



# Roadmap to Engagement

**APRIL 2022**



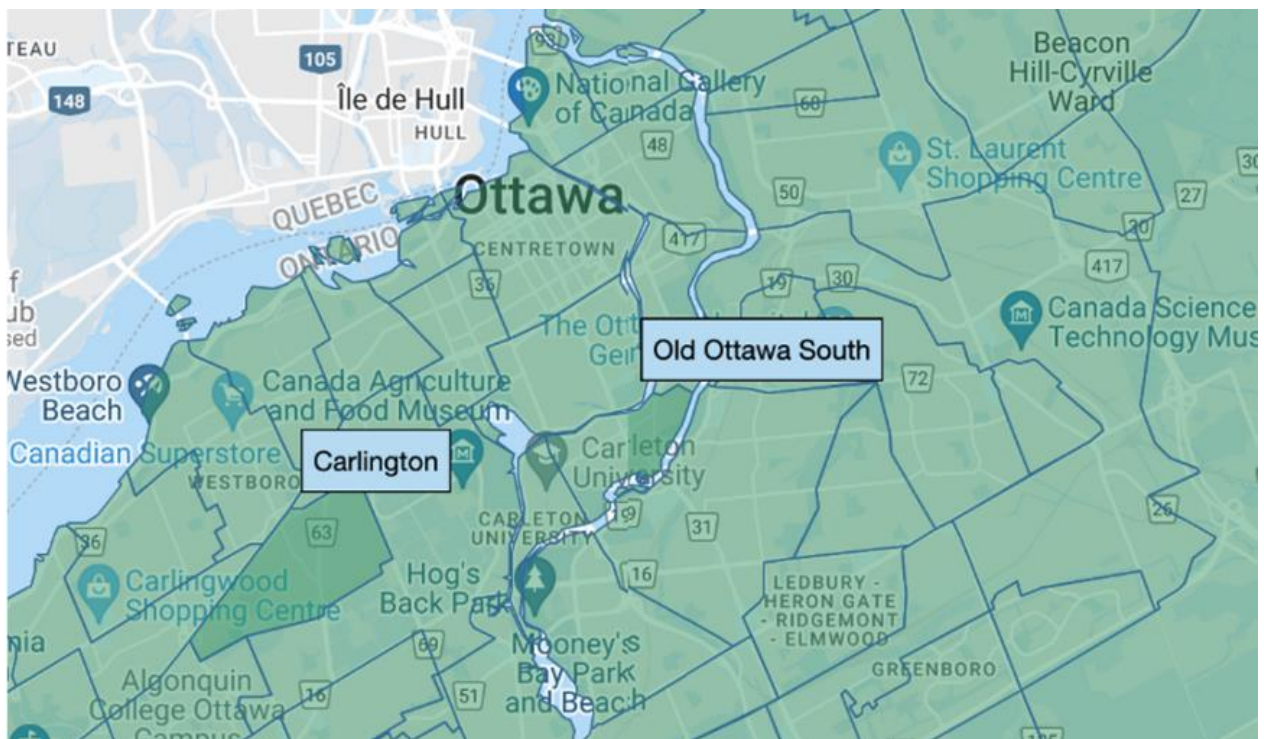
**envirocentre**

# Future Homes Ottawa Roadmap

The Futures Home Ottawa pilot project is Phase One of a three-phased residential deep retrofit initiative. The program was designed and delivered by Ottawa-based environmental not-for-profit EnviroCentre, in partnership with the Ottawa Energy Collective and funded by the Ottawa Climate Action Fund. The Future Homes Ottawa Pilot Phase One ran between May 2021 and March 2022.

## Towards the Low-Emission Communities of the Future

The goal of the pilot was to build local capacity for the mass residential retrofit project that Ottawa will need to meet our emissions reduction targets. Specifically, the project aimed to develop some key homeowner support tools, and to test communications and outreach approaches to mobilize community engagement and participation in deep home retrofits in two Ottawa neighbourhoods: Carlington and Old Ottawa South.



Map courtesy of the Ottawa Neighbourhood Study ([www.neighbourhoodstudy.ca](http://www.neighbourhoodstudy.ca))

In Ottawa, 18% of the emissions reductions required to reach net zero by 2050 will come from residential retrofits that reduce energy consumption. To achieve this target, 98% of existing homes must undergo a deep retrofit by 2040. That is around 327,000 homes, or roughly 20,000 homes per year.

If tomorrow's low emissions communities are to become a reality, we need to act now. The Future Homes Ottawa pilot laid the groundwork by testing neighbourhood engagement strategies and homeowner support, developing tools, providing valuable information, and building connections with local partners. In this report we outline the steps we followed and outcomes we achieved in hopes that it will be of use to others.

This analysis focuses on the Future Homes Ottawa Phase One strategies and approaches including; stakeholder, community network, and household engagement; tool development; planning supports; and outcomes.





# Executive Summary

Future Homes Ottawa Phase One set out to create tools, raise resident awareness, and start neighbourhood projects that would lay the groundwork for the mass deep retrofit work that needs to take place in Ottawa over the next two decades to meet our emissions reduction targets and ensure our homes are resilient enough to weather the coming climate changes.

Our aims were simple:

- Create clear communication tools and test the ones that were most effective.
- Develop a clear report tool that would take the information from the Energuide audit and provide the homeowner with easy, understandable 'good - better - best' retrofit recommendations to eventually bring their home to net-zero energy consumption.
- Deliver this report to 40 homeowners in the target neighbourhoods.
- Identify six homes, three in each neighbourhood, that would act as demonstration retrofit project homes for the region, completing a deep retrofit and allowing Future Homes Ottawa to share their work as case studies.
- Support these homeowners through their project planning by providing retrofit planner support and expert guidance.
- Finish Phase One ready to launch a Phase Two project that would see the demonstration homes retrofit projects to completion, and see the work scale to a mass retrofit pilot initiative.
- Provide a template for action for our partners, friends, and communities across the country who are trying to get this work off the ground in their own neighbourhoods, towns, and cities.

We succeeded in our goals. This report is the template for action to what we learned, our process, and our tools.

## What we Learned

We came out of Phase One with clear learnings and a good sense of our next steps, summarized below into 10 key points:

1. Effectively engaging residents requires a multi-prong approach that accommodates widely varying demographics, tastes, situations, and levels of knowledge.
2. Neighbourhood-level outreach and awareness-building activities are effective and should be expanded to other neighbourhoods where resources allow. In particular, the establishment of active, engaged neighbourhood environment committees, clubs, or crews who can catalyze local interest and action should be a focal point tested in Phase Two.
3. A Stepped Recommendations to Net-Zero report is useful, possible, and can be produced with relatively few resources. More tools could be developed in this manner while we wait for streamlined national tools to emerge.
4. A residential home retrofit planner service is feasible and effective. It is less expensive than we originally thought, and shows some promise as a sustainable service, especially if it qualifies for inclusion in emerging funding and financing models. The model needs to be tested with a larger sample group to observe outcomes and assess potential process efficiencies.
5. We need better regional data collection to support progress in this work, both for communications approaches and progress in emissions/energy consumption reduction in the residential sector. This data will support a better understanding of the scale of the task and the pace of progress, while also supporting the case for the financial supports that will be required to accelerate the city-wide project.
6. We need a regional communications approach to continue the work of raising awareness of residential retrofits in tandem with neighbourhood-specific outreach. While uptake in retrofits is improved by neighbourhood outreach (in particular, consumer confidence to complete the retrofit), the scale of the work to be done demands a more streamlined, regional approach with a broader reach.
7. Partners want to collaborate on this work but have limited capacity to organize the process. We received positive response and levels of engagement from a wide range of partners. Actors in this sector are ready to move but are struggling to find the capacity to organize next steps. A 'backbone' organization with capacity to play a planning and facilitating role could help to jump-start an effective local collaboration to move the work forward.

8. Funders and partners are eager to see mass retrofit work move forward. There is consensus in the local environmental community that the work of residential retrofits is an urgent priority. While funders and partners are rightly nervous about untried and emerging models and the ability of local actors to effectively mobilize the models, we all recognize that someone needs to take the first step, and as such, we are willing to take on a certain level of risk to see progress.
9. Trades need to be engaged to support this work in a way that supports their business models and avoids revenue loss. Local trades enterprises are interested in and supportive of the work of deep residential retrofits, but they are busy and struggling with capacity. Their interest and engagement will be best secured through opportunities to participate in on-the-ground projects with 20+ homes that can concurrently act as an upskilling opportunity and a business opportunity.
10. We need to forge forward and start trying things to make them happen. There are no expert practitioners working on the ground with the capacity to effectively scale residential retrofits today. This process, network, and trades capacity will need to be established, and the sooner we start, the better. It is time to start trying 'the impossible,' and testing the most promising models in action, in our communities.

What follows is a breakdown of what we did to get our project rolling, what worked, some of our challenges, and what we recommend for other groups walking the same path. We hope it will give you ideas for your local project model, save you some time, and move you forward, with the aim to accelerate this important national retrofit project.



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# Step 1: Gather a good team of knowledgeable stakeholders

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Accelerating deep residential retrofits is an inherently cross-sectoral project, requiring strong communications, data, technical tools, and outreach, together with engagement from local trades, training and educational institutions, policy developers, the municipality, financial institutions, and more. Engaging core stakeholders is essential in launching an initiative that aims to scale.

## What we did

EnviroCentre, working in collaboration with the Ottawa Energy Collective, invited stakeholders from industry groups, trades representatives, government, local and national non-profit organizations, and environmental and research groups to join the Future Homes Ottawa stakeholder group. The full stakeholder network was comprised of nearly 50 members from 37 organizations, with a core group of around 15 partner organizations who attended and actively participated in monthly meetings. These meetings were held to provide project updates, solicit feedback, and invite open information sharing among stakeholders and partners. Minutes and newsletter updates were shared with the full group to keep everyone in the loop.

### **Our stakeholders included representatives from 37 organizations:**

Ottawa Climate Action Fund (OCAF), Community Associations for Environmental Sustainability (CAFES), Ottawa Energy Collective Impact (OECI), Ecology Ottawa, SMARTNet Alliance, Canada Green Building Council (CaGBC), Greater Ottawa Home Builders' Association (GOHBA), The Conscious Builder, Building Science Trust, Hydro Ottawa, Efficiency Canada, Federation of Community Associations, Social Planning Council, Ottawa Neighbourhood Study, The Energy Mix, YMCA-YWCA, CoEnergy, Carleton University Centre for Community Innovation, Federation of Canadian Municipalities (FCM), City of Ottawa, Canada Mortgage and Housing Corporation (CMHC), Natural Resources Canada (NRCan), CanmetENERGY, Passive House Canada, Sustainable Buildings Canada, Pembina Institute, Smart Prosperity Institute, WSP Canada, Algonquin College, Circular Economy Leadership Canada (CELC), The Natural Step, To-do-done,



Carpenter's Union, North American Insulation Manufacturers Association (NAIMA), Green Communities Canada (GCC), Great Northern Insulation (GNI)

**The core group, who participated consistently throughout the project, included representatives from the following 15 organizations:**

OCAF, OECI, CAFES, Ecology Ottawa, SMARTNet Alliance, Building Science Trust, Hydro Ottawa, Ottawa Neighbourhood Study, YMCA-YWCA, City of Ottawa, The Natural Step, The Energy Mix, NAIMA, GCC, GNI

## **What worked**

Hosting monthly virtual meetings coordinated and facilitated by EnviroCentre staff helped to maintain consistent touch points for the project and invite opportunities for input, guidance, and support. Attendance and participation at meetings remained high throughout the project. We were able to frequently have dynamic discussions involving multiple partners around project specifics, and stakeholders had opportunities to help identify contacts, offer the services of their organizations, and contribute knowledge expertise.

Circulating meeting minutes and supporting documents following meetings and distributing monthly newsletters kept everyone in the loop and provided opportunities to engage. Newsletter subscribers grew 219% from May 2021 to March 2022, and the monthly newsletter maintained a high average open rate (49%).

## **Challenges**

Widely varied levels of subject-matter expertise were represented at the table, which occasionally presented minor obstacles. Overall, this was an opportunity to raise sector knowledge pertaining to deep residential retrofits.

Calls for general feedback solicited fewer responses than asking individual stakeholders for feedback on specific components most relevant to their expertise.

We were not able to get trades enterprises to the table to join group discussions due to their schedules and competing priorities. Feedback had to be sought directly, leveraging contacts.

## **What we recommend**

Provide your prospective stakeholders with opportunities to engage the way and amount that works for them. This allows invested stakeholders to drive the project, while keeping less invested or peripheral stakeholders well-informed and able to contribute when they want to.

Use one-on-one meetings and smaller working groups to engage stakeholders around expertise-specific issues or questions.

Use time-efficient, focused ways to get input from priority stakeholders. We used virtual meetings, meeting minutes, newsletters, e-mail blasts, short surveys, direct personal emails, and quick telephone calls.

Leverage the new virtual world. Our project ran during a period of intermittent pandemic lockdowns and greatly reduced in-person contact, so our meetings were 100% digital. In this end, this benefitted the project by allowing us to engage key experts across geographies.

## Step 2: Understand your audience

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The first step to mobilizing resident interest is to understand the starting point of your target audience, to effectively tailor your approaches to meet residents where they are. This will ensure you are providing information that speaks to real resident concerns, interests, and questions, and it avoids wasting your communications time and resources.

### What we did

We started out by learning about approaches that were implemented elsewhere with success, taking into account our local context. Since the goal of this pilot project was to develop a neighbourhood-driven deep retrofit initiative, it was important to understand the unique motivators and barriers to residents in the specific neighbourhoods in which we were working.

In order to do this, we:

- **Researched and engaged with groups doing similar projects** in other places to learn about their strategies and approaches to neighbourhood retrofit projects, what worked well, and what didn't. This was done for the most part through telephone and video conversations.
- Developed a **Community Selection Matrix** to evaluate neighbourhood-level profiles using factors related to the housing stock, environmental impact, and community indicators. We referenced municipal resources, the Ottawa Neighbourhood Study, local Councillors and Community Associations, Community Associations for Environmental Sustainability (CAFES), regional maps, and other data to inform this tool. Neighbourhood selection was also informed by the City of Ottawa priority neighbourhoods identified in the Better Homes Ottawa Loan Program feasibility study.
- **Analyzed information from neighbourhood-level Environics Analytics reports**, provided by the City of Ottawa, to better understand the detailed demographics, social values, and behavioural overviews.
- **Developed and delivered resident engagement surveys** to identify top motivators and barriers to completing energy efficiency retrofits, as well as preferred learning tools and engagement approaches.

- Used information from all of the above sources to **create homeowner profiles** that would help guide our communications, outreach, and engagement approaches in the pilot neighbourhoods.

Through this process, we identified three priority target audiences for our project work:

1. Residents likely to engage with a home energy audit
2. Residents likely to complete a deep retrofit
3. Residents whose homes are good candidates for effective energy retrofits

## What worked

We used what we learned from others about potential strategies for engagement. This helped us to leapfrog in our learnings and identify existing approaches that we wanted to test out in the Ottawa context based on their successes, challenges, and findings.

Developing and utilizing a tool to select pilot neighbourhoods provided a way of evaluating and prioritizing local neighbourhoods using standard, replicable criteria to identify best candidates for the goals of our pilot project.

Analyzing information collected from the resident engagement surveys provided genuine new insights into neighbourhood-specific motivators and barriers to retrofits. For example, initial survey results showed us that:

- Top motivators for home energy retrofits for Carlington residents were reducing energy bills, followed by reducing emissions from their home.
- Top motivators for home energy retrofits for Old Ottawa South residents were improving comfort/health of home, followed by reducing energy use and utility bills.
- Top barriers in Carlington were cost, followed by a lack of knowledge about the most effective types of retrofits.
- Top barriers in Old Ottawa South were a lack of knowledge about the most effective types of retrofits, followed by not having time to research contractors/service providers.

## Challenges

There are multiple target audiences within one neighbourhood, and multiple reasons for reaching out to different groups. Time and resources limit the ability to reach everyone. For example, we learned from the Environics reports that the top two demographic segments representing 46% of households in Carlington were:

- Young singles and single-parent families with mixed levels of education and lower incomes, and;
- Older singles and couples with mixed education levels and upper-middle-incomes, who value community involvement.

In Old Ottawa South, the top two demographic segments representing 63% of households were:

- Younger and middle-aged couples and families, highly educated with high incomes, who prioritize the convenience of downtown living and have strong ecological concerns, and;
- Mature families and couples with very high incomes and high levels of education who prioritize environmentally friendly products that reflect their lifestyles and values.

Because of these varying demographic segments, our identified target audiences, and the time and resources available, we had to find a balance between customizing messaging that would resonate both within and between the pilot neighbourhoods without having to duplicate our efforts entirely. The easiest way we found to work around this was to focus key messaging on neighbourhood specific motivators and barriers at in-person or virtual events in each neighbourhood and when speaking with residents at other outreach activities where we could adjust talking points on the go.

Pandemic public health restrictions limited our ability to engage in-person with residents and conduct in-person random samplings for surveys and data collection. This likely meant losing the input and concerns from the least engaged segment of the community, as well as reducing our engagement with vulnerable or underrepresented groups who may have less access to online resources or have language barriers. We were able to do some in-person outreach, but much less than we would in ordinary circumstances, which meant the data that shaped our target audience had to be adjusted to recognize the 'missing demographics.'

## What we recommend

As you define your target audience, also **clearly define your message**. For example: 'Encourage homeowners to complete audits,' or 'Increase number of residents who know what an energy retrofit is by 25%'. Energy retrofits are a confusing topic for homeowners



and residents. Simple messaging is helpful and effective, and this will help you shape your message to your selected audience.

**Select priority audiences.** There will likely be scores of factors you want to test out and learn from. It was important for us to identify our goals, prioritize the top ones, and define the best approach for reaching them. In our case, we limited our focused engagement to residents identified as 'likely to engage' in one of our priority activities (getting an audit, completing a retrofit), and focused less attention in this pilot on broad-spectrum awareness and engaging those with limited or zero interest in retrofits.

**Keep a record of the goals and audiences you couldn't address.** You may have the opportunity to find funding or community support to reach these groups in the future, and it helps to be ready. In our case, audiences we couldn't reach in Phase One shaped our Phase Two planning, and shaped how we identified key barriers and gap areas to funders and interested parties who want to push the work forward.

## Step 3: Develop an outreach and engagement approach

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Once you know your audience and core messages, you can design the specific approaches that will most effectively communicate your message and catalyze desired outcomes.

### What we did

Based on what we learned from initial research, talking to others doing similar work, our own expertise in community outreach and engagement, and the findings from the resident engagement surveys, we created a plan for the outreach and engagement strategies we wanted to test. We prioritized the outreach approaches we felt would be most successful in the pilot neighbourhoods and also identified approaches we wanted to test on a smaller scale to evaluate impact and effectiveness.

*We prioritized:*

**Working closely with local community associations, councillors, local organizations, and businesses to identify neighbourhood-specific opportunities**, like well-attended events or highly engaged virtual channels. We attended a pop-up market, a recycling/reuse drop-off event, a Community Association General Meeting, a plant sale, a sustainability showcase, and a home show, as well as a range of digital events and webinars..

**In-person and virtual events**, including introductory webinars, technology webinars, walking tours and information session.

**Flying.** We delivered one-page informational flyers to all houses in the pilot neighbourhoods (1936 in OOS and 2231 in Carlington).

**Social Media.** We promoted our virtual resources via social media accounts

**Newsletters.** We launched monthly project specific e-newsletters

*We small-scale tested:*

FHO **branded lawn signs** for home energy audits that we left behind post-audit to advertise the program and services.

Printed **neighbourhood-specific posters with scannable QR codes** that we posted in local cafes, restaurants, and community venues.

**Door-to-door outreach.** We picked small neighbourhood sections that had a high concentration of retrofit-ready homes, and knocked directly on doors with smiles and program information.

## What worked

We partially based our choice of engagement approaches on the advice and experience of earlier projects, and in all cases, their findings proved true in our location also.

We created an engagement plan with clear timelines for the complete project period. This allowed us to plan for weather, community events and internal scheduling conflicts and avoid unexpected obstacles and delays.

## Challenges

There is limited research and hard data to support community outreach approaches, so we had to get creative and do some guesswork around which approaches might work in our locales.

We knew our project would likely roll out during a covid-19 pandemic period that would result in intermittent lockdowns (and it did), but we also knew project outcomes would be limited if we limited our outreach to online and digital methods alone. That meant we needed to develop a flexible plan with built-in contingencies, which really kept us on our toes. Our team had to be agile and hold our plans lightly.

## What we recommend

Prioritize the approaches that you expect to be most successful based on early research. This will help make the most of your time and resources. Test other approaches on a smaller scale to evaluate effectiveness and inform future outreach activities.

Ask for help from partners who have more experience. We worked with local environmental advocacy group, Ecology Ottawa, to leverage their years of experience in door-to-door outreach, as this was a new approach for us.

Build a timeline for outreach and engagement in advance. Weather, other local events, and holidays may impact in-person activities. For instance, the federal election ran during our project, so we planned our door-to-door outreach to roll out after campaigning was complete. This will also help identify key messages at different points in your project and allow you to manage outreach staffing requirements.

# Future Homes Ottawa Engagement Plan



## Month #1

- Engage Councillors in pilot neighbourhoods
- Engage all Councillors
- Engage community groups (introduction)
- Engage community groups for support in sharing resident survey

## Month #2

- Online resident engagement survey
- In-person outreach events
- Articles in community newspaper
- Share pre-written promo texts with community groups
- One-pagers delivered to all houses in pilot neighbourhoods
- Posters in community
- Newsletters
- Start booking energy assessments

## Months #3 & #4

- In person outreach events
- Virtual workshops
- Targeted online ads
- Posters in community
- Newsletters
- Targeted door to door outreach
- Complete & document home energy assessments
- Booking and completing energy assessments
- Lawn signs at assessments
- Complete reports including net zero stepped recommendations

## Month #5

- Confirm 3-6 demonstration project homes

## Months #6 & #7

- Model homes (demo homes)
- Net zero reno plans for homes (demo homes)
- Cost outs (demo homes)
- Homeowner consultations for retrofit plans
- Set proposed timelines for demo projects

## Months #8 & beyond

- Final promo video
- Final presentation
- Final report
- Wind up event
- Ongoing measuring of demo project outcomes

## Step 4: Create a location-specific communications toolbox

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Your initial research into understanding your audience should have focused your core messages and tailored your approaches for the best possible outcomes. But before you launch, you will want to take another look at the micro-dynamics at play in each neighbourhood.

### What we did

In our case, we had selected two focus neighbourhoods with significantly different demographics and building types. This was considered in our first communications analysis, but once we had a draft outreach and engagement approach, we needed to make sure the materials in our communications toolbox were designed to effectively meet the needs of both neighbourhood contexts. To do this we:

- Developed materials (social media and newsletter content, posters, post-cards, informational flyers, webinar content, etc...) that were customized to each target neighbourhood. For example, project posters featured home types specific to each neighbourhood.
- Identified media outlets and communications streams that were neighbourhood-specific with local-specific reach. For example, the OSCAR newspaper in Old Ottawa South, the local City Councillor's newsletters in both neighbourhoods, and active Facebook groups such as the Carlington Community Association and Old Ottawa South Old Ottawa South Enviro Crew.

### What worked

The Old Ottawa South Enviro Crew and OSCAR community newspaper significantly boosted our reach. The Enviro Crew helped us prepare and publish an article for the OSCAR community newspaper, which publishes and distributes 4,300 issues monthly.

Both the Enviro Crew of Old Ottawa South and the Carlington Community Association social media accounts shared our information and events on social media, garnering great local attention.



Councillors Brockington and Menard and their teams included promoted the program in their constituent newsletters, raising awareness and boosting program confidence.

## Challenges

Good example photos of local home types were harder to locate than expected. We purchased stock photos of houses that looked similar to actual homes in these neighbourhoods. Since the home types in our two target neighbourhoods were very different, and the project was 100% home-focused, it was worth the time to procure representative images for each neighbourhood.

## What we recommend

Identify key neighbourhood features (demographics, home types, geography) that may **significantly** impact your reach, and throw in your micro-local content in these places. Otherwise, streamline your tools to minimize work and costs. Make sure you check your assessment against that of some local residents before you move forward.

## Step 5: Plan data collection and evaluation tools

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One of the goals of Phase One was to test the effectiveness of specific outreach tools and approaches, which meant we needed to establish an initial baseline of awareness in each neighbourhood and put in place clear systems to track progress, receive participant feedback, and assess changes.

### What we did

We established our project goals and data points in our original project plan. Our data collection points included: partners engaged, communities selected, households reached, households that completed a home assessment with net-zero recommendations, households that opted to participate in demonstration retrofit planning, and percentage of neighborhood residents aware of the project, including target levels of:

- 80% of neighbourhood residents aware of the project
- 60% of neighbourhood residents supportive of the project
- 30% of neighbourhood residents interested in retrofitting their home for energy efficiency

Our communications metrics included: visits to Future Homes Ottawa webpages on both EnviroCentre and Better Homes Ottawa websites, social media engagement, and our outreach metrics included: number of events, and number of participants/engagements.

Before the project launched, we drafted out an evaluation schedule, flagged core content materials for creation, and developed our evaluation tools, including pre/post client surveys, short polls, and data tracking sheets.

### What worked

We planned our data collection and survey schedule from day 1, and started the project with a pre-project resident survey, to collect baseline information. We tracked participation data on all points of contact, and integrated short survey questions into all client interactions, including 'where did you hear about this project?' We reviewed our process regularly and adjusted our plan to catch anything we missed.

## Challenges

Pandemic restrictions on in-person interactions made the collection of randomized control-group data more challenging. We had planned to conduct quick in-person surveys to assess general public awareness around energy efficiency and residential retrofits by sending staff out to busy public places such as malls, grocery stores, or public events, both within our targeted communities and outside them. This was impossible during the project period, which meant our ability to reach community members with little or no interest in or awareness of our work was significantly limited.

## What we recommend

The goal of a neighbourhood retrofit project is to achieve increased awareness, increased action, and reduced energy consumption and emissions. The most important data you can draw from a project like this is:

- How effective your communications tools and approaches are
- How much your efforts increased awareness
- How much your efforts increased action
- How much energy consumption was reduced

## Step 6: Develop and implement supporting tools

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Our goals for Phase One included sharing practical information about home energy efficiency, mobilizing community engagement and participation in deep retrofits, and supporting the creating of neighbourhood demonstration projects, all with the aim of eventually scaling our action to local mass retrofit projects. To achieve these goals, we developed a set of core tools to support the resident journey toward an effective home retrofit.

### **Tool #1: The Better Homes Ottawa website**

#### **What we did**

To address our goal of sharing practical information, we developed a Better Homes Ottawa website, a one-stop-shop for everything related to home energy efficiency information. We connected with the team from Better Homes Toronto to learn about their website development and content, and gain access to their model. We built on their work, adding new content and guides to the site, and fleshing out a step-by-step approach to a home retrofit. We designed an interactive energy savings tool (modelled on the Better Homes Toronto tool) to help readers conceptualize the impact of different home energy upgrades, and we worked closely with our project partners at the City of Ottawa to market and launch the tool in tandem with the City of Ottawa Better Home Ottawa Loan Program.

#### **What worked**

Leveraging existing resources avoided work duplication. We focused our creative energies on presentation of the information and creating key stories to make the content easily digestible and easy to navigate. Collaborating with the team that developed the Better Homes Toronto website meant we could use their model and content as a starting point to base our own site on instead of starting from scratch, and it also allowed us to build on their successes and avoid what hadn't worked for them.

A strong partnership with the City of Ottawa and other reputable, local organizations was key to the success of this initiative, as it helped to add credibility to the site, expanded the potential reach of the information, and was aligned with other City initiatives, such as the work being done through Energy Evolution.

## **Challenges**

Co-branding with partners proved challenging. We needed to budget significant time to negotiate what had initially appeared to be simple components, like logos, and colours.

Because there are so many websites out there, a new website needs to fit in to the existing constellation of resources, add value, and reduce confusion. What seemed like an obvious 'niche' when we set out in fact created all kinds of questions as we dug deeper and built out the site. For example, how does this site mesh with EnviroCentre or the City's existing resources? How can we fairly represent all service providers in the sector on this site without becoming confusing? Is this site for homeowners only, or also contractors? How do we make the site truly one-stop without blurring the clear, simple mission of the site? All these questions needed answers before we could launch.

A stand-alone brand requires more effort initially to build awareness, credibility, and traction. Website traffic data from the first six months since the launch showed that most visitors land directly on the Better Homes Ottawa Loan Program page. They arrive by clicking links from City of Ottawa communications to search specific loan information rather than general energy retrofit resources. While this is positive for the delivery of the Loan Program and shows the high level of interest for accessing financial incentives, it also indicates that getting the word out about the other Better Homes Ottawa offerings will likely take a more concerted marketing effort.

## **What we recommend**

Develop a one-stop-shop resource if you have the capacity. This is a great approach and streamlines residents' access to complex information, but if your capacity or resources are limited, a few great webpages on an existing website will work.

Borrow content. (Borrow ours!) There is an enormous amount of information available from reputable sources, so borrow and link wherever you can. Save your content creation for catchy articles that answer questions specific to your locale.

Avoid technical language. This is hard with retrofits and energy audits, but it helps the average person to follow along. You can always back up your simple summaries with links to more information for the folks looking for more on the technical and data components.

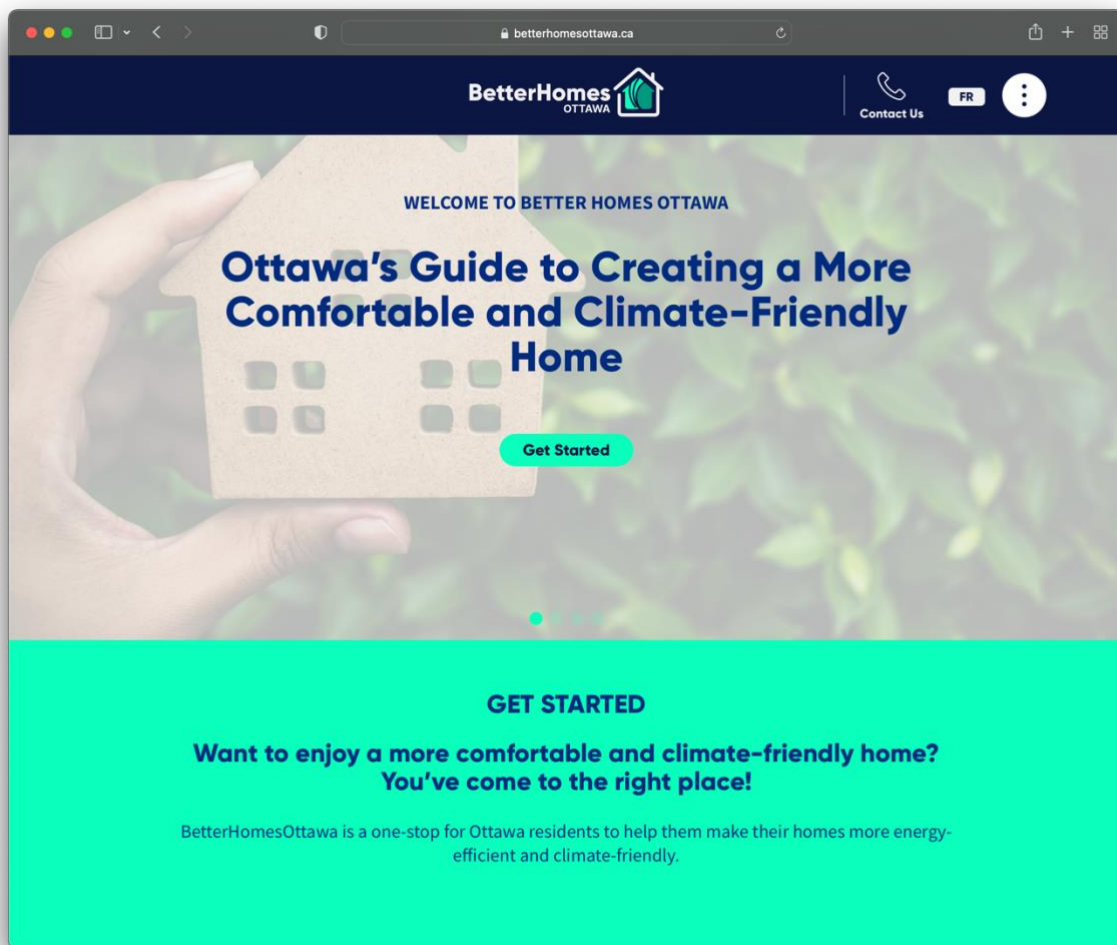
Don't underestimate the time it takes to collaborate, especially on creative or design projects. To maximize efficiencies, gather ideas from stakeholders early, then provide high-quality drafts for group review with specific asks and requests for comments.



Expect to run into conceptual conundrums. Budget the time for your team and partners to think around the website 'niche,' and how it all fits together for maximum impact.

Remember a website is always a work in progress. It is fine to start simple and add in the bells and whistles later, as client feedback comes in and problems are recognized.

Ensure that your partners are clearly referenced on all pages (e.g. in the footer) as this will help build credibility and give visitors confidence in the content you are sharing.



## **Tool #2 The Stepped Recommendations to Net-Zero Report and audit component tool**

To support Ottawa homeowners to complete effective deep retrofits, we wanted to create a tool that would provide clear, easy-to-understand information on the steps to bring their homes toward net-zero energy. This data is provided through the standard Energuide home assessment report, but the results are complex and hard to decipher for the average homeowner. This report also stops short of providing a picture of the steps along the way, and the options a homeowner may have if they do not wish to complete a full retrofit in one step. We had seen some good examples of similar reports from other countries, so we knew it was possible.

### **What we did**

We gathered and compared example tools and reports from regional and international retrofit projects and selected what we considered to be the best elements from each. We then designed a report map and rough graphic model for our 'dream' report. Then, we engaged a graphic designer to develop a branded template for the Stepped Recommendations to Net-Zero Report that looked great, was easy to follow, and provided the information we identified as essential for this purpose.

Next, we engaged leading technical data experts in the field (Building Knowledge Science and Volta Research) to develop the back-end tool that Energy Advisors could use to easily input data, which would then auto populate this *first-of-it's-kind in Canada* Stepped Recommendations to Net-Zero Report for homeowners. This tool was tested with sample house files, and then shared with partners and clients for feedback.

Finally, we prepared and shared Stepped Recommendations to Net-Zero reports for 40 homeowners across the two pilot neighbourhoods who had completed home energy audits with EnviroCentre through the pilot project.

### **What worked**

Registered Energy Advisors tested the tool and provided feedback at early stages, especially on the technical content and calculations. After the final revisions, the team reported that it was easy to use and worked well to produce the designed report.

Stakeholders were invited to provide feedback on the report throughout development. This stimulated interest in the tool, which helped to secure additional sponsorship funding for the tool from Hydro Ottawa.

We solicited input from non-experts to ensure our report was genuinely easy to understand, clear, and engaging.

We aligned our report to the standard Energuide report, recognizing that homeowners will still need the standard format report to qualify for incentives, grants, and financing

programs. This allowed us to add information and answer questions without creating confusion or duplication.

## **Challenges**

We launched our project and began building our tool at almost the same time that the federal Greener Homes Program launched to a huge rush of interest. This meant our technical staff (and those we were working with to develop this tool) were suddenly overwhelmed with work demands, which made it harder to complete the project at the pace originally planned.

Testing, feedback, and revisions took longer than expected, partly because our requirements evolved as we learned more and saw how the tool worked and the data that appeared.

During our project, the Canadian Home Builders' Association (CHBA) pilot Net-Zero Renovation Labelling Program was expanded into a full program. This was excellent news, but we recognized that this could cause confusion for homeowners who might connect the report to the new certification. We flagged this with our report developers to ensure homeowners were always informed and questions were answered.

While the report tool aligns with the Energuide report and draws data from it directly, the process for creating the Net-Zero report is still quite labour intensive, as it requires modeling home results three times to produce different outcomes. In Phase Two we will explore automating pieces of this process to expedite the work.

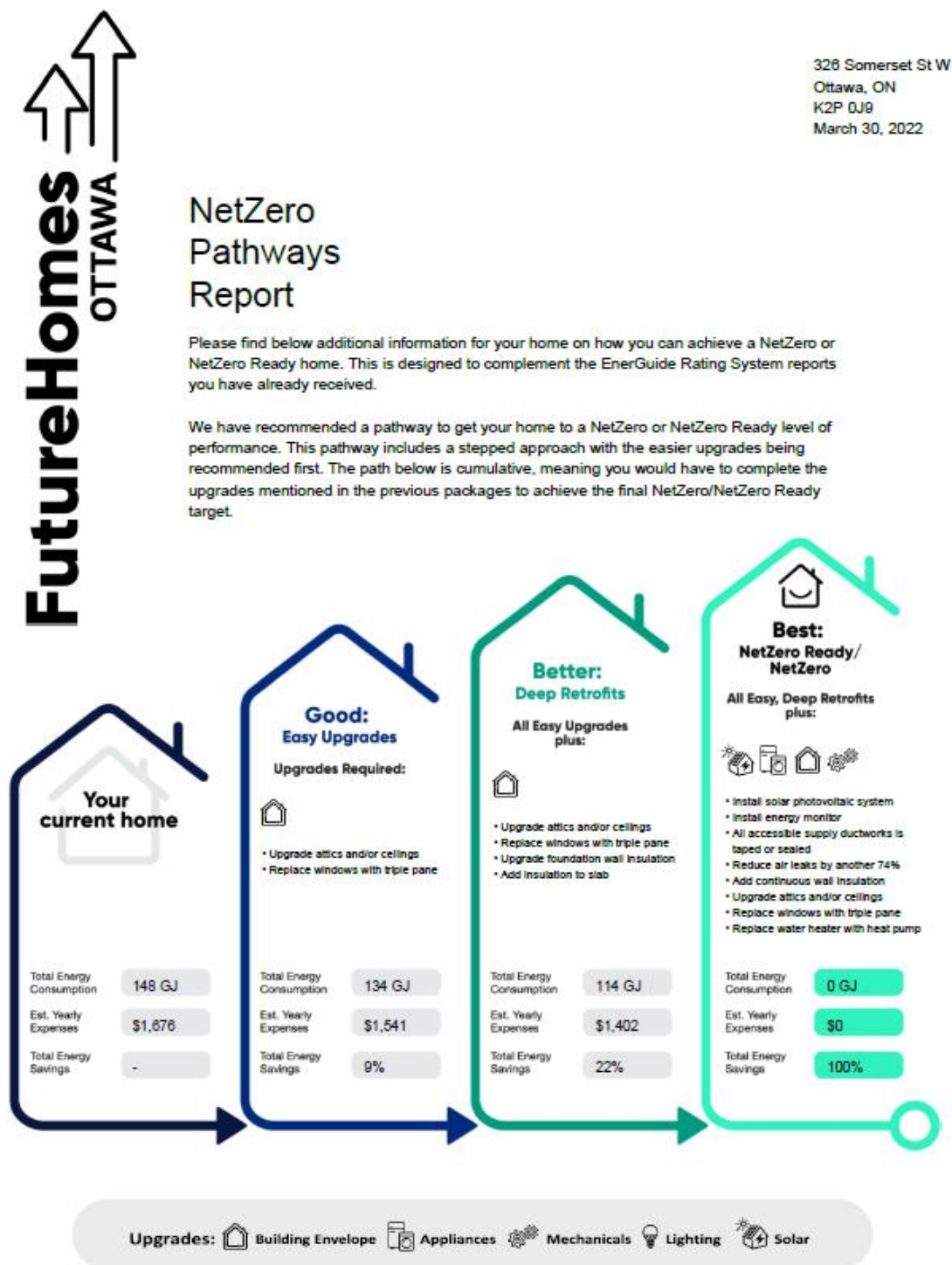
## **What we recommend**

Take a deep dive into available tools and previous work before starting to develop something new. Seeing what similar projects had used in Scotland, the Netherlands, Germany, and other parts of Canada saved an enormous amount of time and allowed us to reflect on what we wanted in comparison to a real product, rather than a blank page.

Share what you are working on with others in-process. This can help catalyze potential partnerships and avoid duplicating efforts. It can also create interest in your project, which is affirming for your work, as you do it.

Use our tool! Improve it if you can, or just send us suggestions and we'll work on it. A copy of the report is below.

## Sample report



## Tool #3: The Home Retrofit Planner service

There has been a lot of sector interest in the development of a 'concierge' service that walks homeowners through the process of planning their energy retrofit. One of the major obstacles homeowners identify to completing a retrofit is a general lack of knowledge and/or time to plan the project. Experts also note that a poorly planned energy retrofit can undermine results when steps are missed, performed in the wrong order, or badly executed.

We wanted to start developing a service for Ottawa residents that would address these barriers and promote effective deep retrofits.

### What we did

First, we did a deep dive into retrofit planner services that exist elsewhere, digging into models, costs, goals, and outcomes. Building on this information, we designed a model that was appealing, feasible, and cost-effective for our region.

Then, we ran this ideal model through our project development team to flesh out each step, identify prospective timelines for each service, and identify the forms and documentation that would need to be created to guide and streamline the process. We also did a more detailed cost-out and matched process requirements to specific skill sets and staff who would perform each step. We then created all the forms and documentation for the service model, including tracking systems, intake applications, participant agreements, occupant satisfaction surveys, and other client forms. At this stage, the service was ready to be tested with our demonstration project homes (see details below).

The service included four stages:

- **Discovery.** Initial phone calls/meetings with homeowners to discuss their retrofit plans. This is a discovery stage, to learn about upgrades the homeowner is interested in and establish goals.
- **Logistics.** Follow-up calls/meetings with homeowners to provide additional information and resources on specific upgrades or technologies, available incentives/rebates, answer questions, and develop a project budget.
- **Contracts.** Support for homeowners in vetting contractors, reviewing quotes, and procuring materials.
- **Final Plan.** Development of detailed Retrofit Project Plans that outlines the short, medium, and long-term plans for the home retrofit journey, including costing of upgrades and potential utility savings.



## What worked

The initial deep dive into existing services gave the team confidence that the ideas we had already begun to hatch were feasible and appropriate for the context.

Testing and developing the service with a small sample group (the demonstration project homes) gave us the opportunity to improve the service in real time before a full program launch.

Regular check-ins with staff who were not associated with sales or servicing of products promoted trust that the recommendations were based on the energy savings, rather than sale of a product or service. This was valuable to homeowners and to the overall goals of our project.

Scheduling regular check-ins maintained contact between the homeowner and the technical expert to ensure that the project goals and benefits were kept front of mind and the project was kept on-track. The check-ins also provided a space for homeowners to see the project as a whole, rather than the narrow scope that was discussed during conversations with contractors for estimates, allowing for a big picture view.

Providing homeowners guidance to navigate conversations with contractors was an effective strategy for both gathering information and providing homeowners with practical skills to put towards their retrofits. It meant homeowners were able to gather accurate and important information about estimates, and specific products, and it ensured individual contractors had an understanding of the big picture retrofit, beyond their own trade. This helped reduce the risk that one area of work would negatively impact the performance of other upgrades, or that retrofit steps would be performed in the wrong order.



## Challenges

It was difficult to schedule initial check-ins with homeowners during regular business hours.

Homeowners found it difficult to find an available, reputable contractor due to high demand for retrofit trades. A list of vetted contractors continues to be a highly requested resource from homeowners. This finding underscores the need to build local trades capacity to meet growing demand, which is a focus of Phase Two of this project.

The schedules for rebates and grants available for the retrofits proved to be difficult to coordinate, as their timelines and deadlines vary. For example, upgrades eligible for utility rebates were to be completed in 120 days, while Better Homes Ottawa Loan Program upgrades may be completed within one year. This made it challenging for homeowners to schedule and plan for the follow up audit, unless they aligned with the tightest timeline.

Materials for many of the recommended upgrades were difficult to procure due to the global supply issues that were exacerbated during the pandemic, and related price increases. This led to some upgrades being dropped, products being replaced with lower efficiency alternatives, and decisions to delay fuel switching and remain locked into combustion energy sources (like oil, natural gas).

## What we recommend

Draw on existing models in your program design. It saves time and avoids blank page syndrome. It is also very inspiring to see what other folks are achieving in different contexts around the world.

Take the time to sketch out 'who does what' in minute detail before you start. For us, this resulted in a clear process, identified staffing efficiencies, and provided a framework from which to complete a detailed cost-out for the service. We realized that the service did not have to be as time-consuming or prohibitively expensive as we had originally feared. This enabled us to develop a model that is efficient and inexpensive enough to be a marketable retrofit service, especially if it can be included as such in emerging funding supports (for example, PACE loan programs).

Create solid participation agreements that map out meeting schedules in advance. Homeowner delays are likely, and anything you can do to avoid a project slow-down will benefit all involved.



## Tool #4: The Neighbourhood Demonstration Project Package

One of the goals of Phase One of our project was to identify six homes, three in each neighbourhood, that would act as demonstration retrofit project homes for the region, completing a deep retrofit and allowing the Future Homes Ottawa project to share their work as case studies.

### What we did

Homeowners in the pilot neighbourhoods were invited to apply to use their home retrofit projects as demonstration project homes, which would provide examples for others across the city and beyond. Participants would receive dedicated support to complete their deep retrofits, through the home retrofit planner service. This allowed us to test the new model while also supporting demonstration home participants to complete a strong, effective, streamlined retrofit projects with maximum energy efficiency outcomes.

More than 20 homeowners applied. Our six participants were selected based on the information provided in their application form and the results from their energy audit. We evaluated applicants using a scoring matrix, which included the requirement that participating homeowners undertake a deep retrofit and that their homes could effectively accommodate these upgrades.

Once the 6 participants were selected, our team:

1. Contacted selected homeowners to review the details and confirm their interest in participating as a demonstration project home. We aimed to select homeowners who were interested in completing a **deep** retrofit and working towards a six-month timeline for the project. We also requested that they sign:
  - a. Participant Agreement Form, outlining what was expected from participants (for example, providing pre and post retrofit energy use data) and what was provided in return for participating (for example, dedicated technical support and check-in meetings at no cost, and a donation of sustainable IKEA home products)
  - b. Participant Release Form, to ensure we had permission to share photos and stories from their retrofit.
2. Scheduled **discovery** meetings with homeowners to discuss their retrofit plans, learn about upgrades the homeowners were interested in, and establish goals.
3. Reviewed the Energuide report from the home energy audit alongside notes from the homeowner discovery meeting and prepared the **Stepped Recommendations to Net-Zero Report** with 'good - better - best' retrofit options.

4. Scheduled follow-up **logistics** and **contracts** check-in calls with the homeowner and a technical expert to provide a touch point for navigating the retrofit planning process. The technical expert provided support in reviewing plans/budget/quotes, provided feedback, and answered questions. At these meetings, the technical expert also:
  - a. Shared information about available incentives and rebates.
  - b. Offered guidance to homeowners on specific products and technologies and the benefits, drawbacks, and long-term maintenance associated with them.
  - c. Helped guide homeowners through the process of gathering quotes, vetting contractors, and procuring materials for their project.
5. Prepared and shared a detailed **Retrofit Project Plan** with the homeowner, outlining the short, medium, and long-term planning for the home retrofit journey, including costing of the upgrades and potential utility savings.

Phase One of this project brought homeowners to the point of having a complete retrofit project plan, ready to launch. The completion of the retrofits and the documentation process will take place in Phase Two.

## What worked

The rigorous pre-application (webinars, information sessions), application and vetting processes ensured demonstration home participants were well informed, and ready to dive into their retrofit project. It also ensured that participants were committed to using their project to share information with neighbours and other local residents.

The Home Retrofit Planner service model produced clear, detailed project plans that included a full project cost-out, good-better-best project options and clear indications of projected energy and emissions savings. The reports alone, even pre-work, provide valuable insight into the real costs, steps, and challenges of a deep retrofit on a real Ottawa home.

## Challenges

The recruitment process and tool development took longer than expected, which meant the delivery of the planning service rolled out on a compressed timeline. This was feasible for the EnviroCentre team, but a challenge for the participating homeowners, who had to work project meetings around busy lives and competing priorities.

Modeling real home retrofits to net-zero energy is hard! None of the homes are projected to reach this goal. Two will reach roughly a 74% reduction and four will reach reductions in the 45-65% ballpark. The addition of renewable energy could increase these reductions by

as much as 31%, in 3 projects, but would also add at least \$25,000 to the each of the project costs.

## **What we recommend**

Set out a full project roll-out schedule with check-in dates, follow-up calls and milestones right from the outset – at least a plan. This will give homeowners the opportunity to fully understand the process and time commitment, identify scheduling conflicts and delays (vacations, busy work times, birthdays etc), and plan accordingly. A realistic timeline will reduce stress for everyone.

Offer one-on-one check-in meetings with a dedicated technical expert. These help to build a relationship and create a safe space for homeowners to ask questions and get accurate information on a variety of topics related to their retrofit.

Break down the cost of the retrofits, and potential benefits (both emissions and cost) to encourage homeowners to go deeper in specific areas of their retrofit. Ensuring that the homeowner understands the lifecycle cost of the retrofit, rather than solely initial capital can help support this goal by minimizing the potential financial burdens of the upgrade, while making a tangible difference in their reduction plan.

Where possible, offer demonstration homes products, discounts or incentives early on in the process to support engagement and promote the program. We worked with IKEA to offer free sustainability products, and explored avenues to arrange bulk-buys in Phase 2 of the project to reduce costs and/or ordering complexity. Our participants were engaged and motivated, but a deep retrofit is still a big undertaking. Small incentives never hurt.

## Step 7: Engage community networks and champions

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In reality, this engagement began concurrent with Step 1, since we needed input from our local partners and residents to effectively build our project model. For simplicity, this is presented as Step 7, but we can't emphasize enough the importance of engaging with local residents, networks, and champions from the earliest stages. All our research, reading, and conversations with similar projects emphasized that the most successful neighbourhood projects are neighbourhood-driven, rather than external party-driven. External parties need to play a role in accelerating the residential retrofit project, and especially in cases where neighbourhood motivation and interest is low, but the more an external party works in tandem with local residents and champions, the more a hybrid model can emerge, ensuring better outcomes for everyone.

### What we did

We contacted the councillors of the pilot neighbourhoods to introduce the project and solicit support; engaged community associations to introduce the project and inquire about upcoming events, activities, and potential partnership opportunities; and shared a project overview with other community organizations and groups, explaining the benefits, and inquiring about potential partnership opportunities.

Throughout the project, we continued to engage councillors, provide updates, and request help to share information and promoting events and activities. We shared regular project updates with community associations by e-mail and video calls and presented at community association meetings, and shared project updates with other community organizations and groups, highlighting upcoming activities, events, or new resources.

### What worked

Engaging with community networks and champions allowed us to build trust and credibility for the project and it helped us identify good channels for information sharing, well-attended events, and additional insights into neighbourhood-specific interests and concerns.

We tailored our outreach approaches to each group or representative for maximum impact. We scheduled video calls with the Old Ottawa South Enviro Crew regularly and were in contact primarily by e-mail to organize events and outreach.

In Carlington, we had brief check-in calls with the councillor at key points to share information and ask about neighbourhood specific events and activities. We engaged with the Carlington Community Association primarily via social media, as they identified this was the best way to draw their attention to materials, events, and resources to be shared.

We found our best impact for time spent came through leveraging the passion and community knowledge of the local environmental group.

## **Challenges**

One neighbourhood had an established 'Enviro Crew' and strong community interest in the project content, while the other did not. Given the pandemic restrictions in place during the project delivery period, it was challenging to find ways to support replication of the successful Old Ottawa South neighbourhood strategies in Carlington (for example, supporting the creation of a similar community group).

Community champions are incredibly helpful, but even they have trouble reaching the un-reached and under-served, including those without access to internet, with language barriers, or those who do not engage with community information or events.

## **What we recommend**

Identify key community leaders who can point you toward the most active community members, key community gathering spots, and/or community newsletters and communications streams. The city councillor is a great place to start.

While climate action and specific mitigation approaches can be controversial issues, home energy efficiency and home improvement generally are not. When in doubt keep your communications focused on the clear benefits of energy efficiency while you are seeking community champions.

Homeowners who have completed or are completing energy efficiency retrofits – and especially deep retrofits including renewable energy, electrification and/or electric vehicle chargers – are excellent champions for the work. They love to talk about what they have done or are doing. They are expert resources and they are trusted by their neighbours in a way an external project representative is not. Below are some other best practices we suggest:

If you don't have team members with particular local knowledge of your focus neighbourhoods, find partners to inform your planning. Our team consisted of folks who had lived in both neighbourhoods, which was incredibly helpful.

If you want to broad-spectrum, cross-community reach, make sure you have a diverse group of champions, including some that represent the under-represented residents. This means both engaging with diverse community groups, and heading out to pound the pavement and meet people directly.

## Step 8: Engage residents and households

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Now we were ready to get out on the ground (actual and digital) to share our message, offer our services, and start building interest and action. Getting here took longer than expected, but when we were ready to launch, we were **really** ready. We had branded materials, trained outreach staff, booked events, outreach schedules lined up, and even a waitlist for audit services. We had an amazing website resource to refer interested parties to for information, and we were set to release promotional articles in multiple venues. We were ready to go.

### What we did

Once we had developed an outreach and engagement strategy and gathered input from community partners, we engaged with residents and households in every way we could. This included online resident engagement surveys, booths at in-person events and activities, door-to-door outreach, articles in community newsletters, direct mail-outs, such as informational flyers, virtual events, such as webinars or presentations at community meetings, and social media and online promotion.

### What worked

Identifying and collaborating with highly engaged community partner organizations proved to be incredibly helpful in reaching neighbourhood residents through their existing virtual channels (for example newsletters, Facebook groups, and events/meetings) and in-person activities. Our partnership with the Old Ottawa South Enviro Crew opened up new opportunities to co-host events like neighbourhood walking tours and virtual webinars. Our research and early findings showed that neighbour to neighbour conversations were a driving force in information sharing and taking action, and these were great ways to get the conversation moving.

Our resident engagement survey received nearly 1,000 responses to our initial and follow up resident engagement surveys, which provided a wealth of information.

We worked with members of the Old Ottawa South Enviro Crew to publish an article in the local newspaper, the OSCAR. This article featured the Future Homes Ottawa project, an interview with a homeowner who had recently had a home energy audit completed, and information on how to get in touch with us or find additional resources. This article received positive response and boosted program inquiries.

Of the client inquiries that followed through on completing an audit and had reported a referral source, 20% were from our article in the OSCAR newspaper.

We hosted virtual events that were well attended and provided an opportunity for residents to ask questions. Webinars were facilitated by a mix of program staff, technical experts (for example, Registered Energy Advisors), and neighbourhood residents who had already taken action in a specific area (for example, homeowners who had installed heat pumps or EV charging stations). Throughout the project EnviroCentre hosted three webinars and co-hosted one in collaboration with the Old Ottawa South Enviro Crew of Old Ottawa South, with more than 130 live participants and 200+ views of recordings.

We coordinated and hosted a walking tour in collaboration with the Old Ottawa South Enviro Crew, where participants were invited to join a guided neighbourhood walk to visit homes with energy efficient technologies. The Old Ottawa South Enviro Crew was essential in helping to connect us with homeowners who had installed heat pumps, solar panels, and EV charging stations. Since this in-person event was held during the pandemic, registrations were capped at 30 participants, and the event sold out quickly.

We provided pre-written content for newsletters and social media posts, which reduced the effort required for partners to share messaging and helped us reach a wider audience. For example, we sent pre-written newsletter and social media text options to the local councillors, community associations, and some local businesses who all helped us share information about the project with their networks.

We found that hosting events on specific topics that we heard were of interest to local residents worked well for drawing in an audience of people who were eager and ready to take action. For example, we hosted the virtual heat pump webinar and follow-up in-person walking tour in Old Ottawa South (though they were open for anyone to join). These events were well attended and allowed neighbours to talk directly with each other about the realities of these upgrades, while also getting folks engaged in the project. In Carlington we worked primarily with the general Community Association and city councillor, both of whom had limited capacity due to competing priorities. Virtual events that could be easily shared and promoted through various channels proved to be more effective in this case. For example, our Future Homes Ottawa Introduction webinar was very well attended and boasted a lively Q&A.

## **Challenges**

We found that door-to-door outreach and direct mail-outs were our least effective outreach approaches. We mailed out neighbourhood-specific informational flyers to all 4,167 houses in the two pilot neighbourhoods combined. Despite this, only 4% of inquiries for home energy audits that reported a referral source came from these mail-outs. While it is more effective to send follow-up mail-outs, we decided that given the cost of this approach (printing and delivering flyers) and the low impact, that this type of outreach was not effective for our purposes.



For door-to-door outreach, pandemic restrictions limited our ability to engage hard-to-reach residents, including seniors. Since the lockdowns had already crunched our delivery timeline, we developed a smaller scale, targeted approach to test door-to-door outreach as one way of reaching this demographic. We knocked on 850 doors in targeted areas of the pilot neighbourhoods (houses that would be good candidates for deep retrofits), spoke directly to 216 of those homeowners, and left behind informational flyers with everyone, but only 6% of follow-up survey respondents reported that they had heard about the project from door-to-door outreach, and only 4% of audit inquiries that reported a referral source were from this.

## What we recommend

The approaches we found most effective, ranked in order of success, were:

1. **Resident engagement surveys**, a combination of virtual and in-person if possible.
2. **Booths at in-person events**, for example at sustainability or home renovation fairs for maximum community reach
3. **Articles in community newsletters/newspapers**, especially established ones with dedicated local readership
4. **Community events**, for example attending local markets or hosting neighbourhood walking tours or virtual webinars
5. **Social media** and online promotion, especially a dedicated website with resources and sending pre-written content to partners to share

The least effective approaches for this project were:

- Door-to-door outreach
- Direct mail-outs

If your budget allows, test your preferred outreach strategies in small campaigns to determine the effectiveness of each strategy in your own context. Our project demonstrated the outcomes listed, but your residents may show different preferences.

The cheapest form of engagement is word-of-mouth and relationships. It's also very effective. If you have limited resources, focus your attention on finding champions amongst different demographic groups and communities, and start a vibrant local conversation.

## Step 9: Evaluate your progress

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Our evaluation process had three purposes:

1. To assess our success in delivering on our planned outcomes
2. To assess the effectiveness of each of the communications approaches tested, and
3. To inform the Phase Two delivery model and our planned approach to accelerating mass retrofits in our region

Our data synthesis and evaluation were shaped around these three purposes.

### What we did

**To assess our success in delivering on our planned outcomes**, we collected data and evaluated progress throughout the project both qualitatively and quantitatively (using surveys; tracking inquiries; contact data and participation; analyzing home energy audit reports; and soliciting resident, partner, and stakeholder feedback).

We measured our progress against the desired outcomes identified at the project launch. Our deliverables were to:

- Develop resident needs profiles for a range of residential scenarios in two Ottawa neighborhood communities
- Develop and implement a communications strategy and roadmap applicable to both the target neighbourhoods and the greater Ottawa region
- Develop and launch a Better Homes Ottawa information website modeled after Better Homes Toronto
- Develop and utilize a supplementary net zero audit component and report, with a stepped recommendations format
- Develop and implement a communications tool package including marketing materials
- Gain firm buy-in from neighbourhood stakeholders, residents, and community leaders, including participation commitments
- Complete 40 home assessment reports with net-zero recommendations reports
- Complete detailed retrofit project plans for participating demonstration homes
- Complete a comprehensive feasibility plan for Phase Two roll-out of the project

- Complete funding proposals to support Phase Two roll-out in 2022, as required
- Complete post-project evaluation for all approaches tested in the Phase One project stage, including a public-facing project report

We set the following targets to measure our overall success:

- Number of households that complete a home energy audit with net-zero recommendations: 40
- Number of households that opt to participate as demonstration project homes: six
- Percentage of neighborhood residents aware of the project: 80%
- Percentage of neighborhood residents supportive of the project: 60%
- Percentage of neighbourhood residents interested in retrofitting their home for energy efficiency: 30%

We successfully delivered on all project components. Our follow up resident engagement survey found that:

- 80% of neighbourhood residents aware of the project (target 80%)
- 100% of neighbourhood residents supportive of the project (target 60%)
- 83% of neighbourhood residents interested in retrofitting their home for energy efficiency (target 30%)
- Comparing the follow up survey results to the initial results showed a 10% increase in both pilot neighbourhoods for residents that reported that they were planning on completing a retrofit in the next 1-2 years.

Some of the other metrics we collected included:

- Number of virtual and in-person events, such as booths and webinars, and individual engagements per event
- Referral source when inquiring for an audit
- Percentage of audit inquiries converted to completed audits, and the referral source
- Total number of engagements with digital and online media
- Number of newsletter subscribers and open rates

#### **To assess the effectiveness of each of the communications approaches tested:**

The success of each engagement tool was evaluated based on pre and post survey result comparisons, in which we asked all contacts how they heard about the program. Some highlights of these results are included in the 'Outcomes' section at the end of this report.

## **To inform the Phase Two delivery model and our planned approach to accelerating mass retrofits in our region:**

Evaluation of the program model and Phase Two plan was informed by the full scope of project data, including partner interviews, stakeholder discussions, working meetings with technical and government partners, client feedback, trades enterprise feedback and our work in the sector both through the FHO program and other programs (including Better Homes Ottawa, Greener Homes audits and low-income conservation programs). The outline of the Phase Two project model can be found below (p40).

## **What worked**

Our **work across multiple home energy efficiency initiatives** allowed us to keep abreast conversations across the sector, well beyond what would have been possible within the Future Homes Ottawa program portfolio alone. This gave us a better view of trends and best-practices in the sector as a whole, which significantly informed our Phase Two planning.

**Incentivizing participation.** For our resident engagement surveys, we purchased gift cards to local/popular businesses to use as draw prizes. This helped to incentivize participation and tap into another local channel to help with promotion.

**Tracking referral sources.** Asking clients who inquired about a home energy audit or any other service through the Future Homes Ottawa program how they heard about us helped us identify which outreach and engagement approaches were most effective.

## **Challenges**

Our **control group data collection was limited** by pandemic restrictions (as noted in Step 6: Challenges), which made it harder to produce meaningful comparisons between raised awareness in our target neighbourhoods (as a result of project activities) and raised awareness across the region, which may have been a result of other factors, like the launch of the federal Greener Homes program.

As we dug into data evaluation, we were mindful of the limitations imposed by our relatively **small data set** and outreach-based approaches. EnviroCentre has extensive experience in data collection and evaluation for community sustainability initiatives, and we are confident in the strength of our approaches in these areas, but we are aware of the advances and changes in data collection approaches as a field, and the need for broad-spectrum advanced data to adequately support programs that will require significant public investment in coming years. This led us to conclude that a greater focus on data collection and evaluation should be a key component in the Phase Two project.

Our **data collection was focused on outreach and engagement outcomes** for the Phase One project, but effective transition to a mass retrofit program model will require a clear model to collect and compare energy consumption and emissions data for local residences, and changes over time.

While we identified six demonstration project homes in Phase One of this project, the retrofits will be completed in Phase Two, when we will be better able to assess reductions in energy consumption. Our project budget did not allow capacity to deeply examine this question in Phase One.

## **What we recommend**

Remaining agile throughout your project can allow you to respond and adjust along the way, based on your progress. For example, if your initial community and resident engagement research finds that the outreach or learning tool preferences of the community are different than what you had planned for, or if early findings show that the outreach approaches you were planning to focus on are not getting the traction you expected, it is worthwhile to revisit and adjust your plans. In our project, we expected to have a significant focus on in person outreach, but due to pandemic restrictions we needed to scale back and modify this approach. Our early resident engagement survey results and outreach activities showed that we could still engage effectively with our target audience through virtual platforms and activities, so we shifted our focus to online webinars and interactive virtual events that included opportunities for open conversations between experts and homeowners.

Longer-term approaches that seek to engage in mass retrofit approaches will require more in-depth data collection. We recommend starting conversations around robust data collection strategies relatively early in your project, as their development will require funding support, collaboration between interested regional partners (in our case including the city and local funders), and a robust long-term plan.

## Step 10: Share your successes and findings

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### What we did

Throughout project delivery, we shared updates and successes with community partners and stakeholders. Our goal was to be as transparent as possible to encourage collaboration, stakeholder feedback, and knowledge sharing. Sharing successes also helped keep partners engaged.

At the project end, we hosted a **virtual public wrap-up event** to share and promote our achievements and findings, and we released a comprehensive public-facing report (this one) on our website. Our goal was to keep our community partners and residents interested and informed about project outcomes. We also wanted to ensure all our learnings were publicly accessible to inform future projects across Canada and elsewhere. We are eager to share the tools we have developed and support the national project of scaling residential retrofits, wherever possible.

### What worked

All of it!

Our wrap-up event, the ***Future Homes Ottawa Round-Up: Learnings from Ottawa's First Neighbourhood Retrofit Project*** was a sold-out event. We aimed to make this event more interactive and engaging than a simple presentation, so we invited our partners to join and participate. Councillor Brockington, from River Ward (Carlington neighbourhood) shared his support for the project in Carlington. Holly Bickerton from the Old Ottawa South Enviro Crew spoke about the group's involvement in the project and their success as a local environmental group. John Purkis, a member of the Future Homes Ottawa Stakeholder group and a resident of Old Ottawa South detailed his personal retrofit journey. Project partners facilitated break-out room conversations with participants on popular topics, including Home Insulation, Solar Power, Electrification and Electric Vehicles.

Of course, this piece of the project is not over. You can help share our learnings by sharing this report, one of our tools, or any aspect of this project with your local environmental group or municipality. We are happy to chat further, and provide more details.

## **What we recommend**

Document everything. Making sure that you have organized systems to track activities and collect data throughout the course of the project will make it easier to report on everything at the project end.

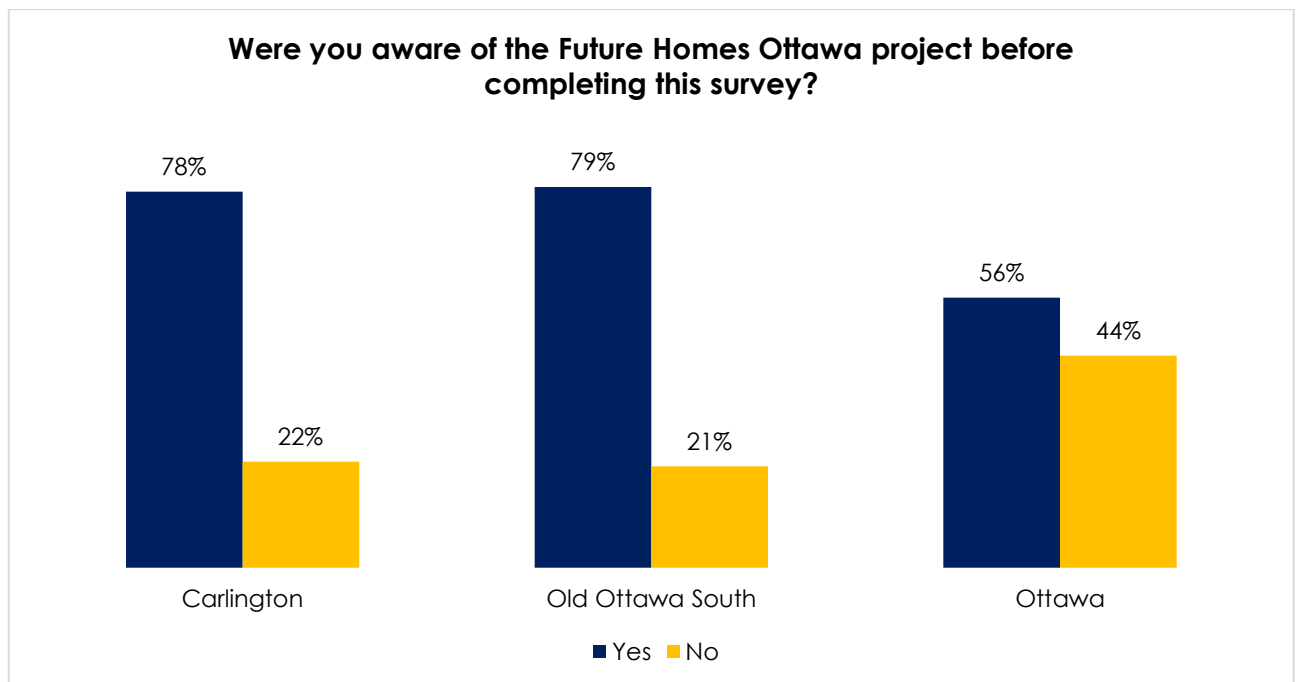
Share information in real time. We recommend 100% transparency and open-source sharing of resources. The project of retrofitting Canada's homes to net-zero is enormous, pressing, and important. We will not reach our targets unless we work together and leapfrog our progress to the finish line. If you want access to our tools, or obtain permission to copy our website resources, get in touch. We are happy to share.



# Outcomes

Some project outcomes and highlights are included below:

*Note: The initial Resident Engagement Survey received 632 responses, with 20% from residents within the pilot neighbourhoods (11% from Carlington and 9% from Old Ottawa South), 41% from residents within Ottawa. The follow up Resident Engagement Survey received 351 total, with 16% were responses from residents within the pilot neighbourhoods (6% from Carlington and 10% from Old Ottawa South), 84% from residents within Ottawa. The initial survey had 39% of responses from residents outside of Ottawa, compared to just 0.2% in the follow up survey.*



*Figure 1. Residents in the pilot neighbourhoods reported significantly higher rates of project awareness compared to the rest of Ottawa. This speaks to the significant focus on outreach and engagement specifically within the pilot neighbourhoods.*

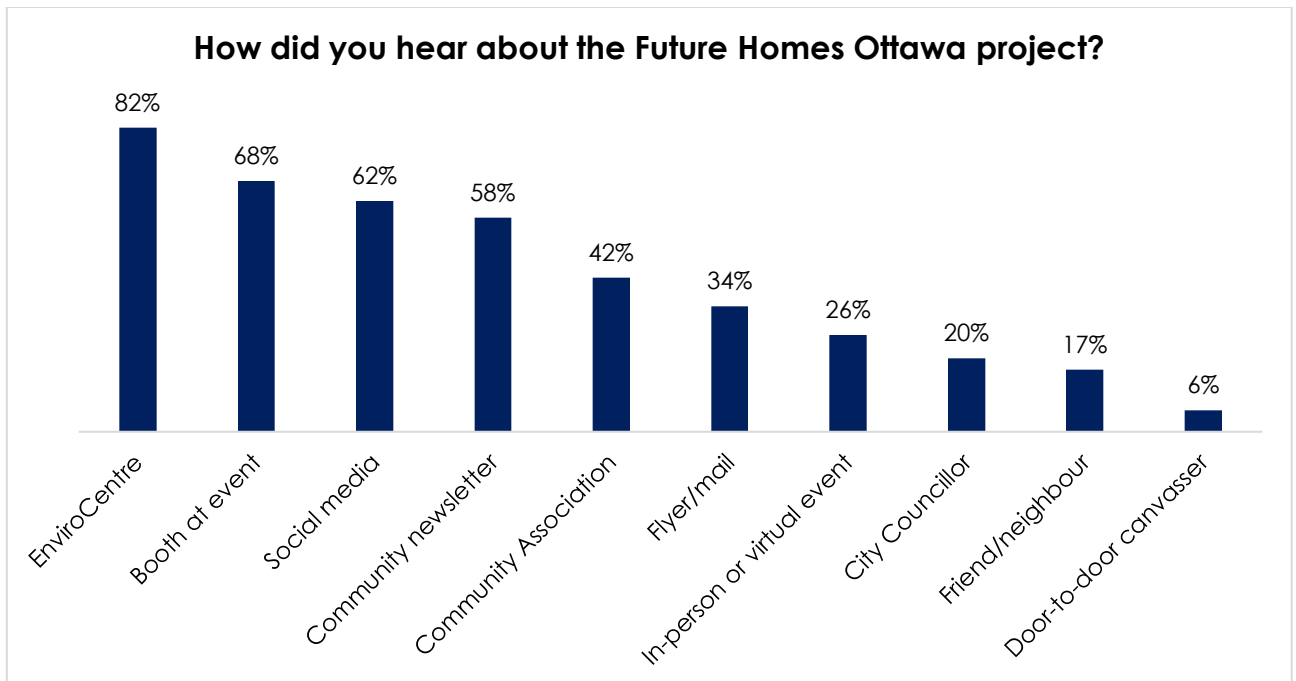


Figure 2. Survey respondents who had heard about Future Homes Ottawa prior to completing the follow-up resident engagement survey reported where they had heard about the project.

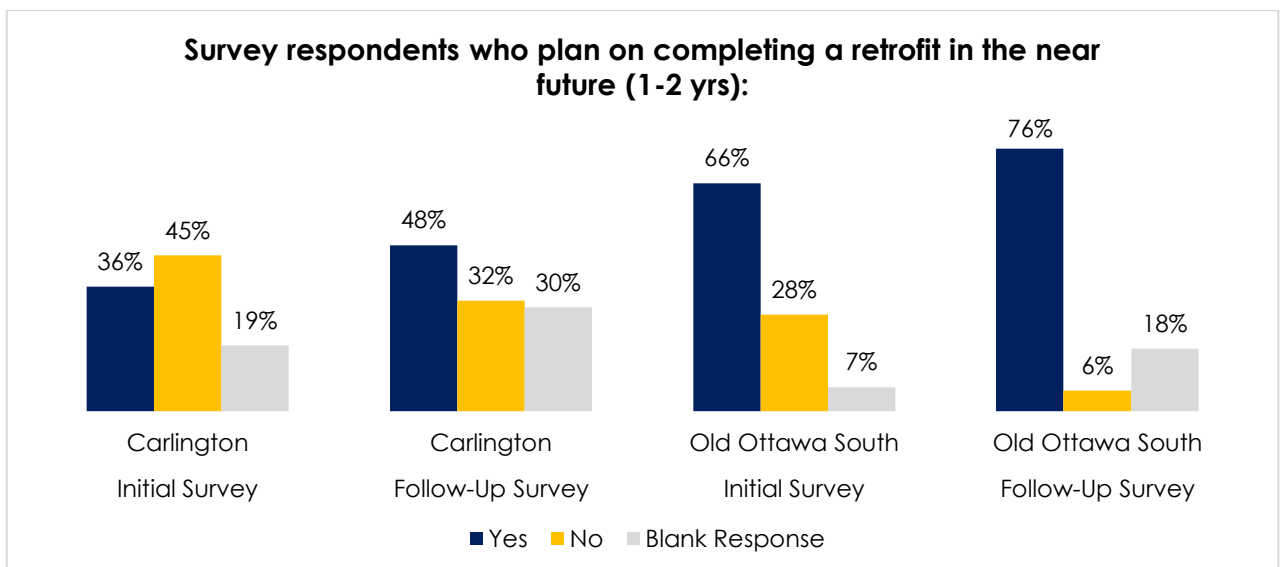


Figure 3. At the end of Phase One, there was a 10% increase in both pilot neighbourhoods for residents that reported that they were planning on completing a retrofit in the next 1-2 years.

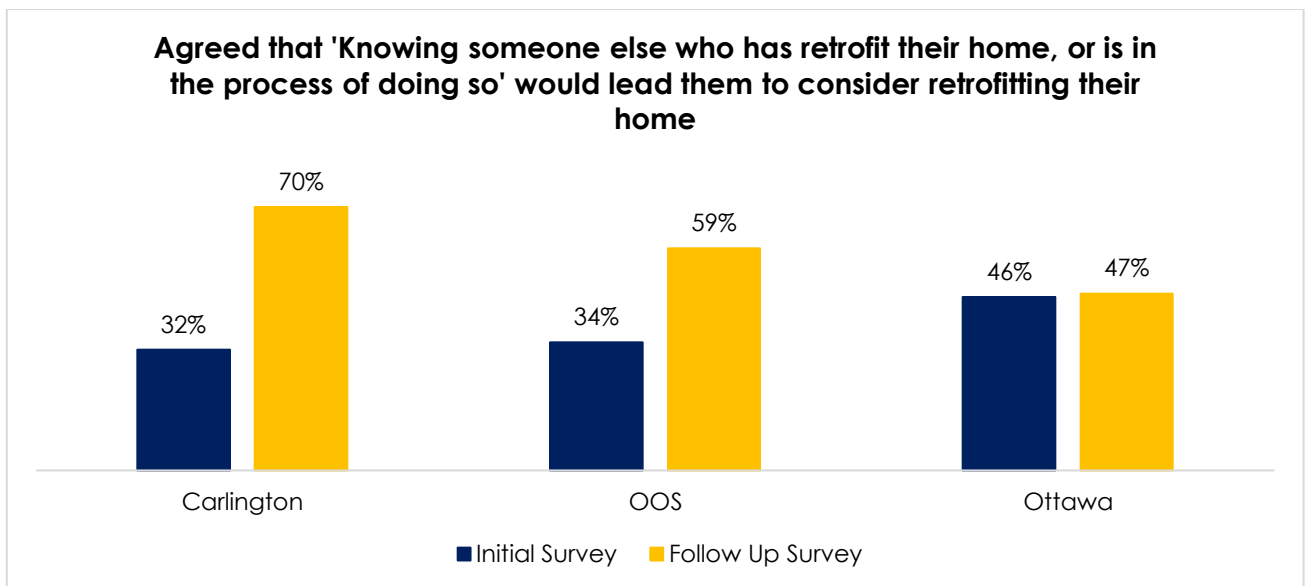


Figure 4. In both pilot neighbourhoods there was a significant increase in the number of respondents who agreed that knowing someone else who has retrofit their home, or is in the process of doing, so would lead them to consider retrofitting their home.

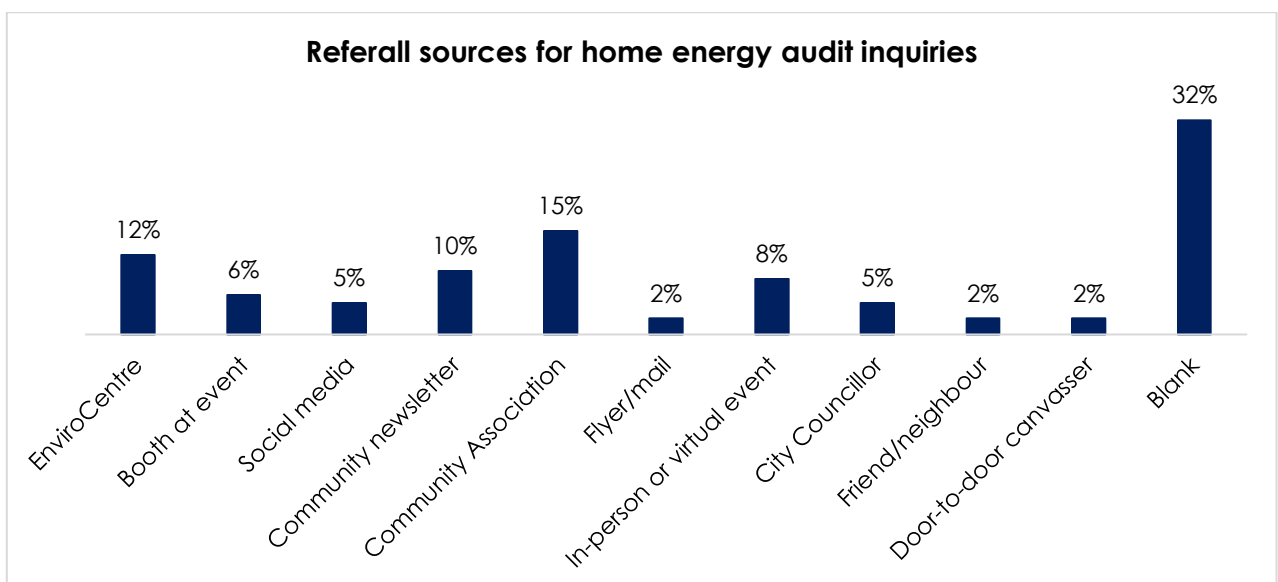


Figure 5. A. Residents in the pilot neighbourhoods were encouraged to complete home energy audits as the first step in assessing a home's energy use. The majority of these inquiries were referred to us through Community Associations (including the Enviro Crew), followed by EnviroCentre directly. Community Associations, the Enviro Crew in OOS specifically, were strong supporters of the project and helped connect us to and build trust with local residents.

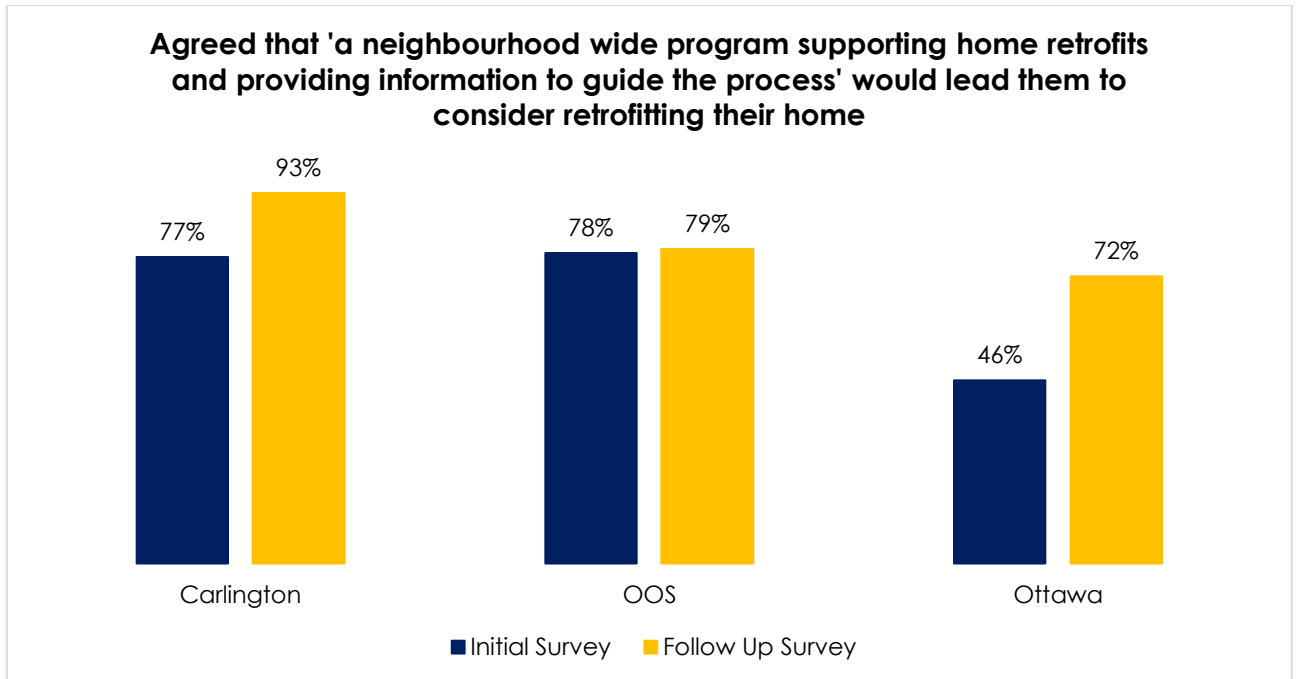


Figure 6. There was some increase in the number of respondents who agreed that a neighbourhood wide program supporting home retrofits would lead them to consider retrofitting their home, but the largest increase was from residents outside the pilot neighbourhoods, where agreement with this statement increased 26%. This suggests that there is demand for the program to expand into additional neighbourhoods. It should also be noted that the pilot neighbourhoods had high agreement with this statement in the initial survey compared to the rest of Ottawa, positioning them as good candidates for the pilot project.

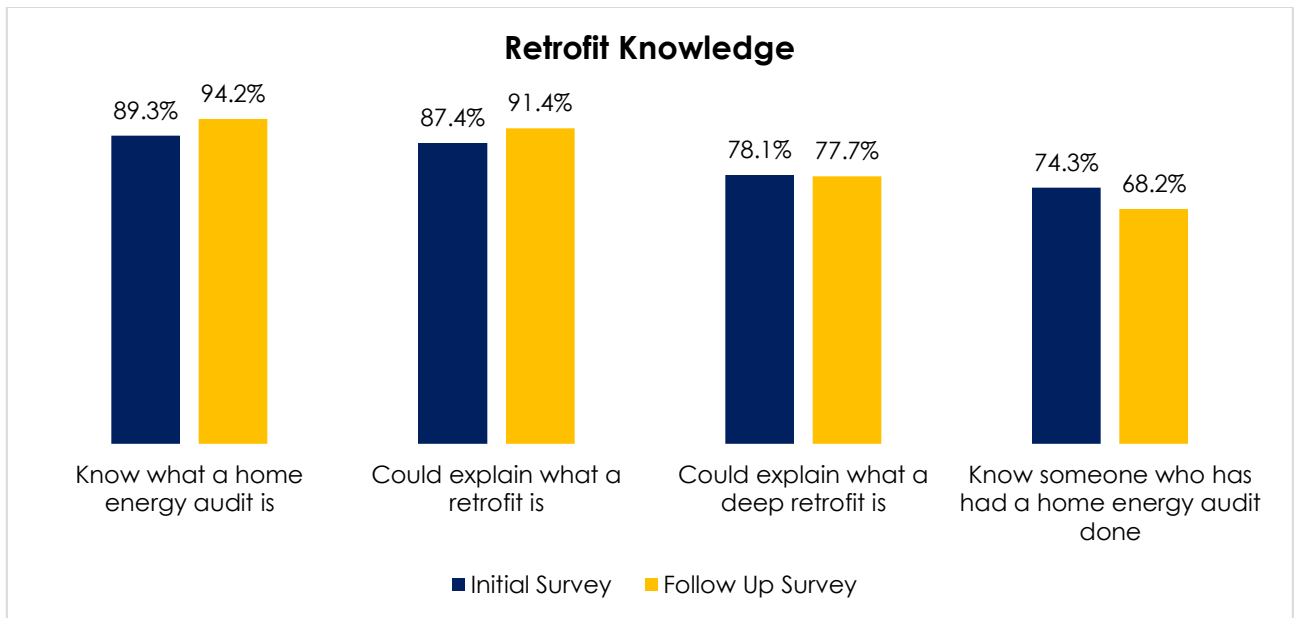


Figure 7. Comparing the results from the initial and follow-up resident engagement surveys show an increase in respondents who reported that they know or could explain what an energy audit is and what a retrofit is. There was a slight decrease in respondents who reported that they could explain what a deep retrofit is or who know someone who has had a home energy audit done.

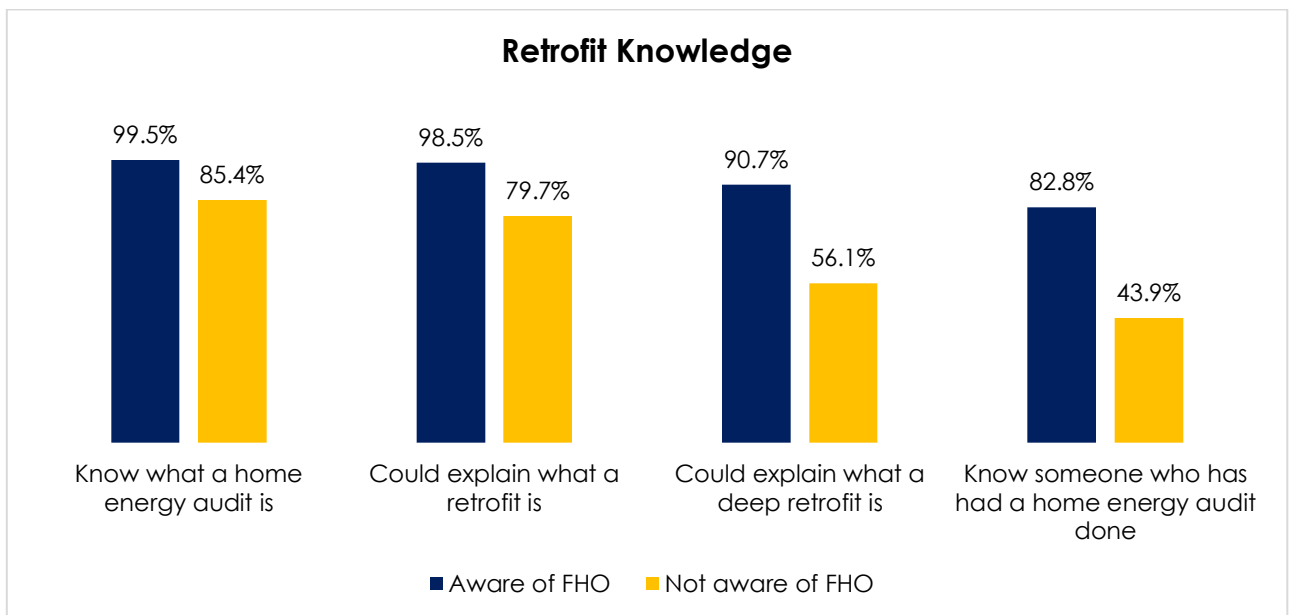


Figure 8. Residents from all neighbourhoods who were aware of the Future Homes Ottawa pilot project reported higher overall knowledge of energy audits and retrofits. Residents who were aware of the project also reported that they know someone who has had a home energy audit at significantly higher rates.

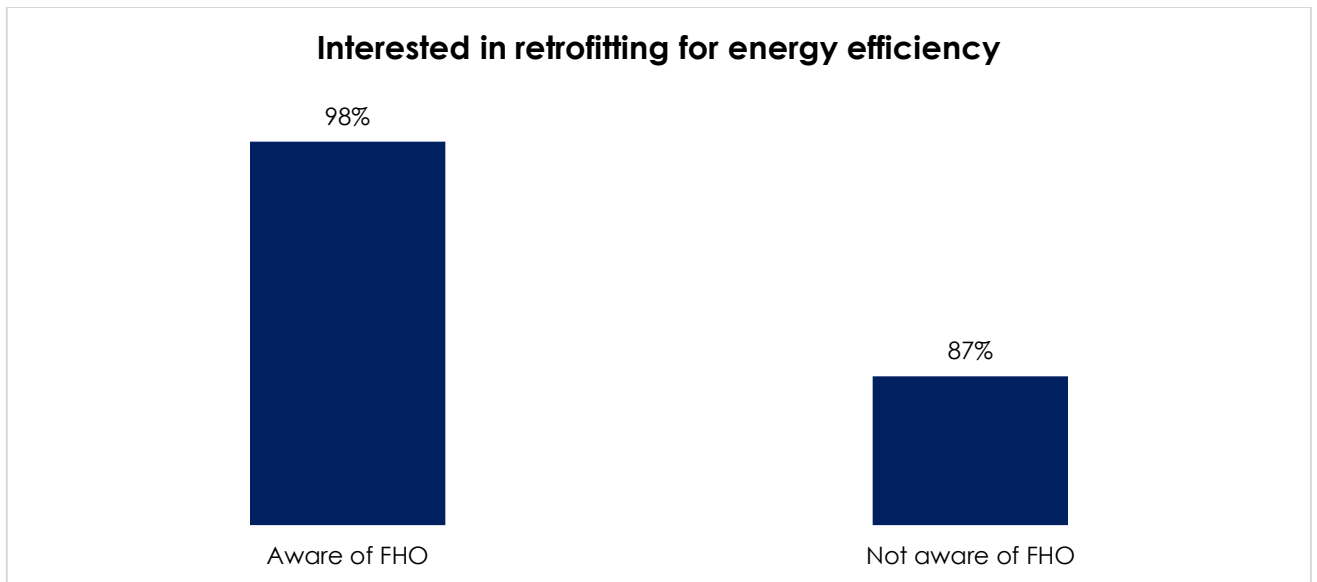


Figure 9. Respondents from all neighbourhoods who were aware of the project were more likely to be interested in retrofitting their home for energy efficiency than those who were not aware of the project.

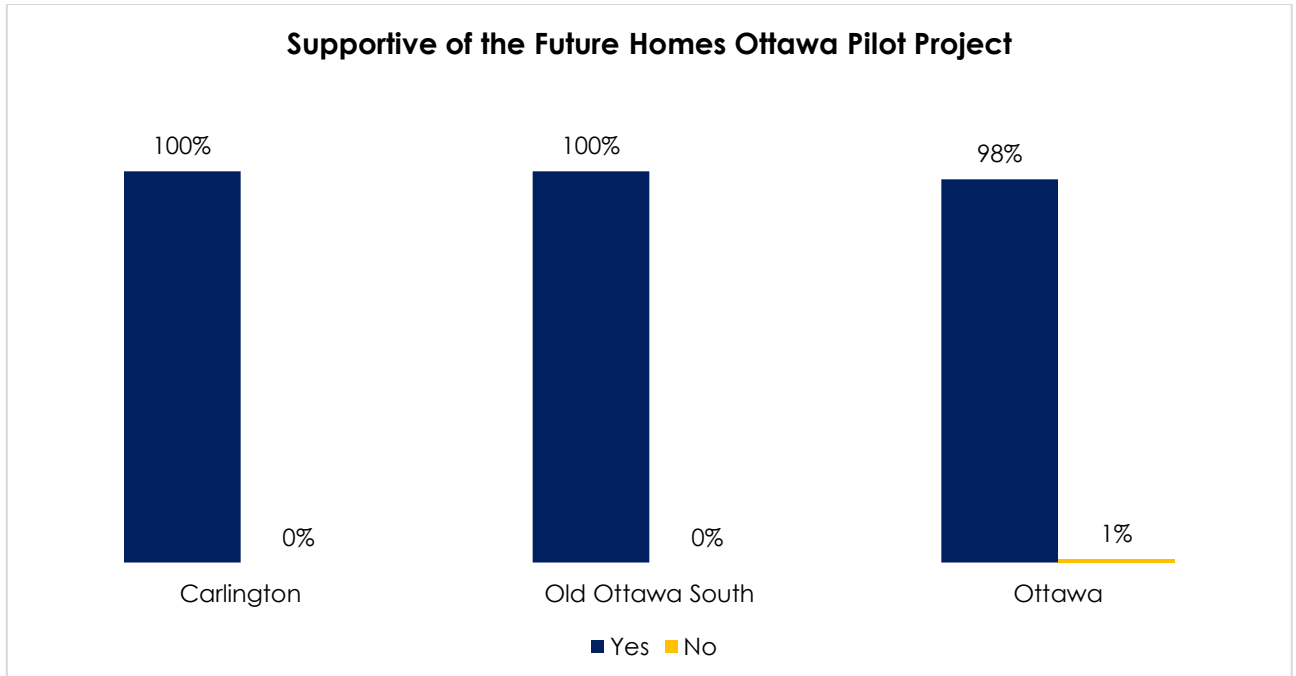


Figure 10. Nearly all survey respondents reported that they were supportive of the Future Homes Ottawa project, regardless of neighbourhood.

# Moving Toward Phase Two

The intent of Phase One was to lay the groundwork for what would become a mass retrofit pilot project. The aims were to establish effective communications strategies to engage participants, raise the general bar for awareness around deep retrofits, create tools that would support an effective mass retrofit strategy, and engage interested parties who would be some of the key stakeholders for a mass retrofit project. The final step was to take the information gathered and lessons learned and design a Phase Two project model that would move Ottawa a step closer to realizing mass retrofits, right here in town.

Based on our learnings, we laid out a Phase Two project model with three overarching goals:

1. **Build local homeowner interest in net-zero and net-zero ready retrofits.** While awareness of retrofit incentive programs is growing and demand for these programs is high, knowledge of and interest in deep retrofits, or net-zero and net-zero ready retrofits remains limited and is not always the focus of government-led incentive and financing programs, even when it is the ultimate goal. Future Homes Ottawa outreach and engagement will focus on deep, net-zero and net-zero ready retrofits exclusively, complementing the broader-reaching goals of the City of Ottawa's Better Homes Ottawa program, and providing a deeper level of support and engagement for those with intent to complete deep retrofits.
2. **Prepare Ottawa trades to execute mass retrofits over the coming years.** There is no better way to understand the dynamics, benefits and challenges of a coordinated mass retrofit here in Ottawa than by working out the mechanics on the ground. This project will provide a working template for future mass retrofit projects, while building the networks, communication, and practices required among trades practitioners and suppliers to start the ball rolling on mass retrofits in the region.
3. **Position Ottawa to take advantage of emerging supports for national mass retrofits.** Ottawa is not alone in engaging with strategies to execute mass retrofits, but we want to be leading the pack. While supports for mass retrofit approaches are not currently available through the federal or provincial governments, it is hoped that a coordinated national effort will emerge, and when it does, Ottawa will be well positioned to inform and join this ground-breaking national project.



We then broke down these goals into clear actions that support the achievement of the goals:

**Goal 1: To build local homeowner interest in net-zero and net-zero ready retrofits, EnviroCentre will:**

1. **Complete the demonstration projects planned in Phase One.** Coming out of Phase One, Future Homes Ottawa will have six homeowners signed on to complete deep retrofits as demonstration projects with full project recommendations and plans in place. These projects will be ready to begin work, and Phase Two will support the homeowners to bring these projects to completion. Our Home Performance Specialist will help the homeowners navigate their retrofits, communicate with contractors, plan schedules, and support quality outcomes. The retrofit process will be documented from start to finish for each home, resulting in clear and impactful project testimonials presented in multi-media format. Energy savings outcomes will be documented and analyzed to further support these local case study home projects.
2. **Expand neighbourhood outreach, building on Phase One learning.** Community-level outreach and engagement is consistently identified as a key component in developing trust around retrofit programs and initiatives and supporting action outcomes. Final results from Phase One community outreach have not yet been tabulated, but support for and engagement in the project was very positive in both target neighbourhoods. Word of mouth, active community groups, community tours, educational events and in-person outreach proved to be popular engagement tools, with the Old Ottawa South Enviro Crew of Old Ottawa South providing a working template for an engaged environmental community group championing retrofit work. Phase Two will build on these learnings and expand this community engagement into four new neighbourhoods, with a particular emphasis on supporting the development of a group of community 'champions' for deep retrofits, if none exist.
3. **Develop a regional communications/marketing strategy.** EnviroCentre's work in Phase One, the work of the Ottawa Energy Collective and the work of the City of Ottawa's Better Homes Ottawa program have begun to address community-level outreach around energy efficiency and home retrofits, all of which will be essential for uptake. But to build regional deep retrofit awareness at scale, our on-the-ground outreach will need to be supported by a wider, cross-regional communications approach, which leverages the best practices in communications data collection and outcomes evaluation to demonstrate key local metrics around awareness and engagement. In Phase Two, EnviroCentre will contract a communications and marketing firm to develop a regional communications and marketing plan to support the shared regional goals around deep residential retrofits and develop messaging and communications products that can be used widely.

4. **Establish a Home Retrofit Planner service.** Building on the Home Retrofit Planner service model developed to support Phase One demonstration project participants and supported by demand from the Better Homes Ottawa-supported Home Retrofit Planner service for low-income participants in the Better Homes Ottawa Loan program, EnviroCentre will launch a Home Retrofit Planner service for Ottawa residents. This service will accompany the homeowner from interest to project completion, building on the Energuide audit with net-zero recommendations, and the costing tool developed in Phase One (and through the Better Homes Ottawa project). The service will support homeowners to select the plan that is right for them, book contractors, plan the work process and ensure each stage is executed correctly. This essential piece of the home retrofit landscape will incentivize deep retrofits, improve homeowner and trades knowledge, promote coordinated projects, and support positive retrofit outcomes. This component does not require OCAF funding for launch, but OCAF funds will support moving the service to the point of launch as a social enterprise, and the work plays an integral role in the full project approach.

**Goal 2: To prepare Ottawa trades to execute mass retrofits over the coming years, EnviroCentre will:**

1. **Facilitate bulk buys and installations.** Phase One project outreach and engagement generated significant interest in and requests for coordinated bulk buys for key energy efficiency equipment, including air source heat pumps, EV chargers and solar installations. Bulk buys can reduce homeowner costs, create installation efficiencies for homeowners and contractors, and develop positive working relationships with manufacturers, distributors, and installers. They also create an opportunity to test some of the coordination components involved in a mass retrofit at a simpler scale. In Phase Two, EnviroCentre will capitalize on this opportunity and support the coordination of three neighbourhood or regional bulk buys. We will work with local partners including Envari, Hydro Ottawa, Ottawa Home Services (HVAC), Execon Solar, and others to accelerate adoption of energy efficiency technologies and streamline efficient group installations.
2. **Facilitate and coordinate a trades consortium of local contractors committed to working collectively to develop and complete 1-3 mass retrofit-model projects.** One popular emerging model that is considered essential to effectively scaling residential retrofits is the coordinated mass retrofit approach. Where Phase One started small and focused on developing strong example retrofits of individual homes, EnviroCentre recognizes that to effectively scale at pace, we need to explore and start to actualize approaches that move beyond the one-by-one.

In Phase Two we will start to model and test this approach in Ottawa, in partnership with local trades, and informed by the research and learnings from our provincial and national partners. Future Homes Ottawa will emerge from Phase One with a growing network of engaged trades enterprises, and a shortlist of key enterprises who have expressed interest in working collaboratively on a mass retrofit project. In Phase Two we will engage the shortlisted group, and any other emerging participants, to form a working mass retrofit consortium that will inform and plan a coordinated approach to completing a mass retrofit.

- 3. Complete 1-3 mass (20-50 home) retrofit projects.** EnviroCentre will recruit homeowner participants, provide homeowner planning support, and provide high-level planning and coordination to the trades retrofit consortium(s) to complete the mass retrofit projects. Projects will include bulk buys where possible and encourage deep retrofits and fuel-switching measures. Deep retrofits will be required for a percentage of mass retrofit participants and may be required for all participants, depending on feasibility and project uptake. One project will be planned with the aim of launch within the first year, with a second and third (where applicable) planned to begin year 2. Provided there is sufficient trades interest, a second consortium will be engaged in year 2 to complete a third mass retrofit. Pre and post data collection and sharing will be required of all participants.

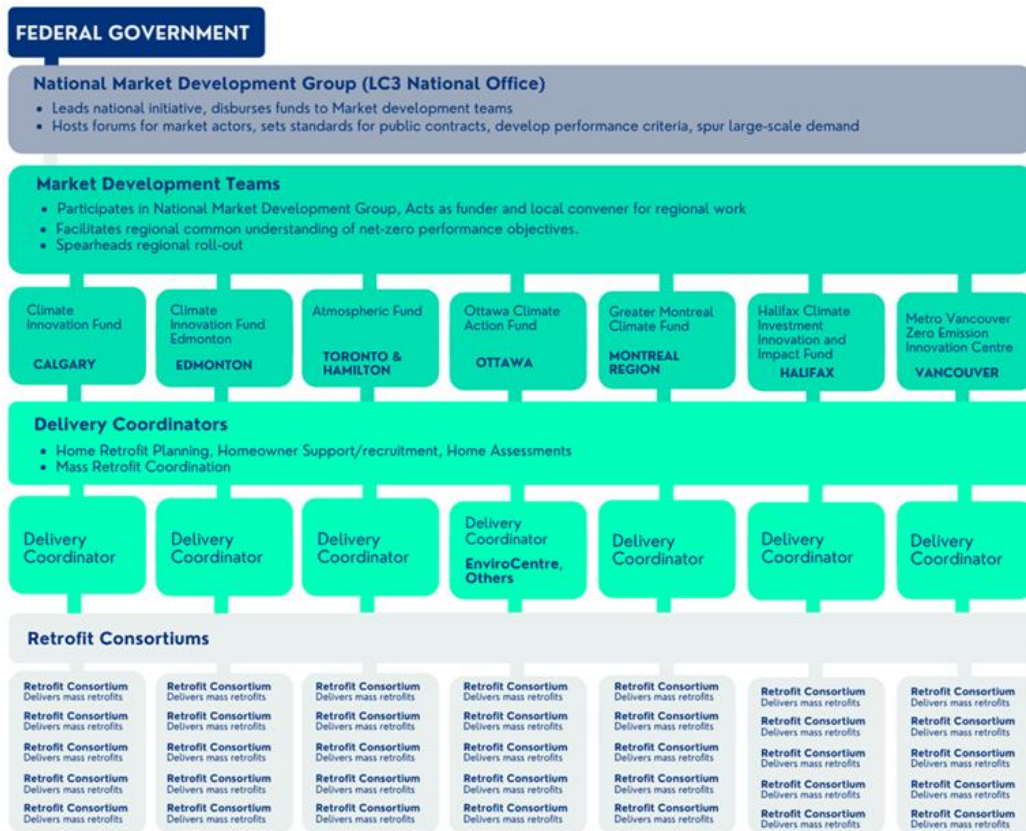
**Goal 3: To position Ottawa to take advantage of emerging supports for national mass retrofits, EnviroCentre will:**

- 1. Develop a data collection and evaluation tool to track and analyze regional progress in awareness and communications approaches.** Marketing and communications around climate generally and retrofits specifically is a rapidly-evolving field, but there remain many unknowns with regard to approaches and outcomes. Clear data in this area will support effective use of coveted outreach dollars and will better position Ottawa to win federal and provincial funding to build public awareness. Supported by the external communication and marketing consultant, EnviroCentre will create project-specific data collection evaluation methods and analytics, while working toward a longer-term regional approach to measuring and tracking progress in public awareness and engagement. Phase Two will build on the relatively simple approach of Phase One to integrate key components such as control groups and EDI-centred engagement approaches.
- 2. Develop a data collection and evaluation strategy to track and analyze regional uptake in net-zero and net-zero-ready retrofits, and reductions achieved.** Over the longer term, availability of strong, multi-factor data indicators that demonstrate residential retrofit uptake and the resultant savings in terms of energy and carbon emissions will be essential. This data will inform regional strategy and planning with respect to residential retrofit projects and will need to integrate multiple data sources and leverage all available technologies.

While this data set will become essential to EnviroCentre's work, it is certainly beyond our scope alone. In partnership the City of Ottawa, The Ottawa Climate Action Fund, and other interested stakeholders, EnviroCentre will support the development of a strategy and data collection tool to capture regional emissions reduction and energy efficiency gains over the long-term, as the region progresses toward our net-zero emissions goal for the residential sector.

3. **Develop a Regional Action Plan to scale capacity to meet targets.** We know that to meet our regional emissions reduction targets for the residential sector, we will need to retrofit around 20,000 homes per year over the next decade. Future Homes Ottawa is developing the building blocks that we will need in place to accelerate this massive regional project, but building blocks can only be understood, designed, and produced to support a complete plan. EnviroCentre's preliminary vision for this plan is sketched out in *Figure 1*, but part of our work over the next two years will be to revise and adjust this plan, work with regional partners to settle on a shared vision, and ensure that by the end of Phase Two we have not only formed the building blocks, but also the plan to mass produce them and shift this work into high gear. In particular, this strategy will identify best-practice approaches that ensure equitable distribution of gains from local mass retrofit boom economy

## Figure 1: Mass Retrofit Model Map



## Figure 2: Roadmap to Engagement in Ten Steps



**We are grateful to the following organizations and projects for sharing their time, knowledge, and/or resources:**

Toronto

- **Toronto Community Housing TowerWise Retrofit Project**
- **Toronto and Region Conservation Authority SNAP Green Home Program**
- **Harbord Village Residents' Association Net Zero Carbon Project**
- **The Pocket Change Project**
- **Transformation Initiative Bungalow Green**
- **Toronto East End Climate Collective**
- Community for Climate Action North Etobicoke
- Neighbourhood Energy Solutions Toronto Burlington
- **Centre for Climate Change Management at Mohawk College**

**For more information on the Future Homes Ottawa pilot project, or this report, please contact us!**

### **EnviroCentre**

Mailing address: 1554 Carling Ave Unit 347, Ottawa, ON K1Z 7M4

Email: **[futurehomes@envirocentre.ca](mailto:futurehomes@envirocentre.ca)**

Tel: 613-656-0100

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# References

- Calder, D. (2020). *The Case for Deep Retrofits* (p. 70). The Atmospheric Fund. [https://taf.ca/wp-content/uploads/2020/09/TAF-Business-Case-Deep-retrofits\\_2020.pdf](https://taf.ca/wp-content/uploads/2020/09/TAF-Business-Case-Deep-retrofits_2020.pdf)
- Cicmanova, J., Maraquin, T., & Eisermann, M. (2020). *How to Set Up a One-Stop-Shop for Integrated Home Energy Renovation? A step-by-step guide for local authorities and other actors*. Energy Cities. [https://energy-cities.eu/wp-content/uploads/2020/07/INNOVATE\\_guide\\_final.pdf](https://energy-cities.eu/wp-content/uploads/2020/07/INNOVATE_guide_final.pdf)
- City of Ottawa. (2020a). *Better Homes Loan Program: Feasibility Study and Program Design* (p. 41). <http://ottwatch.ca/meetings/file/653061>
- City of Ottawa. (2020b). *Energy Evolution: Ottawa's Community Energy Transition Strategy* (p. 101). [https://documents.ottawa.ca/sites/documents/files/energy\\_evolution\\_strategy\\_en.pdf](https://documents.ottawa.ca/sites/documents/files/energy_evolution_strategy_en.pdf)
- City of Ottawa. (2020c). *Results of the 2019 Community and Corporate Greenhouse Gas (GHG) Inventories* (p. 28). City of Ottawa. [https://documents.ottawa.ca/sites/documents/files/2019\\_ghg\\_report\\_en.pdf](https://documents.ottawa.ca/sites/documents/files/2019_ghg_report_en.pdf)
- City of Ottawa. (2020d). *Climate Change Master Plan* (p. 40). [https://documents.ottawa.ca/sites/documents/files/climate\\_change\\_mplan\\_en.pdf](https://documents.ottawa.ca/sites/documents/files/climate_change_mplan_en.pdf)
- Clean Air Partnership. (2021). *Pathways to NetZero in the Single-Family Residential Sector*. <https://cleanairpartnership.org/cac/wp-content/uploads/2021/03/BHTO-100321.pdf>
- Dion, J., Kanduth, A., Moorhouse, J., & Beugin, D. (2021). *Canada's Net Zero Future: Finding Our Way in the Global Transition*. Canadian Institute for Climate Choices. [https://climatechoices.ca/wp-content/uploads/2021/02/Canadas-Net-Zero-Future\\_FINAL-2.pdf](https://climatechoices.ca/wp-content/uploads/2021/02/Canadas-Net-Zero-Future_FINAL-2.pdf)
- Division of Environment & Energy. (2021). *BetterHomesTO Knowledge Exchange: Pathways to Net Zero in the Single-Family Residential Sector*. City of Toronto. <https://cleanairpartnership.org/cac/wp-content/uploads/2021/03/BHTO-Knowledge-Exchange-March-10-2021-FINAL.pdf>
- Energy and Mines Ministers' Conference, C. & Natural Resources Canada. (2017). *Build smart - Canada's buildings strategy: A key driver of the pan-Canadian framework on clean growth and climate change 2017*. Natural Resources Canada. [http://epe.lac-bac.gc.ca/100/201/301/weekly\\_acquisitions\\_list-ef/2018/18-07/publications.gc.ca/collections/collection\\_2018/rncan-nrcan/M4-150-2017-eng.pdf](http://epe.lac-bac.gc.ca/100/201/301/weekly_acquisitions_list-ef/2018/18-07/publications.gc.ca/collections/collection_2018/rncan-nrcan/M4-150-2017-eng.pdf)



- Environmental Audit Committee. (2021). *Energy Efficiency of Existing Homes* (Fourth Report of Session 2019-21; p. 80). House of Commons.  
<https://committees.parliament.uk/publications/5171/documents/52521/default/>
- Fabbri, M., De Groote, M., & Rapf, O. (2016). *Building Renovation Passports: Customised roadmaps toward deep renovation and better homes* (2nd Edition). Buildings Performance Institute Europe. [https://www.bpie.eu/wp-content/uploads/2017/01/Building-Passport-Report\\_2nd-edition.pdf](https://www.bpie.eu/wp-content/uploads/2017/01/Building-Passport-Report_2nd-edition.pdf)
- Greenest City Action Plan. (2016). *Zero Emissions Building Plan*. City of Vancouver. <https://vancouver.ca/files/cov/zero-emissions-building-plan.pdf>
- Haley, B., & Torrie, R. (2021). *Canada's Climate Retrofit Mission: Why the climate emergency demands an innovation-oriented policy for building retrofits*. Efficiency Canada. <https://www.efficiencycanada.org/wp-content/uploads/2021/06/Canadas-Retrofit-Mission-At-A-Glance.pdf>
- Hoicka, C. E., & Das, R. (2021). Ambitious deep energy retrofits of buildings to accelerate the 1.5°C energy transition in Canada. *The Canadian Geographer / Le Géographe Canadien*, 65(1), 116-127. <https://doi.org/10.1111/cag.12637>
- Hulan, J. (2021). *Energy Efficiency and Greenhouse Gas Reductions in the Housing Sector: A Federal Perspective* (p. 14). Natural Resources Canada. [https://cleanairpartnership.org/cac/wp-content/uploads/2021/03/Workshop-Presentation\\_HCD\\_NRCAN-March-10th-2021.pdf](https://cleanairpartnership.org/cac/wp-content/uploads/2021/03/Workshop-Presentation_HCD_NRCAN-March-10th-2021.pdf)
- Jermyn, D., & Richman, R. (2016). A process for developing deep energy retrofit strategies for single-family housing typologies: Three Toronto case studies. *Energy and Buildings*, 116, 522-534. <https://doi.org/10.1016/j.enbuild.2016.01.022>
- Kassirer, J. (n.d.). *Fort Collins Efficiency Works (Neighborhoods)* [Tools of Change]. <https://toolsofchange.com/fr/case-studies/detail/707/>
- Kennedy Consulting. (2021). *A Study to Explore the Feasibility of a Social Purpose Organization to Advance Deep Energy Retrofits in Halton*. Halton Environmental Network. [https://haltonenvironet.ca/wp-content/uploads/2021/06/HEN\\_IRP\\_DER\\_Feasibility\\_Study\\_2021.pdf](https://haltonenvironet.ca/wp-content/uploads/2021/06/HEN_IRP_DER_Feasibility_Study_2021.pdf)
- Kennedy, M., & Frappé-Sénéclauze, T.-P. (2021). *Canada's Renovation Wave: A plan for jobs and climate* (p. 43). The Pembina Institute.
- Morris, R., & Becker, J. (2018). *EnergyFit NYC: Final Report*. Pratt Center for Community Development. [https://prattcenter.net/uploads/0420/1587936953509575/Energyfit\\_Final\\_Report\\_for\\_web.pdf](https://prattcenter.net/uploads/0420/1587936953509575/Energyfit_Final_Report_for_web.pdf)



- Net Zero Labelling Program. (2020). *Technical Procedures Guidebook* (Version 1.3). Canadian Home Builders' Association.
- Net Zero Labelling Program. (2021). *Administrative Requirements* (Version 1.3). Canadian Home Builders' Association.
- Net Zero Labelling Program for Renovation. (2021). *Technical Requirements* (Version 1). Canadian Home Builders' Association.
- Steinberg, J. (2021). *Green Homes: Sustainable Finance for Residential Retrofits* (p. 19). Ottawa: The Conference Board of Canada.
- Sustainability Solutions Group. (2019). *Pathway Study on Existing Buildings Residential Buildings in Ottawa* (The City of Ottawa's Energy Evolution Strategy (Phase Two)). City of Ottawa.  
[https://documents.ottawa.ca/sites/documents/files/pathway\\_study\\_exist\\_res\\_d\\_en.pdf](https://documents.ottawa.ca/sites/documents/files/pathway_study_exist_res_d_en.pdf)
- Sye, M., Scott, L., Hammond, R., & Davis, T. (2021, October 6). The Role of Green Buildings in Our Post-COVID Recovery [Webinar]. CAGBC.  
<https://www.cagbctoronto.org/27-education-a-careers/839-webinar-series-the-role-of-green-buildings-in-our-post-covid-recovery>
- The Retrofit Academy. (2020). *Local-Authority-Retrofit-Toolkit.pdf*.  
<https://www.ukgbc.org/wp-content/uploads/2020/11/Local-Authority-Retrofit-Toolkit.pdf>
- Wheeler, J., Alker, J., & Box, P. (2021). *The Retrofit Playbook: Driving retrofit of existing homes—A resource for local and combined authorities*. UK Green Building Council.  
<https://ukgbc.s3.eu-west-2.amazonaws.com/wp-content/uploads/2021/02/05144353/Retrofit-Playbook.pdf>