



**BETTER
HOMES
NEIGHBOURHOOD
ENERGY PROJECT
2019-2020
FINAL
REPORT**

REPORT CONTENT

Project Summary	3
Project Details	5
THE WHERE: ABOUT THE NEIGHBORHOOD	6
THE WHO: ABOUT THE PARTICIPANTS	7
THE HOW: ABOUT THE PROCESS	8
THE COST: BUDGET BREAKDOWN	10
THE RESULTS.....	10
BHNEP Participants Energy Consumption Data	11
Energy Efficiency Program Participation Data.....	12
BHNEP Participants vs. Non-Participant Neighbors	15
MOVING FORWARD: RECOMMENDATIONS	17
COVID-19 IMPACTS	17
PROGRAM STAFF APPRECIATION	18

Project Summary

Neighbourhood Level Engagement: Home Energy Efficiency

The [City of Charlottetown](#) and [efficiencyPEI](#) partnered to develop a neighbourhood-level energy efficiency engagement program tailored to suit residents of the municipality of Charlottetown in Prince Edward Island. A key motivation for the program was an observation by municipal and provincial government staff that although many residents were aware of efficiencyPEI and the home energy rebates available to them, many were still experiencing barriers to navigating and participating in those programs. The Better Homes Neighbourhood Energy Project (BHNEP) was an opportunity to establish a two-way communication channel with homeowners to help government staff better understand what the barriers were and to provide information and assistance to optimize their me energy upgrades.

Project Intentions

- Reduce barriers & enhance motivations to participate in existing energy efficiency programs
- Educate and engage Charlottetown residents on the topic of home energy efficiency
- Build community around a shared goal of creating a more sustainable neighbourhood
- Create a scalable and reproduceable neighborhood engagement project model
- Work toward Charlottetown Community Energy Plan objectives. Specifically, ***“To significantly improve energy efficiency in buildings”*** with a specific goal within that objective of ***“Increasing collaboration with efficiencyPEI and the Province of PEI to encourage incentives for GHG reduction measures and technologies”***

Ultimately, the goal of the Better Homes Neighbourhood Energy Project is to increase City of Charlottetown residents’ uptake in existing energy efficiency programs offered by efficiencyPEI and in doing so reduce greenhouse gas emissions from the residential sector.



Project Results

The Better Homes Neighbourhood Energy Project developed by the City of Charlottetown and efficiencyPEI was successful at educating and engaging participants on the topic of home energy efficiency and in increasing uptake in existing home energy efficiency programs offered by efficiencyPEI.

- Households who participated in the Better Homes Neighbourhood Energy Project were **2X** more likely to access efficiencyPEI's home energy efficiency programs in comparison to households who did not participate in the project.
- Participants in the Better Homes Neighbourhood Energy Project were **4X** more likely than non-participants to access efficiencyPEI's [Home Insulation Rebates](#) and improve their homes overall energy efficiency.
- **60%** increase in participants reporting a **high** level of energy efficiency knowledge when comparing participant pre survey (15%) and post survey (75%) results.
- The community building aspects of the project were impacted by the COVID-19 pandemic, but survey results found that **73% - 75%** of participants were interested in more opportunities to socialize with neighbours and community meetings. Participants reported having discussions with neighbours about the Better Homes Neighbourhood Energy Project and home energy efficiency in general.

It is recommended that the Better Homes Neighbourhood Energy Project continues in the City of Charlottetown and that project delivery is expanded into other municipalities in Prince Edward Island. This project model has the potential to be used to educate and motivate households to participate in other sustainability programs available to them through their municipal and/or provincial governments.

Project Details

Participating households received:

- [An energy audit](#)
- A one-on-one consultation with an energy consultant to review the results of their energy audit and discuss options for improving energy efficiency for their home. They also received free
- Energy upgrades* including: air sealing, low flow showerheads, LED light bulbs, programmable thermostats, and a voucher for a home heating system cleaning.

There was no charge to participate in the program and all of these energy efficiency upgrades and services were provided free of charge.

*These home energy upgrades are typically offered through efficiencyPEI's [Winter Warming Rebate](#)

Participating households provided:

- Pre and post survey feedback
- Pre and post project home energy data from their home energy providers

Access to the participants home energy data and their feedback was crucial for the project team to determine the success of the program and to gain insight into the barriers and motivations that the homeowners had related to home energy upgrades. Participants provided written consent for the City of Charlottetown's energy coordinator to access their home energy data directly from the provider when they registered for the program.

WHAT IS THE DIFFERENCE?

Table 1 BHNEP Benefits

	BHNEP Participant	Non-Participant
Cost of home energy audit	FREE	\$99+hst
One on one consultation to review home energy audit results	✓	✗
<i>Winter Warming</i> Energy upgrades: air sealing, low flow showerheads, LED lightbulbs, Programmable thermostats, home heating system cleaning voucher	✓	✗

THE WHERE: ABOUT THE NEIGHBOURHOOD

A sub-section of the Sherwood community, between Maple Avenue and Mount Edward Road – Oak Drive and Centennial Drive in Charlottetown was selected for the BHNEP pilot. This area of the city was chosen because of resident’s high level of participation in an energy-related public survey during Community Energy Plan consultations, and a low-level of participation in efficiencyPEI programs as of the program start date.

The neighbourhood consists of pre-dominantly older (est. 1970s/1980s) single-family homes. The project team theorized that the housing stock in this area would be ripe for home energy upgrades and that could maximize the impact of offering the pilot program in that area of the City.



THE WHO: ABOUT THE PARTICIPANTS

A total of 41 households registered to participate in the program. They were split in to two intakes with one group starting the program in the Fall of 2019 and the other group starting in the Winter of 2020. The project team made the decision to split registrants into two groups to manage each smaller group more efficiently. The participants were given the opportunity to indicate their preference (Fall or Winter) in the pre-survey.

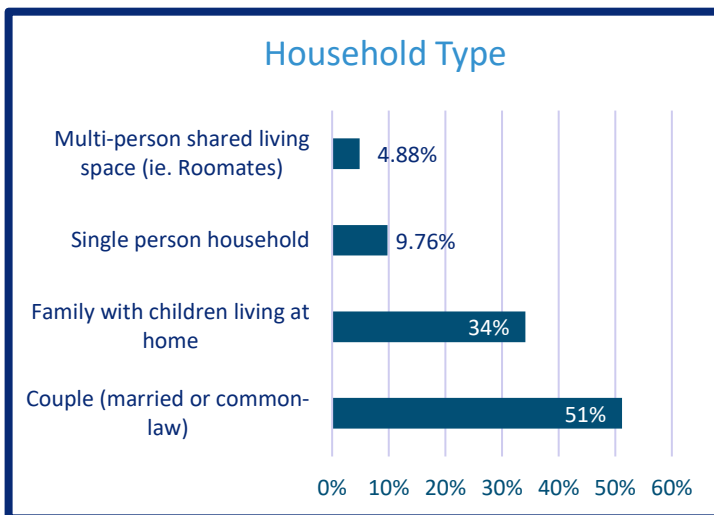
Participant Motivations

- **64%** of participants reported that their #1 motivation for participating was Financial - to save money on home energy costs.
- **49%** of participants reported that their #2 motivation for participating was Environmental – to reduce GHG emissions

Home Characteristics

- **1815 sq.ft** = Average square footage of Home
- **47 years** = Average age of home
- **95%** (38/41) of participants reported oil as their primary home energy source (HES)
- **29%** (11/41) of participants reported having a heat pump in addition to their primary HES
- **1** participant reported having propane as their primary home energy source

Table 2 Participant Household Type



THE HOW: ABOUT THE PROCESS

ENGAGING WITH PARTICIPANTS

1. **Direct Mail-Out:** Information & invitation to info session was sent to all households in the selected sub-section of the neighbourhood
2. **Information Session:** The information session included a brief presentation on home energy-efficiency basics and all existing rebate and incentive programs, a description of the Better Homes Neighbourhood Energy Project, and a Q+A period.



At the kick-off event a large aerial print out of the selected neighbourhood was posted on the wall at the event and attendees were invited to place a sticker on their property. This was intended to facilitate conversations among neighbours at the event and for staff to have a visual representation of which homeowners in the neighbourhood attended.

When the participants were finalized, they were notified about which intake group they would be participating in and were sent a 'What to Expect' email, outlining the steps of the program. Each participant was given a lawn sign to indicate their participation in the program and create a buzz in the community. The intention of the lawn sign was to further the reach of the program to others in the community who were not participating and ideally increase the uptake in home energy efficiency upgrades in the entire neighbourhood.



PROJECT DELIVERABLES:

- 1) **Home energy audits** – efficiencyPEI works directly with companies like [HomeSol](#) to deliver home energy audits to Island residents. The first step for participants was to receive a home energy audit to determine the current energy efficiency of their home.
- 2) **One-on-one energy consultation** – efficiencyPEI’s staff met with each participant to review the results of their home energy audit. This process was used as an opportunity to translate the technicalities of the home energy audit report with the homeowner. The energy consultant also used this opportunity to educate homeowners about the fundamentals of the ‘energy pyramid’ and to help them determine the energy upgrades that would be the most impactful on their home’s overall energy efficiency. They were also given extra support if needed to apply for any of efficiencyPEI’s energy upgrade rebate/incentive programs.
- 3) **Free home energy upgrades**- the energy upgrades that were included as part of the program included: air sealing (caulking around drafty windows, weatherstripping around doors), the installation of low flow showerheads, LED light bulbs, programmable thermostats, and a voucher for a home heating system cleaning. These upgrades were installed following the initial home energy audit.
- 4) **Post-Survey**- Once the audits, consultation, and free upgrades were complete participants were given their post-survey to complete. The feedback from this survey was used to help determine the success of certain aspects of the program.
- 5) **Project Wrap-up**- This element of the project was originally intended to be a community building event such as a block party or BBQ but due to COVID-19 restrictions in place at the time this was not a possibility. Instead, the Mayor of Charlottetown and program staff from efficiencyPEI and the City of Charlottetown did an ‘EV parade’ through the neighbourhood, stopping at each home to deliver branded sugar cookies and some efficiencyPEI and City of Charlottetown swag.

PROJECT TIMELINE:

July/August 2019 – Project approvals and planning stage

September 2019 – Direct mail-out to residents in selected neighbourhood

October 2019 – Information session & registration (pre-survey submission)

November 2019 – All participants are contacted. Fall cohort (20 households) begins program.

February 2020 – Fall cohort program mostly complete. Winter cohort (21 households) begins program.

March 2020 –COVID-19 Pandemic Lockdown. Fall cohort complete (post survey submission period). Winter cohort paused (all operations on hold).

May/June 2020 – Winter cohort program resumed.

September 2020 – Winter cohort complete (post-survey submission period).

October 2020 – Project wrap-up: EV parade through neighborhood with prizes.

THE COST: BUDGET BREAKDOWN

The project was cost shared between the City of Charlottetown and efficiencyPEI.

Table 3 Project Budget

Item	Cost	Funded by
Home Energy Audits	\$99+hst/Participant \$4,059.00	City of Charlottetown
Included Energy Upgrades*	\$400/Participant \$16,400.00	efficiencyPEI
Lawn Signs	\$400.00	City of Charlottetown
Information Session	\$500.00	efficiencyPEI /City of Charlottetown
Wrap-up Community Event	\$200.00	efficiencyPEI /City of Charlottetown
Total	\$21,559.00	Total costs shared between partners

*based on an estimated monetary value of the [Winter Warming Rebate program](#)

The most substantive contributions from each of the partners was in-kind staff time. Especially that of the energy coordinators who spent time with each homeowner reviewing their energy audit and recommending the highest-impact energy upgrades for their home.

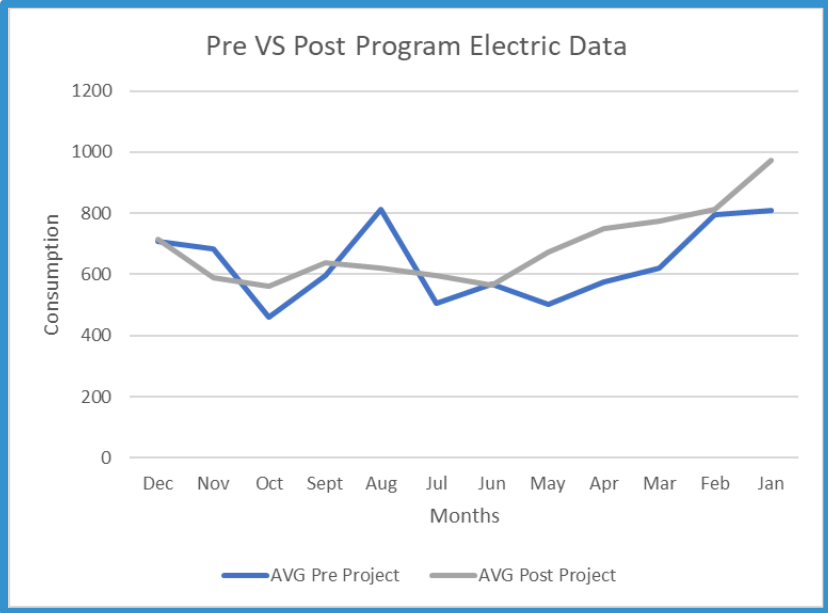
THE RESULTS

City of Charlottetown and efficiencyPEI staff determined the project was successful at achieving many of the project intentions outlined at the beginning of the pilot. The COVID-19 pandemic and coinciding restrictions had an impact on the project timeline and plans for community building elements that were originally planned. Efforts to determine the greenhouse gas statistics based on participant's energy data are ongoing and it is expected that this will be a multi-year process to understand the full impact. The energy data collected so far may have been impacted by the COVID-19 pandemic and coinciding lifestyle changes for participants (ie. influx of individuals working from home). Data comparing the BHNEP participants with all other efficiencyPEI home energy efficiency program participants, as well as with a very similar comparison group of households from a different sub-section in the same neighbourhood was used to determine the effectiveness of the BHNEP program model. Review and comparison of the participants pre and post survey data was also considered when determining the overall success of the pilot project.

BHNEP Participants Energy Consumption Data

Participants in the program consented to providing their energy consumption data from both their fuel provider and the electric utility. The purpose of collecting this data was to allow project organizers to determine the greenhouse gas reduction impacts of the project.

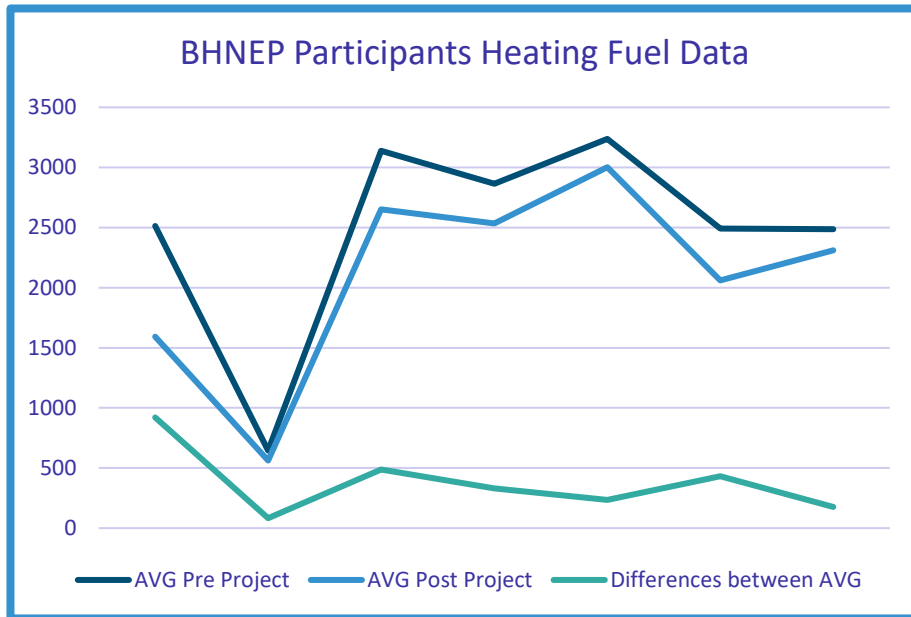
Table 4 Participant’s Pre vs Post Program Electric Data



There was not a clear reduction in electricity use when comparing participant’s pre and post program data. There are a few possible reasons for this finding:

1. The installation of energy efficient equipment such as heat pumps increase a home’s electricity demand because they are powered by electricity.
2. Due to COVID-19, in 2020 many homeowners began working and learning from home meaning they were likely increasing typical electricity demand due to running home office and learning equipment, and simply from being in the home more often.
3. This data doesn’t factor in temperature differences from year to year which could also impact electricity demand due to space heating.

Table 5 Participant's Pre vs Post Program Heating Fuel Data



There was a slight reduction in average heating fuel (oil) consumption for participants when their pre-program energy data was compared with their post-program energy data. This is a promising result, especially given that temperature data was not factored into this comparison, and that lifestyle change for participants due to the COVID-19 pandemic likely resulted in more time at home. To better understand the true greenhouse gas reduction potential of this program, the participant's average heating fuel data could be tracked on an annual basis for 3-5 years and compared to their pre-participation data. Average temperature data or number of extreme cold days could also be factored into the comparison.

Collecting each individual homeowner's fuel consumption data from the various home energy providers was a somewhat arduous process, even with the pre-signed consent form from participants. If this program were to be offered again on a larger scale, or by numerous municipalities, options for a more streamlined process for this data collection should be considered.

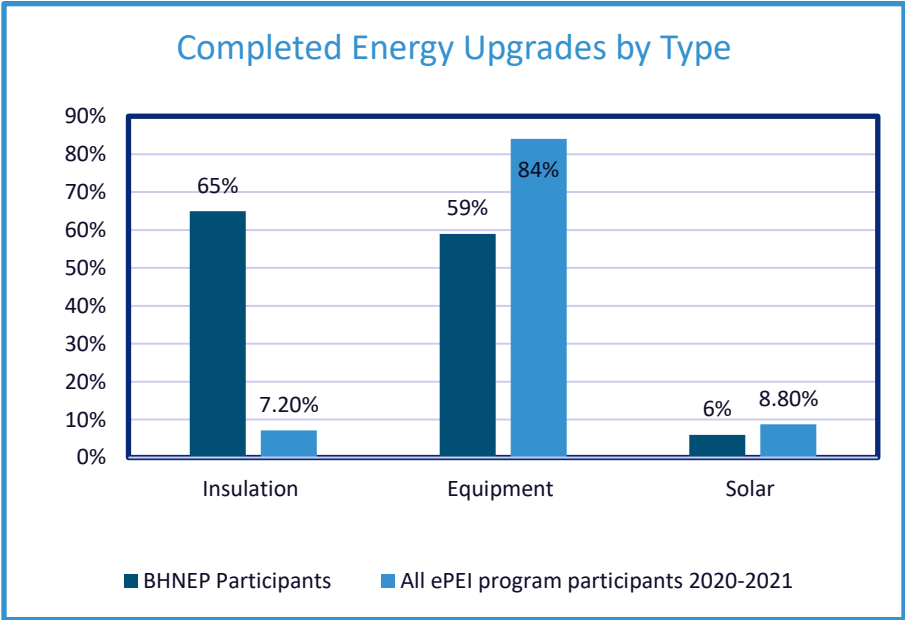
Overall energy efficiency program participation among participants

- **44%** of BHNEP pilot program participants have completed additional energy efficiency upgrades to their home since completing the program.
- There have been **\$45,153.00** in energy efficiency rebates claimed for BHNEP pilot participants for the 2019/2020 time-period.

Energy Efficiency Program Participation Data

The BHNEP pilot ended in the Fall of 2020, with many of the energy audits and consultations taking place in the Winter and Spring of 2020. The energy program participation data used for the charts below is from the time of program initiation in 2019 to December 2021 when the data was collected.

Table 5 Completed Energy Upgrades (BHNEP vs. ALL)

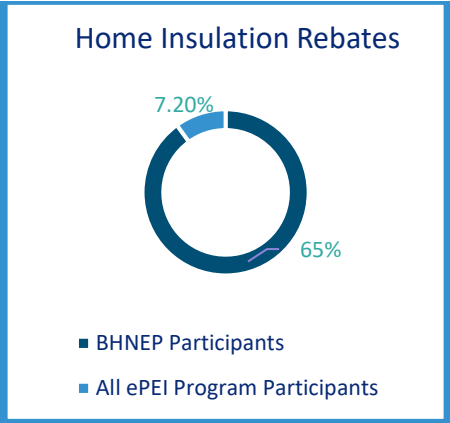


One of the most promising results of the pilot project were the findings comparing the type of energy upgrades that BHNEP participants completed to the types of energy upgrades that all other efficiencyPEI program participants across PEI completed within the same time-period. Specifically, insulation type energy upgrades accessed through efficiencyPEI’s Home Insulation Rebate program.

65% of BHNEP participants who followed through with energy upgrades accessed efficiencyPEI’s Home Insulation Rebate Program. In comparison, only **7%** of all other efficiencyPEI program participants across PEI accessed efficiencyPEI’s Home Insulation Rebate program.

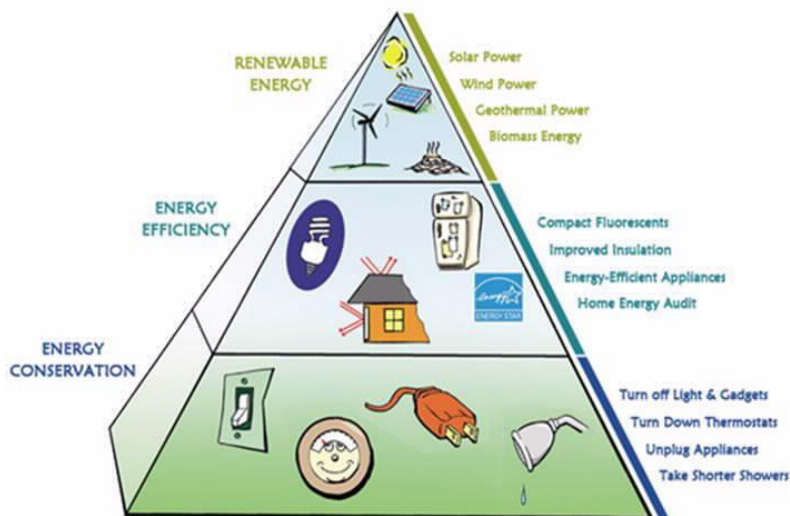
This is significant because it indicates that the targeted education provided at the initial information session, energy audit, and the one-on-one session with an energy consultant influenced the BHNEP participants and the types of upgrades they chose to focus on.

Table 6 Home Insulation Rebates



A key component of all energy audits and of the energy consultations included as part of the Better Homes Neighbourhood Energy Program was emphasis on the importance of improving the building envelope through improved insulation and air sealing to reduce overall energy consumption **before** upgrading home energy equipment and switching to renewables. This message is synonymous with the **Smart Energy Living Pyramid** of home energy efficiency. When considering home energy efficiency, homeowners should always start at the bottom of the pyramid and work their way up.

The Smart Energy Living Pyramid



Source: National Energy Education Development Project Learning_Conserving Teacher Guide

Home energy efficiency upgrades are always a step in the right direction for homeowners, but the type of upgrades and order of installation is crucial in creating a truly efficient home. A home energy audit is not required to receive rebates for energy efficient equipment upgrades including heat pumps and homeowners may opt for efficient equipment rebates before ensuring the home itself is efficient and not losing heat due to a lack of insulation, especially in key areas like the attic and basement. If the building envelope of the home is not efficient homeowners will continue to waste energy, reduce financial benefits, and GHG reductions, even if the energy source and equipment is more efficient. It is also worth noting that insulation/building envelope improvements have a long and effective lifespan, whereas energy equipment such as heat pumps require maintenance and replacement.

The results of the project clearly demonstrate that this message was heard by participants:

- **84%** of ALL efficiencyPEI program rebates were for energy equipment upgrades only.
- **59%** of BHNEP participants efficiencyPEI program rebates were for energy equipment upgrades.
 - **29%** equipment + insulation upgrades

- **30%** equipment upgrades only.

Responses from participants in the post-survey point to the value of the energy audit and post-audit consultation with an energy consultant:

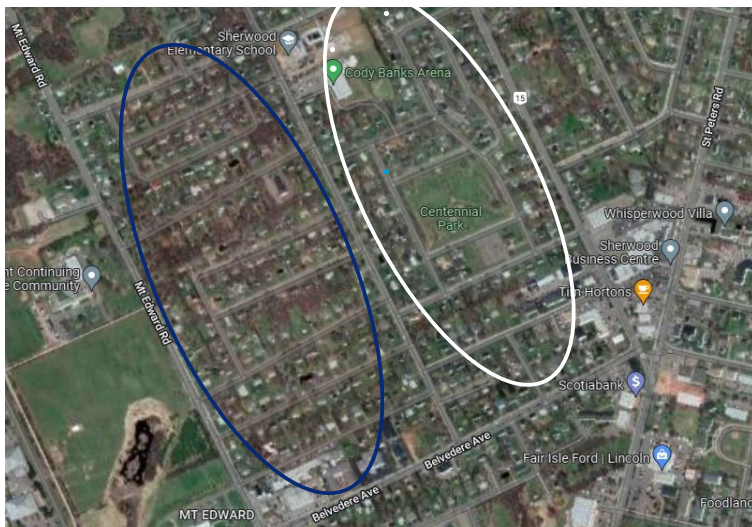
What did you find beneficial about the Better Homes Neighbourhood Energy Project Home Energy Audit and post-audit consultation with efficiencyPEI staff? Please be as specific and detailed as possible in your response.

Participant response: “The staff was very friendly and helpful. The inspection showed that I only had about 20% of insulation that should be in it the attic. I have since had [local energy solutions contractor] install more insulation to meet what was suggested by the audit. I can now see that it will make our house cooler for summer and easier to heat this winter. Thank you for making the audit available.”

Participant response: “I got a good indication of what needs to be done to bring greater energy efficiency to our home....specific steps like upgrading the attic insulation, getting a heat pump for auxiliary heating/cooling. In other words...a feasible game plan.”

BNHEP Participants VS. Non-Participant Neighbours

Program organizers went a step further in determining the impact of the Better Homes Neighbourhood Energy Program model on participant homeowner’s behavior by running a data comparison with the program participants vs. a set of 40 random addresses selected from a subsection of a similar neighborhood in Sherwood, in other words their Non-Participant Neighbours.

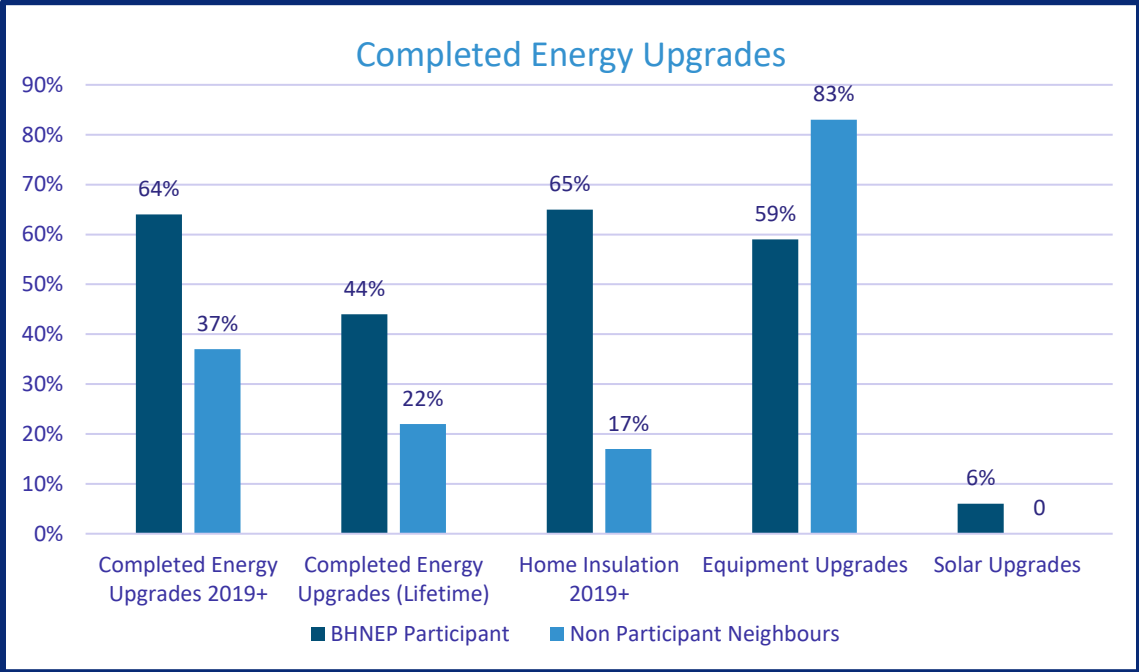


This aerial image shows the Better Homes Neighborhood within the dark blue oval. The area within the white oval shape is the non-participant neighborhood that was used for the comparison.

The results of this comparison clearly demonstrate the success of the Better Homes Neighbourhood Energy Program in boosting the uptake of participation in existing efficiencyPEI home energy efficiency programs, even when many other variables among comparative groups are similar.

- **The BHNEP participants were 2X more likely to access efficiencyPEI energy efficiency programs in comparison to their neighbours who did not go through the program.**
 - BHNEP Participants = 44% uptake in all efficiencyPEI programs (2019+)
 - Non-Participant Neighbours = 20% uptake in all efficiencyPEI programs (2019+)
- **The BHNEP participants were 4X more to access efficiencyPEI’s Home Insulation Rebates than their neighbours who did not go through the program.**
 - BHNEP Participants = 65% uptake in efficiencyPEI’s Home Insulation Rebates (2019+)
 - Non-Participant Neighbours = 17% uptake in efficiencyPEI’s Home Insulation Rebates (2019+)

Table 7 Completed Energy Upgrades (BHNEP vs. Non-Participant Neighbours)



It is also worth noting that although the program emphasizes the importance of home insulation and improvements to the home’s building envelope, home energy equipment rebates, including solar panels are also encouraged when appropriate and **BHNEP participants also demonstrated higher uptake in renewable energy systems (6%) in comparison to their non-participant neighbours (0).**

MOVING FORWARD: RECOMMENDATIONS

The Better Homes Neighbourhood Energy Project was successful despite challenges and the promising results of this pilot can be used as a learning tool and program model for future education, action motivation, and community-building projects on the topic of home energy efficiency and beyond.

The project organizing team consisting of staff and managers at the City of Charlottetown and efficiencyPEI have compiled the following recommendations based on the results of this project:

1. The City of Charlottetown should continue partner with efficiencyPEI to deliver the Better Homes Neighbourhood Energy Project to neighbourhoods in Charlottetown.
2. efficiencyPEI consider incorporating the one-on-one home energy consultation as an optional service to accompany the existing Home Energy Audit Program due to its impact on the homeowner's overall energy efficiency knowledge and increased program uptake.
3. The City of Charlottetown consider applying this neighbourhood level engagement project model to additional program themes such as: home flood protection and ecological property maintenance.
4. The Final Report for the Better Homes Neighbourhood Energy Project is shared with the Federation of Canadian Municipalities and specific municipalities located across Prince Edward Island.

COVID-19 IMPACTS

The COVID-19 pandemic significantly impacted all sectors of industry, government, and society in the Winter and Spring of 2020. Regular operations of non-essential services offered with the City of Charlottetown and the Government of Prince Edward Island, including efficiencyPEI, were disrupted due to the Public Health restrictions in place to keep all Islanders safe. The Better Homes Neighborhood Energy project experienced delays in **program delivery** especially in home services such as the home energy audits, one on one home energy consultations, and the installation of free home energy upgrades. **Energy contractor service delivery** was impacted due to labor shortages and supply chain issues, and this may have affected homeowner's ability to have their home energy upgrades completed. **Communication** among participants and City of Charlottetown and efficiencyPEI staff was also affected due to changes in staff working set-up, and general re-prioritization of some staff files due to the pandemic. The initial project scope included additional **community building** elements such as a neighbourhood block party and additional in-person energy efficiency demonstrations and info sessions which were not able to be delivered. Participants and

other households in the neighbourhood were socializing less overall due to the pandemic and that may have diminished some of the potential community building and word-of-mouth influence of the project during this time-period as well.

PROGRAM INSPIRATION

This program mimics the design of the SNAP ([Sustainability Neighbourhood Action Program](#)) offered in Ontario. SNAP has proven effective in increasing uptake for sustainability improvements and in incentive programs by providing direct support and by engaging residents on a neighbourhood level.

STAFF APPRECIATION

This project was made possible through ongoing collaboration across different levels of government serving residents of Prince Edward Island. The City of Charlottetown and efficiencyPEI have partnered on various energy efficiency engagement initiatives over the last number of years and the Better Homes Neighbourhood Energy Project was developed in direct response to the insight gained by staff participating in these various initiatives. Staff and Management from both organizations contributed their creativity, project development & management skills, and in-kind time to make this project a success.

Thank you to the staff and Energy Advisors at HomeSol for coordinating with the project team and completing the energy audits for participants.

