

ENVIRONMENT COMMITTEE

TO: MAYOR AND COUNCILLORS

SUBJECT: ZERO-EMISSIONS BUILDING RETROFIT STRATEGY

RECOMMENDATION:

THAT the Zero-Emissions Building Retrofit Strategy, as outlined in Attachment 1 of the report titled “Zero-Emissions Building Retrofit Strategy” dated October 18, 2023, be approved; and

THAT staff advance work on the implementation of the Zero-Emissions Building Retrofit Strategy, as outlined in Attachment 1 of the same report.

REPORT

The Environment Committee, at its meeting held on October 18, 2023, received and adopted the attached report seeking Council endorsement of the Zero-Emissions Building Retrofit Strategy as the basis for future implementation.

On behalf of the Environment
Committee,

Councillor J. Keithley
Chair

Councillor M. Santiago
Vice Chair

TO: ENVIRONMENT COMMITTEE (EC)
FROM: GENERAL MANAGER PLANNING AND DEVELOPMENT
SUBJECT: **ZERO-EMISSIONS BUILDING RETROFIT STRATEGY**
PURPOSE: To obtain committee endorsement of the Zero-Emissions Building Retrofit Strategy as the basis for future implementation.

RECOMMENDATIONS

THAT the Zero-Emissions Building Retrofit Strategy as outlined in Attachment 1 of the report titled “Zero-Emissions Building Retrofit Strategy” dated October 18, 2023 be approved.

THAT staff advance work on the implementation of the Zero-Emissions Building Retrofit Strategy as outlined in Attachment 1 of the same report.

1.0 POLICY SECTION

The Zero-Emissions (ZE) Building Retrofit Strategy supports the following City policies:

- *Environmental Sustainability Strategy (2016)*;
- *Community Energy and Emissions Plan (2016)* Green Building and Energy goals;
- *Climate Action Framework (2020)* Big Move 7: ZE Building–Retrofits for Net-Zero existing buildings; and
- *Corporate Strategic Plan (2022)* goals and sub goals of a Connected Community, an Inclusive Community, a Healthy Community and a Dynamic Community.

2.0 BACKGROUND

On July 6, 2020, Council adopted the Climate Action Framework authorizing staff to develop a citywide Zero-Emissions (ZE) Building Retrofit Strategy. This ZE Building Retrofit Strategy will help move the City towards the ambitious carbon reduction commitments of the climate emergency declaration and the goal to reach carbon neutrality, citywide, by 2050.

The work to develop this strategy began in 2022 with the convening of the Urban Resilient Futures (URF) Zero-Emission Building Retrofit Taskforce (Taskforce). On November 21, 2022, Council referred the Taskforce’s report to staff for review. The Taskforce’s report provided City staff with a foundational set of 20 recommendations for the development of the preliminary draft of the ZE Building Retrofit Strategy.

On 2023 July 10, Council endorsed a preliminary draft Strategy as the basis for further consultation and development.

The purpose of this report is to request that the Committee recommend Council's endorsement of the final ZE Building Retrofit Strategy (Attachment 1) for implementation.

3.0 GENERAL INFORMATION

Buildings are the second most significant source of greenhouse gas (GHG) emissions in Burnaby. Based on modelling from the City's *Climate Action Framework*, nearly 35% of all GHG emissions reductions needed in Burnaby to reach carbon neutrality can be achieved by retrofitting existing buildings. The ZE Building Retrofit Strategy lays out key actions the City can take to help support building owners and occupants to retrofit their buildings to use more efficient and less carbon-intensive energy sources.

Following the endorsement of the preliminary draft of the ZE Building Retrofit Strategy in July 2023, staff:

- Reengaged with the URF Taskforce for further feedback on the draft, in alignment with the URF Memorandum of Understanding from September 2021; and
- Expanded upon the preliminary draft of the ZE Building Retrofit Strategy with additional research.

3.1 URF Building Retrofit Taskforce Feedback

Facilitated by the SFU Morris J. Wosk Center for Dialogue, staff reconvened with the URF Taskforce on July 19, 2023 to seek feedback on the preliminary draft of the ZE Building Retrofit Strategy. At the virtual meeting, staff presented the preliminary draft ZE Building Retrofit Strategy, learnings from the Taskforce process and a review of the alignment between the draft Strategy and the Taskforce recommendations. The review of the preliminary draft Strategy shows that 80% of the Taskforce recommendations have been incorporated into the document. The remaining Taskforce recommendations will be incorporated or addressed in other City programs and policies.

Based on this meeting and an accompanying survey, Taskforce members were in support of the preliminary ZE Building Retrofit Strategy and indicating it met important themes around community engagement, building processes, leadership and climate action targets. Some Taskforce members commented that the first Taskforce recommendation to provide targeted supports to increase affordability for those who live in energy poverty or face energy insecurity had not been incorporated in the preliminary draft. The *Urban Resilient Futures Burnaby: Feedback on Burnaby's Draft Retrofit Strategy – Zero-Emission Building Retrofit Task Force* report can be found in Attachment 2.

3.2 Zero-Emissions Building Retrofit Strategy

The ZE Building Retrofit Strategy (Attachment 1) expands on the four key objectives laid out in the preliminary draft Strategy: education and awareness, incentives, policy and bylaws, and advocacy. Incorporating the recommendations and feedback from the Taskforce and cross-departmental internal meetings and industry best practices, the strategy hones in on the gaps and opportunities in the existing retrofit landscape and the municipal tools available to accelerate large scale adoption of retrofit work in our community.

Recognizing the diversity in buildings requiring retrofits, the range of retrofit actions available, and the spectrum of building owners and residents across the City, this Strategy delves into:

- The emissions and energy-use of buildings across the City;
- How retrofits can improve GHG emissions levels and health objectives;
- Understanding who may be most impacted or may most benefit from building retrofits, especially as it relates to enhancing health, comfort and affordability in a changing climate;
- The barriers encountered during the building retrofit process; and
- The suite of actions the City will undertake to support and guide building owners and residents throughout the retrofit journey.

The ZE Building Retrofit Strategy focuses on how different City levers can support retrofit adoption. The implementation of the programs and practices in this Strategy will require careful planning to address systemic inequities and barriers for those most vulnerable to climate change and energy insecurity. The ZE Building Retrofit Strategy responds to these barriers, to ensure as many people as possible benefit from the retrofit process as we work together to build a low-carbon community.

To advance the Strategy, staff identified the following key quick starts based on feasibility, existing resources, building processes, and optimizing retrofit uptake in the community:

- Develop a centralized online platform and communication materials for residents to enhance awareness and energy literacy;
- Participate in a concierge program that provides guidance and support for residents throughout the retrofit process;
- Provide clarity on the permitting process for retrofit work to reduce permit barriers; and
- Explore options in City policies and bylaws that reduce complexity of the retrofit process.

Staff recommends that the Committee forward the Zero-Emissions Building Retrofit Strategy, as outlined in Attachment 1, to Council with a recommendation to endorse the Strategy.

4.0 COMMUNICATION AND COMMUNITY ENGAGEMENT

Communication and community engagement play a fundamental role in enhancing public awareness and energy literacy on building retrofits. Upon the adoption of the ZE Building Retrofit Strategy, staff will work with Corporate Services – Marketing and Communications to develop the needed resources and materials to warrant a successful awareness campaign.

5.0 FINANCIAL CONSIDERATIONS

Work on the ZE Building Retrofit Strategy is being undertaken within existing budgeted resources. Elements of the Strategy include financial implications that will require additional budgetary support in future, which staff will request in forthcoming reports to Council.

Respectfully submitted,

E.W. Kozak, General Manager Planning and Development

ATTACHMENTS

- Attachment 1 – Zero Emissions Building Retrofit Strategy
- Attachment 2 – Urban Resilient Futures Burnaby: Feedback on Burnaby’s Draft Retrofit Strategy – Zero-Emission Building Retrofit Task Force

REPORT CONTRIBUTORS

This report was prepared by Darseen Pooni, Climate Action and Energy Officer and Joanna Cheng, Climate Action and Energy Officer, and reviewed by Erica Lay, Manager Climate Action and Energy, Wendy Tse, Director Community Planning, and Lee-Ann Garnett, Deputy General Manager Planning and Development.



ZERO EMISSIONS BUILDING RETROFIT STRATEGY

**THIS IS >>>
CLIMATE
ACTION**





LAND ACKNOWLEDGEMENT

Burnaby is located on the ancestral and unceded homelands of the hə́nqəmíḱəm and Skwxwú7mesh speaking peoples. We are grateful for the opportunity to be on this territory.

EXECUTIVE SUMMARY

Our climate is changing. In order to lessen the severity of climate change, we need to reduce our greenhouse gas emissions and adapt to the changing climate as a community. Greenhouse gas emissions from our buildings are one of the most significant sources of emissions in Burnaby and hold the most emission reduction potential. This Zero Emissions (ZE) Building Retrofit Strategy takes on a people-first approach in understanding our community, the barriers our residents may encounter, and ensuring as many people benefit in the process of building a low-carbon community together.

The strategy has 4 major objectives that aim to provide support in different stages of the retrofit process. These objectives include Education and Outreach, Incentives, Policies and Bylaws, and Advocacy. Each has a series of actions that are designed to support residents every step of the way. The strategy aims to accelerate the adoption of building retrofit work in our community to help build a climate resilient future.

Acknowledgement

We would like to acknowledge our Urban Resilient Futures partners at the Simon Fraser University Morris J. Wosk Centre for Dialogue and Vancity for the development and facilitation of the Zero Emissions Building Retrofit Task Force. We would also like to express our deep appreciation to all Task Force members and internal stakeholders who shared their expertise, knowledge and insights in the development of this strategy.

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INTRODUCTION

Climate change is a global problem with significant local impacts and opportunities. The greenhouse gas (GHG) emissions we produce in our day-to-day lives—from the buildings we live and work in, to the ways we get around, to the things we consume and the waste we create—contribute to global changes in our climate. At the same time, we are already seeing the devastating effects of these climatic changes, every year, right here in BC—in wildfires, droughts, extreme heat events, flooding, and more frequent large storm events.

To lessen the likelihood and severity of gradual climate change and extreme weather events, we need to both accelerate actions to reduce our GHG emissions where we live, work and play, and take actions that make us more resilient and better able to adapt to these changes.

Understanding these emissions sources will help us strategize ways to reduce Burnaby's GHG emissions. As in most municipalities, the emissions from buildings are one of our most significant sources of emissions. Building emissions make up 39% of Burnaby's citywide emissions and 34% of the city's modelled emission reduction opportunities.

Designing and adapting our built environment to the changing climate will make buildings better places to live, work and learn in the face of changes we know are already underway. Many existing buildings have years of life remaining and will be around for decades to come. Retrofitting these buildings preserves the benefits of the embodied emissions from their construction and construction materials. This makes retrofitting existing buildings to reduce emissions and adapt to climate change a key action in reaching the City's commitment to carbon neutrality by 2050.

The City of Burnaby's ZE Building Retrofit Strategy aims to tackle improved energy efficiency of buildings, the adoption of lower-emission fuel sources, and measures that will make buildings healthier to live in, in our changing climate—through improved indoor air quality, and improved thermal comfort.

The purpose of this retrofit strategy is to:

- » improve our understanding of Burnaby's existing building stock and the opportunity for retrofits
- » better understand the retrofit process and challenges including the perspectives of different building occupants, owners and the building industry
- » identify means to support an accelerated adoption of building retrofits for climate mitigation (GHG reduction) and resilience (installation of cooling systems improved indoor air quality and increased energy efficiency)
- » ensure equity is integrated in the development and implementation of the building retrofit objectives and actions, recognizing that our community members experience climate actions and climate change impacts inequitably, often based on existing systemic inequalities, oppression and wealth inequality



CLIMATE ACTION IN BURNABY

OUR CHANGING CLIMATE

In Burnaby, we are currently experiencing changes to our climate, and can expect more changes in the future. Understanding how our climate will change locally allows us to better adapt to climate change. While we cannot stop climate change, there are actions we can take to make it less severe.

Broadly, Burnaby residents can expect to experience warmer temperatures, drier summers and wetter winters in the future.

What does this mean for our community?

Warmer, drier summers



- » Longer dry spells
- » Less summer rain
- » More water use restrictions
- » Increased risk of wildfires
- » Increased risk to fish and wildlife habitat

Warmer, wetter winters



- » Decrease in snowpack for spring and summer water supply
- » Increased risk of neighbourhood overland flooding
- » Increased risk of landslides
- » Increased stress on drainage systems
- » Impact on local winter recreation/tourism

By 2050, daytime temperature will be significantly warmer in the summer, with a seven-fold increase in the number of days with daytime temperatures exceeding 30°C¹ (Figure 1).

Warmer and drier summers impact our communities. With rising summer temperature and humidity there is a risk of higher indoor temperatures creating concerns around air quality and overheating. Longer dry spells and less summer rain increases the risk of wildfire. Wildfire smoke impacts both indoor and outdoor air quality.

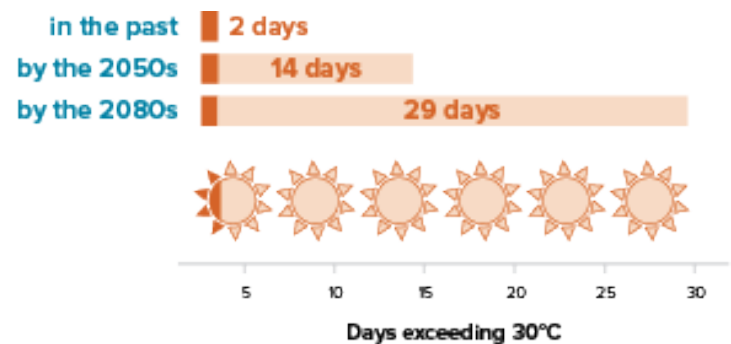


Figure 1. Climate projection on daytime temperatures

¹ Metro Vancouver (2020). *Climate Projections for Metro Vancouver Report*

VULNERABILITY TO CLIMATE CHANGE

People across Burnaby are currently impacted by changes in our climate, and will be in the future, too. Some people will be more impacted by climate change than others. People may also have a combination of factors, rather than just one, that make them more vulnerable to climate change². Building retrofits can improve the resilience of people most vulnerable to climate change.

Communities or people that are at higher risk or more vulnerable to climate change include³:

People who are more at risk because they may be more **sensitive** to climate change hazards:

- » People who are immunocompromised or have chronic health conditions
- » People living with pre-existing physical or mental illnesses (especially cardiovascular, respiratory or renal disease)
- » Seniors (over 65)
- » Youth and children (under 5 years old)
- » People with disabilities
- » People who are pregnant

Our seniors are more susceptible to our changing climate, especially in extreme heat events. In the summer of 2021, 619 deaths in BC were attributed to heat exposure, 73 in Burnaby⁴. BC Coroners Service reported the majority of those who perished from the heat were older adults with compromised health and lived alone⁵.

People with less **adaptive capacity**—those with less access to resources, social and technical skills, or strategies that will help them to prepare for or respond to environmental, social or economic changes related to climate change⁶.

Adaptive capacity is dependent upon many factors, including:

- » Income and social status
- » Physical environment
- » Physical mobility
- » Education and literacy, including home language
- » Social supports and coping skills
- » Employment and working conditions

People with more **exposure** to climate change hazards (like extreme heat or precipitation events), for example:

- » People who work outside (e.g. in heat or other extreme weather conditions)
- » People who have insecure shelter or are experiencing homelessness
- » People who live in hotter neighbourhoods (e.g. those areas with fewer trees, and more pavement)
- » People who live close to a flood plain or at low elevation close to a shoreline (e.g. that may be at risk of flooding or sea level rise)

² Government of Canada. *Who is most impacted by climate change*. January 24, 2022

³ Vancouver Coastal Health, Fraser Health, UBC. *Community Health and Climate Change: Mapping Exposure, Sensitivity and Adaptive Capacity to Four Health-Related Climate Hazards, results from a preliminary study*. July 2021.

⁴ B.C. Coroners Service. (2021, July 3). *Coroner Responded Deaths in B.C.*, June 25-July 1, 2016-2021. Retrieved from Province of BC: <https://www2.gov.bc.ca/gov/content/life-events/death/coroners-service/news-and-updates/coroner-responded-deaths>

⁵ Retrieved from <https://pub-burnaby.escribemeetings.com/filestream.ashx?DocumentId=61575>

⁶ Yu J, Castellani K, Yao A, Cawley K, Zhao X, Brauer M. *Mapping spatial patterns in vulnerability to climate change-related health hazards*. University of British Columbia; 2020.

BURNABY'S EMISSION SOURCES

Like other municipalities in Metro Vancouver, the 2 biggest sources of emissions in Burnaby are buildings and transportation (Figure 2). Each of these sources account for about one-third of the city's total emissions—buildings amount to 39% of citywide emissions—approximately 570,000 tCO₂e⁷. To address current and future building emissions, we need to systematically reduce the emissions from buildings that already exist in the City and outline a path to ensure new buildings that are being built are net-zero emission buildings.

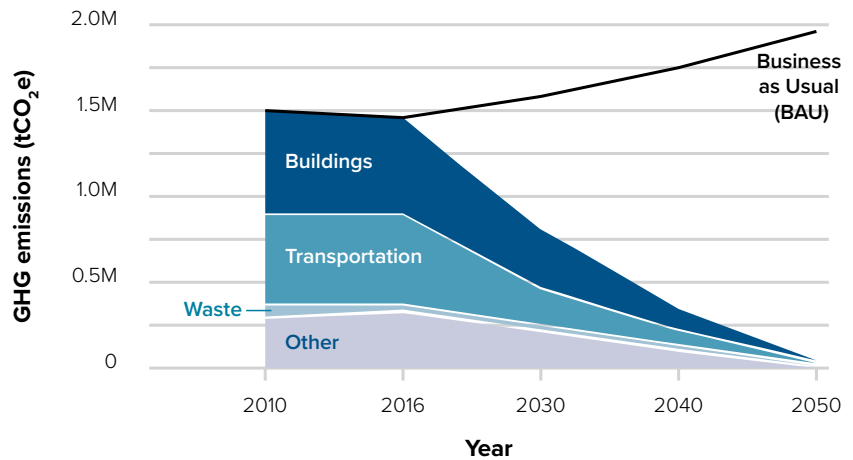


Figure 2. City of Burnaby Greenhouse Gas Emission Sources and Pathway to Carbon Neutrality. City of Burnaby (2020). Climate Action Framework

BURNABY'S CLIMATE ACTION COMMITMENTS

Recognizing the dangers posed by climate change, in 2019, the City of Burnaby joined other jurisdictions around the world to declare a climate emergency and set out ambitious carbon reduction targets.

45%
reduction
by 2030

75%
reduction
by 2040

**CARBON
NEUTRAL
by 2050**

(no longer contributing to the carbon emissions that accelerate climate change)

⁷ tCO₂e = Tonnes of carbon dioxide equivalent, a measurement that captures all greenhouse gases emissions from various gases (e.g. Carbon dioxide, methane) and their global warming potential.

In 2020, the City of Burnaby adopted a Climate Action Framework, analyzing the major sources of the city's emissions, and laying out 7 key areas of transition or "Big Moves", to guide the City's action towards carbon neutrality.

Burnaby's Climate Action Framework focuses on climate change mitigation, which is to make future climate change less severe. The City is also working on a climate change adaptation strategy. Climate change adaptation is about adjusting processes, infrastructure and relationships in anticipation of current and future effects of climate change so that our community will be better able to weather those changes.



This ZE Building Retrofit Strategy contributes to the advancement of the Climate Action Framework **Big Move 7: Zero Emission Building Retrofits** with the recognition that transforming existing building serves the biggest carbon reduction opportunity in our community (Figure 3).

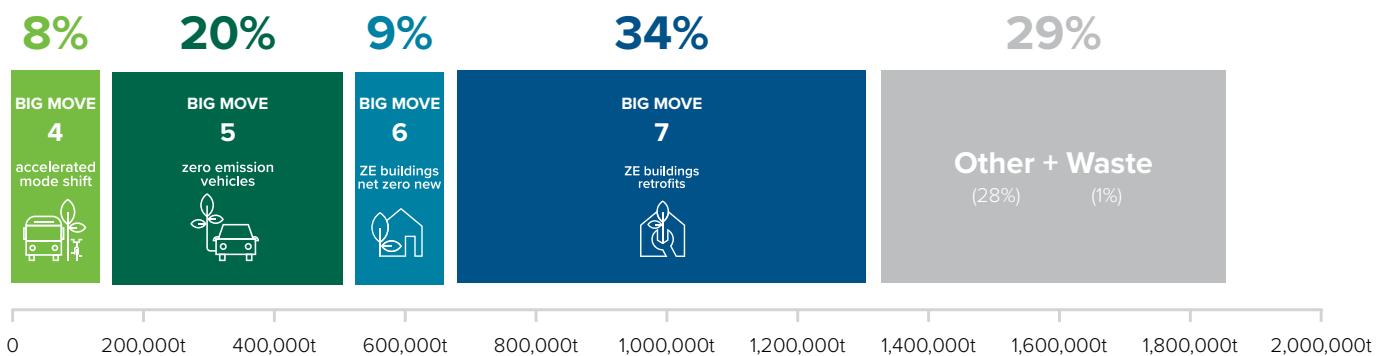


Figure 3. Allocation of carbon emission reductions by Big Move, to 2050

With the vision of achieving a large-scale adoption of building retrofit work in the community, existing buildings in Burnaby will transition to low-carbon energy sources for space heating and hot water systems, resulting in zero emission homes and businesses throughout the city in order to reach our 2050 goals.

Climate Action Framework Big Move 6—New Buildings

The work under **Big Move 6: Zero Emissions- New Buildings** of the Climate Action Framework complements the work of this retrofit strategy by ensuring that new buildings are energy efficient and zero emission. This will minimize the need to retrofit future buildings. By 2030 or sooner, most new buildings in Burnaby will be moving towards net-zero emissions.

As of May 1, 2023, the Province amended the BC Building Code (BCBC) Energy Step Code (ESC) for higher standards of building energy efficiency and created the Zero Carbon Step Code (ZCSC). The amendments mean new Part 3 (“complex”) and Part 9 (“simple”) residential buildings will be built with less energy use (ESC) and produce less GHG emissions (ZCSC).

Building Energy Efficiency – Energy Step Code Amendments

The Province raised the minimum standard in the BCBC for both Part 3 buildings (from Step 1 to Step 2) and Part 9 residential buildings (from Step 1 to Step 3). New buildings built under these Building Code amendments will be 20% more energy efficient than the 2018 BCBC requirements.

Zero Carbon Step Code

The introduction of the ZCSC allows municipalities the option of adopting this code to set carbon emission standards for new buildings. While it is optional for municipalities to regulate carbon performance at this time, the Province has signalled that in the future, carbon performance will be included in the BCBC requirements over time. As of the development of this strategy, Burnaby is consulting with interested parties on proposed ZCSC requirements.



BUILDINGS IN BURNABY

Everyone plays an important role in reducing our energy consumption and emissions from our buildings. The majority of the buildings in Burnaby are between 10 and 70 years old, with most expected to be around for many more years (Figure 4). Most of these buildings, however, were not originally constructed with energy efficiency and climate resiliency in mind. For example,

it has not been typical to have cooling in residences, but during the June 2021 heat dome, the likes of which will become more frequent, 98% of those who died as a result of heat exposure were inside their residence. Cooling could have helped prevent this.

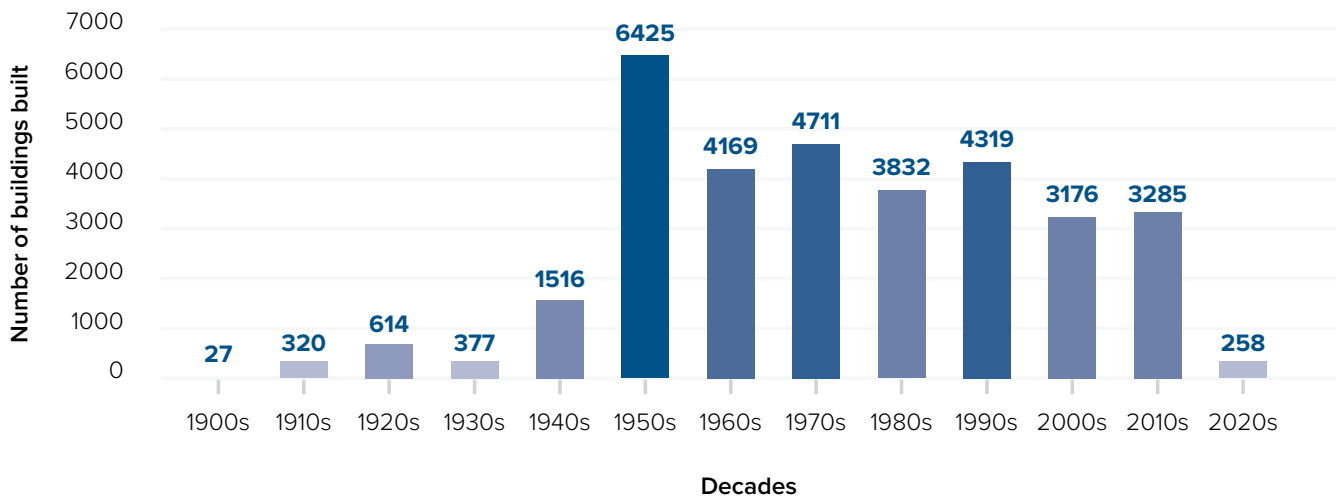


Figure 4. Number of buildings built in Burnaby per decade

In our buildings, the majority of energy is used to power our space and water heating systems. These systems account for 85% of all energy used and 77% of all carbon emissions⁸ from buildings. The magnitude of carbon emissions from our energy use is highly influenced by energy efficiency and fuel source.

Heating and hot water systems such as hot water tanks and furnaces in these buildings have a shorter life span than the buildings themselves. The need for end-of-lifecycle replacement provides a key opportunity for energy efficiency and fuel-switching upgrades.

⁸ Natural Resources Canada (2017). *Energy End Use Data Handbook*.

Sources of Emissions—Energy Efficiency and Energy Source

Energy efficiency refers to the amount of energy used in an existing building. Enhancing energy efficiency in an existing building allows each unit of energy used to heat or cool the home better with less waste. This is often related to comfort levels in the home. Buildings with energy inefficient appliances and/or poor air tightness or thermal insulation consume more energy thus resulting in higher emissions.

Energy source refers to the type of energy used to generate power. The type of energy sources used influences the magnitude of a building’s emissions. The 2 most common energy source in buildings in Burnaby are electricity and natural gas. Electricity in Burnaby

comes from BC Hydro which is generated from 98% clean, renewable resources⁹. Natural gas heating and hot water systems in buildings involve burning natural gas, a fossil fuel, to heat air or water. In BC, natural gas has an emission factor that is 15 times higher than electricity¹⁰ and the Carbon Tax associated with natural gas use will continue to rise, increasing the cost of natural gas¹¹. There is a range of other low-carbon and renewable energy sources that can also reduce building emissions, such as solar and geothermal. Fuel switching from natural gas to electricity or other low-carbon energy sources presents a significant carbon reduction opportunity in the building sector.

Emissions

To better strategize ways to reduce emissions from existing buildings, it’s essential to understand the proportion of emissions from different types of buildings and the factors contributing to their emissions. Single-family and attached buildings, together with commercial buildings, account for the majority of the GHG emissions in Burnaby (Figure 5).

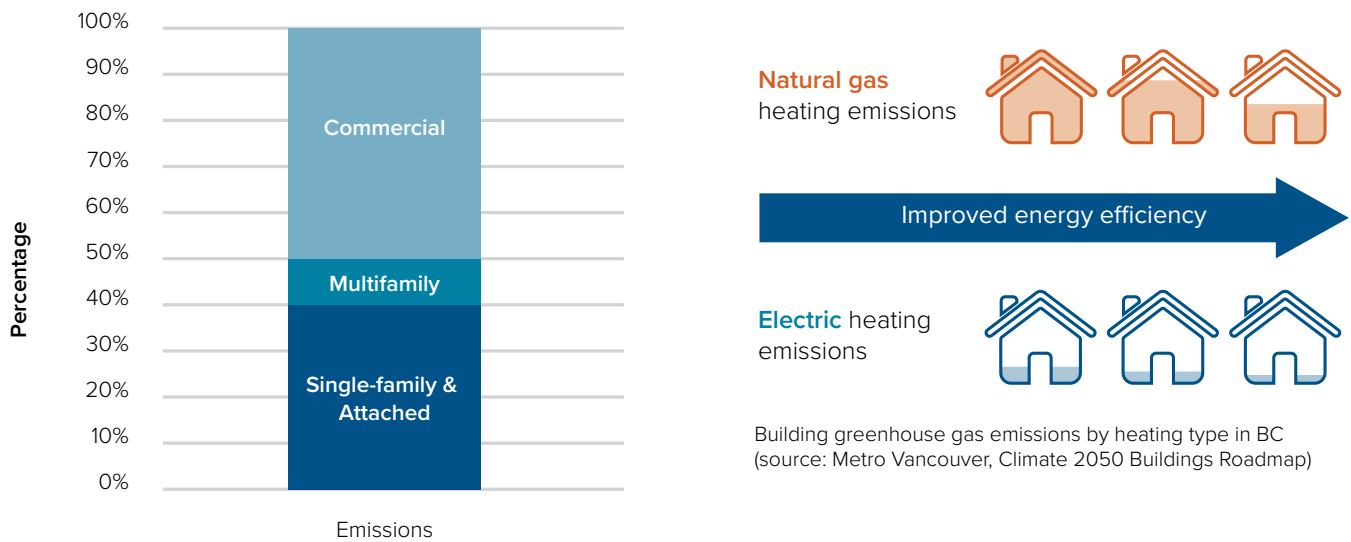


Figure 5. Building emissions by type

⁹ BC Hydro. (2023). *Greenhouse Gas emissions*: <https://www.bchydro.com/toolbar/about/sustainability/greenhouse-gases.html>

¹⁰ Province of British Columbia (2023). *Local Government Climate Action Program Emission Factors Catalogue*

¹¹ Province of British Columbia. *Carbon Tax Rates by Fuel Type*: <https://www2.gov.bc.ca/gov/content/taxes/sales-taxes/motor-fuel-carbon-tax/publications/carbon-tax-rates-by-fuel-type>

BUILDING MAKE-UP

The variety of building types in Burnaby influences the building retrofit landscape. Building type, occupancy, ownership and existing emissions profile all impact the opportunities for and suitability of climate resilient retrofits.



Single-family and attached homes

represent one of the largest retrofitting and emissions reduction opportunities. Single-family and attached homes are responsible for nearly 40% of the overall building emissions in Burnaby. Single-family and attached homes also comprise the largest group of buildings in Burnaby by building count (Figure 6). The high proportion of single-family and attached homes signify the necessity of a large-scale adoption of the building retrofit work in the community as each homeowner is a decision-maker that will bring Burnaby closer to our 2050 goal of carbon neutrality.



Commercial buildings are another significant area of opportunity for emissions reductions. Commercial buildings make up only 15% of Burnaby's building count, but they are responsible for nearly 50% of the City's building emissions. The disproportionate representation of emissions from commercial buildings illustrate the influence each commercial building owner can have in reducing our community carbon emissions.



Multifamily buildings such as townhouses, low-rise and high-rise buildings emit fewer GHGs compared to other building types. They are only responsible for 10% of the city's emissions, which indicates multifamily buildings are generally more efficient than single-family dwellings.

However, multifamily buildings represent a collection of different owner structures including stratas, rentals, co-operatives and senior living facilities. With a nearly 50/50 split between rentals and strata buildings, multifamily buildings pose a different challenge in conducting retrofit work (e.g. gaining strata approval or conducting retrofit work without displacing tenants, etc). Many vulnerable people also live in older low-rise buildings with inadequate cooling during extreme summer events, which creates opportunities to retrofit their homes to provide the thermal comfort needed to adapt for future climate change.



UNDERSTANDING OUR COMMUNITY: CHALLENGES & OPPORTUNITIES

People-first Approach

In order to achieve a large-scale adoption of building retrofits in the community, it is crucial to put people first. The Zero Emissions Building Retrofit Task Force, various industry workshops and staff research, have highlighted key barriers that are hindering residents from retrofitting their existing home. While these barriers arise at different stages of the retrofit process, the ZE Building Retrofit Strategy aims to assist residents in addressing these barriers and provide necessary supports along the retrofit journey.

A Diverse and Growing Community

Burnaby is a diverse and fast-growing community of nearly 250,000 people. It has the third highest population in Metro Vancouver and British Columbia, and is home to nearly 9% of the people in Metro Vancouver. Since 2016, our population has grown by 7% and by 2050, it is projected that 109,000 more people will be living in Burnaby (approximately 360,000 people total)¹². Immigrants and non-permanent residents account for 57% of the total population, with over 120 languages spoken at home.

With Burnaby's projected population growth, the demand on energy and fuel use will continue to increase if homes are not energy efficient and/or reliant on fossil-based natural gas. The urgency in retrofitting our existing building stocks heightens as the city continues to grow.

Age Distribution

Between the 2016 and 2021 Census, Burnaby has seen a nearly 20% increase in the population over 65 years of age. Seniors are living longer than previous generations as Canadians are generally healthier and more active. The gains in life expectancy mean that more older adults are living with chronic diseases including respiratory disorders¹³. Recognizing these health conditions, retrofitting homes can improve indoor air quality and thermal comforts.

Home Energy Affordability

As the majority of our energy is used to power our space and water heating systems, our energy bill can add up depending on the energy source and the efficiency of the system. In Burnaby, the median annual home energy expenditure is \$1,202. Approximately 16% of Burnaby's population experiences a high home energy cost burden, meaning more than 6% of total after-tax household income is spent on home heating and electricity¹⁴. About 37% of our residents spend more on energy costs compared to the Canadian average (3% of total after-tax household income).

Recognizing that more than a third of Burnaby residents spend an above-average proportion of their income on home energy costs, retrofitting existing buildings can help to lower resident's home energy burden. In many cases, making a shift from fossil fuel-based heating and hot-water systems can provide energy cost savings. However, this shift has to be accompanied by, or even preceded by energy efficiency upgrades, like the addition of building insulation or air-sealing. Electrification without these improvements can exacerbate energy insecurity—the inability to adequately meet household energy needs—rather than improve it, especially for community members who are already more vulnerable to climate change (e.g. seniors during heat waves). It will be critical in the implementation of this retrofit strategy to support community members in energy insecurity to ensure they realize the affordability and resilience benefits of building retrofits.

¹² Statistics Canada: 1996, 2016 and 2021 Census, and Metro 2050

¹³ Retrieved from CMHC, *Housing for Older Canadians: The Definitive Guide to the Over-55 Market*, 2020

¹⁴ Canadian Urban Sustainability Practitioners (2023). *The Many Faces of Energy Poverty in Canada*.

RETROFITTING A BUILDING

Many of our existing buildings are not built to cope with future climate changes. While short-term solutions such as air conditioning may provide temporary thermal comfort, the high energy demand and GHG emissions from inefficient energy units further contribute to the warming climate. Retrofitting existing buildings can help make residences and workplaces ready for future climate changes.



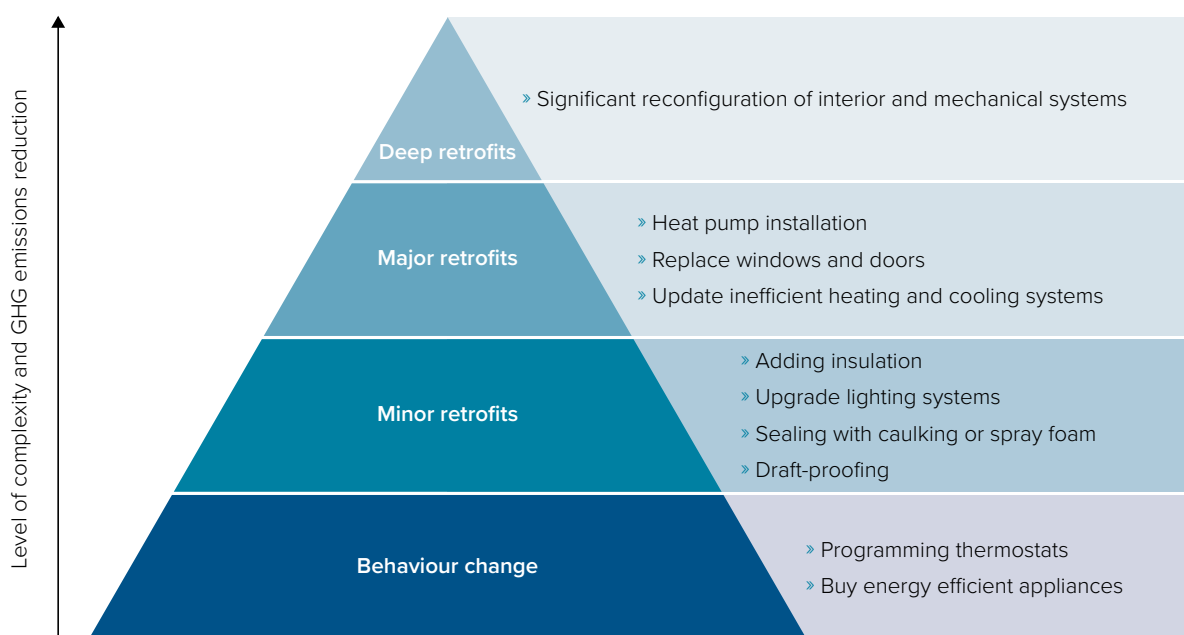


WHAT IS A RETROFIT?

Retrofitting is the process of modifying something after it has been built. Many of the existing buildings are expected to be around for many more years. Most of these buildings, however, were not originally constructed with energy efficiency and sustainability in mind.

Retrofitting existing buildings aims to reduce GHG emissions by making a building better (more efficient) at keeping hot or cold air in, and/or by using a lower-emission energy source to heat or cool the building. There are 4 main types of building retrofits:

- » Behaviour change—easy upgrades, which include zero- to low-cost actions
- » Minor—upgrades that are low cost and easy to implement
- » Major—holistic approach without disrupting the occupants
- » Deep—an overhaul of the buildings, interior and mechanical systems



Types of building retrofits and corresponding levels of complexity and GHG emissions reduction. Content adapted and modified from <https://natural-resources.canada.ca/energy-efficiency/buildings/existing-buildings/retrofitting/20707>

CO-BENEFITS OF RETROFITTING

Retrofitting not only reduces the emissions of harmful GHG into the atmosphere, it has inherent social, economic and health benefits that are commonly referred to as co-benefits. These co-benefits include:

- » **Comfort**—Creating an airtight, insulated building envelope, and installing an energy efficient cooling and heating system will provide thermal comforts all year round.
- » **Health**—Improving insulation and draft proofing, and installing an energy efficient ventilation system can help improve indoor air quality.
- » **Energy efficiency**—Upgrading and optimizing energy systems ensures they are properly sized to reduce system redundancy or overload.
- » **Market transformation**—retrofitting helps support the local economy and create job opportunities.
- » **Cost savings**—Energy efficiency upgrades can reduce energy costs. Fuel switching from fossil fuel to electricity can save on Carbon Tax.



EXISTING RETROFIT POLICIES

Recognizing the need to accelerate retrofit work in the community, various levels of government along with utility providers are working together to address the problem at multiple levels. Programs and initiatives are in place to encourage public uptake on retrofit work to reduce community emissions.



Federal government

Existing and proposed retrofit policies:

- » Canada Green Buildings Strategy

The Government of Canada has set reduction targets for 2030 and is committed to be net-zero emissions by 2050. In *Canada's 2030 Emissions Reduction Plan*, the federal government is committing more funding for energy efficient home upgrades and more support to transition away from fossil fuel heating. One of the actions is the Canada Green Building Strategy, which will include the following:

- » Develop regulations, standards, and an incentive framework to support the transition away from fossil fuels for heating systems.
- » Develop an approach to require EnerGuide labeling of homes at the time of sale, and design a complementary Climate Adaptation Home Rating Program.
- » Invest in the Green Homes Loan Program and Retrofit Accelerator Initiatives



Provincial government

Existing and proposed retrofit policies:

- » Highest Efficiency Equipment Standards
- » PACE financing pilot program
- » Virtual Home Energy Rating System
- » Alteration Code

The provincial government's *CleanBC Roadmap to 2030* sets out key pathways to achieve carbon reduction goals. The provincial government recognizes that current emission reductions from the building sector are not at the scale needed to meet the provincial 2030 targets. The Province is committed to act on the following items related to retrofits:

- » Develop highest-efficiency standards for new space and water heating equipment which requires all new space and water heating equipment sold and installed in BC to be at least 100% efficient after 2030.
- » Enhance energy efficiency programs to support deep reductions needed to meet long-term targets such as building envelope improvements, better insulation and high efficiency heat pumps.
- » Proceed with the next steps in a Property Assessed Clean Energy Program (PACE), which allows property owners to finance the upfront costs of energy upgrades and make annual payments for the improvements tied to their local government property taxes.
- » Introduce home energy labeling that demonstrates home energy efficiency at the time of sale.
- » Introduce the Alteration Code, which accelerates energy performance improvements based on the scope of renovation. Significant renovations will be required to meet the energy requirement equivalent of the current building code.



Regional government

Existing and proposed retrofit policies:

- » Greenhouse Gas Performance Requirements for Existing Large Buildings

Metro Vancouver is in the process of developing Greenhouse Gas Performance Requirements for Existing Large Buildings. This action is in response to the *Clean Air Plan* and the *Climate 2050 Buildings Roadmap*, which set the reduction target to achieve zero emission buildings by 2050. This policy addresses the current policy gap on operational emissions from existing large buildings in the region while complementing actions from other levels of government.

EXISTING RETROFIT INCENTIVES

The federal and provincial governments are providing rebates to alleviate the financial burden and allow applicants to get back a portion of their retrofit costs. The Province of British Columbia works together with utility providers such as BC Hydro and Fortis BC to provide rebates for energy efficiency upgrades.

	Grants	Loans
Federal government	<p>Canada Green Homes Grant</p> <ul style="list-style-type: none"> » \$125 to \$5,000 based on eligibility and types of work performed » up to \$600 towards the total cost of the pre- and post-retrofit EnerGuide Evaluation 	<p>Canada Green Homes Loan</p> <ul style="list-style-type: none"> » up to \$40,000 interest-free loan with a repayment term of 10 years to assist residents with major retrofits financing
Provincial government	<p>CleanBC Better Homes and Home Renovation Rebate Program</p> <ul style="list-style-type: none"> » up to \$6,000 based on the type of upgrades <p>CleanBC Heat Pump Group Purchase Rebate</p> <ul style="list-style-type: none"> » additional rebate that rewards homeowners who work together on fuel switching from fossil fuel heating systems to an air source heat pump 	<p>CleanBC Better Homes Low-Interest Financing Program</p> <ul style="list-style-type: none"> » up to \$40,000 interest-free loan



CITY OF BURNABY RETROFIT STRATEGY

STRATEGY DEVELOPMENT

The City's Climate Action Framework lays out the development of a citywide ZE Building Retrofit Strategy as a Quick Start in Big Move 7, Zero Emission Buildings—Retrofits. The variety of building make-up, emissions distribution and ownership structures in Burnaby mean that tailored solutions will be required to advance the City's building retrofit and carbon emission

goals. Recognizing the broad influence the ZE Building Retrofit Strategy will have in Burnaby's building stock, a variety of interested parties were engaged in the development of the strategy, primarily through a cross-sectoral Building Retrofit Task Force (see Figure 6).



Figure 6. Zero emissions building retrofit strategy development

URBAN RESILIENT FUTURES INITIATIVE—BUILDING RETROFIT TASK FORCE

The Urban Resilient Future Initiative is a partnership with SFU Morris J. Wosk Centre for Dialogue and Vancity. The initiative aims to put people at the center of climate action work. The first program undertaken by the Urban Resilient Future Initiative was the Zero Emissions Building Retrofit Task Force. The program provided a series of in-depth engagement opportunities with Task Force members representing various sectors (see Appendix 1). Recommendations from the Task Force were endorsed by Council in July 2022 and the

preliminary draft of this strategy was circulated to the Task Force for feedback in July 2023.

The ZE Building Retrofit Strategy will establish a pathway to support large-scale adoption of energy efficiency upgrading and low carbon fuel switching of our existing buildings, and to accelerate a complete transition to zero emissions heating, cooling and hot water systems between now and 2050.

STRATEGY OBJECTIVES

The ZE Building Retrofit Strategy sets 4 key objectives to respond to barriers and to reduce our community emissions. The objectives and actions are drawn from a combination of best practices from other jurisdictions, modelling, feasibility review and input from key industry members, external stakeholders and City of Burnaby staff. The 4 key objectives in this strategy include:

- » **Education and Outreach**
- » **Policies and Bylaws**
- » **Incentives**
- » **Advocacy**

Supporting each of the key objectives are a series of action items that the City can prioritize and develop in the future.



RETROFIT PROCESS

Retrofitting a home can be a complex process to navigate. Figure 7, below, outlines a sample retrofit process—starting with the need for awareness of retrofits and energy efficiency to the final stage of evaluating the retrofit. For widespread adoption of home retrofits across the City, more outreach and education is required to support homeowners through this retrofit process.

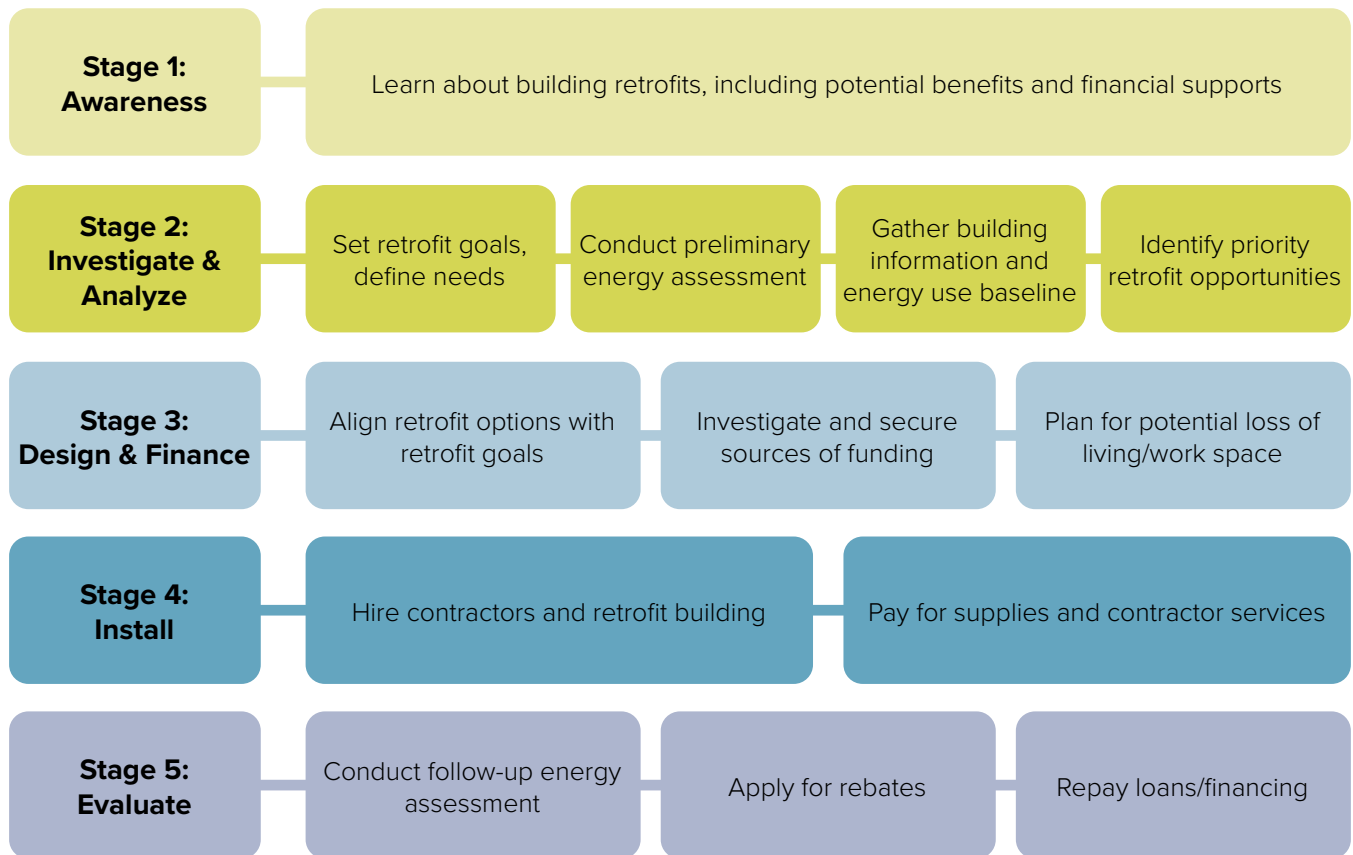


Figure 7. Sample home retrofit process

The retrofit process is illustrated and detailed in Appendix 2 (starting on page 42).

BARRIERS TO BUILDING RETROFITS

There are 6 common barriers to retrofits that emerged through the development of this strategy. Residents may come across these barriers at different stages of the retrofit process.



Lack of awareness

With the life cycle of space and water heating systems lasting an average of 10 years, end-of-life upgrades of mechanical systems provide a great opportunity to replace them with a cleaner fuel source or more efficient system. Early planning is needed in order to take advantage of provincial and federal government grants and incentives. The lack of retrofit awareness often leads to like-for-like replacement, which creates a lost opportunity for upgrades.



Energy literacy

Energy literacy education plays an important role in building retrofits. An energy-efficient home requires a combination of high performance/efficiency systems, airtight insulations, together with energy-conscious habits. Older homes can be retrofitted with higher efficiency systems to improve energy performance and make small behaviour changes that reduce energy use. Increasing energy literacy in the community provides an opportunity for residents to look for ways to improve energy efficiency, reduce energy cost and lower carbon emissions in their homes.



Upfront costs

Building retrofits come with upfront costs that may deter residents. There are, however, provincial and federal grants and rebates that are designed to lessen the upfront financial burden. Money savings from electricity bills will balance out the upfront costs of the higher efficiency mechanical systems or insulation improvements in the long run.



Lack of qualified professionals and tradespeople to complete retrofits

There is a lack of interest, experience, and capacity in the industry, especially for multi-unit residential buildings. In order for a contractor to properly design the system and get the proper equipment, contractors have to do a lot of upfront work including heat loss calculations, duct analysis and balance point calculations in order for the residents to be eligible for rebates. Many contractors have to obtain additional tickets that are not part of the standard education of a gas-fitter or sheet metal worker.



Complexity of the process

The retrofit process can be complex for homeowners to navigate. Not only do residents have to secure qualified professionals for the work, residents also have to meet a list of criteria in order to be eligible for provincial and federal incentives. These criteria include conducting pre- and post-retrofit EnerGuide evaluations, ensuring equipment is purchased in Canada and eligible for rebates, and meeting certain heat distribution criteria.



Limited municipal government powers

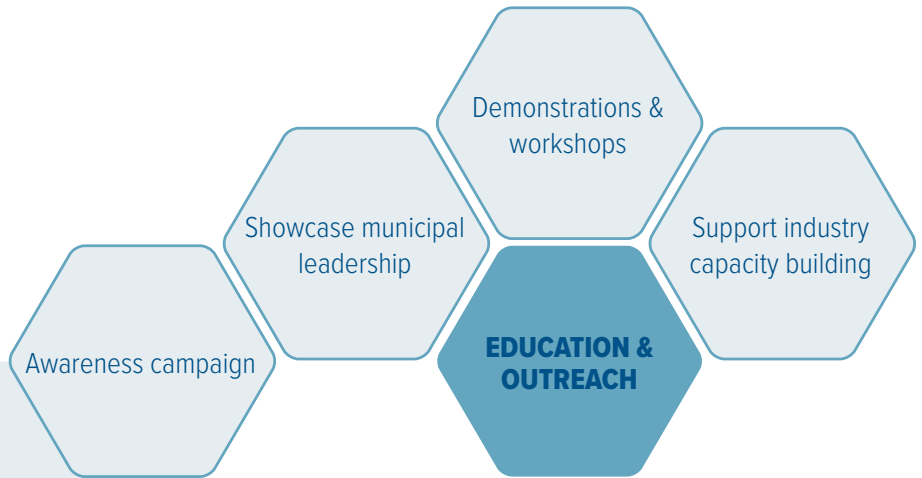
While municipalities can take some actions, the provincial and federal governments have more regulatory powers to influence building retrofits.



KEY OBJECTIVES AND ACTIONS

Education and outreach

Education and outreach aims to increase awareness and energy literacy by enhancing retrofit and energy efficiency education. This objective will accelerate public participation and encourage behavioral changes related to building retrofits, carbon reduction and energy efficiency options.



Targeted barriers:



- » Awareness
- » Energy literacy

ACTION 1.1 Deliver multisectoral and multilingual awareness campaign

	Quick start	Cost	Lead department	Timeline
1.1.1 Develop a centralized platform to house all building retrofit related information	✓	\$	Co-led: Corporate Services, Planning and Development	2023 Q4
1.1.2 Develop tailored communication materials to specific sectors (homeowners, tenants, property managers) and building archetype		\$\$	Co-led: Corporate Services, Planning and Development	2024 Q3
1.1.3 Develop multilingual materials to ensure all members of the public can be engaged		\$\$	Co-led: Corporate Services, Planning and Development	2024 Q3
1.1.4 Design a retrofit toolkit to help support residents take actions	✓	\$\$	Planning and Development	2024 Q3
1.1.5 Develop messaging around fuel switching, end-of-life replacement, energy efficiency, and climate preparedness	✓	\$\$	Co-led: Corporate Services, Planning and Development	2024 Q1

\$ = low or no cost \$\$ = modest cost \$\$\$ = significant cost \$\$\$\$ = major cost

ACTION 1.2 Retrofit City-owned buildings to lead by example

	Quick start	Cost	Lead department	Timeline
1.2.1 Accelerate the adoption of low-carbon transition plan for water and space heating systems in City-owned buildings	✓	\$\$\$	Lands and Facilities	Ongoing
1.2.2 Report GHG emissions from City-owned buildings on an annual basis		\$	Planning and Development	Ongoing
1.2.3 Showcase success stories via awareness campaigns to lead by example		\$	Co-led: Corporate Services, Lands and Facilities	Ongoing

ACTION 1.3 Organize energy efficiency and retrofit demonstrations and workshops

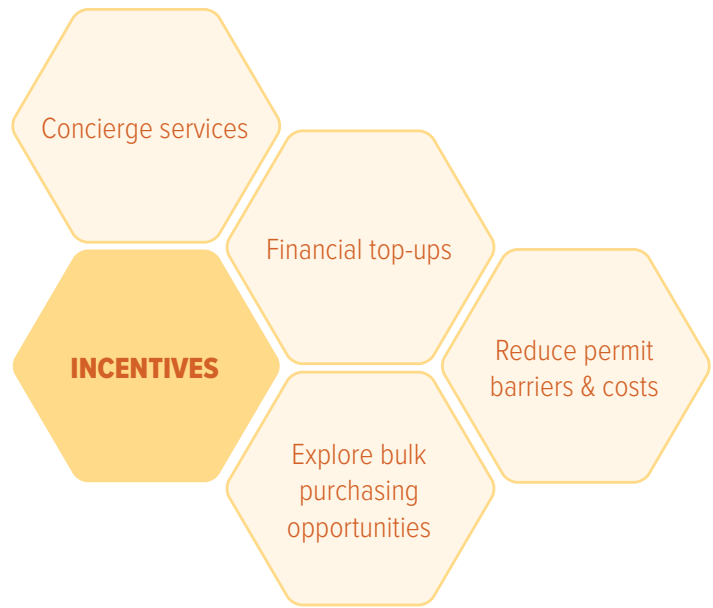
	Quick start	Cost	Lead department	Timeline
1.3.1 Liaise with industry leaders and contractors to organize demonstrations and workshops that enhance public awareness and address any inquiries from the public		\$\$	Planning and Development	2024 Q3
1.3.2 Provide a platform for residents to engage with industry leaders		\$\$	Planning and Development	2024 Q3
1.3.3 Provide a platform for residents to compare different products in the market		\$\$	Planning and Development	2024 Q3
1.3.4 Provide an opportunity for positive dialogues and encourage early planning for end-of-life replacement and climate adaptation upgrades		\$\$	Planning and Development	2024 Q3

ACTION 1.4 Support industry capacity building

	Quick start	Cost	Lead department	Timeline
1.4.1 Connect contractors with local institutions to obtain required certification to support retrofit work		\$	Planning and Development	2024 Q3
1.4.2 Provide early signals to contractors, industry associations and equipment manufacturers to advance retrofit work		\$	Planning and Development	2024 Q3

Incentives

The retrofit process can be complex and expensive, which discourages residents from taking on the work. To address the upfront cost and complexity of the retrofit process, financial incentives and process support will encourage public adoption of retrofit work.



Targeted barriers:



- » Upfront cost
- » Complexity of the process

ACTION 2.1 Partner with existing concierge retrofit programs/accelerator programs who provide retrofit support to residents going through the retrofit process

	Quick start	Cost	Lead department	Timeline
2.1.1 Join a concierge program that provides retrofit support to single-family homes and duplexes	✓	\$\$\$	Co-led: Corporate Services, Planning and Development	2024 Q3
2.1.2 Collaborate with energy advisors, contractors and concierge services provider to understand their roles and responsibilities	✓	\$\$	Planning and Development	2024 Q1

ACTION 2.2 Provide top-ups to existing retrofit incentive programs for electrification measures

	Quick start	Cost	Lead department	Timeline
2.2.1 Provide top-ups to those who switch from a fossil fuel (oil, gas or propane) space or water heating system to an electric air-source heat pump		\$\$\$	Planning and Development	2025
2.2.2 Provide top-ups for energy assessments		\$\$\$	Planning and Development	2025
2.2.3 Provide top-ups to those who require additional financial support		\$\$\$	Planning and Development	2025

\$ = low or no cost \$\$ = modest cost \$\$\$ = significant cost \$\$\$\$ = major cost

ACTION 2.3 Reduce permit barriers and costs

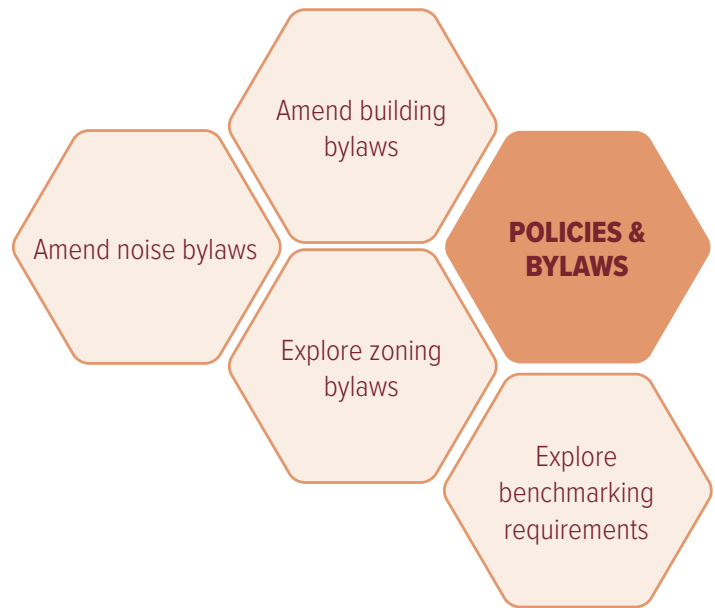
	Quick start	Cost	Lead department	Timeline
2.3.1 Review and update furnace permit to a heating and cooling permit		\$	Planning and Development	Ongoing
2.3.2 Provide clarity on permitting process for retrofit work (i.e. bulletin, map out process on website)	✓	\$	Planning and Development	Ongoing
2.3.3 Improve existing permitting administrative processes to increase the turnaround time to permit issuance		\$	Planning and Development	Ongoing

ACTION 2.4 Work with other municipalities to explore bulk purchasing options for heat pumps and other mechanical systems to bring down costs and secure availability of technology

	Quick start	Cost	Lead department	Timeline
2.4.1 Look at standardized and/or competitive prices to remove additional cost barriers		\$\$	Planning and Development	2025

Policies and Bylaws

Certain existing policies and bylaws may act as a deterrent for homeowners to retrofit their homes. By reviewing and exploring City policies and bylaws, this objective aims to reduce barriers around complexity of the process and guide decision-making that encourages the uptake of retrofit work.



Targeted barriers:



» Complexity of the process

ACTION 3.1 Explore options to incorporate carbon emissions reductions for existing buildings in the Building Bylaw

	Quick start	Cost	Lead department	Timeline
3.1.1 Liaise with internal stakeholders (Corporate Services, Building) to explore options to support retrofit work in Building Bylaw	✓	\$	Planning and Development	Ongoing

ACTION 3.2 Explore options to amend noise bylaws to support heat pump installations

	Quick start	Cost	Lead department	Timeline
3.2.1 Conduct an analysis of the sound levels of heat pumps in the market		\$\$	Co-led: Planning and Development, Public Safety	Ongoing
3.2.2 Review noise mitigating options and develop a heat pump bulletin outlining noise and appropriate location to reduce impacts	✓	\$	Co-led: Planning and Development, Public Safety	Ongoing
3.2.3 Liaise with internal stakeholders (Corporate Services, Public Safety) to evaluate community noise impacts of heat pumps		\$	Planning and Development	2025

\$ = low or no cost \$\$ = modest cost \$\$\$ = significant cost \$\$\$\$ = major cost

ACTION 3.3 Explore options to amend zoning bylaws to support heat pump installations

	Quick start	Cost	Lead department	Timeline
3.3.1 Review the Zoning Bylaw for siting outdoor appliances and structures along the side yard	✓	\$	Planning and Development	Ongoing
3.3.2 Harmonize appropriate siting for outdoor appliance and structures in conjunction with Housing Choices program implementation	✓	\$	Planning and Development	Ongoing
3.3.3 Explore how the Official Community Plan (OCP) can introduce or reinforce policies that plan for existing or future zero-carbon opportunities		\$	Planning and Development	Ongoing

ACTION 3.4 Explore policy and standards on mandatory benchmarking, water and space heating efficiency and fuel switching requirements

	Quick start	Cost	Lead department	Timeline
3.4.1 Encourage voluntary public disclosure of home energy performance prior to the full implementation of the provincial Virtual Home Energy Rating System		\$	Planning and Development	Ongoing
3.4.2 Liaise with internal stakeholders (Corporate Services, Building) to determine the option of requiring home energy performance disclosure during the permitting process		\$	Planning and Development	Ongoing

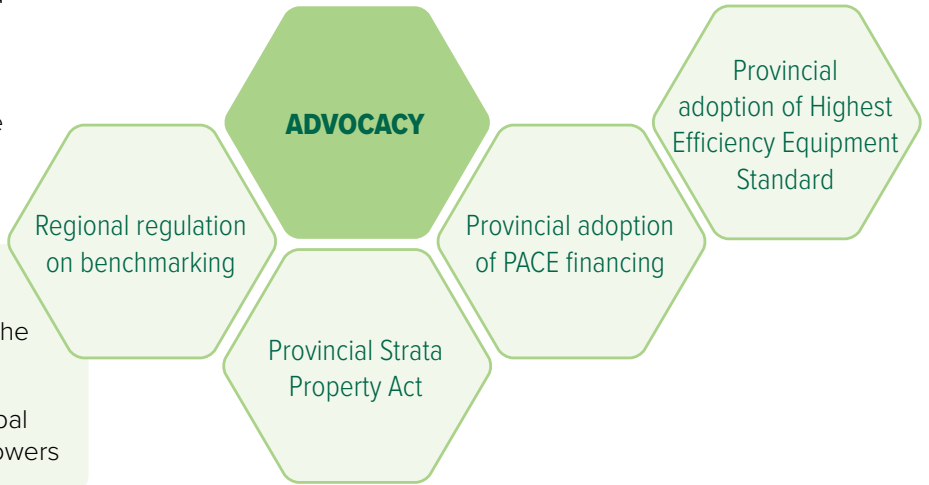
Advocacy

The provincial and federal governments have introduced a number of programs and incentives to help support building retrofits. Work is underway with the Province to introduce regulatory tools which will have the most influence and power to accelerate large-scale adoption of retrofits in Burnaby.

Targeted barriers:



- » Complexity of the process
- » Limited municipal government powers



ACTION 4.1 Support Provincial regulation on benchmarking and energy disclosure

	Quick start	Cost	Lead department	Timeline
4.1.1 Support the provincial implementation of the Virtual Home Energy Rating System which will require mandatory home energy performance disclosure at time-of-sale		\$	Planning and Development	When applicable
4.1.2 Provide communication support via available platforms to encourage public participation in the Virtual Home Energy Rating System		\$	Planning and Development	When applicable

ACTION 4.2 Explore advocacy with the provincial government to amend the Strata Property Act to include zero emission retrofits and energy upgrades in a building’s depreciation report

	Quick start	Cost	Lead department	Timeline
4.2.1 Support industry experts to advocate for further dialogues with the Province		\$	Planning and Development	When applicable

\$ = low or no cost \$\$ = modest cost \$\$\$ = significant cost \$\$\$\$ = major cost

ACTION 4.3 Support the provincial adoption of PACE (Property Assessed Clean Energy) financing

	Quick start	Cost	Lead department	Timeline
4.3.1 Explore options with internal stakeholders on the implementation of the PACE program once adopted by the Province		\$	Planning and Development	When applicable
4.3.2 Provide communication support via available platforms to amplify the program when implemented		\$	Planning and Development	When applicable

ACTION 4.4 Support the provincial adoption of Highest Efficiency Equipment Standard

	Quick start	Cost	Lead department	Timeline
4.4.1 Provide support on the provincial development of the Highest Efficiency Equipment Standard		\$	Planning and Development	When applicable
4.4.2 Provide communication support via available platforms to amplify the program when implemented		\$	Planning and Development	When applicable
4.4.3 Liaise with internal stakeholders on the implementation of the Highest Efficiency Equipment Standard once adopted by the Province		\$	Planning and Development	When applicable

IMPLEMENTATION AND MONITORING

The Climate Action and Energy team of the Planning and Development Department will lead the implementation of the ZE Building Retrofit Strategy. Each strategy action will be led with support from other departments including Building, Corporate Services, Finance, Lands and Facilities and Public Safety. The implementation of these actions will require additional resources and funding and therefore funding requirements will be presented to Council as part of the annual budget process. The table below lists a number of quick start actions the City can implement with limited additional research or review.

Education and outreach	Cost	Lead department
1.1.1 Develop a centralized platform to house all building retrofit related information	\$	Co-led: Corporate Services, Planning and Development
1.1.4 Design a retrofit toolkit to help support residents take actions	\$\$	Planning and Development
1.1.5 Develop messaging around the fuel switching, end-of-life replacement, energy efficiency, and climate preparedness	\$\$	Co-led: Corporate Services, Planning and Development
1.2.1 Accelerate the adoption of a low carbon transition plan for water and space heating systems in City-owned buildings	\$\$\$	Lands and Facilities
Incentives	Cost	Lead department
2.1.1 Join a concierge program that provides retrofit support to single-family homes and duplexes	\$\$\$	Co-led: Corporate Services, Planning and Development
2.1.2 Collaborate with energy advisors, contractors and concierge services provider to understand their roles and responsibilities	\$\$	Planning and Development
2.3.2 Provide clarity on permitting process for retrofit work (i.e. bulletin, map out process on website)	\$	Planning and Development
Policies and Bylaws	Cost	Lead department
3.1.1 Liaise with internal stakeholders (Corporate Services, Building) to explore options to support retrofit work in the Building Bylaw	\$	Planning and Development

\$ = low or no cost \$\$ = modest cost \$\$\$ = significant cost \$\$\$\$ = major cost

Monitoring and Reporting

The ZE Building Retrofit Strategy is a living document that will evolve as the actions are implemented and as other levels of government launch further building policies and programs. Progress will be reviewed on an annual basis and further refinement of these actions will be considered. These actions will be evaluated based on their impact on GHG reductions, energy efficiency and household energy insecurity, their alignment with the Climate Action Framework, and their cost.



APPENDIX 1

URBAN RESILIENT FUTURES INITIATIVE
ZERO EMISSIONS BUILDING RETROFIT TASK FORCE

In 2021, the City of Burnaby entered into the 3-year Urban Resilient Futures (URF) Initiative partnership with the SFU Morris J. Wosk Centre for Dialogue and Vancity. This partnership is a co-funded initiative to accelerate climate action in cities and increase equity in public participation.

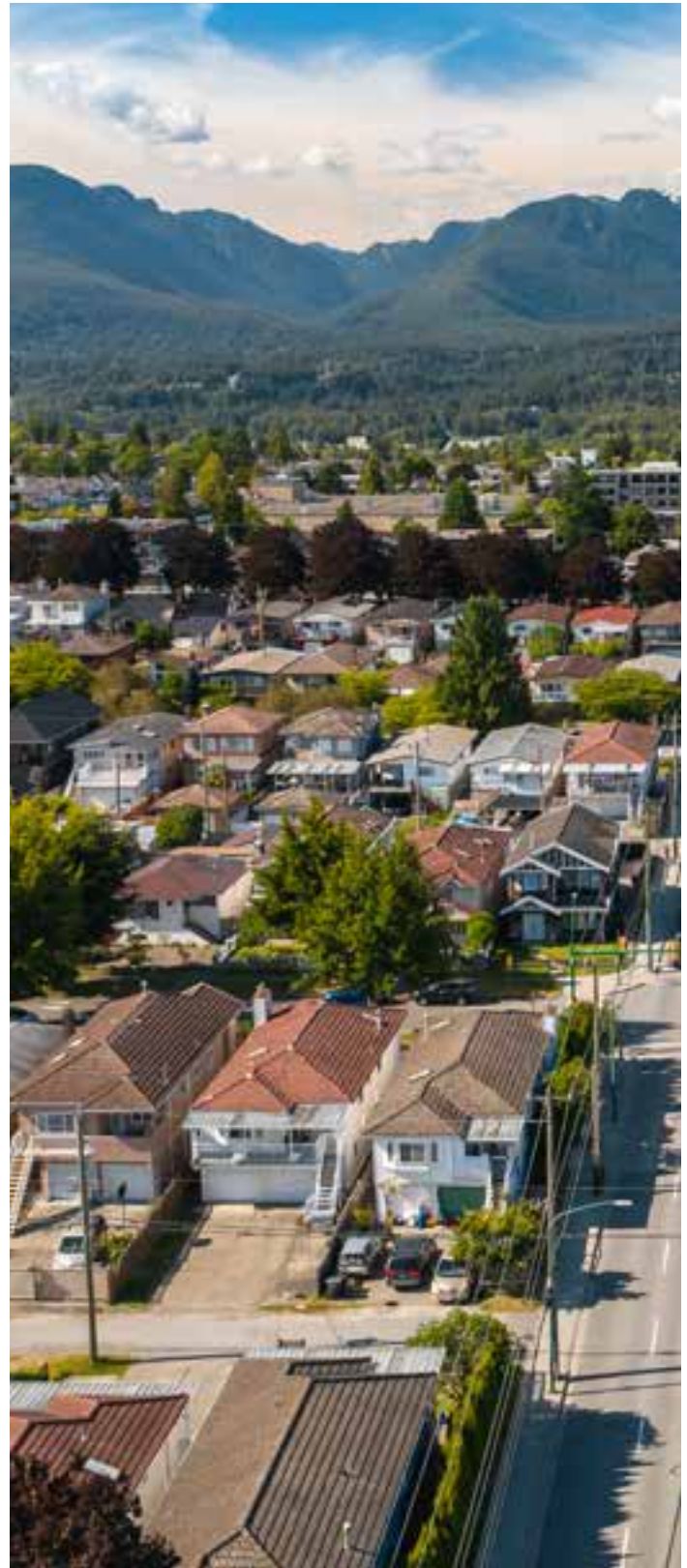
Programming designed and delivered as a part of the URF Initiative works to achieve a combination of these outcomes. Work in the first year of the URF partnership is focused on the program outcome of accelerating action on retrofits for commercial and residential buildings, through the convening and facilitation of a Zero Emissions Building Retrofit Task Force. This multisectoral task force is a new format in the region to tackle the widespread challenge of decreasing the carbon footprint of existing buildings.

The Task Force convened 7 times, progressing through context and vision setting, sharing and developing baseline and topic-specific knowledge, to developing and deliberating on building retrofit recommendations to present to the City of Burnaby. The 16-person Task Force includes elected officials, representatives from the construction and homebuilding industry, representatives of commercial and multi-residential property owners, tenants, homeowners, groups reflecting the needs of residents living in energy insecurity or with disabilities, technical experts, and representatives from the public sector and Burnaby's Intercultural Planning Table.

As partners in the Urban Resilient Futures Initiative, Vancity and City of Burnaby staff provided contextual finance and municipal government information, as well as research and data to the Task Force for members to consider during the Task Force process. That information complemented the deep subject matter expertise of the Task Force members and 5 targeted presentations from additional subject matter experts that occurred during the first 4 Task Force meetings. These knowledge sources formed the basis for the Task Force's development of and deliberation on recommendations to present to the City.

The Task Force's work provided a foundational set of recommendations for City staff to refer to through the development of the ZE Building Retrofit Strategy. The citywide strategy, prepared by City staff, will build out evidence-informed policy direction for advancing building retrofits towards the City's goal of carbon neutrality by 2050. The ZE Building Retrofit Task Force recommendations themselves are broken into 2 categories: priority recommendations for which the

Task Force has provided additional detail on how to initiate the recommendation and partners for the implementation of that recommendation; general recommendations that provide broad direction to the City on advancing building retrofits.



Organization	Invited Member	Position
Kambo Energy Group EmpowerMe Program	Yasmin Abraham	VP, Business Development and Co-Founder
Burnaby Intercultural Planning Table	Ana Maria Bustamante	Local Immigration Partnership Coordinator
Community Energy Association	Maya Chorobik	Director of Climate Leadership
BC Non-Profit Housing Association	Ian Cullis	Director, Asset Management
Homebuilders Association Vancouver	Diana Dilworth	Director of Government Relations
Condominium Home Owners Association of BC	Tony Gioventu	Executive Director
Vancouver Regional Construction Association	Donna Grant	President
City of Burnaby	Councillor Alison Gu	Environment Committee member
BCIT	Alexandre Hébert	Manager, Zero Energy/Emissions Buildings
City of Burnaby	Mayor Mike Hurley	Chair of the Executive Committee of Council
City of Burnaby	Councillor Joe Keithley	Chair of Environment Committee
Disability Alliance of BC	Karen Martin	Project Coordinator
Vancity Credit Union	Emily Pearson	Consultant, Climate Strategy and Performance Team
Shades of Sustainability	Jocelle Refol	Co-Founder
Building Owners and Managers Association of BC	Zach Segal	Director of Government Relations
SFU City Program	Andy Yan	Director



APPENDIX 2

AN ILLUSTRATIVE EXAMPLE OF THE CITY OF
BURNABY'S ZERO EMISSIONS BUILDING RETROFIT
STRATEGY IN ACTION

The building retrofit process consists of 5 different stages from first learning about the benefits of building retrofit to completing the retrofit process. The City of Burnaby's ZE Building Retrofit Strategy recognizes the barriers that arise throughout the different stages and is designed to provide homeowners with guidance and assistance to help them through each stage.

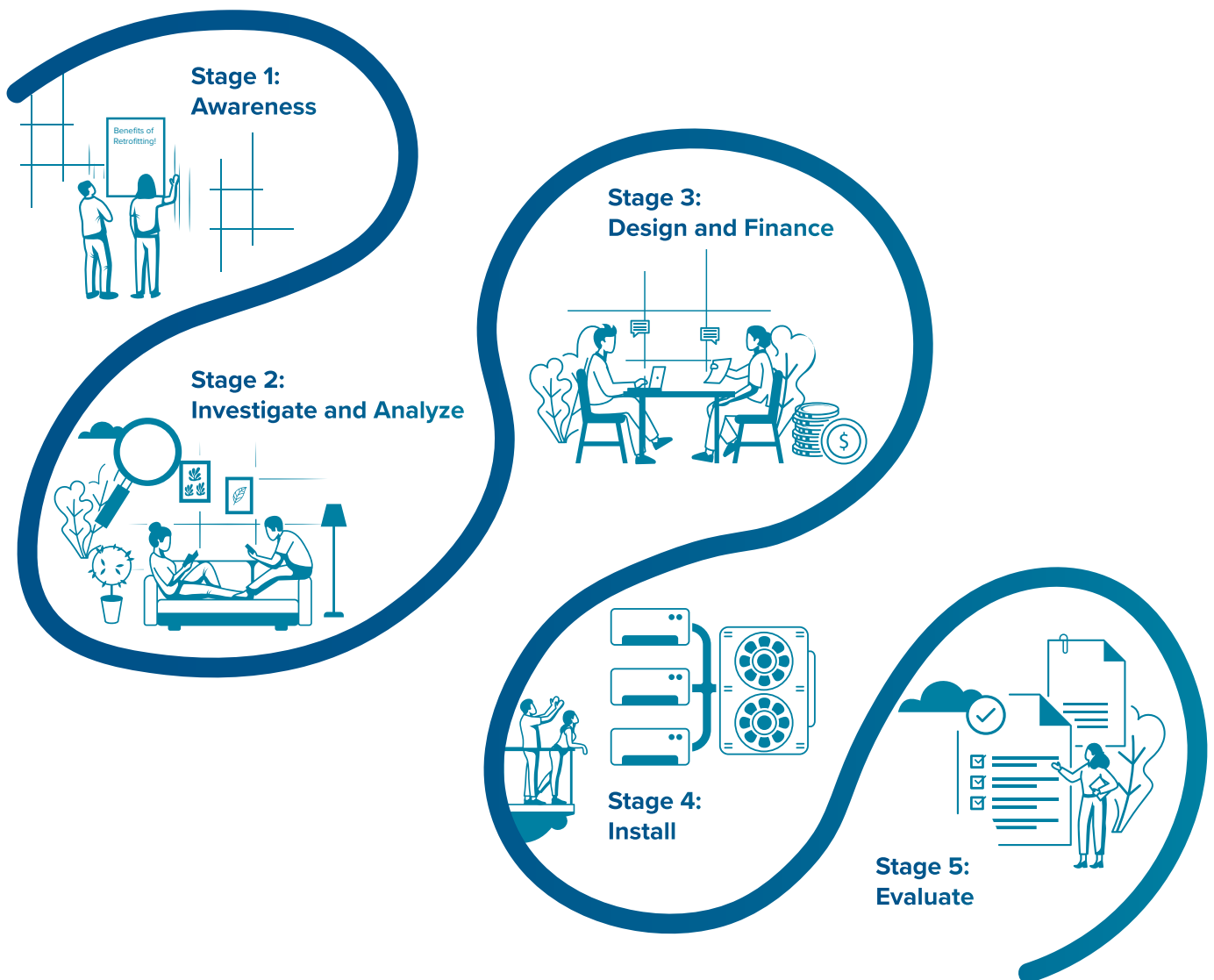
The following scenario illustrates how the City of Burnaby's ZE Building Retrofit Strategy will support a typical homeowner through the various stages of retrofitting their home.

Scenario:

A homeowner living in 40-year single-family home, with no cooling system, poor ventilation, leaky windows and high energy bill. The homeowner is hoping to lower their energy bill and increase comfort in the summer.

To address some of the concerns of the homeowner, the following retrofits may include updating the building envelope such as adding Insulation, energy efficient windows and doors, air sealing and upgrading the heating sources and adding a cooling component such as a heat pump.

Let's walk through the journey of the homeowner from Stage 1 Awareness to Stage 5 Evaluate, assuming the actions in the City of Burnaby's ZE Building Retrofit Strategy are in place.



Stage 1: Awareness

Public awareness of the benefits of retrofits plays a fundamental role in driving a large-scale adoption of building retrofit in our community. Homeowners may not be aware or have knowledge around carbon reduction or energy use. This might also be the first time they are renovating their home and they don't know where to start. If homeowners are not aware of the benefits of building retrofits, they may proceed with a "like-for-like" replacement, which will set the next upgrade opportunity back for another decade.

In Stage 1, the homeowner is learning more about building retrofits, including potential benefits and financial support. There are 2 key objectives in the City of Burnaby's ZE Building Retrofit Strategy—Education and Outreach and Incentives—that will support the homeowner's journey in this phase.

EDUCATION &
OUTREACH

INCENTIVES

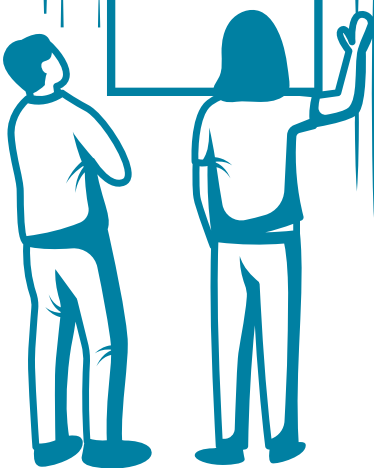
In learning more about building retrofits for their home, some prompting questions from the homeowner may include:

- » Is my home efficient? How does my energy bill compare to others?
- » Is it about time to replace...?
- » How can I increase thermal comfort at home, especially in the summer?
- » What are the co-benefits of making such investments?
- » What are my options?
- » Where do/should I begin?

The City of Burnaby's ZE Building Retrofit Strategy addresses these questions through a suite of tools to support homeowners through their awareness and discovery stage, including:

- » a comprehensive multilingual and multisectoral awareness campaign, allowing targeted information to reach different audience groups at different times
- » a series of demonstrations and workshops to connect industry experts with interested homeowners, giving them an opportunity to ask questions and compare products
- » concierge services providing homeowners with 1-on-1 support and guidance to start the retrofit process
- » success stories about retrofitting City-owned buildings
- » support for industry capacity-building, encouraging industry to prepare for market readiness and qualified contractors to spread the word on the benefits of building retrofits

Benefits of
Retrofitting!





Stage 2: Investigate and Analyze

In this stage, homeowners will be deciding whether to retrofit their home or not. They are setting their goals and looking at their needs. They are starting to take steps toward doing a retrofit by conducting preliminary assessments, gathering building and energy information and identifying priority retrofit options.

All 4 objectives—Education and Outreach, Incentives, Policies and Bylaws and Advocacy—in Burnaby’s ZE Building Retrofit Strategy are considered in this stage of the homeowner’s building retrofit journey.



As the homeowner starts to investigate and analyze, there are a number of questions they need to ask:

- » Will the building be demolished or sold?
- » Is the home being renovated?
- » What type of retrofits are required to optimize energy efficiency in the home?
- » What is the energy rating of the home?
- » How do I go about getting an energy assessment?

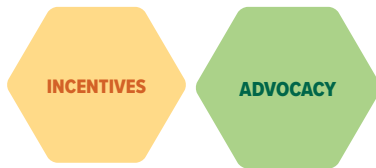
The City of Burnaby’s ZE Building Retrofit Strategy addresses the homeowner’s questions through a suite of actions to support homeowners during the Investigate and Analyze stage, such as:

- » concierge services providing homeowners with resources including a list of certified and licensed energy advisors
- » access to a licensed energy advisor to conduct pre- and post-retrofit energy assessments to help identify the home’s overall efficiency (homeowners can voluntarily disclose their home energy performance prior to full implementation of the Provincial Virtual Home Energy Rating system)
- » access to the provincial PACE program (a loan on the property, not the individual), which may lower the upfront financial burden on homeowners
- » benchmarking to allow homeowners to learn how well retrofitted buildings are performing

Stage 3: Design and Finance

Homeowners at this stage have already determined what is important to them—such as health benefits, cooling requirements and utility cost savings—and will begin to design their retrofit plan accordingly. As they get closer to doing the retrofit work they are reviewing their finances and looking into various incentives to determine if it is feasible.

The City of Burnaby's ZE Building Retrofit Strategy includes 2 key objectives—Incentives and Advocacy—that support this stage of the homeowner's retrofit journey.



The City of Burnaby's ZE Building Retrofit Strategy includes key actions to support homeowners through the Design and Finance stage:

- » The City will help lower retrofit costs by:
 - providing financial support through concierge services
 - providing top-ups for switching from fossil fuels for space and/or water heating
 - bringing down mechanical equipment costs by exploring bulk purchasing options
 - adjusting permit costs
- » The Province, once it has implemented the PACE (Property Assessed Clean Energy) Program, will offer loans on the property (not the individual)



Stage 4: Install

In this stage, the retrofit work is being done. The homeowner receives estimates from local contractors and building retrofit service providers, hires contractors, and pays for supplies and contracting services so that the retrofit work is completed.

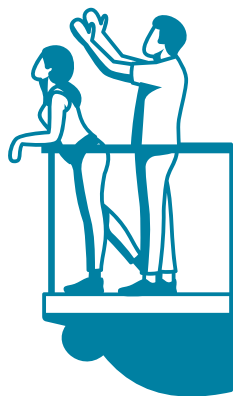
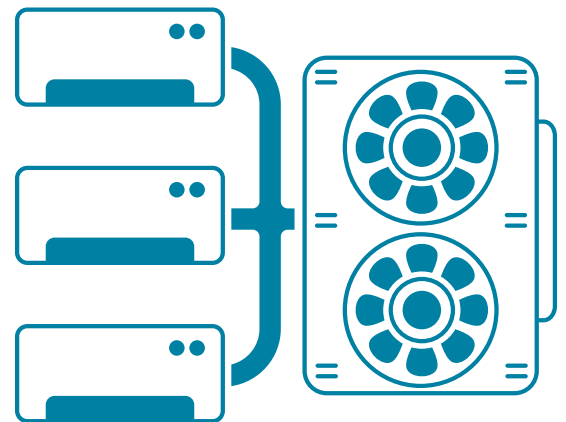
Three key objectives of the City of Burnaby's ZE Building Retrofit Strategy support this stage of the homeowner's process—Education and Outreach, Incentives and Policies and Bylaws.

Throughout this stage, there are a number of questions for the homeowner to consider:

- » How do I know if this is a qualified contractor?
- » How long will the permitting process take?
- » Will the contractors be applying for the permit?
- » Will there be City bylaws that prohibit the proposed work?

The City of Burnaby's ZE Building Retrofit Strategy addresses the homeowner's questions through 7 key actions to support homeowners during the Install stage, including:

- » demonstrations and workshops to provide an opportunity for homeowners to connect with industry representatives and qualified contractors
- » concierge services providing a list of qualified professionals and those eligible for provincial and federal rebates
- » support for industry capacity building by having qualified contractors in the market, making it easier for homeowners to start installations
- » reduced permit barriers and costs by the City to make the permitting process more approachable
- » options to amend the Zoning Bylaw to harmonize appropriate siting for outdoor appliances and structures where heat pumps can be installed along side yards
- » options to amend noise bylaws to evaluate ways of supporting heat pump installations with peace and quietness in mind
- » options to incorporate carbon emission reductions for existing buildings in the Building Bylaw to encourage retrofit work through available tools





Stage 5: Evaluate

At the final stage, homeowners will be conducting a post-installation EnerGuide assessment to qualify for rebates.



In the Evaluate stage, some prompting questions from the homeowner may include:

- » Who do I contact to arrange for a post-installation EnerGuide assessment?
- » Where do I submit the required documents to receive rebates?
- » What other rebates may I qualify for?

The City of Burnaby's ZE Building Retrofit Strategy has 3 key actions that will support homeowners through the Evaluate stage:

- » continue to work with the concierge service to ensure all necessary documents are ready for rebate submission
- » access to contractors who are knowledgeable in the retrofit process and can provide input and assistance
- » financial incentives offered by the City to lessen the financial burden of retrofitting

The homeowner has retrofitted the home to be low carbon and climate resilient for many years to come.





SFU

MORRIS J. WOSK
CENTRE FOR DIALOGUE

FEEDBACK ON BURNABY'S DRAFT RETROFIT STRATEGY ZERO-EMISSION BUILDING RETROFIT TASK FORCE

AUGUST 2023



URBAN RESILIENT FUTURES



City of
Burnaby

Vancity

SFU

MORRIS J. WOSK
CENTRE FOR DIALOGUE

About Urban Resilient Futures Burnaby

Urban Resilient Futures Burnaby puts people at the centre of climate action. Stewarded by Simon Fraser University's Morris J. Wosk Centre for Dialogue in partnership with the City of Burnaby and Vancity, the initiative is working with Burnaby residents and stakeholders to accelerate a just transition to a resilient, low-carbon future. Planned activities include a Zero-Emission Building Retrofit¹ Task Force, Neighbourhood Climate Action and Awareness Projects, and a Citizens' Assembly on Livable and Resilient Neighbourhoods. The result will be a community-driven vision and actions that are rooted in local context, values and climate science. This work will also serve as a proof-of-concept for how municipal governments across Canada that face barriers in reducing their carbon² emissions can engage their urban populations.

More information:

<https://www.sfu.ca/dialogue/programs/urban-sustainability/urban-resilient-futures/>

About the Task Force

The Zero-Emission Building Retrofit Task Force (“the Task Force”) met from March to June 2022 with a mandate to make recommendations to Burnaby City Council for “quick starts” and long-term actions to shape Burnaby’s Zero-Emission Building Retrofit Strategy. This work was facilitated by Simon Fraser University’s Morris J. Wosk Centre for Dialogue in partnership with the City of Burnaby and Vancity as part of the Urban Resilient Futures Initiative.

The purpose of this report is to present the Zero-Emission Building Retrofit Task Force’s feedback on the City of Burnaby’s Draft Retrofit Strategy.

Acknowledgements

The Simon Fraser University Morris J. Wosk Centre for Dialogue would like to acknowledge its partners at the City of Burnaby and Vancity for sharing their knowledge and expertise throughout this work. The Centre would like to extend special thanks and recognition to the following individuals from the City of Burnaby’s Climate Action and Energy team for their advice and expertise: Erica Lay, Manager; Darseen Pooni and Joanna Cheng, Officers.

The Centre and its partners would also like to warmly thank all the Burnaby community members, residents and stakeholders who gave their time to participate in the various programming activities and who shared their experience and input to help shape climate action in their city.

Any works referring to this material should cite:

Simon Fraser University’s Morris J. Wosk Centre for Dialogue. (2023). Urban Resilient Futures Burnaby: Feedback on Burnaby’s Draft Retrofit Strategy – Zero-Emission Building Retrofit Task Force.

Cover photo by [Alfred Shum](#), Writ3Click Photography

¹ Retrofitting is the process of modifying something after it has been built.

² Carbon dioxide or CO₂ is the most prevalent of the greenhouse gases.

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EXECUTIVE SUMMARY

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The City committed to publicly respond to the Task Force recommendations as it developed its draft Zero-Emission Building Retrofit Strategy, as well as to receive feedback from the Task Force on its draft strategy in an open and transparent manner. The Task Force reconvened on July 19, 2023 to provide reactions on the strengths and weaknesses of the draft strategy. Five Task Force members provided feedback at the meeting, with three additional Task Force members providing feedback asynchronously for a total of eight responses.

Feedback was largely positive for most areas of the strategy: 83% of members who responded felt that the retrofit strategy would enable Burnaby to meet its climate targets, 80% of members who responded were satisfied with how the City addressed the themes of community engagement and building processes, and 60% of members who responded were satisfied with how the City addressed the theme of leadership. However, 50% of members who responded were satisfied with how the City addressed the theme of equity: some members raised strong objections over the City’s approach to equity and found that the draft strategy was misaligned with Task Force recommendation to target subsidies on residents who live in energy poverty or face energy insecurity. Some Task Force members also urged the City to provide information in multiple languages and ensure comprehensive community engagement as part of strategy implementation.

City staff will use this feedback to inform the next draft of the Building Retrofit Strategy, which they will present to the Environment Committee in Fall 2023. A delegation of Task Force members will attend this meeting to represent their perspectives.

VIRTUAL MEETING ATTENDEES AND AGENDA

The Zero-Emission Building Retrofit Task Force (“the Task Force”) originally met from March to June 2022 with a mandate to make recommendations to Burnaby City Council for “quick starts” and long-term actions to shape Burnaby’s Zero-Emission Building Retrofit Strategy. This work was facilitated by Simon Fraser University’s Morris J. Wosk Centre for Dialogue as part of the Urban Resilient Futures Initiative, in partnership with the City of Burnaby and Vancity. The Task Force published its [Final Recommendations Report](#) in July 2022 and presented its recommendations to Burnaby City Council in November 2022.


The City committed to publicly respond to the Task Force recommendations as it developed its draft Zero-Emission Building Retrofit Strategy, as well as to receive feedback from the Task Force on its draft strategy in an open and transparent manner. The Task Force reconvened for a two-hour virtual meeting on Wednesday July 19, 2023 to provide reactions on the strengths and weaknesses of the draft strategy. Five Task Force members provided feedback at the meeting, with three additional Task Force members providing feedback asynchronously for a total of eight³ responses.

The five Task Force members who attended the meeting included:

- Mike Hurley, Mayor and Chair, Executive Committee of Council - City of Burnaby
- Ana Maria Bustamante, Local Immigration Partnership Coordinator - Burnaby Intercultural Planning Table
- Zach Segal, Director of Government Relations - Building Owners and Managers Association of BC
- Alexandre Hébert, Manager - Zero Energy/Emissions Buildings Learning Centre, BCIT
- Andy Yan, Director - SFU City Program.

The meeting was facilitated by the Simon Fraser University Morris J. Wosk Centre for Dialogue with support from City of Burnaby staff.

³ The original Task Force was made up of sixteen members.



The meeting had the following agenda:

1. Opening round:

- a) *What's new for you over the past year?*
- b) *Have any developments changed your minds about retrofits or added new learnings you'd like to share?*

2. Presentation by the City, Q&A and General discussion:

- a) *What are your initial reactions to the information that has been shared?*

3. Thematic Discussions on the 4 topic areas based on the TF recommendations: Equity, Community Engagement, Building Processes, Leadership:

- a) *What did you like in this thematic area?*
- b) *If you could change one or two things in this area, what would they be?*

4. Plenary:

- a) *What resources does the City need to allocate to meet its retrofit ambitions?*

5. Closing Round:

- a) *If you were to summarize your feedback for the Environment Committee and/or Council, what would it be?*
- b) *What is your best advice to Burnaby as it finalizes its retrofit strategy?*

UPDATES

Task Force members began by sharing updates and current issues that are on their mind.

For example, over the last year, BCIT opened a new heat pump installation lab that has attracted many gas fitters interested in transitioning to heat pumps.

Concern over recent [news](#) was shared about landlords in New Westminster who are preventing their tenants from using air conditioning units, claiming the old buildings do not have the electrical capacity to withstand a surge in demand. There was agreement from participants around the urgency of incorporating cooling measures as we face higher temperatures during the summer months, which during the 2021 heat dome led to a concentration of heat-related deaths in [South Burnaby](#), highlighting demographic disparities in residents' abilities to deal with the heat.

“I would like to think about this work in the context and lens of 'the right to cool' based on the Coroner's report and work the Province is doing. In the last month the ECAP⁴ program has now included AC units as part of its offer - from accounts on the ground this process is very clunky and challenging for residents to take advantage of. Would recommend Burnaby consider the coordination of cooling between the ECAP AC unit and the CleanBC Income Qualified Program which offers heat pumps. Currently no connection between these exist and we risk carbon lock in for low-income homes that could and should qualify for a heat pump.”

Another Task Force member worried that despite the leadership demonstrated by cities like Burnaby, zero-emission building retrofits are likely to face many challenges, especially due to labour and materials shortage.

⁴ ECAP: Energy Conservation Assistance Program <https://www.betterhomesbc.ca/rebates/energy-conservation-assistance-program/>

TASK FORCE'S GENERAL FEEDBACK ON THE RETROFIT STRATEGY

Ahead of the meeting, participants were provided with the following documents to support their analysis:

- Draft Building Retrofit Strategy (Appendix B)
- Table of how Task Force recommendations were addressed in the draft strategy (Appendix C).

During the meeting, City staff presented elements of the draft strategy, areas of convergence with the Task Force recommendations, as well as areas the strategy diverged from recommendations and why (Appendix A).

In general, Task Force members present at the meeting shared positive comments about how the draft retrofit strategy represents their discussions, overall commending the good work done to-date.

“I understand where the City is going with this and I like the direction we are going.”

Task Force members reiterated their offer to support the City in whatever way they could and were also interested in using the City’s materials in their own work, for example BCIT’s “Introduction to retrofits” course.

Areas for improvement included translating materials into diverse languages and hiring Community ambassadors to engage community in diverse languages (e.g. in the Edmonds neighbourhood).

The Task Force looks forward to seeing the final retrofit strategy product and is hopeful its implementation will lead to GHG reductions.

Other pieces of advice to the City included:

“Be bold and ambitious with the strategy. Lead by example.”

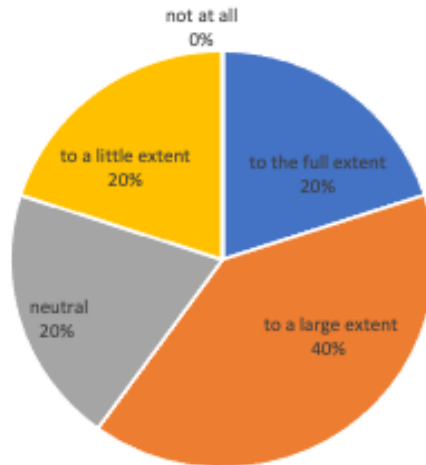
“Lean on the experts - don't be shy to pick up the phone or send an email.”

Polls were used throughout the meeting to provide a quantitative gauge on participants’ input. Poll results presented in this section include feedback from participants present at the meeting as well as feedback received from other Task Force members through an online survey.

Poll: General Sentiment

To what extent do you feel the City of Burnaby has generally taken into account the Task Force's recommendations in its draft retrofit strategy?

5 respondents



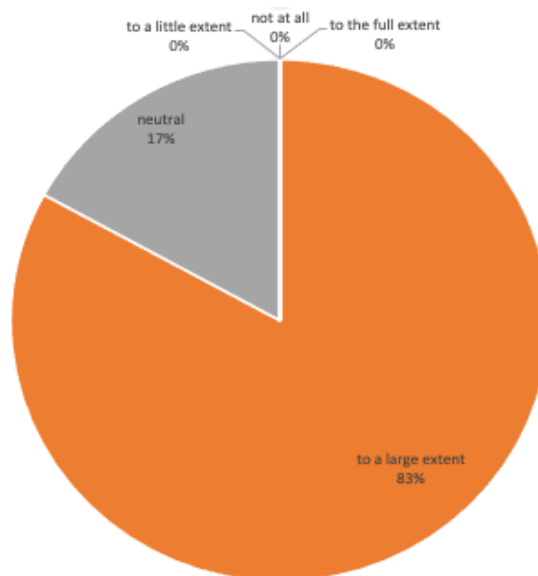
Poll: Meeting climate targets

Recognizing the dangers posed by climate change, Burnaby City Council declared a Climate Emergency in 2019. This emergency declaration set new carbon reduction targets for the City for the next three decades:

- 45% reductions by 2030
- 75% reductions by 2040
- carbon neutrality by 2050

To what extent do you feel this strategy will enable Burnaby to meet its climate targets?

6 respondents



THEMATIC DISCUSSIONS ON THE 4 TOPIC AREAS BASED ON THE TASK FORCE RECOMMENDATIONS

In the November 2022 presentation to City Council, the 20 Task Force recommendations (8 High-Priority Recommendations and 12 Regular-Priority Recommendations) were grouped into the following four thematic areas:

- Equity
- Community Engagement
- Building Processes
- Leadership.

During the meeting, participants used a [Mural board](#) to individually rotate through the four thematic areas and note what they liked and didn't like about how the draft strategy has addressed each area. They then shared their thoughts in a larger plenary discussion.

Once again, polls were used throughout the discussion to provide a quantitative gauge on participants' satisfaction with the draft strategy. Poll results presented in this section include feedback from participants present at the meeting as well as feedback received from other Task Force members through an online survey.

For reference, the Task Force High-Priority and Regular-Priority Recommendations are listed for each thematic area.

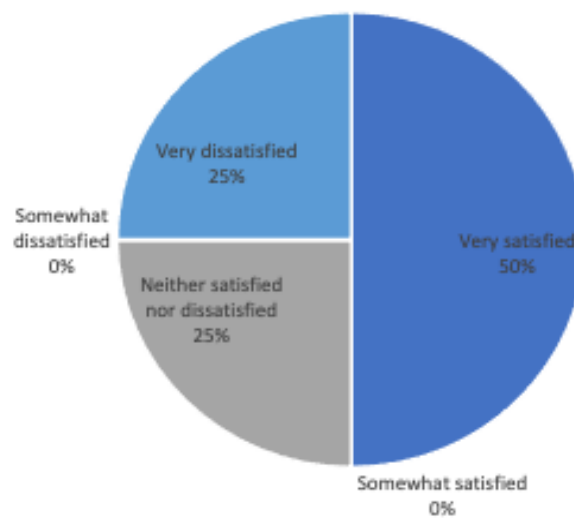
Thematic Area: Equity

For reference, the Task Force recommendations related to this thematic area included:

Number	Title of the Recommendation <i>Green: High-Priority Recommendations</i> <i>Blue: Regular-Priority Recommendations</i>
1)	Provide retrofit subsidies and incentives that support residents living in energy poverty or that reduce the impacts of climate change for vulnerable residents (e.g., seniors and people with disabilities during heatwaves, etc.).
5)	Provide rules or resources to both landlords and tenants (?) to mitigate tenant disruptions/evictions during retrofits.
11)	Add green space and trees around buildings in under-served parts of Burnaby, which are often the same locations where non-profit housing and those residents who are most vulnerable to heat waves are located.
16)	Explore ways, such as through large-scale procurement or partnerships, to create training and employment opportunities for under-represented groups so they benefit from the growing retrofit economy. In addition, the City of Burnaby should ensure that retrofit solutions are designed and delivered by the communities they serve.

Poll: How satisfied are you with how the City's preliminary draft strategy addresses equity?

4 respondents



One participant underscored the importance of continuous improvement as the City engages its residents on planning the strategy and implementing it:

“Overall, there is need to measure effect and participation of who and where participants are coming from and adjust for effect.”

Another Task Force member in particular expressed strong dissatisfaction around the strategy’s mention of subsidies and incentives:

“When reading over the plan I was surprised that the wording and meaning of the first and primary recommendation of the Task Force had changed somewhat significantly. I feel that the City has fundamentally missed the intention and main goal of this first recommendation, which was to “Provide retrofit subsidies and incentives that increase affordability for residents living in energy poverty and/or that reduce the impacts of climate change for vulnerable residents (e.g., seniors and people with disabilities during heat waves).” This has been changed to “Provide retrofit subsidies and incentives” with no mention of energy poverty or vulnerable communities. This omission shifts the activities to be vastly different than if the goal and target market were vulnerable communities. And while this shortened version is not incorrect, it loses the intention and focus to increase affordability and focus on vulnerable residents which was a key focus of our work over the past year.

As a result of this shift in meaning, the action items that address this recommendation don’t include activities that mention vulnerable or lower income households:

2.2 Provide top-ups to existing retrofit incentive programs for electrification measures

- Provide top-ups to those who switch from a fossil fuel (oil, gas or propane) space or water heating system to an electric air-source heat pump*
- Provide top-ups for energy assessments*
- Provide top-ups to those who require additional financial support (*)⁵*

2.4 Work with other municipalities to explore bulk purchasing options for heat pumps and other mechanical systems to bring down costs and secure availability of technology

- Look at standardized and/or competitive prices to remove additional cost barriers*

While certainly these activities are important and impactful, without the focus on improving affordability/reducing energy poverty and/or reducing impacts of

⁵ A Task Force member was interested in obtaining clarification about what the asterisk denotes next to the last bullet of Action 2.2 in the draft retrofit strategy: “Provide top-ups to those who require additional financial support (*)”.

climate change for vulnerable residents I feel these activities don't achieve the goal that the taskforce set out to do. For example while incentives to electrify are important for households in energy poverty, electrification alone (without significant energy efficiency upgrades) can increase household bills and therefore increase energy poverty and reduce affordability for Burnaby residents.

I feel quite strongly that the words 'energy poverty' and 'vulnerable communities/residents' should be included somewhere in the strategy and centered in the first task that the Taskforce recommended to the City."

Another Task Force member agreed:

"This key recommendation was, to me, an important accomplishment of the Task Force. To see it watered down in this way is extremely disappointing and negates the voices of those on the Task Force who work with vulnerable populations and wanted to ensure considerations for them were embedded in the recommendations."

On this topic, another Task Force member brought up the respective definitions of “energy poverty”, defined as “the lack of access to sustainable modern energy services and products⁶” and “energy insecurity”, defined as the “inability to adequately meet household energy needs⁷”. He posited that the term “energy insecurity” may be more appropriate in the context of zero-emission building retrofits, adding that the term “energy insecurity” may also have a less negative connotation than the term “energy poverty”.

⁶ World Economic Forum, "Energy Poverty Action," 2010.

⁷ Hernández D. Understanding 'energy insecurity' and why it matters to health. *Social Sci Med.* (2016) 167:1–10. doi: 10.1016/j.socscimed.2016.08.029

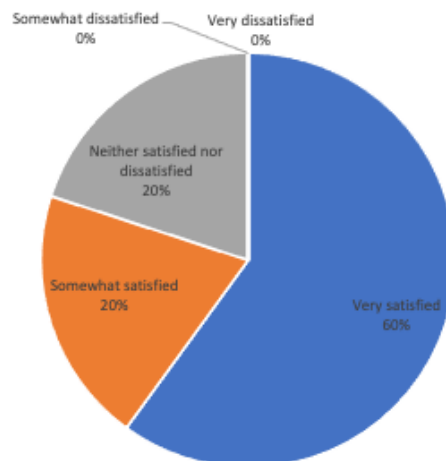
Thematic Area: Community Engagement

Task Force recommendations related to this thematic area included:

Number	Title of the Recommendation <i>Green: High-Priority Recommendations</i> <i>Blue: Regular-Priority Recommendations</i>
2)	Create or join a “one stop shop” concierge service for different building (and ownership) types to navigate the retrofit process, including planning, applying for financing and grants, paperwork, inspections, contractor management, etc.
3)	Devise a multi-lingual awareness and education campaign to explain the benefits and necessity of retrofits and the availability of concierge services, and encourage participation in retrofit programming. The campaign could potentially include success stories, demonstrations and resources for a range of building types and circumstances.
14)	Mail every building owner in Burnaby customized information about how their home/building is able to be retrofitted, with individualized communications similar to property assessments.
15)	Provide targeted information to “the right people at the right time” to influence building owners to retrofit at key milestones (e.g. point-of-sale, mortgage refinancing, new builds, equipment failure, having children, etc.), working with realtors, financiers, tradespeople and others.

Poll: How satisfied are you with how the City's preliminary draft strategy addresses Community Engagement?

5 respondents



Overall, members found the draft strategy properly and realistically addressed their recommendations for the thematic area of Community Engagement. They expressed satisfaction in finding their concierge service recommendation reflected in the draft strategy, and reiterated the importance of having information and documents available in different languages. They suggested inviting cultural groups and faith groups to be involved in the awareness and education campaign and advised providing presentations to stratas and management companies with information in diverse languages.

“It is hard for people who have low literacy, they need personalised and individualized information in multiple languages.”

They understood the resource limitations presented by City staff (financial, staff, information and time) which explained why Recommendation 14 and 15 would not be adopted with the same amount of detail as written in the Task Force recommendations.

Other advice expressed for improved community engagement included:

- use neighbourhood houses and other community groups to be in close consultation with impacted residents and to get multicultural and multilingual groups’ input
- *“learn from each engagement and adjust accordingly”*
- *“see what worked and did not work, give it a try and see what happens”*.

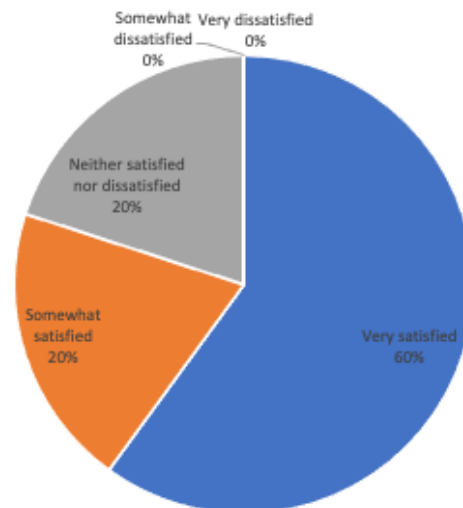
Thematic Area: Building Processes

Task Force recommendations related to this thematic area included:

Number	Title of the Recommendation <i>Green: High-Priority Recommendations</i> <i>Blue: Regular-Priority Recommendations</i>
4)	Optimize the permitting process for all building types in ways that incentivize climate-friendly retrofit options such as heat pumps (e.g. fast-track permitting, streamlined processes, etc.) and discourage the use of fossil fuel gas (e.g. trigger contractors to present low-carbon choices to building owners during application process, etc.).
6)	Review City bylaws (noise, permitting, etc.) and clarify/adapt/simplify them to facilitate retrofits.
9)	Build the capacity of contractors in Burnaby to offer heat pumps and other retrofit services, shaped by an initial needs assessment and leading to training programs and other forms of engagement.
19)	Seek out appropriate buildings that can be retrofitted and connected to the City of Burnaby's pending District Energy System.

Poll: How satisfied are you with how the City's preliminary draft strategy addresses Building Processes?

5 respondents



Task Force members approved of the draft strategy's content in terms of reviewing City by-laws: they felt this will serve to "give residents a sense of action and direction." They were satisfied with the strategy's approach to reducing red tape:

"Make it as simple as possible, this is a smart way to go about."

Thematic Area: Leadership

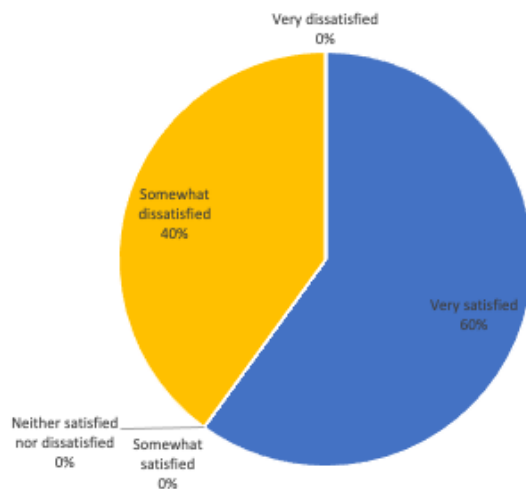
Task Force recommendations related to this thematic area included:

Number	<p align="center">Title of the Recommendation</p> <p align="center"><i>Green: High-Priority Recommendations</i></p> <p align="center"><i>Blue: Regular-Priority Recommendations</i></p>
7)	Accelerate the adoption of higher standards for the BC Energy Step Code (and upcoming Carbon Pollution Standard) in Burnaby to increase the emissions performance of new buildings and reduce the need for future retrofits.
8)	Retrofit all City-owned buildings to lead by example, showcase solutions and stimulate the retrofit market.
10)	Hold a large-scale retrofit pilot or participate in an existing accelerator/incubator program to identify innovative practices and stimulate the local retrofit market.
12)	<p>Pilot new and innovative financing models that:</p> <ul style="list-style-type: none"> i) promote retrofits for rentals, non-market housing, and other buildings not well-served by current methods (e.g. Stratas), while taking care not to place additional debt on residents who can't afford it. ii) implement pending provincial PACE legislation to allow property owners to borrow the upfront costs for retrofits and pay back the loan on their property tax bill, with any remaining debt transferred to future owners if the property is sold, while taking care to include consumer protections that protect lower income households.
13)	<p>Ask the Provincial Government to amend the Strata Property Act to:</p> <ul style="list-style-type: none"> i) add a requirement for Building Condition Assessment Reports (a.k.a. 'depreciation reports') to identify potential energy upgrades. ii) require energy-saving upgrades in Strata buildings at appropriate milestones, including when equipment or components have reached the end of their useable lifespan. iii) inclusion of electrification pathway
17)	Ask the Province to introduce mandatory energy labeling legislation for high-emitting buildings over 50,000 square feet in a manner that ensures a uniform approach across municipalities.
18)	Eliminate the use of natural gas fireplaces in City of Burnaby-owned buildings. Include signage explaining why these have been turned off.

20)	Decrease the emissions intensity per resident by finding ways to accommodate additional population density within existing single-family homes and along transit corridors.
-----	---

Poll: How satisfied are you with how the City's preliminary draft strategy addresses Leadership?

5 respondents



One member thought the language in these sections of the draft strategy was “*very passive and [did] not give the reader confidence that this work [would] actually happen (words like ‘support’, ‘explore’, ‘when applicable’).*”

Another member had specific feedback around benchmarking and energy disclosure:

“I believe this needs to be clarified if this is private or public. If public, I believe there are privacy concerns that need to be tweaked. Additionally, there are better ways to achieve the same goal with incentives, rather than sticks. For example, by encouraging building energy efficiency certification programs in which buildings that meet a certain standard become certified (BOMA Best, LEED⁸, etc.), energy efficient buildings will become the norm, and it will become harder for laggards to continue to operate inefficient buildings.”

Another member advised exploring provincial and federal pre-existing supports to achieve the goal of retrofitting City-owned buildings.

⁸ LEED: Leadership in Energy and Environmental Design

NEXT STEPS

City staff will continue the development of the Building Retrofit Strategy and will use this feedback from the Task Force to inform the next draft, which they will present to the Environment Committee and Council for review in Fall 2023. Task Force members will appear as a delegation at the Environment Committee meeting to continue to share Task Force perspectives on the final strategy.

APPENDIX A: PRESENTATION BY CITY STAFF

BUILDING RETROFIT STRATEGY



Agenda

- Strategy Preliminary Draft Updates
- Progress Update
- Learnings from the Taskforce
- Building Retrofit Strategy
- Taskforce Recommendations and Preliminary Draft
- Next Steps

Strategy Preliminary Draft Updates

- June 15, 2023 → Preliminary draft of the ZE Building Retrofit Strategy was presented to and adopted by Environment Committee
- July 10, 2023 → Preliminary draft was forwarded to Council for information
- Now → Seeking for taskforce feedback on preliminary draft

Progress Update

- Attended workshops related to retrofits hosted by Zebx, CEA, ZEIC, and Metro Vancouver Regional District Climate Action Committee (REAC)
- Working with a UBC scholar whose developing a building retrofit toolkit for MURBs to address extreme heat events for our vulnerable groups
- Engaging with other local governments and internal stakeholders to review, assess and determine best practices and incorporate key retrofit elements

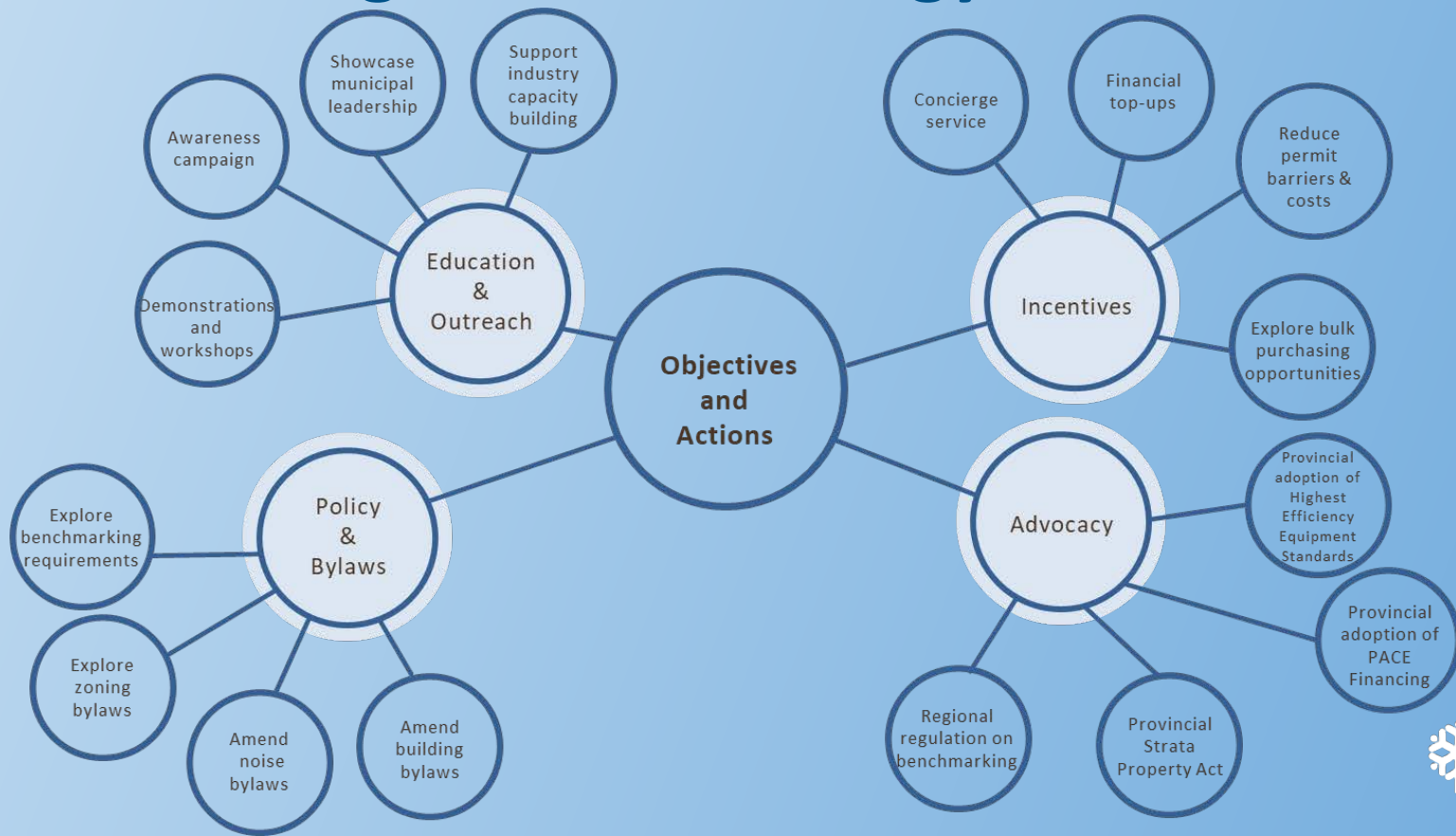
Learnings from the Taskforce

- Provided the opportunity to hear from leading experts in multiple disciplines
- Built connections with taskforce members to support each other on future projects
- Emphasized effort on a people and community-approach
- Strategic use of high-priority and regular-priority recommendations
- Awareness on retrofit challenges faced by various community groups

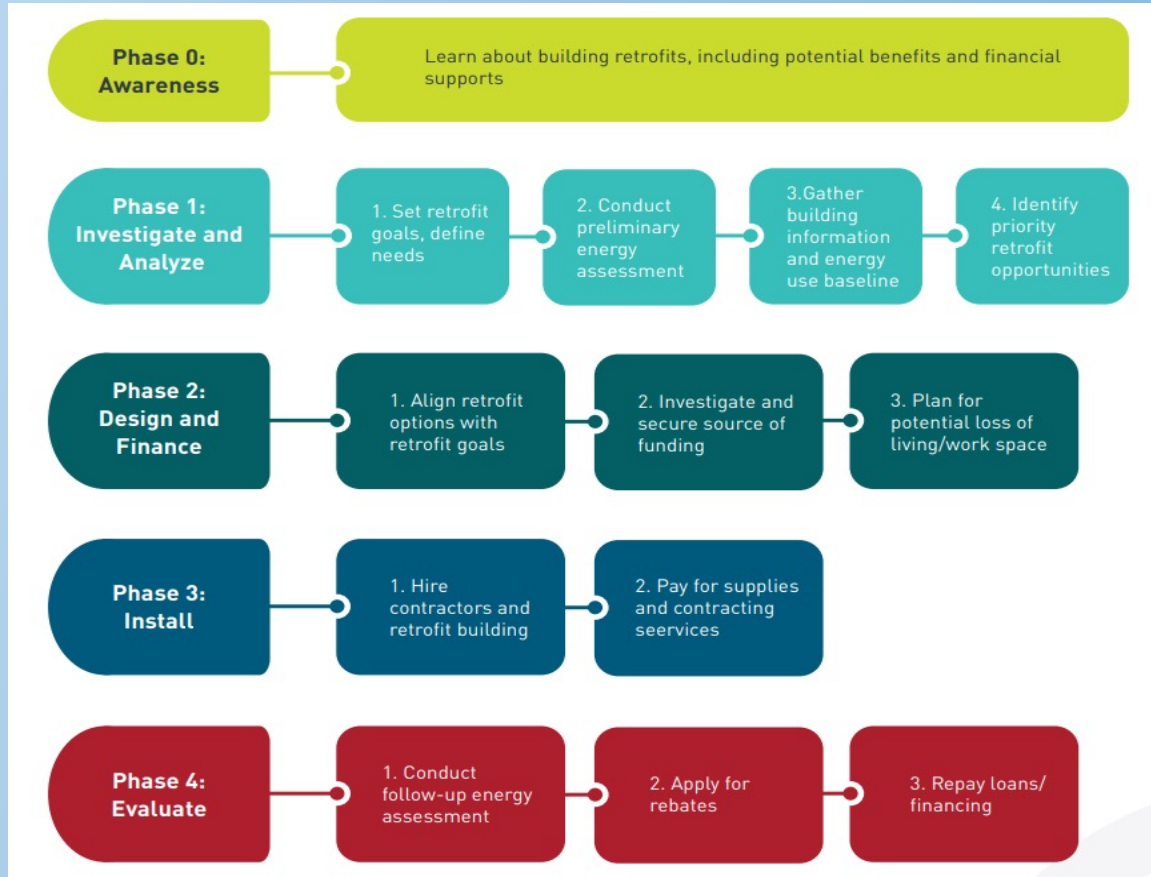
Key Barriers Identified Through the Taskforce

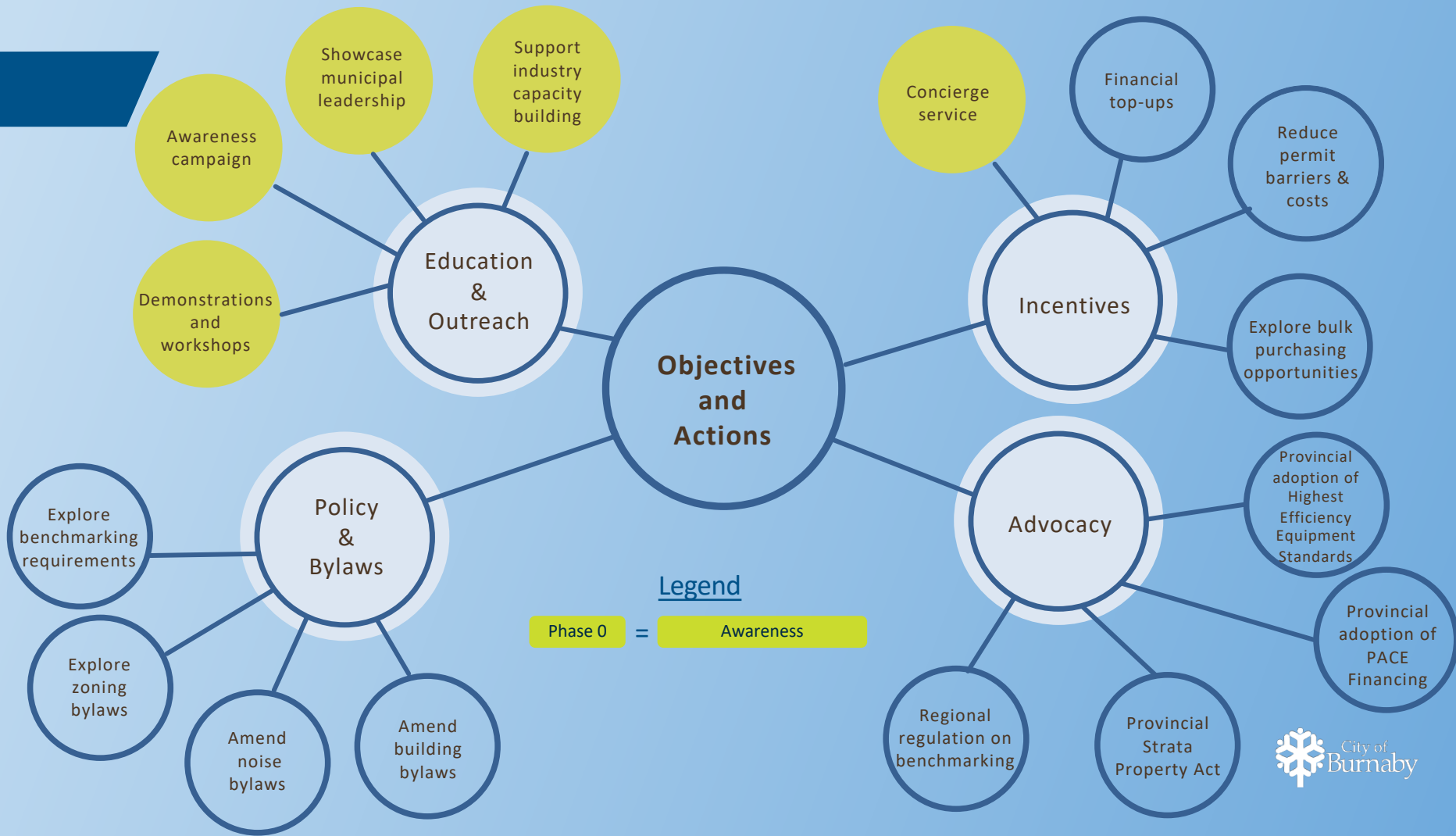
- Lack of awareness;
- Energy literacy;
- Up-front cost;
- Lack of qualified professionals and tradespeople to complete retrofits
- Complexity of the process; and
- Limited municipal government powers.

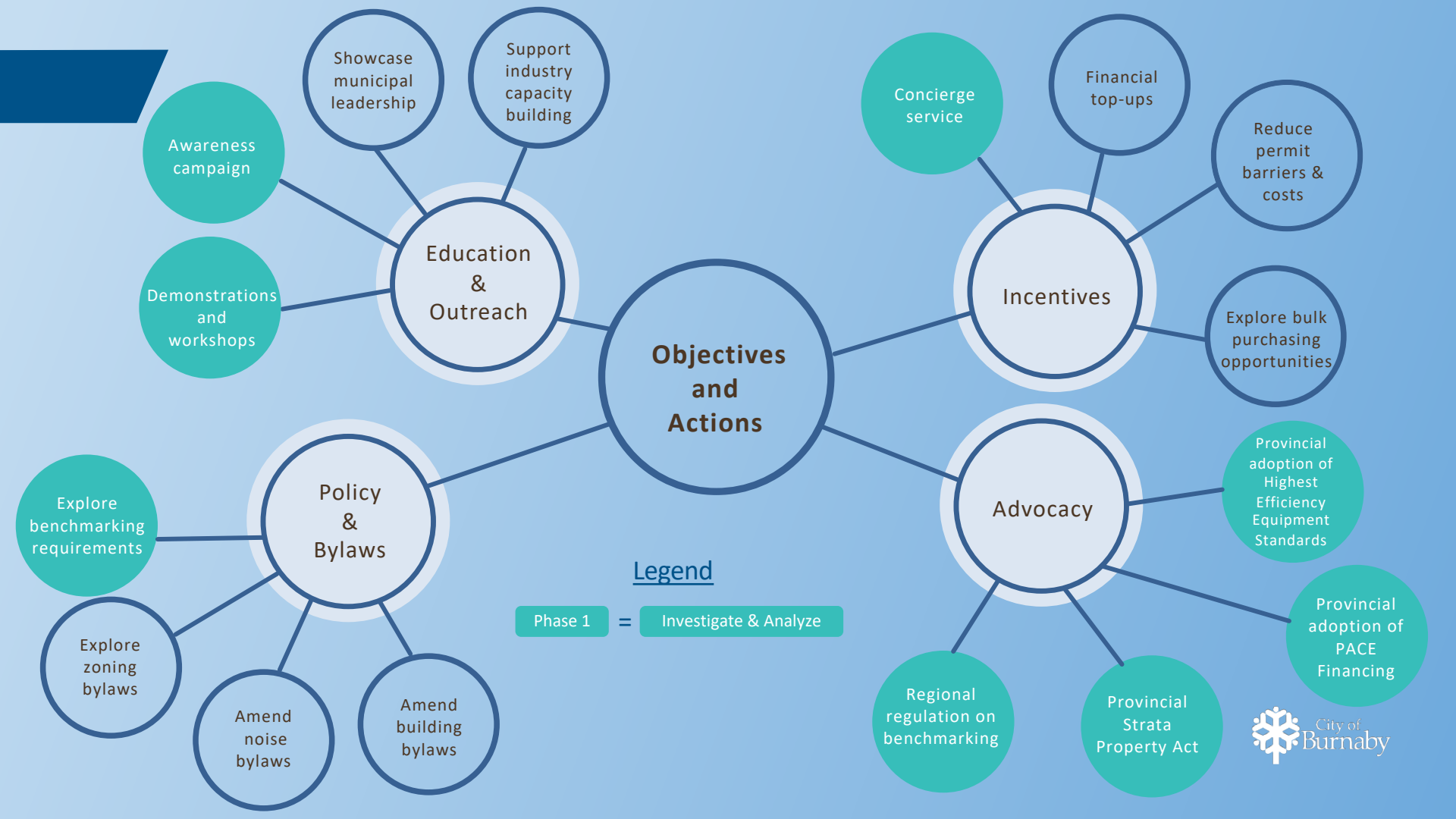
Building Retrofit Strategy

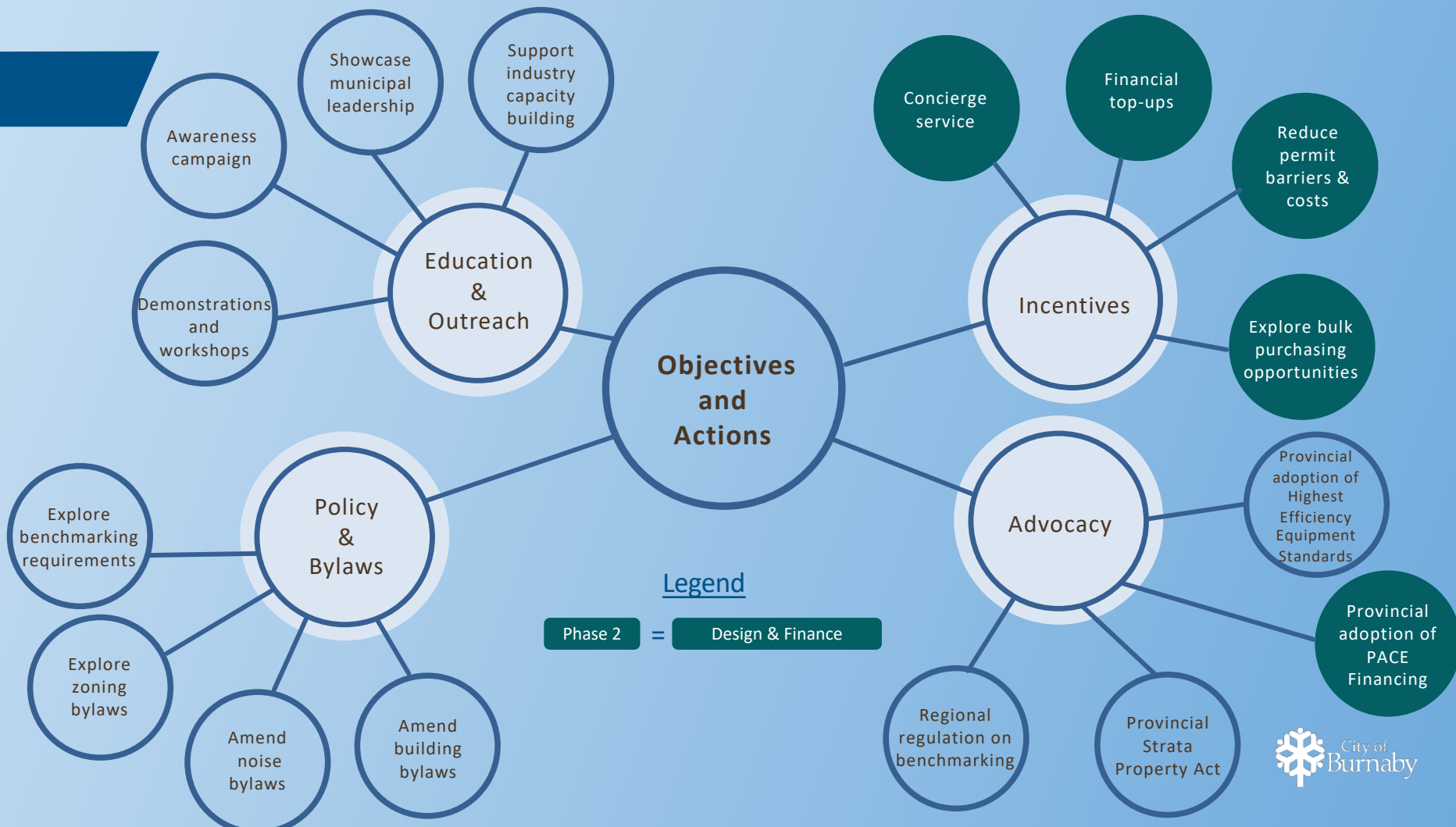


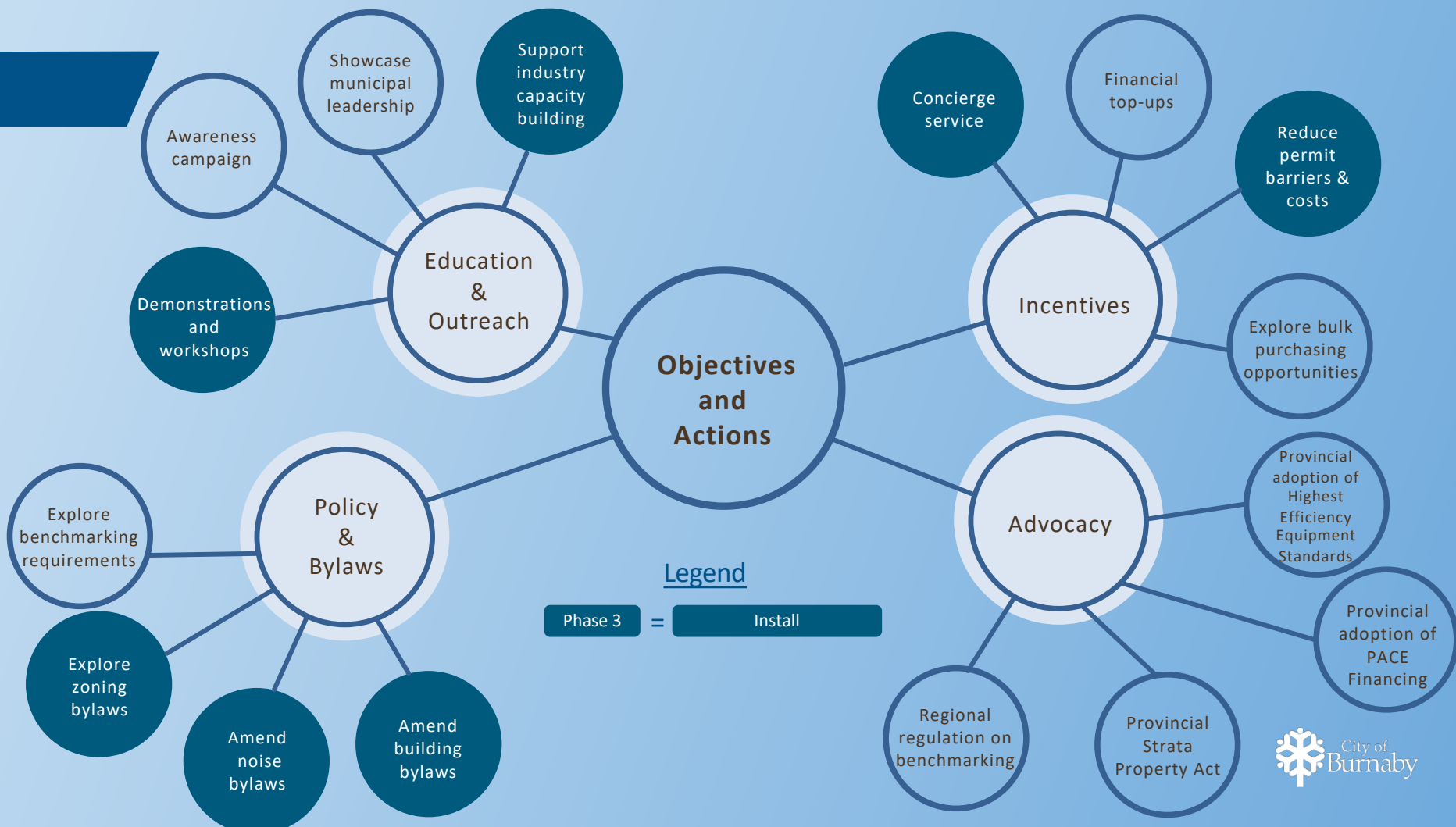
Retrofit Phases

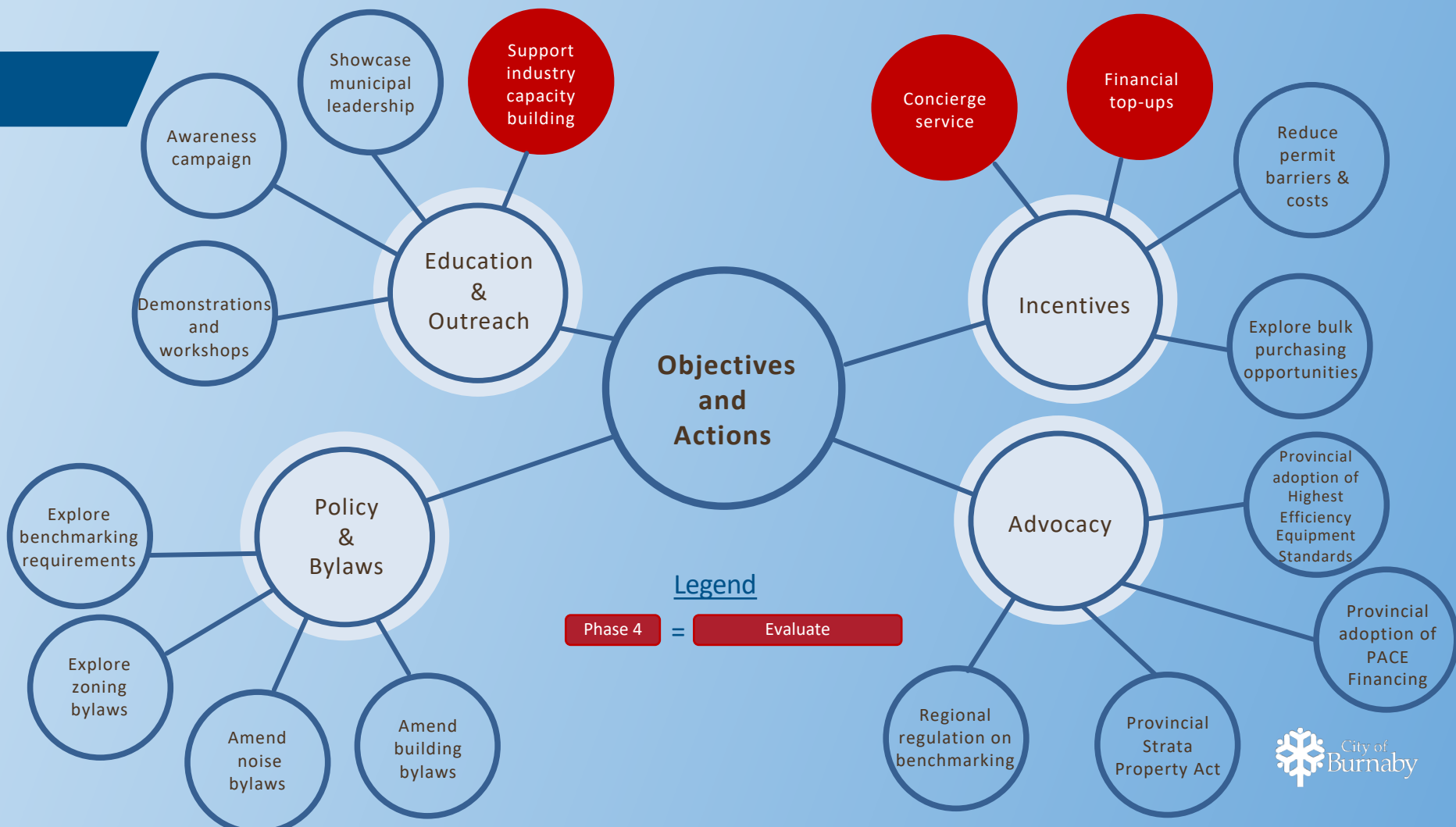












Taskforce recommendations and preliminary draft objectives

Taskforce recommendations that are part of the Draft Building Retrofit Strategy:

Number	Taskforce Recommendations	Strategy Objectives	Action Items
1	Provide retrofit subsidies and incentives	Incentives	2.2, 2.4
2	Create or join one-stop shop concierge service for different building types and ownerships	Incentives	2.1
3	Launch a multilingual awareness and education campaign to explain benefits and necessity of retrofits	Education and Outreach	1.1
4	Optimize the permitting process for all building types such as heat pumps	Policy and Bylaws	2.3, 3.1 – 3.4
5	Provide rules or resources to both landlords and tenants to mitigate tenant disruptions or evictions	Education and Outreach	1.1
6	Review City bylaws	Policy and Bylaws	3.1 – 3.4
8	Retrofit all City-owned buildings to lead by example	Education and Outreach	1.2
9	Build the capacity of contractors in Burnaby	Education and Outreach	1.3 – 1.4
10	Hold a large scale retrofit pilot or participate in existing accelerator/incubator program	Incentives	1.1

Taskforce recommendations that will be addressed through advocacy

Number	Taskforce Recommendations	Building Retrofit Strategy - Objectives
12	Pilot new and innovative Financing models - PACE	Advocacy
13	Ask the provincial government to amend the Strata Property Act	Advocacy
17	Ask provincial government to introduce mandatory energy benchmarking and regulate emissions from existing buildings	Advocacy

Taskforce recommendations that are/will be part of other work at the City:

Number	Taskforce Recommendations	Building Retrofit Strategy - Objectives
7	Accelerate the adoption of higher standards for BC Energy Step Code for new buildings	Step Code for Part 9 buildings increased May 1, 2023. Now looking at adoption of new Zero Carbon Step Code. This work is advancing under the Climate Action Framework Big Move 6: Zero Emissions – New Buildings
11	Add green space and trees around buildings in underserved parts of Burnaby	Urban Forestry Management strategy currently under development.
19	Seek out appropriate buildings that can be retrofitted and connected to district energy system	Work on the District Energy Utility (DEU) underway.
20	Decrease the emissions intensity per resident by findings way to accommodate additional population density within existing single family homes and along transit corridors	Work on the District Energy Utility (DEU) underway.

Taskforce recommendations that will be addressed with limitations:

Number	Taskforce Recommendations	Reasoning
14	Mail every building owner in Burnaby customized retrofit package	Limited Resources (financial, staff, information and time)
15	Provide targeted information to the right people at the right time	Limited Resources (financial, staff, information and time)
16	Explore ways, such as through large scale procurement or partnerships to create training and employment opportunities	This can be supported by the City of Burnaby, but would be lead by other actors, such as post-secondary institutions.
18	Eliminate the use of natural gas fireplaces in City of Burnaby-owned buildings	Will be considered within the suite of retrofits encompassed in Action 1.2 (Lead by example).

Next Steps

- Continue the development of the final Building Retrofit Strategy
- Bring Retrofit Strategy back to committee and council for review in Fall 2023

Thank You

APPENDIX B: DRAFT BUILDING RETROFIT STRATEGY

Draft Building Retrofit Strategy for URF Taskforce review only—not for circulation

Objective: To enhance resident and building owner retrofit and energy efficiency literacy.

	Targeted Actions for the City	Implementation Timeline	Cost
<p style="text-align: center;">1 Education & Outreach</p>	<p>1.1 Deliver multi-sectoral and multi-lingual awareness campaign</p> <ul style="list-style-type: none"> - Develop a centralized platform to house all building retrofit related information - Develop tailored communication materials to specific sector (home owner, tenants, property managers) and building archetype - Develop multi-lingual materials to ensure all members of the public can be engaged - Design a retrofit toolkit to help support residents to take actions - Develop messaging around the fuel switching, end-of-life replacement, energy efficiency, and climate preparedness 	Immediate	\$\$
	<p>1.2 Retrofit city-owned buildings to lead by example</p> <ul style="list-style-type: none"> - Continue to liaise with internal stakeholders to accelerate the adoption of low-carbon transition plan for water and space heating systems in city-owned buildings - Report greenhouse gas emissions from city-owned buildings on an annual basis - Showcase success stories via awareness campaigns to lead by example 	Medium-term	\$\$\$
	<p>1.3 Organize energy efficiency and retrofit demonstrations and workshops</p> <ul style="list-style-type: none"> - Liaise with industry leaders and contractors to organize demonstrations and workshops that enhance public awareness and address any inquiries from the public - Provide a platform for residents to engage with industry leaders - Provide a platform for residents to compare different products in the market - Provide an opportunity for positive dialogues and encourage early planning for end of life replacement and climate adaptation upgrades 	Medium-term	\$\$
	<p>1.4 Support industry capacity building</p> <ul style="list-style-type: none"> - Connect contractors with local institutions to obtain required certification to support retrofit work - Provide early signals to contractors, industry associations and equipment manufacturers to advance retrofit work - Stimulate the market on retrofit needs 	Long-term	\$

Draft Building Retrofit Strategy for URF Taskforce review only—not for circulation

Objective: To provide financial and process support to encourage public adoption of retrofit work.

<p>2 Incentives</p>	<p>2.1 Partner with existing concierge retrofit programs/accelerator programs who provide retrofit support to residents going through the retrofit process</p> <ul style="list-style-type: none"> - Join a concierge program that provides retrofit support to single-family homes and duplexes - Collaborate with energy advisors, contractors and concierge service provider to understand their roles and responsibilities 	Immediate	\$\$\$
	<p>2.2 Provide top-ups to existing retrofit incentive programs for electrification measures</p> <ul style="list-style-type: none"> - Provide top-ups to those who switch from a fossil fuel (oil, gas or propane) space or water heating system to an electric air-source heat pump - Provide top-ups for energy assessments - Provide top-ups to those who require additional financial support (*) 	Short-term	\$\$\$
	<p>2.3 Reduce permit barriers and costs</p> <ul style="list-style-type: none"> - Review and update furnace permit to a heating and cooling permit - Provide clarity on permitting process for retrofit work (i.e. bulletin, map out process on website) - Improve existing permitting administrative processes to increase the turnaround time to permit issuance - Reduce permitting fees to increase uptake of retrofits 	Immediate	\$
	<p>2.4 Work with other municipalities to explore bulk purchasing options for heat pumps and other mechanical systems to bring down costs and secure availability of technology</p> <ul style="list-style-type: none"> - Look at standardized and/or competitive prices to remove additional cost barriers 	Medium-term	\$

Draft Building Retrofit Strategy for URF Taskforce review only—not for circulation

Objective: To reduce City policy and bylaws barriers that hinder retrofit adoption.

3 Policy & Bylaws	3.1 Explore options to incorporate carbon emissions reductions for existing buildings in Building Bylaw <ul style="list-style-type: none"> - Liaise with internal stakeholders (Corporate Services, Building) to explore options to support retrofit work in Building Bylaw 	Immediate	\$
	3.2 Explore options to amend noise bylaws to support heat pump installations <ul style="list-style-type: none"> - Conduct an analysis of the sound levels of heat pumps in the market - Review noise mitigating options and develop a heat pump bulletin outlining noise and appropriate location to reduce impacts - Liaise with internal stakeholders (Corporate Services, Public Safety) to evaluate community noise impacts of heat pumps 	Immediate	\$
	3.3 Explore options to amend zoning bylaws to support heat pump installations <ul style="list-style-type: none"> - Review the zoning bylaw for siting, outdoor appliances and structures along the side yard - Harmonize appropriate siting for outdoor appliance and structures in conjunction with Housing Choices implementation - Explore how Official Community Plan (OCP) can introduce or reinforce policies that plan for existing or future zero-carbon opportunities 	Immediate	\$
	3.4 Explore policy and standards on mandatory benchmarking, water and space heating efficiency and fuel switching requirements <ul style="list-style-type: none"> - Encourage voluntary public disclosure of home energy performance prior to the full implementation of the Provincial Virtual Home Energy Rating System - Liaise with internal stakeholders (Corporate Services, Building) to determine the option of requiring home energy performance disclosure during the permitting process 	Medium-term	\$

Draft Building Retrofit Strategy for URF Taskforce review only—not for circulation

<i>Objective: To engage with other orders of government to advance regulatory tools and supports for retrofit work.</i>			
4 Advocate	1. Support Provincial regulation on benchmarking and energy disclosure <ul style="list-style-type: none"> - Support the Provincial implementation of the Virtual Home Energy Rating System which will require mandatory home energy performance disclosure at time-of-sale - Provide communication support via available platforms to encourage public participation in the program 	When applicable	\$
	2. Explore advocacy with the Provincial Government to amend the Strata Property Act to include zero-emissions retrofits and energy upgrades in a building’s depreciation report <ul style="list-style-type: none"> - Support industry experts to advocate for further dialogues with the province 	When applicable	\$
	3. Support the Provincial adoption of PACE (Property Assessed Clean Energy) Financing ⁱ <ul style="list-style-type: none"> - Explore options with internal stakeholders on the implementation of the PACE program once adopted by the Province - Provide communication support via available platforms to amplify the program when implemented 	When applicable	\$
	4. Support the Provincial adoption of Highest Efficiency Equipment Standard ⁱⁱ <ul style="list-style-type: none"> - Provide support on the Provincial development of the Highest Efficiency Equipment Standard - Provide communication support via available platforms to amplify the program when implemented - Liaise with internal stakeholder on the implementation of the Highest Efficiency Equipment Standard once adopted by the Province 	When applicable	\$

ⁱ The Province has identified PACE as a priority to drive adoption of energy efficiency and low carbon building retrofits. Information retrieved from <https://www.ubcm.ca/convention-resolutions/resolutions/resolutions-database/provincial-enabling-property-assessed-clean>

ⁱⁱ The Highest Efficiency Equipment Standard is a provincial commitment to explore future requirement for all new heating and hot-water equipment sold and installed in BC to exceed 100% efficiency since space and water heating systems are primary drivers to GHG emissions from a building. Information retrieved from CleanBC Roadmap to 2030 - The Province of British Columbia



APPENDIX C: TABLE OF HOW TASK FORCE RECOMMENDATIONS WERE ADDRESSED IN THE DRAFT STRATEGY

Urban Resilient Futures Taskforce recommendations and Draft Building Retrofit Strategy Objectives

Taskforce recommendations that are part of the Draft Building Retrofit Strategy:

Number	Taskforce Recommendations	Strategy Objectives	Action Items
1	Provide retrofit subsidies and incentives	Incentives	2.2, 2.4
2	Create or join one-stop shop concierge service for different building types and ownerships	Incentives	2.1
3	Launch a multilingual awareness and education campaign to explain benefits and necessity of retrofits	Education and Outreach	1.1
4	Optimize the permitting process for all building types such as heat pumps	Policy and Bylaws	2.3, 3.1 – 3.4
5	Provide rules or resources to both landlords and tenants to mitigate tenant disruptions or evictions	Education and Outreach	1.1
6	Review City bylaws	Policy and Bylaws	3.1 – 3.4
8	Retrofit all City-owned buildings to lead by example	Education and Outreach	1.2
9	Build the capacity of contractors in Burnaby	Education and Outreach	1.3 – 1.4
10	Hold a large scale retrofit pilot or participate in existing accelerator/incubator program	Incentives	1.1

Taskforce recommendations that will be addressed through advocacy:

Number	Taskforce Recommendations	Building Retrofit Strategy - Objectives
12	Pilot new and innovative Financing models - PACE	Advocacy
13	Ask the provincial government to amend the Strata Property Act	Advocacy
17	Ask provincial government to introduce mandatory energy benchmarking and regulate emissions from existing buildings	Advocacy

NOTE: This document is best reviewed in conjunction with the *Building Retrofit Strategy Table for URF Taskforce Review* document.

Urban Resilient Futures Taskforce recommendations and Draft Building Retrofit Strategy Objectives

Taskforce recommendations that are/will be part of other work at the City:

Number	Taskforce Recommendations	Other City Policies and Programs
7	Accelerate the adoption of higher standards for BC Energy Step Code for new buildings	Step Code for Part 9 buildings increased May 1, 2023. Now looking at adoption of new Zero Carbon Step Code per staff report and Council amendment (Item 6.3 pp.6-7) from May 8, 2023. This work is advancing under the Climate Action Framework Big Move 6: Zero Emissions – New Buildings
11	Add green space and trees around buildings in underserved parts of Burnaby	Urban Forestry Management strategy currently under development. Please see update summary of presentation (Item 3.1 pp.2-3) at Environment Committee May 26, 2022, or video of presentation (minute 4:55). Tree Bylaw review currently underway, as per Motion (Item 6.1), pp5-6) at Environment Committee May 26, 2022.
19	Seek out appropriate buildings that can be retrofitted and connected to district energy system	Work on the District Energy Utility (DEU) underway. The Draft Burnaby District Energy Policy was advanced at the March 8, 2023 Planning and Development Committee meeting.
20	Decrease the emissions intensity per resident by findings way to accommodate additional population density within existing single family homes and along transit corridors	The Housing Choices-Final Program for Phase 1A and Scope for Phase 1B were approved at the June 19, 2023 Council meeting, and similar considerations for “missing middle” housing will be considered through the Official Community Plan update that is currently underway (2023 to 2050)

Council and Committee meeting agendas, minutes, reports, and recordings can be found on the City website at: <https://www.burnaby.ca/our-city/meetings-and-public-hearings>

NOTE: This document is best reviewed in conjunction with the *Building Retrofit Strategy Table for URF Taskforce Review* document.

Urban Resilient Futures Taskforce recommendations and Draft Building Retrofit Strategy Objectives

Taskforce recommendations that will be addressed with limitations:

Number	Taskforce Recommendations	Reasoning
14	Mail every building owner in Burnaby customized retrofit package	Draft Building Retrofit Strategy Action 1.1 includes sector- and audience-specific tailoring of communications materials. Considering resource limitations (financial, staff, information and time) the Taskforce recommendation 14 in the URF Taskforce Report will not be adopted with the same amount of detail as written.
15	Provide targeted information to the right people at the right time	As above, Draft Building Retrofit Strategy Action 1.1 includes sector- and audience-specific tailoring of communications materials. Considering resource limitations (financial, staff, information and time) the Taskforce recommendation 15 in the URF Taskforce Report will not be adopted with the same amount of detail as written.
16	Explore ways, such as through large scale procurement or partnerships to create training and employment opportunities	This can be supported by the City of Burnaby, but would be lead by other actors, such as post-secondary institutions.
18	Eliminate the use of natural gas fireplaces in City of Burnaby-owned buildings	This recommendation aligns with Draft Building Retrofit Strategy Action 1.2 <i>Retrofit City-owned buildings to lead by example</i> . This action is more granular in scale than the Draft Building Retrofit Strategy and will be considered within the suite of retrofits encompassed in Action 1.2.

NOTE: This document is best reviewed in conjunction with the *Building Retrofit Strategy Table for URF Taskforce Review* document.

APPENDIX D: TASK FORCE FINAL RECOMMENDATIONS REPORT (JULY 2022)

The Task Force Final Recommendations Report was presented to Burnaby City Council at the November 21, 2022 meeting. It can be found at this [link](#).

This link to the report is embedded on the SFU Morris J. Wosk Centre for Dialogue's Urban Resilient Futures [webpage](#).