering with the Town of Bridgewater on program design and delivery to ensure the program is effective and the residents receive the best energy outcomes.

EfficiencyOne is proud to support the Town of Bridgewater's Smart Cities Challenge application and is confident in the Town's vision to reduce energy poverty for residents. The outcomes of Bridgewater's Energy Poverty Reduction Program will also assist EfficiencyOne to help other Nova Scotian municipalities in reducing energy poverty and help EfficiencyOne undertake deep energy retrofits at homes across the province.

Please do not hesitate to contact me if you have any questions about our support for the Town of Bridgewater's Smart Cities Challenge Energy Poverty Reduction Program.

With kind regards,

Stephen MacDonald
Chief Executive Officer

21st February, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Energy Services Association of Canada (ESAC) in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

ESAC's purpose is to develop and advocate adoption of government policy, regulations and programs that enhance the role of performance-based solutions in achieving government's climate change, conservation and economic development objectives. Our aim is to increase the profile of performance based solutions as well as members of ESAC in achieving climate change and conservation objectives, particularly by politicians and senior levels of government.

Partnering with the private sector, specifically under the form of an Energy Services Contractor (ESCo) provides the financial resources, expertise, risk transfer and project implementation expertise for deep retrofits in exchange for a portion of the financial savings that result over the term of the contract. ESCo's typically offer comprehensive contracts that include energy reporting/ information and control systems, energy audits, installation, operation and maintenance of equipment and can competitive finance if required.

An essential element of the Energy Performance Contract (EPC) is to provide the assurance of a performance guarantee, placing the risk of under performance (management and technical) with the ESCO rather than the property owner. Partnering with an ESCo provides a valuable conduit for capitalizing neighborhood retrofits, aligning ESAC initiatives align with the Town's energy poverty reduction program.

ESAC works with all levels of Government across Canada to promote much required initiatives such as the Town of Bridgewater is going to achieve. Not only is it imperative that we reduce our excessive consumption of energy and introduce cleaner ways to lessen our impact on the environment, but there are numerous reports that show the benefit such projects have on social enterprise projects and local resiliency programs, reduction of; addiction issues, suicides, self-medicating and local crime.

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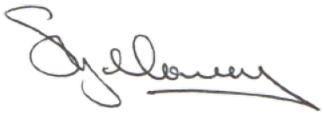
stuartgalloway@energyservicesassociation.ca energyservicesassociation.ca
https://twitter.com/EnergyESACstu www.linkedin.com/in/stuartgalloway01

ESAC members see such a project as the Town of Bridgewater has developed as inspiring and I can confirm that the members are committed to engaging in a competitive tendering process, relishing the opportunity to demonstrate innovative ways to work with and be an integral part of Bridgewater's SMART City vision. The project closely aligns with what ESAC and its members have been working with Government to achieve across all levels of public sector socially inclusive projects.

We are assured of the Town of Bridgewater's vision to reduce energy poverty and ESAC is extremely hopeful that the Town is successful in its Smart Cities Challenge application as we wish them every success. Indeed, we are excited to commit to partnering with the Town to implement the Energy Poverty Reduction Program.

Sincerely



Stuart Galloway

Chief Executive Officer
Energy Services Association of Canada

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stuartgalloway@energyservicesassociation.ca energyservicesassociation.ca
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FREEMAN HOUSE
www.fswns.org
Child, Youth & Family Hub Coordination of Services
Youth Outreach 16+
Family Support
Men's Intervention & Health Promotion
Supervised Access & Exchange
Primary Health Care Access
Housing Support/Housing First

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March 1, 2019
Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Energy Poverty Reduction Program

To the Smart Cities Challenge jury panel,

This is a letter confirming the full support and confidence of Family Service Association of Western Nova Scotia (FSAWNS) – and our local sites Freeman House and 629 King Street - in the Town of Bridgewater's collective capacity to achieve the outcomes of its proposed Energy Poverty Reduction Program. At Family Service Association of Western Nova Scotia, we have the capacity to play a critically important role in the Town's achievement of the Program's goals, particularly through supporting the co-development together with the Town and our Community Partners, of an effective Coordinated Access System.

FSAWNS has its own experience of applying for and delivering, successfully and on time, on projects funded through Federal and Provincial funding sources. Federal funding has included PHAC support for our Nova Scotia Trauma Informed Network, and ESDC Homelessness Partnering Strategy support for our Lunenburg/Queens Housing Support Program. Provincial support has included funding from the Nova Scotia Department of Community Services, Prevention and Early Intervention Sector, for Programs including Men's Intervention, Youth Outreach, Family Support, and, Community Hub Coordination of support and services.

In addition, since August 2018, we have been successfully on-track with completion of an affordable housing and Coordinated Access site at the former Rofihe Store site in the Town of Bridgewater. The site development will include supported affordable housing units and storefront access to community-based support and services. It is an ideal site for partnering with the Town and our community partners to create a people-centered Coordinated Access support and services delivery system spanning needs across the Social Determinants of Health.

The following are indicators our funders have identified as key to the site's success.

- FSWNS has the human resource's capacity to see this project to a successful conclusion. Its history of successful operation over the past 25 years is a demonstration of this.

- FSWNS is not without some financial resources with over $50,000 typically in cash assets. This is significant from an operational perspective as 'liquidity" is one of the key measures in determining the sustainability of a non-profit.
- FSWNS has already requested quotes for ground floor renovations related to structural and services. Further, conversations with this same contractor for the all of the interior renovations have begun. The contractor is known to Housing Nova Scotia regional staff as both reputable and competent.
- The Town of Bridgewater is 100% supportive of the project which is an asset to facilitating the administrative components of the construction project.
- It is an opportunity for partnerships that will create more than one programs could do alone.
- The building is ideally located, close to all of the amenities people access.
- Census data shows that Bridgewater is the only town in Nova Scotia experiencing growth and one of the resulting pressures is the lack of affordable housing. Although small in number the affordable housing created is much-needed.
- Preliminary cash flow estimates are favourable.
- The project further supports a coordinated model in Bridgewater. Guiding principles, such as: sustaining a collective focus on how programs and services should intersect in order to achieve better outcomes for the people we serve and increasing our collective capacity to support the people we serve at individual, social and systems levels, are foundational supports the community can build upon to achieve coordinated access to service provision in a rural community.

We are a passionate community-based champion of Coordinated Access as defined within Canada's National Housing Strategy, for 2019 onward, called: Reaching Home. Furthermore, as a member of a non-designated rural community, we are passionate about developing Coordinated Access systems in rural areas like the South Shore of Nova Scotia. The Town's Energy Poverty Reduction Program is a perfect fit with our work in this regard. Coordinated Access is a collective means for coordinating support and services based on triaging need together, using real-time data collection, and nationally familiar assessment tools, in order to ensure that our most excluded and vulnerable populations are included and linked with the support and services they self-identify are needed spanning the Social Determinants of Health (SDoH). Coordinated Access invites all of us to work from unfamiliar, collective, people-centered perspectives, and outside of our traditional, familiar territories of service delivery. It requires all of us to change how we work to better meet the needs of our local and national communities in 21st century Canada.

I am so proud of the Town of Bridgewater for proposing an Energy Poverty Reduction Program that embeds smart Coordinated Access collaboration, using shared and transferable nationally available tools, to impact our lives in this Town, and, this Nation. I am so proud of Canada for funding the opportunity.

Yours truly,

Art Fisher
Executive Director,
Family Service Association of Western Nova Scotia

February 23, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is to confirm the full support and confidence of Green Power Labs in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Green Power Labs' mission is to bridge the gap between energy resources and their users and to enhance energy management in Atlantic Canada, nationally and internationally. We realize this mission by providing comprehensive decision support and predictive energy management products and services.

Predictive energy analytics encompasses a variety of advanced techniques that analyze current and historical data to predict future events and effectively prepare for their impact. With the rising cost of energy, and the rapid changes in how we generate electricity, the business case for the use of predictive analytics in our communities is compelling. We provide value by helping our clients use connected technology to reduce energy consumption, energy expenses, and environmental impact.

Green Power Labs has been a strategic advisor for the Town of Bridgewater's Smart Cities Challenge Finalist application in 2018-2019. We are very supportive of the connected technology work the Town of Bridgewater has been advancing to reduce energy use budgets of the households in the community and their risks of energy poverty. The proposed Energy Poverty Reduction (EPR) project proposed by the Town in the Smart Cities Challenge sees, presents and leverages the use of connected technology as a core element of a smart cities approach for communities in Canada.

The EPR Connected Technology Engine proposed by the Town coordinates the proposed energy asset applications and solutions as a part of the project activities. This includes Connected Energy Efficiency solutions such as smart thermostats for residential houses and smart thermal optimization for multi-unit residential buildings and municipal buildings, and connected clean technology solutions such as residential microgrids, virtual community loads and power plants, and electricity micro market management. The digital technology supports a democratization of clean energy distribution and consumption with innovative and significantly beneficial social outcomes.

Green Power Labs will be pleased to help develop and deploy the advanced Town's Energy Management Information System (EMIS) that would measure the efficiency of foundational and advanced energy services and support related to energy productivity for the households-at-risk, and broader municipal energy efficiency programs. The EMIS will operationalize municipal energy management objectives and provide an efficient means

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to audit and account for prescribed EPR outcomes. It will enable the Town to improve energy performance, related energy use, cost and carbon footprint in a low-carbon economy.

Green Power Labs is confident of the assurance the Town of Bridgewater has required in the development and deployment of the EMIS in the municipality. This is based on the highest data analytics level of the EMIS including advanced predictive analytics applications developed by the company. Also, the cutting edge EMIS components demonstrated, tested and used in the industry in Canada over the last 10 years will bring municipal EMIS solutions to the Town at reduced costs while ensuring its highest quality.

We fully support the Town of Bridgewater's proposal to reduce energy poverty in the community. Green Power Labs is committed to partnering with the Town to implement the Energy Poverty Reduction Program with all key connected technology components.

Sincerely,

Alexandre Pavlovski, PhD, P.Eng.
President & CEO

Housing
NOVA SCOTIA
Office of the President
and Chief Executive Officer
P. O. Box 702 Stn Central
Halifax, NS B3J 2T3
www.housingns.ca

FEB 2 8 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000, 85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury:

Please accept this letter to confirm Housing Nova Scotia's support for the Town of Bridgewater in their attempt to implement the Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

As the provincial government agency responsible for the administration and delivery of affordable housing programs for low-to-modest income Nova Scotians, Housing Nova Scotia is aware of the many difficulties related to an old and inefficient housing stock, high energy prices, and low incomes. Many individuals who find themselves living in energy poverty are seeking solutions for either repairing their housing or looking for alternative affordable housing.

Housing Nova Scotia has provided information on its existing programs to the Town of Bridgewater, including the number of public housing units, locations, and general condition of the housing stock. We have expressed our interest in helping to monitor and reduce the energy consumption of these public buildings. Furthermore, Housing Nova Scotia offers programs for homeowners and landlords to carry out health and safety repairs to their properties, so they can remain affordable. In some cases, clients are referred to Efficiency Nova Scotia, a provincial energy efficiency utility, for energy savings upgrades. A similar partnership may be possible with the Town of Bridgewater, whereby clients that qualify to Housing Nova Scotia or Efficiency Nova Scotia programs could also benefit from the Energy Poverty Reduction Program.

The Town's proposal to increase collaboration between organizations using data and connected technology platforms is a strong and preventative model for reducing energy poverty. A coordinated access system for interrelated services would ensure those who need resources are prioritized. The Town has a track record for creating solutions under the Energize Bridgewater program which can be emulated by other communities. Housing Nova Scotia is supportive of Bridgewater's ability to have a regional and national impact through this proposal.

. . . p. 2

Housing Nova Scotia is pleased to continue its close working relationship with the Town of Bridgewater to implement the Energy Poverty Reduction Program.

Sincerely,

Nancy MacLellan
President and Chief Executive Officer

cc: Mr. Earl Mielke, Program Manager, Western Regional Housing Services, HNS

February 27th, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of *Lunenburg County Seniors' Safety Program, a project of Safe Communities Lunenburg County,* in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Safe Communities Lunenburg County (SCLC) is a registered non-profit organization that oversees several projects and programs that enhance the wellbeing of the community. The mission of the SCLC is to continually improve the safety of individuals and communities in Lunenburg County by enhancing a culture of safety and wellness. The *Lunenburg County Seniors' Safety Program* serves the safety needs of seniors in our community through education, presentations, advocating on behalf of seniors and one to one support. We work closely with seniors, their support systems, community and collaborating partners. We provide support with safety issues such as; financial hardship, elder abuse, transportation, food security, housing, wellbeing issues etc. We help people connect to the services they need.

Many of our clients feel the effects of energy poverty on a daily basis. We serve seniors in the community who must make difficult choices about which bill to pay or how high they can afford to turn their heat up. We have visited seniors who are living by the light of an old cell phone, without power or heat. At times, medication is not purchased so that the light bill is paid. We try to help senior's access financial aid to ease their hardship but the supply is limited and the need is great.

The Bridgewater Energy Poverty Reduction Program will improve the quality of life for seniors living in Lunenburg County. This program will offer options to reduce energy costs, find housing that is more economical and retain more of what limited income they receive. It will foster an opportunity for improved health and wellness. As a program, we will be able to focus more on safety needs beyond the basic fundamental physical needs of an individual.

We were very impressed with how the Town of Bridgewater has worked with such great focus and determination to try to bring this program to fruition. What is most striking is their commitment to inclusion and finding out how all community members feel. The Lunenburg County Seniors' Safety Program assisted with gathering information from seniors through surveys, attending workshops and participating in interviews. Our clientele is very pleased that their voices are heard.

The Town has demonstrated their committed to coordinated access with an "all hands on deck" approach, which will make this program a success. A program of this design will remove walls and build bridges between individuals, the community and all invested partners. It is very exciting to think of this project's promising potential can be applied in different communities across Canada!

The Town of Bridgewater has demonstrated their commitment to coordinated access with an "all hands on deck" approach, which will make this program a success. A program of this design will remove walls and build bridges between individuals, the community and all invested partners. It is very exciting to think that this project's promising potential can be applied in different communities across Canada!

We are excited to continue to be part of this project; we share the vision of the Town of Bridgewater. Improved energy affordability, service accessibility, improved housing, new economic opportunities and increased environmental quality are very important and will make a difference for everyone. We know that the Town of Bridgewater has a strong spirit of getting things done – getting things done that serve community well-being. We firmly believe the Town of Bridgewater can deliver on the program goals.

Sincerely,

Penny Carver,
Chair, Lunenburg County Seniors' Safety Advisory Partnership
Councillor, Town of Mahone Bay

YMCA of Southwest Nova Scotia

75 High Street
Bridgewater, NS B4V 1V8
T: 902-543-9622
ymcalunenburgcounty.org

February 21, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Lunenburg County YMCA in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Lunenburg County YMCA sees people of all walks of life come through our doors. The Energy Poverty Reduction Program would greatly benefit some of those people by lowering the level of stress they endure due to financial hardship. The Town of Bridgewater sees the highest core housing need as well as the lowest average household income in Lunenburg County.

The Town of Bridgewater has created many partnerships on this initiative to best help those in need. They have a strong team for the Energy Poverty Reduction and full support of their Municipal Council.

Lunenburg County YMCA is willing to provide its members with any information regarding the Energy Poverty Reduction Program in hopes that they can benefit from this program and lower their financial stress levels as well as better themselves physically at the Y.

If you have any questions or require additional information, please reach out.

Thanks,

Kim Roy

Centre Manager

YMCA of Southwest Nova Scotia
Lunenburg County YMCA
75 High Street Bridgewater, Nova Scotia B4V 1V8
T: 902-543-9622 M:902 521 5980 E: kim_roy@ymca.ca

Building healthy communities

ymcalunenburgcounty.org

HALIFAX

MIKE SAVAGE
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LE MAIRE
ME'R

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March 4, 2019

Privy Council Office, Officer of the Prime Minister of Canada
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

I am very pleased to offer my full support and confidence in the Town of Bridgewater to implement its innovative Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Halifax Regional Municipality is highly aware of the social and environmental impacts that climate change is having on Nova Scotia. Our municipality is only the second in Canada to declare a climate emergency and is currently working on a climate action plan for a sustainable future. Further to the environmental impacts of a reliance on fossil fuels, are the economic impacts on vulnerable individuals. Nova Scotians endure some of the highest energy prices in Canada, paying 15.3 cents per kilowatt hour before taxes, well above the Canadian average of 12.9 cents. Energy poverty is a structural societal issue that is faced not only by Bridgewater, but by towns and municipalities across Nova Scotia.

Bridgewater has emerged as a leader in addressing this issue and the community's actions are an important step in enabling other municipalities to act on energy poverty. The Town's municipal Council, led by Mayor David Mitchell, has shown urgency and ambition on climate change, setting an 80% emissions reduction target by 2050 in their Community Energy Investment Plan. Parallel to Halifax Regional Municipality's Solar City program, Bridgewater has implemented a PACE financing program for energy upgrades and is collaborating with the Clean Foundation on an innovative Net Zero housing program.

Bridgewater's proposed Energy Poverty Reduction Program model would be demonstrably effective elsewhere in Nova Scotia at empowering those who experience energy poverty and should be emulated by municipalities across Canada. Many of the issues our communities face require increased collaboration between local service providers that help those across the spectrum of need. Utilizing data and connected technology to improve the energy security of households is key to ensuring that households can achieve their basic needs.

Halifax Regional Municipality is proud to share a vision for a clean and affordable energy future with our friends at the Town of Bridgewater and is ready to exchange knowledge on addressing climate change. Our municipality wishes the Town of Bridgewater the best of luck on its Smart Cities Challenge bid to put Nova Scotia on the map as Canada's leader on climate change.

Mike Savage

Mike Savage
Mayor

New Dawn Enterprises Ltd

P.O. Box 1055, 106 Townsend St, Sydney, Nova Scotia B1P 5E1
Phone: 539-9560 Fax: 539-7210
Website: www.newdawn.ca

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of New Dawn Enterprises in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

New Dawn Enterprises Limited is the oldest Community Development Corporation in Canada.

New Dawn is a private, volunteer-directed social enterprise dedicated to community building. It seeks to identify community needs and to establish and operate ventures that speak to those needs. Its mission is to engage the community to create and support a culture of self-reliance. Its vision is a self-reliant people living in a vibrant community. New Dawn articulates this mission through a number of businesses, organizations, and partnerships.

Among its businesses and activities are New Dawn Health Care, New Dawn Real Estate, New Dawn Community Engagement and Education, New Dawn Meals on Wheels, the Cape Breton Island Centre for Immigration, and the New Dawn Centre for Social Innovation.

For more than a decade, New Dawn administered Community Economic Development Investment Funds (CEDIFs) to raise local capital for the start-up and expansion of local businesses. In Nova Scotia, CEDIFs have long been a key tool in community economic development providing a provincially-supported mechanism for the raising of community capital. Given the CEDIF oversight by the Nova Scotia Securities Commission, CEDIF investors today benefit from strong legal and regulatory frameworks.

Since their inception more than twenty years ago, CEDIFs have been used by community economic development organizations, by for profit and not-for-profit cooperatives, and by private sector groups and companies. While CEDIFs can serve a variety of business needs, they are highly compatible with ownership structures that have social and community focused missions.

CEDIFs can be used on an annual basis to advance a particular project or group of projects or on an ad hoc basis to raise all of the capital needed to see a particular effort through to completion.

CEDIFs bring the added advantage of genuinely engaging investors – through education and participation – in the work being advanced by the CEDIF – i.e. supporting the growth of local businesses, creating or expanding wind farm installations, creating new community housing.

Through a considerable amount of collaboration, the Town of Bridgewater's proposed program and potential use of a centralized CEDIF platform, using data and connected technology, will strengthen the impact investing sector and offer all Nova Scotians a powerful example of how this community-investment tool can be used to advance community sustainability.

Bridgewater's innovative use of a CEDIF program to support its sustainability initiatives are well within the scope and outcomes of the typical use of CEDIFs – i.e. the tendency for CEDIF capital to be used to advance community objectives and social causes such as GHG emission reductions and/or improved community health.

New Dawn has long supported the efforts underway in the Town of Bridgewater to demonstrate the impacts that are possible when a community puts sustainability at the forefront of its planning. We are confident that in the coming years, communities all across the country will be turning to Bridgewater as they endeavour to follow suit. We are invigorated by the Town's current emphasis on the reduction of energy poverty – a concept we are all becoming increasingly familiar with – and are excited to commit to partnering with the Town as they implement their Energy Poverty Reduction Program.

Sincerely,

Erika Shea
VP Development
New Dawn Enterprises

Reg Johnston
Chair of Nova Scotia Community Transportation Network
rjohnsxy@hotmail.com

February 19, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of the Nova Scotia Community Transportation Network (NSCTN) in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

NSCTN is a provincal organization that tackles the barriers to affordable and accessible community transportation options in rural Nova Scotia. We at NSCTN find the Bridgewater Energy Poverty Reduction Program works well with our mandate - to facilitate transportation options that lead to healthier and more connected communities throughout Nova Scotia by partnering with community organizations, governments and business.

NSCTN commends the town in naming this issue – Energy Poverty. This is a thought-provoking juxtaposition that tackles the conundrum of poverty as a lack of energy. This fits hand in glove with seeing poverty as a lack of access to affordable and accessible transportation options. With the town's high poverty rate, access to transportation is a barrier to many residents, especially seniors. Transportation options lead to improved housing conditions, service accessibility, inclusion and empowerment of marginalized and vulnerable families, new economic opportunities, and increased environmental quality of life.

We have worked with and supported Bridgewater Transit's launch of their pilot project. We see Bridgewater Transit as a major player in the South Shore Transit Project. This project connects the South Shore communities resulting in healthier, more vibrant independent rural communities.

We see that the Bridgewater Energy Poverty Reduction Program further facilitates our organization's work in capacity building in Lunenburg County. NSCTN is always interested in promoting proven models that can be transferred to other rural communities in Nova Scotia. The new relationships are being forged here with non-traditional for-profit and non-profit community-based transportation providers is creating a vital network that will harnesses the talents of all providers. This will result in an affordable, efficient transportation network that benefits all communities in Nova Scotia.

Energy poverty identifies the barriers that prevent people from aging in place, escape social isolation, and have a sustainable quality of life. NSCTN pledges continued support, working with the Town of Bridgewater to build an affordable, accessible and sustainable transportation option for their residents and allow them to reach their goals of reducing energy poverty in their community.

NSCTN fully supports of the Town of Bridgewater's vision to reduce energy poverty and are excited to commit to partnering with the community to implement the Energy Poverty Reduction Program.

Kind regards,

Reg Johnston

Chair, NSCTN

NOVA SCOTIA
Energy and Mines
Office of the Deputy Minister

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PO Box 2664
Halifax, Nova Scotia, Canada B3J 3P7
902-424-4575 T 902-424-3265 F
novascotia.ca

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the support and confidence of the Nova Scotia Department of Energy and Mines in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist. The Province is committed to improving affordability, and comfort through the reduction of energy poverty across Nova Scotia, and this Smart Cities Challenge program will help to meet these goals.

The Department of Energy and Mines has been a partner in the development of Bridgewater's Community Energy Investment Plan and are supportive of the implementation of the plan. The focus of the project on improved energy affordability for low-income community members is important as we transition towards low-carbon energy options. Also, under the federal Pan-Canadian Framework on Clean Growth and Climate Change and the Department of Energy and Mine's current mandate, both levels of government are working to reduce greenhouse gases through innovative projects. We recognize the necessity of addressing GHG emissions and are specifically looking for opportunities to do so with a focus on social equity, incorporating new technologies, and energy data. Implementing the Energy Poverty Reduction Program in the Town of Bridgewater will allow for successes to be shared with communities across Nova Scotia and nationally.

The Nova Scotia Department of Energy and Mines is confident that the Town of Bridgewater will create significant change in their community by implementing the Energy Poverty Reduction Program and we are excited to see the program move towards the next steps of implementation. The Department will continue to be a committed partner on this project and we hope to see this valuable project move forward.

Sincerely,

Deputy Minister Simon d'Entremont
Department of Energy and Mines

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Public Health Services, Western Zone, Nova Scotia Health Authority in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Public Health is a service of Nova Scotia Health Authority and is a key part of the health system. Public Health's work is focused on improving the health of the population by working with others to address the social determinants of health and health inequities which impact health.

Public Health Staff encounter energy poverty directly as they support families and individuals in the community, and as they work with community partners to improve access to healthy, safe and affordable housing options. More broadly, we work with a variety of community partners to understand and take action on barriers to the social determinants of health which are connect to poverty.

The most recent Census of Canada in 2016 helps paint a picture of the magnitude and experience of poverty in the Town of Bridgewater. Almost 1 in 3 of all households (27.9%) and nearly half (48.6%) of the tenant households in the town of Bridgewater were identified as living with core housing need. 26.1% of children in the town of reported to be living in poverty, and overall, 22.7% of the population of Bridgewater is living at or below the low income measure, after tax.

Furthermore, as housing and energy prices increase, low-and middle-income households are forced to make compromises in their efforts to feed themselves, stay warm, and pay for rent and heat. These factors combined – food insecurity, fuel poverty, poor housing conditions and housing unaffordability– have detrimental and long term effects on the health of individuals, and have an impact on the community. The costs of "doing nothing" to address poverty – as measured by increased health, justice, education and social services costs – far outweighs the cost of solutions.

The Town of Bridgewater's Energy Poverty Reduction Program, by alleviating the financial burden of energy costs on lower income households and improving housing conditions would support these households to devote more household resources to their other needs including other shelter costs, food, medication, transportation and social inclusion activities.

Throughout its fulsome community engagement process, the Town of Bridgewater has consulted with community partners and provided a variety of opportunities for community partners, stakeholders and the public to be part of this important work. Public Health staff have been involved in supporting the development of the process, promoting community engagement sessions, surveys and focus groups and

providing content support related to health outcomes for the project. We appreciate the efforts of the Town to engage and respond to the community during the past few months. We are very pleased to have been invited to the table as a partner!

Our community is fortunate to have in place a number of services and organizations seeking to improve the lives of our residents. Throughout this engagement process it has become evident that there are opportunities to improve collaboration and improve access to support for those who require it. Just by bringing together community stakeholders to discuss energy poverty in our community, the Town of Bridgewater has initiated improved relationships and understanding. As the program is further developed and implemented in the community, improved communication among providers will undoubtedly improve supports for individuals, here and in other communities; the challenges of coordinated services and rising energy costs are not unique to the Town of Bridgewater.

Public Health's work is focused on improving the health of the population and addressing the impact of the social determinants of health in our communities. Our work shows up in our communities in many ways as we work in collaboration to improve health. The proposed program's outcomes related to health and poverty are most closely associated with our work. As part of the broader health system in Nova Scotia, we have a role to play in supporting the success of this project through championing this work within our networks and among community members, supporting the collection of health outcome data, working with the Town of Bridgewater to develop an Energy Poverty Index, and by facilitating collaboration with other NSHA programs and services. We are pleased to have the opportunity to support this important work and will continue to seek opportunities to ensure its success.

The proposed project prioritizes access to improved energy savings for those who can benefit the most from them; those living with energy poverty. This is a bold and powerful statement about the commitment of the Town of Bridgewater to its' most vulnerable populations and demonstrates its commitment to the community's vision for the Town of Bridgewater as a diverse, thriving and healthy community. As other communities look to Bridgewater as an example of how to address the complex sustainability challenges, this project has potential to inspire others to also promote equity in their communities. Public Health looks forward to hearing that the Town of Bridgewater has been successful in their bid to receive the Smart Cities Challenge grant and working in partnership to take action!

Sincerely,

Nancy Green

Nancy Green, BSc., BScHP
Health Promoter
Public Health Services, Western Zone, South Shore

Nova Scotia POWER
An Emera Company

PO Box 910 • Halifax, Nova Scotia • Canada • B3J 2W5

March 4, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

Dear Jury Panel:

As a company committed to helping build the Nova Scotia economy through clean energy progress and innovation, Nova Scotia Power is excited to support the Town of Bridgewater in its application for the Smart Cities Challenge. The Town of Bridgewater is taking bold action to help drive new solutions to decrease energy poverty, and Nova Scotia Power is committed to working with the Town to achieve their goals.

As new renewable energy technologies mature and become economic, Nova Scotia Power is committed to cost-effectively providing more green energy to Nova Scotians and reducing our carbon emissions. Today, Nova Scotia Power leads Canada in reducing carbon emissions, and we are on track to reach almost 40% renewable energy in 2020. NSP has done so with a laser focus on affordability – holding power rate increases, on average, to less than inflation since 2015.

Specific to the Town of Bridgewater's proposed project, Nova Scotia Power will:

- support access to the smart metering and the Green Button initiative
- offer financing for heat pumps for home retrofits
- provide support and expertise for connected technology solutions and applications
- provide expertise on charging stations for electric public transport

The Town of Bridgewater has been a national leader in its energy programs, such as Energize Bridgewater and now their Energy Poverty initiative. Not only have they been innovative in their projects, they have openly shared their outcomes and best practices with other Nova Scotia municipalities. Nova Scotia Power applaudes the work of the Town of Bridgewater in advancing the progress and awareness of energy innovation for economic solutions. We look forward to supporting this important work led by the Town in conjunction with Infrastructure Canada.

Sincerely,

Shawn Connell
Director, Customer Solutions
Nova Scotia Power Inc.

NOVA SCOTIA WORKS

February 28, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Employment Solutions Society, Nova Scotia Works Employment Services Centre in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Our organization assists individuals in the community to prepare for, find and maintain employment. We offer various programs that individuals can access. Our clients have various backgrounds and some struggle with low income, have high barriers and some live in poverty and in which creates high stress.

With the Town of Bridgewater implementing the programs that they have outlined in their Smart Cities Challenge plan will provide individuals in our community access to help.

Yours truly,

Margaret Matthews

Executive Director

215 Dominion St • Bridgewater, Nova Scotia • B4V 2K7

Canada NOVA SCOTIA Employment Solutions Society

nscc
Lunenburg Campus

February 21, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of Nova Scotia Community College (NSCC), Lunenburg Campus in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The NSCC is committed to building Nova Scotia's economy and quality of life through education and innovation. Serving the province through a network of 13 campuses, the College offers over 100 programs in five academic schools, reflecting labour market needs and opportunities in Nova Scotia.

The NSCC Lunenburg Campus has successfully collaborated with the Town of Bridgewater on a number of occasions, most recently on a workshop series for Net Zero housing upgrades. We look forward to an opportunity to be a part of the Smart Cities Challenge initiative by providing training and education that aligns with our mission and values. These types of potential opportunities would include our Work Integrated Learning courses that are encompassed in most programs; partnering with our Women Unlimited program to help showcase women in non-traditional trades and technology workplaces; being integrated in a Coordinated Access Systems (CAS) model with the Town in order to provide information where applicable around training opportunities; and ultimately exploring the creation of new programming options in the areas around Green Energy and Technologies.

The NSCC is focused on making a community impact, as it is one of the four pillars of its strategic plan. The Town of Bridgewater's dedication to eliminating energy poverty will do nothing but benefit its residents and the community as a whole. We support the efforts by the Town to improve energy affordability and housing conditions, while allowing for inclusion and empowerment of marginalized and vulnerable families. This will create new economic opportunities, as well as increased environmental quality helping all of us prosper in a healthy community.

Sincerely,

Blair Lipsett
Academic Chair, School of Access, & School of Trades and Technology
(902) 521-2390

QUEST

February 27, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This letter confirms the full support and confidence of QUEST in the Town of Bridgewater to implement its Energy Poverty Reduction Program.

QUEST is a national non-government organization that works to accelerate the adoption of efficient and integrated community-scale energy systems in Canada by informing, inspiring, and connecting decision-makers. QUEST undertakes research, communicates best practices, convenes government, utility, private-sector and community leaders, and works directly with local authorities to enable on-the-ground solutions. QUEST grounds all its activities in the "Smart Energy Community"—a concept that encapsulates the ideal end state of the organization's work.

Energy poverty is an important barrier to becoming a Smart Energy Community because households-at-risk are often unable to avail themselves of existing clean energy programs. As households at risk of energy poverty and low-income households are not always one and the same, programs like the Homewarming program can miss the mark, but they can also be too financially insecure to participate in retrofit or clean energy generation programs like Clean Energy Financing or SolarHomes.

Bridgewater's Energy Poverty Reduction Program would increase the ability of QUEST to enable Smart Energy Communities, by demonstrating successful ways to engage

households-at-risk of energy poverty in community energy programs. Through Bridgewater's targeted efforts, this underserved segment of the population could be enabled to improve not only their health and wellbeing, but those of the community, by moving to more efficient and cleaner energy sources.

QUEST is a strong proponent of inter-departmental collaboration, and evidence based decision making. As such we support the idea of the coordinate intake process for access to diverse programs, the Household Navigator and long term approach, and the predetermined indicators to monitor progress and actual impact.

If successful, Bridgewater will be the first community in Canada to demonstrate a concrete new approach that fights poverty, transitions the community off fossil fuels, and builds the local economy. This success would build on the momentum Bridgewater has built within Nova Scotia, and Canada-wide, as being a powerhouse for its size and a generous partner when it comes to sharing lessons learned through trail blazing.

As an organization who convenes community stakeholders on both a local and national level, this could be an important step forward for QUEST to address a significant barrier to becoming a Smart Energy Community. In Nova Scotia, the details of this successful program would be disseminated to other municipalities through our Municipal Energy Learning Group, of which the Town of Bridgewater is a keystone member. It would also be important for our QUEST NS Buildings Working Group, which advocates for broad retrofitting and recommissioning of existing building stock. As one of five regional advisors for the Partners for Climate Protection program, QUEST has a portal to share replicable aspects of this program widely within the country.

QUEST is confident in the Town of Bridgewater to achieve the stated vision, and excited to partner with the Town to implement the Energy Poverty Reduction Program.

Yours Sincerely,

Tonja Leach
Executive Director, QUEST

RDNT PROPERTY MANAGEMENT, INC.

54 Pine Street, Bridgewater, NS
(902) 523-2945; (902) 521-3236
Robert.dykes@mcgill.ca; nthéoret@hotmail.com; Fax : (902) 334-0204

February 8, 2019

Selection Jury
Smart Cities Innovation Program
Minister of Infrastructure and Communities.
Government of Canada

Members of the Jury,

As the owner of a multiunit apartment building in the Town of Bridgewater, I offer a letter of support for the Energy Poverty Reduction Program submitted to the Smart Cities Innovation program.

The Town of Bridgewater, a small community in rural Nova Scotia has a high unemployment rate and a demographic profile skewed to seniors; much of the population lives on a variety of fixed income sources in an aging housing stock. As individuals, few community members have the means to invest in energy-saving improvements and consequently are locked into high-energy-cost living conditions

The plan to offer an integrated program for all that will allow those living in our community to easily explore ways to reduce energy costs and to improve their lifestyle through a coordinated access portal is an innovative idea for energy poverty and overall energy consumption. I believe that it will improve may people's access otherwise inaccessible programs and that it has a strong likelihood to enhance the quality of life for many in the town while simultaneously reducing the overall energy consumption of the community.

I am particularly intrigued by the Program's inclusion of landlords as participants in the planning and execution of the programmed activities. The strategies being proposed to address the "split-incentives" issues that surround rental housing are particularly innovative. The proposed solutions rely on previously unavailable technologies that now can be used to educate individuals about their energy use. A shared interest in energy consumption, its costs and how to save energy can only strengthen the sense of community. I believe that these new technologies can enhance a sense of shared purpose even at the level of those living in, or managing, individual multiunit buildings.

I offer my wholehearted support for the Proposal submitted by the Town of Bridgewater with the hope that will lift many of our residents out of energy poverty while building a stronger, healthier and energy-efficient community.

Sincerely,

Robert Dykes
Secretary
RDNT Property Management, Inc.

Linda Jensen, B.S.W, R.S.W
SchoolsPlus Facilitator/Parent Navigator
Mail: c/o SSRSB 69 Wentzell Dr.
Bridgewater, NS, B4V 4G9
E-mail: ljensen@ssrsb.ca
Phone: 902 521 9817
Confidential Fax: 902 541 3055

Date Feb 27, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence by SchoolsPlus of the South Shore Regional Education Centre the Town of Bridgewater has the ability to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.
SchoolsPlus is a provincial program in Nova Scotia whose mandate is to support students at risk and their families. The Program is funded jointly by the Departments of Community Services, Justice, Health and Education and Early Intervention. The program is housed in the education system as that is where children and youth are more easily supported and accessed. SchoolsPlus staff work with Interagency Partners who provide services to the student and families in the Town of Bridgewater and surrounding areas to ensure students get the services they require, address gaps in service and reduce duplication of service. We work directly with students and their families.

Many of the students/families we support struggle because of barriers that are a result of low incomes. Housing costs, housing shortages, heating and electrical costs, transportation and fuel costs, unemployment and food costs are some of the main issues we see on a daily basis. We have an emergency fund based on donations from the community that supports emergency needs such as medication, clothing, food, transportation to medical appointments, glasses, lice treatments and more. We see the impact of energy poverty in our schools each day as schools work to feed and clothe the students. We connect family to financial supports and service organizations on a weekly basis. We provide transportation and support families in applications for financial assistance, as well as connections to employment services and more.

People with low income and inadequate housing and inadequate ability to meet their basic needs experience barriers and stressors that reduce their ability to enjoy a good quality of life and health.

As the Town of Bridgewater implements their proposed programs as outlined in their Smart Cities Challenge Plan and works toward solving the energy needs of our most vulnerable residents, we expect that the quality of life and health of our residents will improve. This will result in citizens who are more fully educated, who can meet the needs of themselves and their families, and will reduce the number of students and families at risk in this community.

The Town of Bridgewater encouraged and compensated its citizens for taking time to give important input in this project. Focus groups and opportunities for students and families to contribute their input were frequent and easily accessible. Our program was able to encourage families and individuals to take part and have a voice. The Town developed strong relationships with the community organizations that serve our most vulnerable and marginalized families that will continue into the future. Through this project the residents of the town and surrounding area were clearly given the message that the town is serious about making changes that will improve their lives.

Part of the mandate of SchoolsPlus is to have monthly meetings with the service providers, agencies and services that provide frontline service to our students and families. The Town of Bridgewater has engaged these services and demonstrated a desire to work with us to make a difference for our citizens.

We feel the Coordinated Access System will help people get quick access and help as well as efficient access to a wide variety of services and supports that will improve their lives. SchoolsPlus is committed to supporting the Town of Bridgewater as they move forward with this project.

Sincerely,

Linda Jensen

Linda Jensen, BSW, RSW

SchoolsPlus Facilitator/ Parent Navigator

SchoolsPlus of the South Shore Regional Centre for Education

Second Story Women's Centre

18 Dufferin Street, PO Box 821 902-543-1315
Lunenburg, Nova Scotia B0J 2C0 902-640-3044
www.secstory.com
February 20, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury:

This is a letter confirming the full support and confidence of Second Story Women's Centre in the Town of Bridgewater's Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Second Story Women's Centre (www.secstory.com) is a non-profit organization funded through the Nova Scotia Advisory Council on the Status of Women. Its mandate is to provide support and services to women and others who are gender-oppressed, including those who are transgender. Although based in an adjacent town (Lunenburg, Nova Scotia), we provide essential counselling and program services in Bridgewater. We also closely partner with many community organizations in Bridgewater and surrounding areas to align and inform our work. In our work with vulnerable populations, we assist those who are living in poverty or isolation and recognize the serious impact that the risk of energy poverty has on our clients – physical and mental health issues, inability to access services, mobility, transportation, and isolation from family, friends and community.

In its research and design stage, Bridgewater's Energy Poverty Reduction Program has been collaborative, innovative and community-building. Their Energy Poverty Research Program placed the voices of the vulnerable at the centre of the research using focus groups and individual interviews. It also provided an opportunity for service-providing organizations to break down silos and cooperatively recommend best practices that respect the strengths, resiliency and resourcefulness of those impacted by poverty. With community input, it has designed a comprehensive program which will help reduce the cost of energy for individual women and their families - a concrete and evidence-based strategy to reduce poverty in general. It is a long-awaited approach, as we often assist single mothers, the poorest of the poor in Canada.

One of our organization's strategic priorities is 'poverty reduction' with its main goal to develop community partnerships and collaboration focused on reducing poverty among women and other vulnerable populations. The Energy Poverty Reduction Program has

allowed us to greatly move forward in this work, focusing on energy affordability, improved housing conditions, service accessibility, inclusion and empowerment and recognition of the incredible strengths of vulnerable persons. We are also incredibly excited about participating in coordinated access for our clients using data and technology to facilitate wraparound services. While the program has been designed for the Town of Bridgewater, we recognize the innovative nature of the work and its transferability to other communities across Canada.

Second Story Women's Centre is proud to have been part of the research for the Smart Cities application process and is very excited about working in partnership with others to reduce energy poverty in Bridgewater. We have fully participated in the community consultations and information sessions that the Town offered in all of their processes and we felt truly heard and included.

Sincerely,

Rhonda Lemire, Executive Director

Small World Learning Centre
352 York Street, Bridgewater
Phone: 902-543-7343
Email:smallworld@ns.aliantzinc.ca
Website: www.smallworldbridgewater.com

February 15,2019
Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Small World Learning Centre (SWLC) in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

SWLC is a non-profit organization, serving families on the South Shore since 1978 by providing child care for children 18 months to 12 years. We are licensed for 90 spaces and care for 125 children weekly through our part time and full-time programs. Approximately 30% of our families are low income and receive child care subsidy.

On the south shore, the percentage of aging citizens are rapidly increasing. Seniors struggle to "make ends meet" living on Canada and Old Age pensions. They face rising costs of living, age-related illnesses and disabilities. Younger families struggle financially due to limited employment opportunities, student loans, housing, education or the limitations of living in a rural area. We who work in child care, see many families that qualify for child care subsidy but some are not even able to pay the lower rate. These families often resort to un regulated child care or they do not accept employment at all. Poverty reduction could help "at risk" families have licensed regulated care for their children.

SWLC educates our youngest citizens as well as their families regarding sustainability and being an "eco responsible" member of society. As an organization we have taken steps to consume less ourselves by making our centre more energy efficient and growing some of our own food in gardens and by becoming part of Green Schools Nova Scotia.

The Town meetings allowed us to speak of the cost of child care and the financial strain that face many. They were informative and helpful to increase awareness and provided dialogue about the very serious problem of poverty, specifically energy poverty in our area. Meetings were advertised in the Media and included the general public, service clubs, business and service organizations.

If more residents of this area had funds available to obtain even a subsidized rate of quality child care they would be more likely to enrol children in a licensed centre, which in turn would allow them to work and contribute to not only their family income but to raise their own self esteem and provide an example for their children.

Bridgewater is already a leader initiating energy saving promotions and public awareness events. Studies done recently by the Town of Bridgewater prove that there is a huge problem of energy poverty in our community and has been an ongoing problem that "at risk" families are stressed about. This project would be a great model for any other community across the country to follow. Other areas may not be in as great a need as ours but every area can look to ways to reduce the energy consumption and environmental footprint.

- The Town of Bridgewater; offers PACE-a clean energy loan financing which helps residents to reduce the costs associated with energy especially heating and cooling as these are a home's largest energy costs.

  Also, the town has an "Energize Bridgewater" initiative, with a focus on implementing the Town's Community Energy Investment Plan.

  Energize Bridgewater is a community-wide initiative to accelerate the transition of our community into a "clean energy economy". Started in 2016, the initiative has resulted in practical energy demonstration projects, innovative new partnerships, and new knowledge and skills.

  Bridgewater held an Energy Nova Scotia Discovery Fair highlighting sustainability and reducing energy use which was very well attended

  Bridgewater Improved access to community transportation by initiating a town bus. It is part the Poverty Reduction Blueprint and is identified as a priority in Nova Scotia's Action Plan for an Aging Population.

- Our organization can be actively involved with efforts because we have over a hundred families with children who are living and concerned with the issues with living in this area. We would share information, encourage and be actively involved with events and efforts to better our community, specifically and specially to reduce energy poverty.

- A community-wide energy poverty initiative could help Bridgewater residents and the community as a whole live better and allow funds to be directed to basic needs such as housing, medical items, child care, healthy food choices and physical activities that they may not have been able to afford because of high energy costs. As well the overall community environment would improve both physically and emotionally. Bridgewater has an excellent bid to receive an award at the 2018 Globe Climate Leadership Awards. https://www.globeseries.com/forum/awards-en/

As an organization, we are fully in agreement with the town goals of working together to create a more efficient cooperative society that helps each other live better by reducing stressful and wasteful energy costs. As families become more self reliant and are able to take employment, we will support them by not only offering quality child care but work to increase education to the whole family in areas of conservation, ecology and sustainability.

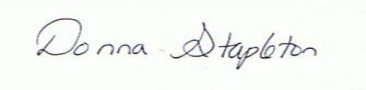
At a recent conference, The International Network of Michelin Cities, a major from Chennai India was so impressed with Bridgewater he said "Never did I think I would come to this conference representing the 8 million people in my city and have our major problems solved by the Town of Bridgewater with only 8500 people but their energy plan did just that". Dec 2017 Bridgewater is a shining example to other

communities, the whole country and beyond because of the ongoing efforts to become more energy efficient right here in our home town!

We are so proud to be part of Bridgewater and the efforts to be responsible efficient consumers of clean energy. Winning the Smart Cities Challenge grant would be a major contribution toward reducing energy poverty in Bridgewater and have a huge positive impact on many lives and the area as a whole!

Therefore, I would say that we are very confident in the Town of Bridgewater to effectively coordinate and work openly and transparently with multiple partner organizations to implement any programs or solutions that can be funded by the Smart Cities Challenge grant.

Donna Stapleton



Executive Director,

Small World Learning Centre

SOCIETY OF SAINT VINCENT DE PAUL
Saint Joseph Conference, Bridgewater
123 Pleasant Street
Bridgewater, NS B4V 1N3

February 18, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Grant Application

To the Smart Cities Challenge jury panel,

The Society of Saint Vincent de Paul, Saint Joseph Conference, would like to confirm its full support and confidence in the Town of Bridgewater's implementation of its Energy Poverty Reduction Program, as a Smart Cities Challenge finalist.

The Society of Saint Vincent de Paul, Saint Joseph Conference has been operating in Lunenburg County for over 30 years. The Society of Saint Vincent de Paul provides immediate financial assistance to help meet basic needs. This includes electricity, fuel, rent, food, medical, dental and other expenses required to live a decent and productive life in our Bridgewater community.

In 2018, 54% of our funds were spent on providing assistance to individuals living in energy poverty, who are spending a large amount of their income just to heat their homes. Individuals have to make a decision between paying rent, paying for groceries, paying for medication or paying for heat and electricity.

Organizations working together, with a common goal, help to build a strong community. The Town of Bridgewater has been a driving force in the past few months to facilitate this "coming together" of stakeholders interested in the Energy Poverty Program addressing: increasing energy security for residents, reducing and stabilizing energy expenses, reducing greenhouse gas emissions, improving residents' mobility, improving residents' access to community services.

The Society of Saint Vincent de Paul participated in the workshops and forums to provide, to the Town of Bridgewater, data and information related to energy poverty and provide a voice for those who experience a life of poverty.

The Society of Saint Vincent de Paul fully supports the Town of Bridgewater's vision to reduce poverty risk at the household, neighbourhood, and community levels by:

- making affordable energy investments,
- funding energy poverty reduction solutions,
- reducing energy poverty rate,
- improving health of residents,
- increasing resident's quality of life and sense of empowerment and inclusion.

Sincerely,

Patricia Mount, Ways and Means Committee

Patricia Smith

Patricia Smith
Society of Saint Vincent de Paul, Saint Joseph Conference, Bridgewater
Email: pat_smith_73@msn.com
Tel: 902 530 3001

Souls Harbour Bridgewater
136 Pleasant Street, Bridgewater B4V 1N2
902-530-5030

February 27, 2019

Privy Council
ATTN: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

RE: Support for the Town of Bridgewater's Smart Cities Challenge Finalist Application

To whom it may concern,

Souls Harbour Bridgewater supports the Town of Bridgewater's Application for the Smart Cities Challenge and is confident in the Town's ability to fulfill the goals of the program.

Souls Harbour Bridgewater is a Christian non-profit Gospel Mission Home which offers a free nutritious meal to people who are struggling while living in poverty, and with mental health and addiction issues. Several clients are housed in low income housing, and others are homeless. While living in poverty, a person is not able to have basic nutritional sustenance, let alone income for transportation or heat/power. It is evident that their health is of a poor quality.

We would welcome this great initiative through the Smart Cities Plan. It would be one step in providing a basic need and improving a person's quality of life.

Please contact me if you have any questions.

Regards,

Vicky Sovie
Manager/ Chaplain
Souls Harbour Bridgewater
Satellite of Souls Harbour RESCUE Mission Nova Scotia

SOUTH SHORE FAMILY RESOURCE ASSOCIATION
821 King Street, Unit 11, Bridgewater, NS
B4V 1B7 (902)543-3119

Correspondence from:
- ☐ Better Together Family Resource, Lunenburg County Site
- ☐ Queens Family Resource Centre, Queens County Site
- ☐ King Street Family Resource Centre, Shelburne County Site
- ☐ Digby Drop In Centre, Digby County Site

February 20, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of the South Shore Family Resource Association in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The South Shore Family Resource Association has been offering free programming to all families in Lunenburg, Queens and Shelburne counties since 1993. The Association believes in a participant-driven, strengths-based model of program delivery. Programs are designed to increase the opportunities for individuals, families and communities to access supports and services that foster resilience. The work is supported by a strong and dedicated group of staff and volunteers, many of whom are past participants. Our Lunenburg County centre, The Better Together Family Resource Centre, is located in the Town of Bridgewater.

We see and hear from families who struggle with energy poverty every day. They must make hard choices for their families on whether to pay bills such as power/heating/oil, purchase groceries or pay rent. We offer access to supports such as cooking programs, drop in program and continue to keep abreast of any government support programs to help families make informed decisions. We also hold certain funds within our budget for transportation costs to break down barriers for families.

Families who attend our programs will have access to current information and resources on energy assistance that will help with making tough choices. They can serve as a voice of what is working within the community and what is not working in the community by providing feedback to the town through various avenues such as interviews or focus groups.

The South Shore Family Resource Association has full confidence that the Town of Bridgewater can fulfill it's vision of reducing energy poverty and we are excited for our participants who will be able to benefit from this Energy Poverty Reduction Program.

Sincerely,

Heather Fraser

Heather L. Fraser
Executive Director

South Shore Housing Action Coalition
c/o Public Health Services, NSHA
215 Dominion Street, Suite 200
Bridgewater, NS B4V 2K7
sshousingaction@gmail.com
http://sshac.ca
SouthShoreHousingActionCoalition
@sshousingaction

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury panel,

This is a letter confirming the full support and confidence of the South Shore Housing Action Coalition in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The South Shore Housing Action Coalition (SSHAC) is a diverse group of community organizations and committed individuals working collaboratively since 2010 to build awareness and facilitate action on the need for quality, safe and affordable housing in Lunenburg and Queens Counties in particular, and Nova Scotia in general.

There is a growing need to address the growing gap between household incomes and the rising cost of living, including energy costs. In 2016, SSHAC completed a housing needs assessment to support understanding of the housing needs in our communities. When asked what residents' concerns were about their housing for the next 5 years, household energy-related costs were identified as the top concern.

The most recent Census of Canada numbers also point to the serious and urgent nature of the need to address issues related to low income and poverty. According to the 2016 Census of Canada, 27.9% of all households are living with core housing need, indicating that their homes are inadequate, unsuitable and/or unaffordable. Among tenants, it's 48.6%. Additionally, 22.4% of households are at, or below the threshold for the Low Income Measure, After Tax. The program proposed by the Town of Bridgewater to address energy poverty will not only have a direct and profound impact on those households living with energy poverty, it will strengthen the whole community; when we all do better, we all do better!

The South Shore Housing Action Coalition is pleased to have been included as a partner in the development of the Town's proposed program. As a community partner, we have been included in conversation about the needs of our community, consulted on issues related to housing and invited to be part of the program as it moves forward. We have been inspired by the work the Town has done to bring all voices on this issue to the table!

During the past few months, the Town has facilitated connections between community stakeholders which has sparked new partnerships and deepened understanding of the challenges vulnerable populations in our community face. Its efforts to include those with lived experience of energy poverty has also started a conversation in our community and is building awareness about the challenges some of our residents face. This is important work. This is work that all communities can be doing, and Bridgewater is creating a process that will inspire others, not only within our region, but in communities across Canada.

Since 2012, the Town of Bridgewater has been an active member of the South Shore Housing Action Coalition and has demonstrated their ability to be change leaders with a vision for a healthier and more sustainability community through various initiatives. Their experience and success in engaging town residents, businesses and community stakeholders over the past few years to imagine Bridgewater differently has resulted in real and tangible community change. They have revitalized the downtown core, implemented a public transit system, engaged the community to develop an open spaces network plan, and have become a leader in energy sustainability planning through Energize Bridgewater. We are confident that they will continue to effectively partner and engage with community and provide strong leadership to address energy poverty through the proposed project.

SSHAC is fully prepared to support the efforts of the Town of Bridgewater to reduce energy poverty in whatever capacity we are able. We are pleased that the Town has identified this important issue to address. We are happy to work with the Town and other partners in an advisory capacity, and to support and facilitate the sharing of information about the project.

Making energy poverty a priority for action is a bold and powerful statement about the commitment of the Town of Bridgewater to its most vulnerable populations and speaks to the vision of the Town of Bridgewater as a diverse, thriving and healthy community. This project will directly improve housing conditions and affordability, promote active transportation, support the local economy through new investment opportunities, and improve the health of all residents of Bridgewater. Beyond these direct impacts, by prioritizing the needs of those living in energy poverty, the Town is not only sending a message to traditionally marginalized populations that their needs are a priority, they have also set the bar for other municipalities to follow suit.

We look forward to hearing that the Town of Bridgewater has been successful in their bid to receive the Smart Cities Challenge grant. An investment by the Smart Cities Challenge in this project is an investment first and foremost in the lives of those living with energy poverty in the Town; and an investment in the health and wellbeing of the population. We're *energized* and excited to work together!

Sincerely,

Nancy Green, Planning Team Member
South Shore Housing Action Coalition

SAINT MARY'S UNIVERSITY SINCE 1802
One University. One World. Yours.
FACULTY OF SCIENCE
MATH & COMPUTING SCIENCE

Department Office
T 902.420.5784
F 902.420.5035
E mcschair@smu.ca

DATE: February 4, 2019

TO: Leon de Vreede, MCIP, LPP
Sustainability Planner, Planning Department, Town of Bridgewater
60 Pleasant Street, Bridgewater, NS B4V 3X9
T: 902-541-4390 F: 902-543-6876
E: Leon.deVreede@bridgewater.ca

CC: Dr. Alexandre Pavlovski, President and CEO, Green Power Laboratories, Inc.

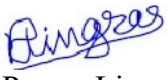
RE: Letter of Interest in the Smart City Project

Dear Mr. de Vreede: I want to thank you for the information related to the Smart City project proposed by the Town of Bridgewater. On behalf of the Computing and Data Analytics research group at Saint Mary's University, I am writing this letter as an expression of interest in the project. As a principal investigator, I have a led a team of research associates and students on a wide range of Research and Development projects in Data Science, Machine Learning and Artificial Intelligence. Over last three years, we have collaborated with more than fifteen companies and overseen R&D grants totaling more than $900,000. A detailed list of the research funding can be found at:

http://cs.smu.ca/~pawan/research/researchDevelopment.html

I have discussed the research project with Dr. Alexandre Pavlovski, President and CEO, Green Power Laboratories, Inc. (GPLI). We have collaborated on a number of green energy projects with GPLI. We believe that our research team, in collaborations with GPLI, can make significant contributions towards Big Data Management, Data Science, Machine Learning, and other aspects of Artificial Intelligence in your Smart City project.

If you need any additional information, please let me know. We look forward to working with you.



Pawan Lingras
Professor and Director, Computing and Data Analytics, Mathematics and Computing Science
Saint Mary's University, Halifax, Nova Scotia, Canada B3H 3C3.

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WWW: http://www.stmarys.ca

6 Alexander Bridgewater NS B4V 1G8

Ph: 530-3775 Fax: 530-3776 Web: ssgns.ca

February 23, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario
K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of The Ark and Support Services Group Ltd in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The Ark, being a non profit day program for persons with a disability, is a place where daily vocational training takes place. It is an environment that promotes confidence, skill development and possible work placements in the greater community. Approximately 55 plus participants use The Ark on a daily basis. (thearkns.ca)

Support Services Group Ltd. is a non profit program that services over 100 individuals living alone in the larger community with a disability. We help navigate the community with services such as budgeting, bill payment, food management, medical management, employment support and social engagement opportunities. (ssgns.ca)

I employed as a Coordinator for each program and see a wide variety of poverty concerns that I will touch base on in this letter.

Firstly, and most seriously, is our housing issues when helping individuals find an apartment. Many of our individuals need to or want to move out of long term care facilities that are forcing to close or have aging parents that can no longer care for them. Our mandate is to find affordable, accessible and safe housing that accommodates their needs. This is always a struggle. With a limited budget set by Department of Community Services our choices are few. Also apartment rentals continue to increase forcing a relocation plan which often means accepting lower standards and in some cases the lowest of standards you can imagine.

In 2013 we were fortunate enough to work with a landlord who built an apartment complex that would help support our crisis. Because of our type and quality of services we created an excellent working relationship between Landlord, Tenant and Coordinators and adequate housing became possible. Heating costs were easily affordable, apartments were very accessible and close to work placements and training facilities. As social services like these expand in our community further partnering with Landlords will be extremely essential. With The Town of Bridgewater's help accommodating contractors and with the acceptance of the Smart Cities Challenge we can develop a better model and system for further housing management.

Secondly, accessible internet, transportation, and fitness possibilities are all key to social services such as ours. Many job positing, community schedules, employment opportunities and housing possibilities are found through multi media platforms. Thanks to organizations like United Way who have supplied free phones, fitness passes to the local fitness centre, and in the future possible transportation passes have made a huge impact in the larger community. Many people I have serviced will feel like they have a new lease on life when they are able to swim at the pool twice weekly, or find a job. It improves overall confidence as well as mental and physical health. Many have told me how they feel valued as a contributing community member. United Way single handedly does this and more but for how long and how sustainable? It is the inclusion and validation that will bring our community together. This was very obvious during our focus groups. Participants left feeling relieved about sharing their struggles and had a wider view and further resources on how to approach their circumstance.

Finally, moving forward our organizations can help promote, enhance, navigate resources that currently exists in our community. Both Support Services Group and The Ark contributes daily in changing and guiding lives of community members. We are leaders in our industry of servicing clients in innovated ways. We are person centred and promote individuals and their abilities. We have access to many community resources offering a holistic approach. We also balance relationships with government organizations and non profits to find resources that helps find solutions. It is important that we look towards the future and how to respond to the voices of our community. The Town of Bridgewater has looked close at our programs and have gain further insight on poverty needs. We will continue to work together to discuss further planning by looking at what types of services that can help lower poverty with Bridgewater residents. Help the Town of Bridgewater continue to be an innovator and leader for other communities struggling with the same types of concerns. We aim to continue to collaborate and combine what is working and develop it into a system that is measurable, manageable and effective. A prospective that is undeniably a necessity in helping to build stronger communities. One that makes us feel safe, affordable and sustainable.

Sincerely Yours,

Tabatha Clements

Co-ordinator for Support Services Group Ltd

Co-ordinator for The Ark

902-541-0650

Mark Furey
Member of the Legislative Assembly
Lunenburg West

House of Assembly
Nova Scotia

February 28, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of the Honourable Mark Furey, MLA for the constituency of Lunenburg West, in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Nova Scotia is at the front lines of climate change and our actions have positioned us to become a leader on climate change in Canada. The Province has enacted legislation, policies and programs which have proved immensely successful. In 2007, Nova Scotia's Environmental Goals and Sustainable Prosperity Act imposed aggressive targets to reduce greenhouse gas emissions and promote renewable energy. Nova Scotia has now surpassed the federal government's target of reducing greenhouse gas emissions by 30% below 2005 levels. Nova Scotia is adding renewable energy to the grid, achieving its target of 25% of electricity from renewables in 2015, and we are on track to reach 40% by 2020. The Province is now developing a Cap-and-Trade Program to further reduce greenhouse gas emissions.

The impacts of climate change are felt most by those who are vulnerable, and often come in the form of households having difficulty heating their homes and paying for energy bills. The issue of energy poverty is severe in Bridgewater and is representative of challenges faced by communities across Nova Scotia. The Province has acted to relieve this energy burden through the provincially funded Home Warming Program, supporting widespread improvements to low income homes. This program is administered by Efficiency Nova Scotia, one of Bridgewater's core project partners. The Province is highly supportive of Bridgewater advancing efforts to support low-income households through an Energy Poverty Reduction Program.

The Town of Bridgewater is a key driver of the momentum behind the Province's status as a climate change leader. Bridgewater's Town council has been effective at prioritizing social and economic outcomes in its pursuit of climate change policy. Bridgewater's proposed Coordinated Access System which will connect underserved populations to a wide range of support services is a signifier of social prioritization. The Town's broad engagement of residents has demonstrated that its Smart Cities Challenge project will be owned by the community and ensure its long-term success. Bridgewater's Energy

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Mark Furey
Member of the Legislative Assembly
Lunenburg West

House of Assembly
Nova Scotia

Poverty Reduction Program addresses the needs of those who would otherwise be left behind by energy transition and instead turns them into beneficiaries.

The Province of Nova Scotia is proud to support the Town of Bridgewater, as they take their innovative program to the national stage to be adopted by communities nation-wide. We are confident that Bridgewater's position as a Smart Cities Challenge finalist will have a positive impact on communities across Nova Scotia and help our Province to continue to lead the way.

Yours truly,

Mark Furey MLA
Lunenburg West

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THE PREMIER
HALIFAX, NOVA SCOTIA
B3J 2T3

February 28, 2019

Privy Council Office
Attention: Impact and Innovation Unit
85 Sparks Street, Room 1000
Ottawa, ON K1A 0A3

Re: Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury:

The Province of Nova Scotia is pleased to endorse the Town of Bridgewater's Energy Poverty Reduction Program finalist application in the Smart Cities Challenge.

The Town of Bridgewater has consistently demonstrated its ability to implement innovative community-based initiatives on diverse topics such as food security, housing, and transportation. The Town's approach to developing and implementing community-based projects is grounded in extensive consultation and building strong partnerships. Their work aligns with our government's broader provincial initiatives for safe and connected communities.

Within 10 years, the Town aims to lift one in five residents out of energy poverty. This outcome-driven approach to the issue has emerged through successive rounds of community engagement on energy, housing, affordability, quality of life and transportation. The Town is also committed to the better use of data and connected technologies to implement systemic solutions.

I am confident in Bridgewater's ability to successfully implement this transformative project and believe they are a strong, worthy contender in the final round of the Smart Cities Challenge.

Sincerely,

Honourable Stephen McNeil, M.L.A.
Premier of Nova Scotia

The Salvation Army
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February 20, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of The Salvation Army, Bridgewater, NS, in the Town of Bridgewater to implement its Energy Poverty Reduction program as a Smart Cities Challenge finalist.

The Salvation Army is a not for profit organization and has been serving the residents of Lunenburg County since 1891. A part of the mission of our Community and Family Services is to try and help meet the human needs of those in our area. We do that in practical ways, and as much as we are able, to help those who find themselves in difficult situations and may not have anywhere else to turn. Some of the ways that we help outside of Christmas are with food, transportation, rent, medical, clothing, heating assistance.

The Salvation Army in Bridgewater receives request for help from families with heating on a regular basis. There may be are a number of reasons, as I see it that contributes to the problem.

- Many people are living below the poverty line and cannot afford the high cost to heat their homes (whether they rent, or own).
- Most energy efficient rental accommodations are out of reach for those on low income
- Many low income people do not own their own homes and are forced to rent accommodations that are not energy efficient. This exasperates the problem for those on low income because often much of their resources go to accommodations.

The effects of energy poverty are very stressful on families which often have long term consequences. I believe that an energy poverty reduction program will allow clients to have a more long term solution to their energy needs instead of a band aid solution that ourselves and many other organizations are providing now.

If clients are not forced to spend the majority of their income on housing, it will give them more money to spend on the other necessities of life such as healthy food. This will lead to a healthier population and longer life expectance. It will also help relieve some of the day to day stress factors that many face today.

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The Town of Bridgewater has worked hard on its Smart Cities Challenge application. They have;

- Met with the people most affected to learn from them firsthand what some of the issues are
- Have met with community organizations such as The Salvation Army and others to gather information of those on the front line helping those in need to learn of what efforts those organizations are doing to help
- Have held a number of workshops and town meetings to gather information and have had discussions with stakeholders as well to keep those involved up to date on the progress of what is happening
- Have completed an Energy Poverty Survey of organizations seeking their experience dealing with people with energy poverty
- Have conducted surveys with other participants of the town to glean their understanding of energy poverty

Currently many people affected by energy poverty do not know what resources are available and we or other organizations only see them when they are in a crisis. With a coordinated system in place people will be made aware that there are programs available that are proactive instead of reactive. The Bridgewater Smart Cities program will work with those affected to coordinate access to programs and empower those that are at risk of energy poverty before they are negatively affected.

I feel that a successful plan by the town of Bridgewater can be a model used by other towns and cities across Canada.

A community-wide energy poverty initiative will have great benefits for the community and for its residents.

- Families will be able to meet their energy needs and will not need to choose between heating their homes or purchasing other basic necessities
- Families will be able to direct their income to eating healthier
- I feel that when families are able to adequately heat their homes, it will lead to healthier people and less drain on our medical system

The Salvation Army in Bridgewater is pleased to support the town of Bridgewater in any way it can in addressing the problem of Energy Poverty and we are also willing to work with the town in any way that we can to help in the process.

If you have any questions, please do not hesitate to be in contact with me.

_____
Wilson Sutton
Major
Copy: File

February 28, 2019

Privy Council Office
ATTENTION: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, ON K1A 0A3

RE: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

We are writing this letter to show support of the Bridgewater ERP Energy Management Information System Concept for the Town of Bridgewater, Nova Scotia.

As the Town is a long-term client of ours, we have worked on many software improvement and software implementation projects together. We feel that this project is beneficial to the community, and as a Canadian company we are happy to see clients like the Town of Bridgewater seek ways to improve the socio-economic conditions of their stakeholders, including reducing energy poverty. We look forward to receiving additional information about this project and determining how we may be involved.

Please note that TownSuite Municipal Software is not an expert in EMIS, rather we make and maintain municipal software that focuses on finance, asset and work management, land management, recreation management, payroll, reporting and electronic services. We do however, see parts of the EMIS concept that could be beneficial to both the Town and even other municipalities who may want to adapt a similar process in the future. This includes improving some of our interfaces and dashboards to allow clients to see more insightful metrics regarding energy usage. Having additional metrics available would also help give the Town access to make more intelligent decisions regarding energy usage and hopefully design a system that could be useable by other municipalities as they take on more environmental responsibility in the years to come. Displaying visual metrics in GIS is also rich in value as it provides a view of complicated data that could be difficult for the average person to view and analyze.

With that said; we would like it noted that the scope of this project is quite ambitious and as the Town's ERP, any potential participation on our part would be limited to portions we believe could benefit our municipal clients over the long term. Some of that work could be included in an existing TownSuite Municipal Software product subscription, or through the implementation of additional TownSuite Municipal Software products. Any mutually accepted items outside of our product scope would be subject to additional cost.

For further discussion, or if you have any questions please feel free to contact Sarah Hobbs at 1-800-408-3313 X 5033 or by email at sarah.hobbs@townsuite.com. She can coordinate a meeting with any individuals that would need to be involved from TownSuite.

Sincerely,

Andrew Whey
CEO

P. O. Box 241 Gander NL A1V 1W6 Canada
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www.townsuite.com

United Way
Lunenburg County

February 19, 2019

Privy Council Office
ATTN: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for the Town of Bridgewater's Smart Cities Challenge Finalist Application

To whom it may concern,

The United Way of Lunenburg County has complete confidence in the Town of Bridgwater's abilities to fulfil all the goals as outlined in their Smart Cities Challenge application. They have a strong and capable management and implementation team, positive ties to our community and have the full support of their Municipal Council.

As the service centre for the South Shore of Nova Scotia the Town of Bridgewater has many amenities that people find appealing. This includes that the fact that the town is small enough to be walkable, it hosts most of the business, shopping and professional services, has a wide range of good recreational facilities, has a variety of housing options and a newly introduced public transit. Because of this the community attracts many people from a lower socioeconomic scale. In fact the Town of Bridgewater has the lowest average household income in Lunenburg County and according to a recent South Shore Housing Action Coalition (SSHAC) report 27.9% of home owners and 48.6% of renters find themselves in core housing need. The core housing needs of residents in Bridgewater is the highest in Lunenburg County.

The United Way of Lunenburg County is an organization that operates several local programs and financially supports local agencies that help support people living in poverty, low income and marginalized populations. The majority of our community investments are to provide FREE opportunities and material resources to people that would struggle or be unable to pay for them themselves. Some examples would include our Bikes for Kids program, youth programs, Coats for Kids – Teens and Adults Too, our iPhone and Laptop program, recreation passes for swimming and skating, quality used sports equipment, access to sports, recreation and cultural activities for kids and youth, transit, day camps and organizations that provide money to help people who struggle to pay their power or heating bills. In fact, our local investment in one such

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agency represents 35% of their annual budget and 60% of their budget is used to help people with their energy and heating bills.

People living with low income and in inadequate housing experience several stressors that reduces their ability to enjoy a good quality of life and health. As the Town of Bridgewater implements the programs outlined in their Smart Cities Challenge plan and focuses on solving the energy needs of our communities most vulnerable residents it is our expectation that these stressors will be reduced and we as an organization can redirect financial and human resources to help individuals and families improve other aspects of their lives.

The United Way of Lunenburg County has a strong working relationship with Town of Bridgewater and all those agencies and government offices that support low income people in our community. We used these positive relationships to help the Town of Bridgewater engage these agencies and the clients that they serve. We feel that the proposed Coordinated Access System will help people get quick access to help and will efficiently provide additional access to a wide variety of programs and services that will benefit their lives.

If you have any questions or require additional information, please do not hesitate to ask.

Sincerely yours,

Michael Graves
Coordinator
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United Way Lunenburg County
Improving lives locally.
www.lunenburgcounty.unitedway.ca

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