



REPORT

Report Date: April 19, 2022
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Meeting Date: May 17, 2022
[Submit comments to Council](#)

TO: Vancouver City Council

FROM: General Manager of Planning, Urban Design and Sustainability

SUBJECT: Climate Emergency – Bylaw Updates Applicable to Existing Detached Homes

RECOMMENDATIONS

THAT Council approve amendments to the Building By-law, generally as described in this report and as set out in Appendix A, where changes for air conditioning and electrification requirements for major renovations are effective January 1, 2023, and minor housekeeping amendments are carried out, effective upon enactment;

FURTHER THAT Council instruct the Director of Legal Services to prepare and bring forward for enactment the by-law necessary to implement these amendments, generally as outlined in Appendix A.

REPORT SUMMARY

This report advances the Climate Emergency Action Plan (CEAP) Big Move 4 targets to reduce operating emissions in existing detached homes by 50% of 2007 levels by 2030. This initial phase proposes amendments to the Vancouver Building By-law for existing one and two family homes. The proposed amendments are:

1. Starting January 1, 2023, all permanently installed new air conditioning systems in existing detached homes must function to provide both low carbon heating and cooling.
2. Starting January 1, 2023, renovations with a construction value over \$250,000 will be required to electrify their existing space heating and hot water systems to the same requirements in Building Bylaw for new construction.

These changes will be supported with the continuation of the current municipal top-up rebates for electric heat pump equipment, the further development of homeowner support programs and pilot programs to address identified barriers to home retrofits, and the continued streamlining of City permitting processes.

After analysis of implementation impacts, staff determined that additional time is needed to develop regulations for space and hot water heating that do not burden City permit processes while allowing for alternate compliance approaches in circumstances when electrification is challenging. This report acknowledges the urgency for climate action and staff will bring a subsequent report in 2023 to address the next steps in achieving the CEAP targets for existing detached homes.

Further to the above, this report includes certain housekeeping changes intended to incorporate miscellaneous clarifications and errata to the affected provisions and the notes in the Building By-law with respect to existing building and energy efficiency language related to windows and upgrade requirements, to better support users of the Code

COUNCIL AUTHORITY/PREVIOUS DECISIONS

In January 2019, Vancouver City Council declared a Climate Emergency in response to the United Nation's 2018 Intergovernmental Panel on Climate Change (IPCC) special report¹: Global Warming of 1.5°C.

On April 29, 2019, Council approved the Climate Emergency Response and associated targets and directed staff to develop strategies to achieve six targets (referred to as "Big Moves") and report back to Council by fall 2020 Including requirements that new and replacement heating and hot water equipment be zero emissions by 2025.

In March 2020, Council adopted a set of Building By-law amendments that require electric space heating and hot water systems along with reduced heat loss for most new 1 to 3 storey residential buildings.

In November 2020, Council approved the Climate Emergency Action Plan (CEAP), a roadmap to cut carbon pollution to 50% of 2007 levels by 2030 including a plan to reduce carbon pollution from existing buildings by the same amount and direction to staff to bring back recommendations for regulating GHG emissions from existing one and two family homes.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager recommends approval of the foregoing.

¹ Global Warming of 1.5 °C (2018): <https://www.ipcc.ch/sr15/>

REPORT

Background / Context

Climate Emergency Action Plan (CEAP)

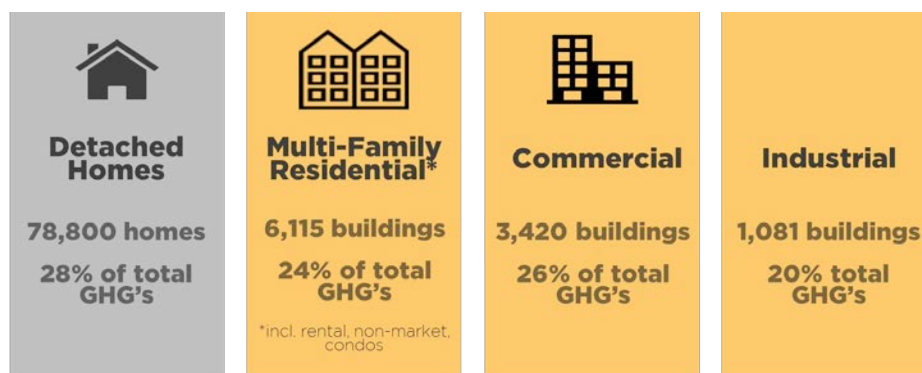
Burning of natural gas in buildings accounts for 57% of total carbon pollution generated in Vancouver². To address this issue, Vancouver's Climate Emergency Action Plan addresses carbon pollution from building operations and strives to cut pollution in half from 2007 levels by 2030.

While the City is rapidly approaching near zero emissions for new buildings, existing buildings are a more complex challenge because of the diversity of existing buildings construction standards and systems.

Vancouver supports building owners to undertake deep emission retrofits with incentives, streamlined regulations, and owner retrofit planning support programs. Staff have worked to reduce permit wait times for trade permits for heat pumps from weeks to days, and continue to streamline and prioritize support for heat pump permit applications.

Detached Homes

Of the total emissions from existing buildings, detached homes account for 28%, the largest portion across all building types.



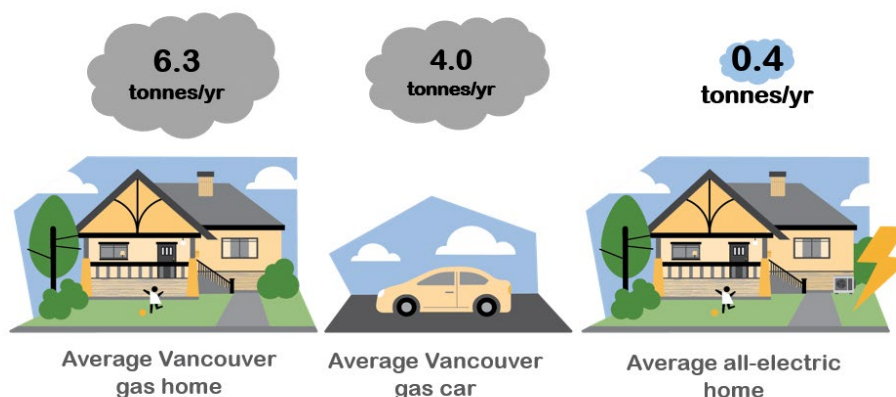
In British Columbia, fossil natural gas produces 16 times more carbon pollution than electricity, per equivalent unit of energy³. A typical detached home in Vancouver that uses natural gas emits about 6.3 tonnes CO₂ annually, the majority of which is from gas space heating and hot water. Conversely, a home using only electricity produces only 0.4 tonnes CO₂.⁴ Incentives are being continued to support Vancouver houses in electrifying their space heating and hot water systems. The City of Vancouver has recently launched a program developed by the City of Victoria to support for homeowners wanting to lower energy use and electrify space heating. The program includes examples of citizens that have retrofitted at

² Referencing the 2020 metrics from the Climate Emergency Action Plan.

³ 2020 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions, Ministry of Environment and Climate Change Strategy (2021): <https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf>

⁴ Based on analysis of EnerGuide Assessments of existing homes from 2007 to 2021

<https://bringithome4climate.ca/testimonials/ask@bringithome4climate.ca> and a no cost call can be arranged by emailing:



The proposed regulations and owner support actions align with plans and roadmaps for emissions reduction and equipment standards in buildings at the provincial and federal level.

Strategic Analysis

Staff are working towards a regulation that will require replacement of their fossil heating and hot water equipment with low emissions equipment when that equipment needs replacement. However, after analysis of implementation impacts it became clear that in order to successfully implement these changes, more time was needed. Therefore, space and hot water heating equipment “time of replacement” requirements will be brought to Council in 2023.

Initial Proposed Regulations

The following initial regulatory updates are proposed (changes to the Building By-law are provided in Appendix A):

Proposed Regulation	Description
1) Two-way air conditioner equipment standards (effective January 1, 2023)	In the Vancouver Building By-law, require plumbed and/or hard wired air conditioning (not including portable systems which are not hard wired) to install an electric two-directional heat pump that also provides zero emissions heat.
2) Major home renovations (effective January 1, 2023)	In the Vancouver Building By-law, renovations with a construction value over \$250,000 will be required to electrify their existing space heating and hot water systems.

Further to the above, miscellaneous clarifications and errata to the affected provisions and the notes in the Building By-law with respect to existing building and energy efficiency language are included to better support users of the Code.

Rationale for two-way air conditioning systems

With increasing summer temperatures, more homes are installing air conditioning systems to supplement their existing heating system. Air conditioning systems are often one-directional, 'cooling only' heat pumps. With the simple addition of a reversing valve, these same systems can provide the desired cooling and near zero emissions heating, enabling homeowners to easily and cost effectively reduce their carbon pollution.

Staff recommends hard wired and/or plumbed air conditioning systems (i.e. does not include portable equipment) must provide both heating and cooling. Industry engagement provided near unanimous support, and manufacturers indicated that supply was not an issue, and actually simplified supply chain issues.

Rationale for electrification during major renovation

This report recommends that homes undergoing substantial voluntary renovations with a construction value over \$250,000 must electrify the heating and hot water equipment as is required in new construction. If a home already has electric equipment or if the requirement is otherwise not applicable, the building code allows for acceptable equivalent measures to be performed. These requirements do not affect gas stoves for cooking.

Engagement Summary

Public Engagement

Public engagement took place in three phases starting with development of the Climate Emergency Action Plan in 2020 and ending in March 2022. Overall, staff heard strong public support for the proposed actions amongst the majority of respondents, with the remaining almost evenly balanced between going too far and doesn't go far enough. The large renovation requirements and heat pumps in place of air conditioners received the highest support.

Industry Engagement

From January to March, 2022, staff met with 15 industry groups representing over 50,000 individuals from professional associations, training institutions, equipment manufacturers, suppliers, energy utilities, and other key stakeholders. Feedback received was overall supportive of the proposed regulations, and industry representatives from most groups provided additional recommendations for amendments, letters of support, and comments for consideration.

More engagement details can be found in Appendices C & D.

Implications/Related Issues/Risk (if applicable)

Financial

This work is funded from existing budgets.

Cost Implications and Owner Supports

Installing permanently wired air conditioning to a house ranges from \$5,000 to \$25,000. The additional equipment cost at the wholesale level to add heating is in the \$100 to \$400 range.

For a home undergoing a renovation valued at \$250,000 or more, the incremental cost of electrifying heating and hot water, after Provincial, City and BC Hydro rebates, averages \$7,000; less than a 2% increase in project cost when replacing this equipment. The operating costs associated with switching from fossil fuels to heat pumps result in savings in most cases.

Additional owner supports such as owner retrofit coaching, resources, webinars and free home energy check-up are offered to Vancouver homeowners via the <https://bringithome4climate.ca/> program. In addition, the City has recently streamlined the permitting process to reduce permit times from weeks to days for most applications, related to the above.

Details on available rebates and other owner supports available at time of writing are provided in Appendix B.

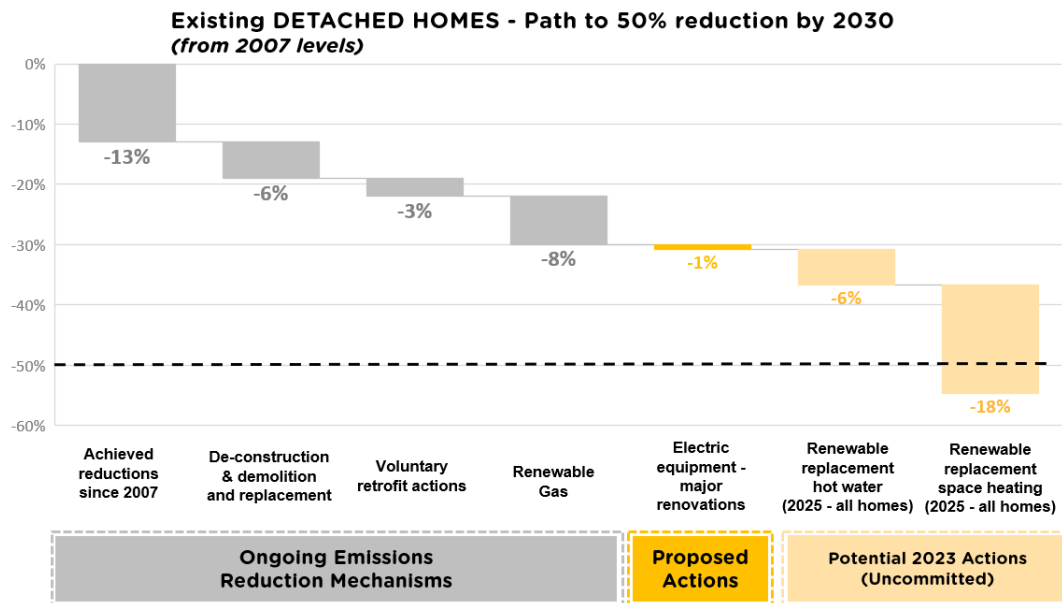
Environmental

This report represents initial requirements to reduce emissions from existing detached homes. The regulatory amendments in this report represent a total reduction of 4,200 tonnes CO₂ per year by 2030, the equivalent of taking 1,050 cars off the road.

These requirements represent the initial step in reducing emissions from existing one and two family homes. Staff will continue to work with partners such as Province, BC Hydro and the Building to Electrification Coalition (B2E) to expand public awareness, increase contractor capacity, and reduce barriers to heat pump adoption. Staff will also be working further with industry and other partners to develop time of replacement requirements for space and water heating that allow for easy permitting and provide owners with options for compliance in those cases when electrification creates undue challenges.

Recommendations on these future requirements will be brought for Council consideration in 2023. Staff will seek to align these additional recommendations with the CleanBC 2030 Roadmap directions to Provincial staff to establish 2030 regulations for heating and hot water equipment and to regulate a reduction in all emissions from natural gas by nearly 50%. Additional clarity on these are anticipated later in 2022.

Analysis of these potential additional 2023 Vancouver requirements combined with the initial regulations recommended in this report, historic reductions, voluntary heat pump retrofits, replacement of heating and hot water systems, and significant increases in the supply of renewable gas already underway indicate that a 50% reduction in emissions from existing one and two family homes is achievable, as shown in the chart below.



Equity Considerations

Vancouver owners of single family and duplex houses are typically the best equipped to take action to protect themselves from climate impacts like heat waves and wildfire smoke. Single family and duplex houses are the biggest source of building emissions in Vancouver and owners have the best supports, such as heat pump incentives and retrofit coaching, available to facilitate a reduction in their carbon pollution.

Given the cost of a renovation over \$250,000 in declared value, or the cost of permanently wiring and plumbing whole home cooling, the bylaw changes recommended here will impose no requirements on households earning less than \$50,000.

Legal

The Vancouver Charter authorizes Council to enact by-laws to regulate the construction of buildings where the conservation of energy or water, or the reduction of carbon pollution is concerned.

CONCLUSION

Staff recommends approval of the proposed amendments to the Vancouver Building By-law for major renovations, and permanently installed air conditioning systems for existing detached homes. Staff recommends continuing incentives and supports for citizens installing heat pumps and lowering energy use in houses. Additional recommendations for time-of-replacement requirements for space and water heating equipment in single family homes and duplexes will be brought to Council for decision in 2023.

* * * * *

Appendix A – Building Bylaw Changes

Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

BY-LAW NO. XXXXX

A By-law to amend Building By-law No. 12511 Regarding the Limiting of Greenhouse Gas Emissions in Existing 1 and 2 Family Home Mechanical Systems and Housekeeping Amendments

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

1. This By-law amends the indicated provisions of Building By-law No. 12511.
2. In Sentence 1.4.1.2.(1) of Book I and Book II, Division A, Council adds the following new definition, in the correct alphabetical order:

“Heat pump means *equipment* that transfers heat from one location to another using a refrigeration cycle. When used for space heating, this *equipment* may function to provide both heating and cooling.”
3. In Article 10.2.2.5. of Book I, Division B, Council strikes out Clauses (1)(a) and (1)(b), and substitutes the following:

“

a) the applicable requirements of Part 8 of the NECB, and the City of Vancouver Energy Modeling Guidelines; or

b) for buildings complying with 10.2.1.5.(2)(a)(i), the EnerGuide Rating System, version 15 or newer.

”.
4. In Article 10.2.2.7. of Book I, Division B, Council strikes out Table 10.2.2.7.(1) and substitutes the following:

“

Table 10.2.2.7.(1)
Maximum Thermal Transmittance of Exterior Closures and Fenestration
 Forming part of Sentence 10.2.2.7.(1)

Type of Closure	Assembly Maximum USI Value (W/(m ² K))	
	Complying with Article 10.2.2.5	Not Subject to Article 10.2.2.5
Windows, sliding, and folding doors with glazing		

Window-to-wall ratio $\geq 30\%$, and One Family Dwelling with conditioned space $\geq 325 \text{ m}^2$	1.44	Average of 1.04 or lower and no individual window can be above $U1.22^{(2)}$
All Other	1.44	1.22
Curtainwall and Window Wall Assemblies		
Window-to-wall ratio $\geq 30\%$, and One Family Dwelling with conditioned space $\geq 325 \text{ m}^2$	1.44	Average of 1.0 (1.04) or lower and no individual window can be above $U1.22^{(2)}$
All Other	1.44	1.22
Other Types of Closures		
Storefront curtainwall, window, and door assemblies	2.27	
Doors with or without glazing ⁽¹⁾	1.80	
Doors with a required fire resistance rating	Exempt	
Roof access hatches	2.94	
Skylights (not larger than 1220 mm in both directions), roof windows and sloped glazing systems	2.44	
Skylights larger than 1220 mm in both directions	2.95	
Tubular daylight devices	2.64	

Notes to Table 10.2.2.7.(1):

⁽¹⁾ Includes doors swinging on a vertical axis with or without glazing, door transoms, and sidelites.

⁽²⁾ See note A-10.2.2.7.(3).

”.

5. In Article 10.2.2.14. of Book I, Division B, Council:

(a) in Sentence (3), strikes out “, and” at the end of the sentence and substitutes “.”; and

(b) in Sentence (5), strikes out “*Buildings* that are complying with” and substitutes “*Buildings* that comply with”.

6. In Article 10.2.2.14. of Book I, Division B, Council:

(a) strikes out “heat pumps” wherever it appears and substitutes “*heat pumps*”;

- (b) strikes out “Heat pumps” wherever it appears and substitutes “*Heat pumps*”;
- (c) strikes out “heat pump” wherever it appears and substitutes “*heat pump*”; and
- (d) in Sentence (3), strikes out “heat pump’s” and substitutes “*heat pump’s*”.

7. In Article 10.2.2.14. of Book I, Division B, Council adds the following new sentence in correct numerical order,

“ **8)** In a *building* containing not more than two principal *dwelling units*, *heat pumps* that provide space cooling must also be able to provide space heating.

”.

8. In Article 10.4.1.1. of Book I, Division B, in Table 10.4.1.1., within the section associated with “**10.2.2.14. Domestic Gas-Heated Furnaces**”, Council adds the following in correct numerical order

(6)	[F86-OE1]
(7)	[F95,F96-OE1]
(8)	[F95,F96-OE1]

”.

9. In Article 11.2.1.4. of Book I, Division B, Council:

- (a) at the end of Sentence (2), adds “.”; and
- (b) strikes out Table 11.2.1.4.(2) and substitutes the following:

“

Table 11.2.1.4.(2) Energy Efficiency Upgrade Requirements for Residential Buildings containing not more than Two Principal Dwelling Units (except as permitted by Clause 11.2.1.2.(9)(d))

Forming part of Sentence 11.2.1.4.(2)

	EnerGuide Assessment ⁽¹⁾	Air tightness upgrades ⁽²⁾	Attic and Sloped Roof Insulation ⁽³⁾	Electric Space and Hot Water Heating
Alteration construction (\$) value				
\$0.00 to \$19,999	N	N	N	N
\$20,000 to \$74,999	Y	N	N	N
≥\$75,000 to \$249,999	Y	Y	Y	N
≥\$250,000	Y	Y	Y	Y
Scope of Work				

Strata Property Conversion ⁽⁴⁾	Y	Y	Y	Y
Relocation	Y	Y	Y	N
Reconstruction	See Note (5)			

Notes to Table 11.2.1.4.(2):

⁽¹⁾ An EnerGuide Assessment completed within the last 4 years must be submitted, a post-construction assessment must also be completed where the cost of construction exceeds \$75,000.

⁽²⁾ Where EGH>5 air changes per hour, air sealing is required.

⁽³⁾ Where attic insulation <R12 (2.11RSI), increase to R28 (4.93RSI); where attic insulation ≥R12 (2.11RSI), increase to R40 (7.04RSI); Insulation in existing attics shall not exceed R43.7 (7.7RSI). All flat roof and cathedral ceiling insulation shall be upgraded to ≥R14 (2.47RSI).

⁽⁴⁾ An existing *building* or parcel converted into 2 or more strata lots.

⁽⁵⁾ *Alterations* that are defined as Reconstruction in the Upgrade Mechanism Model in note A-11.2.1.2. shall comply with Article 11.7.1.5.

”.

10. In Article 11.7.1.5. of Book I, Division B, Council:

- (a) in Clause (1)(b), strikes out “,” at the end of the Clause and substitutes “,”;
- (b) in Clause (1)(c), strikes out “,” at the end of the Clause and substitutes “,”;
- (c) strikes out Clause (1)(f) and substitutes the following:

“

f) the domestic fireplace performance requirements of Sentences 10.2.2.15.(1) to (4) and Article 10.2.2.16.,”;
- (d) strikes out Clause (1)(g) and substitutes the following:

“

g) the heat recovery ventilator requirements of Article 10.2.2.17., except that non-reconstruction *projects* may provide continuous exhaust ventilation in accordance with Section 9.32.,

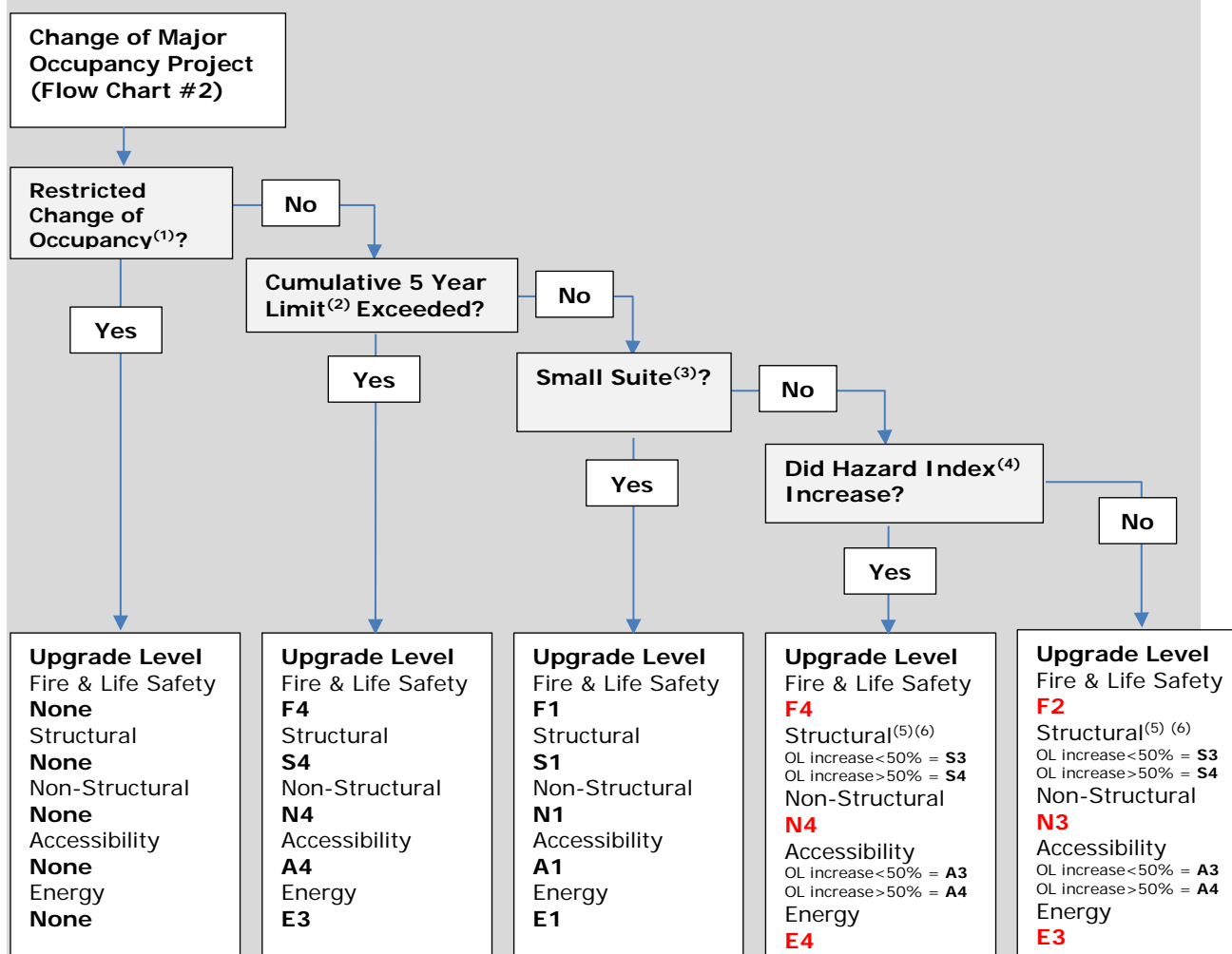
”.
- (e) in Clause (1)(h), strikes out “Reconstruction” and substitutes “reconstruction”,
- (f) in Sentence (2), strikes out “.” at the end of the Sentence;
- (g) in Clause (2)(a), strikes out “minimum”; and
- (h) in Table A-11.7.1.5., in the row associated with “10.2.2.7. Windows, Curtain wall, Sliding or folding doors with glazing”, strikes out “1.4” and substitutes “1.44”.

11. In Article 11.7.1.6. of Book I, Division B, Council strikes out “**Deleted**”, and substitutes “**UTV Deleted**”.

12. In the notes to Part 11 of Book I, Division B, in note A-11.2.1.2. Council strikes out the flow chart under the header "Flow Chart No. 2" and its associated notes and substitutes the following:

“

FLOW CHART NO. 2



Notes to Flow Chart No. 2:

- (1) Restricted Change of Occupancy (see Article 11.2.1.2.(10) and note A-11.2.1.2.(10))
- (2) The cumulative 5 year limit is triggered when there is a change of major occupancy in an existing building and the aggregate area of the change in major occupancy including the current work within any 5 year period is greater than 50% of the building area (as defined in Article 1.4.1.2. of Division A) in a building of not more than one storey, or the aggregate area of the change in major occupancy within any 5 year period is greater than 100% of the building area (as defined in Article 1.4.1.2. of Division A) in a building of more than one storey.
- (3) For small suites, the small suite must be separated on the suite side of the suite separation with at least two layers of gypsum wall board (GWB). Where only one layer exists, then an additional layer of GWB must be added to the suite side only. The additional layer of GWB may be any type of GWB with a minimum thickness of 13 mm.
- (4) The Hazard Index may be determined by the Hazard Index Table A-11.2.1.2.-D. or other methodology as deemed acceptable to the Chief Building Official.
- (5) Occupant load (OL) increase is based on the proposed occupant load for the entire building versus the current occupant load for the entire building. The OL change may be assessed in a comparative manner by considering only those areas undergoing a change of major occupancy,

where the occupant load of the remainder of the building cannot otherwise reasonably be assessed. Occupant loads are to be determined by the acceptable solutions in Subsection 3.1.17. of Division B.

⁽⁶⁾ Where there is a change of major occupancy and the structural load paths or structural design criteria are altered then it must be demonstrated that the existing building has the structural capacity to carry the increase in load or the building shall be structurally upgraded to carry the increase in live load.

”.

13. In Sentence 1.6.3.3.(2) of Books I and II, Division C, Council strikes out "heat pump" and substitutes "*heat pump*".
14. A decision by a court that any part of this By-law is illegal, void, or unenforceable severs that part from this By-law, and is not to affect the balance of this By-law.
15. This By-law is to come into force and take effect on January 1st 2023, except that sections 3, 4, 5, 10, 11 and 12 come into force and take effect immediately.

ENACTED by Council this day of , 2022

Signed _____
Mayor

Signed _____
City Clerk

* * * * *

Appendix B – Owner Supports and Rebates

a) Available Rebates

Homeowners have access to over \$12,000 in funding for heat pumps and other home upgrades through rebate programs offered by Better Homes BC (CleanBC), rebate top-ups from the City of Vancouver, as well as from community interest organizations including the Vancouver Heritage Foundation. An additional \$5,000 is available through the Federal Greener Homes Program for a variety of home upgrades such as heat pumps, windows, and insulation.

CleanBC Rebate Program

From December 2019 to December 2021, the City's municipal top-ups to CleanBC rebate program has resulted in the installation of 188 heat pumps and 22 heat pump hot water systems. The budget has been recently replenished to ensure continuity of available top-ups into 2023. The incentives have supported industry growth locally and shown that heat pumps can work in a variety of housing types.

Since 2014 the City of Vancouver has partnered with the Vancouver Heritage Foundation to run a retrofit incentive program for Heritage and pre-1940 homes to help them lower their carbon pollution. With recent heat waves the program has started to directly incentivize electric heat pumps which deliver heat at a similar cost as gas furnaces. The program is currently working with homeowners to electrify their older homes while caring for the fabric of the home.

b) Owner Support Programs

Owner support programs provide guidance and information to help homeowners navigate the potential complexity of energy retrofits, renovations, and equipment upgrades.

The City of Vancouver recently launched “Bring It Home 4 the Climate”, a homeowner support pilot program that offers guidance, resources, webinars, and free virtual home energy check-ups to Vancouver residents. Staff anticipate expanding this program in upcoming years to offer a range of support options and resources under a comprehensive, Vancouver-specific owner support umbrella. This program will address several identified potential barriers to electrification and home energy retrofits.

Owner supports as of March 2022

- Bring It Home 4 Climate energy coaching and virtual home check-up services provided for City of Vancouver residents
- Energy Coach support services offered by CleanBC
- CleanBC Income Qualified Program
- PST exemption on heat pumps from Government of BC
- Income qualified opportunities offered by BC Hydro and Fortis BC

c) Available Financing Programs

A lack of financing options was not identified as a significant barrier in public engagement. Specific energy retrofit financing programs are currently available through credit unions and banks including VanCity and RBC. The CleanBC Better Homes program offers a Better Homes Low-Interest Financing Program in coordination with Financelt, and federally, the Canada Greener Home Program has announced an interest-free loan up to \$40,000 through Canada Mortgage & Housing Corporation.

* * * * *

Appendix C – Public Engagement Summary



Climate Emergency Home Heating and Cooling Program Phase Three Engagement Summary

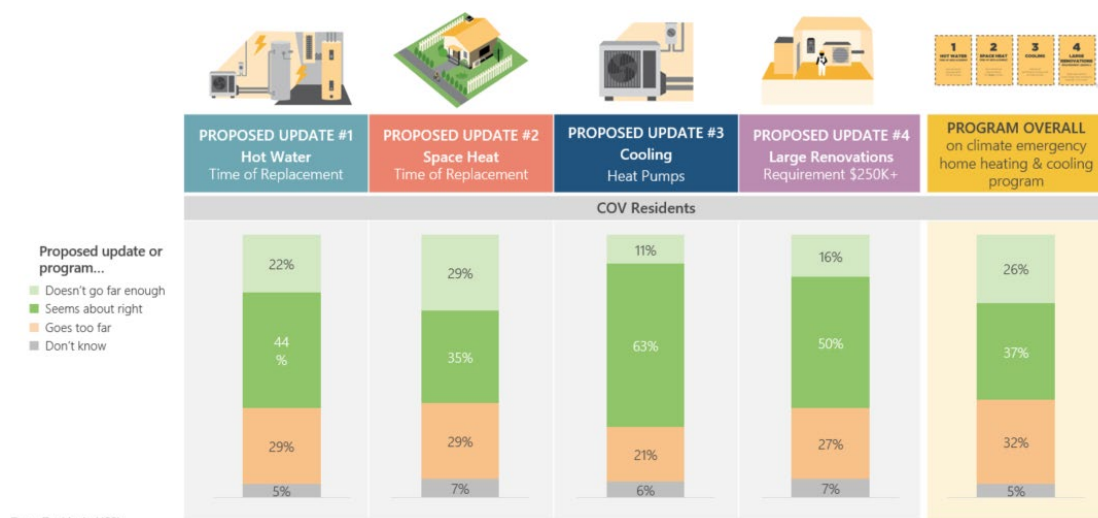


SECTION 1: PROJECT OVERVIEW

SUMMARY

From January 18 – March 6, 2022, feedback was sought on the draft Climate Emergency: Home Heating and Cooling program.

Overall, we heard good support for the proposed actions with the majority of respondents stating that the updates seem about right, with the remaining almost evenly balanced between going too far and doesn't go far enough. Owners of detached homes and duplexes that use natural gas were less supportive of the actions (in particular the Time of Replacement updates for space heat and hot water), stating they go too far, whereas renters living in these impacted homes and all other residents thought the policies didn't go far enough. There was support to lower the size threshold for the time of replacement space heating policy so it would apply to more houses.



Summary of feedback on the proposed updates from the online feedback form

For the most part people thought the supports identified completely or partly addressed the common barriers heard, except for the concern that inspector visits leaving to additional work, and there is greater need for programs to help navigate the complexity of renovating

Major themes heard included:

- Concerns about the cost to install and operate electronic systems
- Skepticism around the role of renewable gas in reaching climate targets
- The need for support services to navigate the complexity
- Desire to go faster and have policies impact more than just detached homes
- Industry stressed the need for practitioner training to ensure there are enough contractors to successfully implement

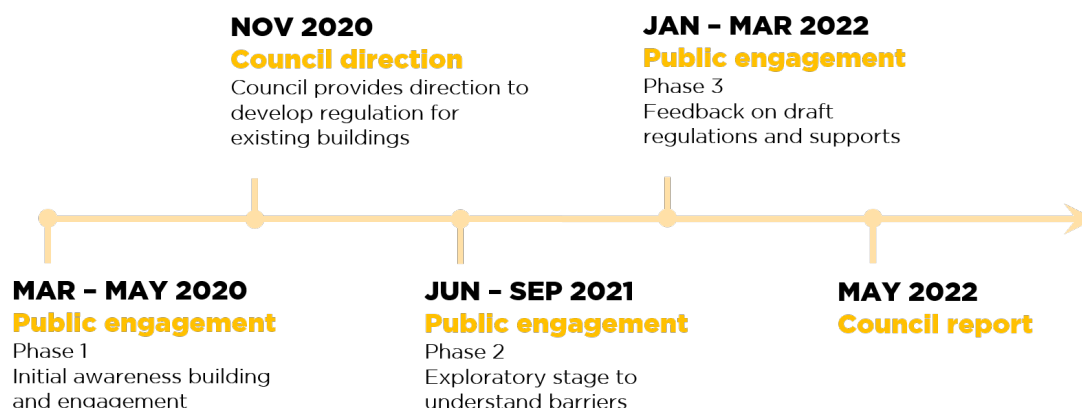
Feedback collected through 6 online public workshops, 1 staff workshop, 1 workshop with the Joint Advisory Committees, 15 industry meetings and an online feedback form posted on Shape Your City. In total, 125 people attended workshops, 514 people (with 463 Vancouver residents) completed an online comment form and over 50 stakeholders attended an industry session.

This report summarizes the engagement approach, tactics to communicate and collect feedback, who we heard from, and what was heard. Results gathered through this process were used by staff to fine tune the proposed regulations that will go to Council in May 2022.

PURPOSE OF THE PROJECT (DECISION STATEMENT)

How do we implement the transition off fossil fuels for home heating and hot water in existing low-rise residential homes in a way that is equitable, considerate of the various home-owners (and their tenants), diverse building types and renovation approaches available to hit CEAP targets of 50% carbon reduction by 2030?

PUBLIC ENGAGEMENT PHASES



This project had three phases for public engagement:

The goal for **Phase 1 engagement**, which took place from March – May 2020, was to raise awareness about the need to take action on the climate crisis and get feedback on potential climate actions that would cut Vancouver’s emissions from buildings and transportation in half by 2030. Feedback was collected through public workshops, self-hosted dialogues, a public survey and a representative survey. Council passed the Climate Emergency Action Plan in November 2020, which kicked off further work on the Green Home Retrofit Plan. (Read the engagement summary for Phase 1 [here](#))

Phase 2 engagement, took place from May to July, 2021. The goal of this phase was to understand barriers that people had when planning or undertaking energy retrofits, what motivated people to do this work, and to get feedback on early thinking on regulations that could reduce carbon emissions. Feedback was gathered through interviews, solution storming sessions, focus group sessions, and conversations with renovators. Based on the public apprehension towards the idea of a carbon budget for detached homes, staff altered the design of the draft regulation towards a “time of replacement” approach, meaning equipment (such as gas furnaces and boilers) would only need to be replaced with more energy efficient versions, and/or use renewable energy when the old equipment reached its natural end of life. (Read the engagement summary for Phase 2 [here](#))

Phase 3 engagement, took place from Jan to March 2022. Feedback on the draft regulations was sought through online workshops with members of the public, organization membership and members from industry. Feedback was also collected through an online comment form. The following report provides an overview of the methods, the engagement approach and what we heard during this phase.

SECTION 2. HOW WE COMMUNICATED AND COLLECTED FEEDBACK

STRATEGIC COMMUNICATIONS OBJECTIVES

Raise awareness:

- Deliver messaging and tactics to raise awareness that the energy we use to heat our buildings and hot water matters when it comes to climate change and climate resilience.
- Raise awareness about the benefits of high-efficiency equipment and electric heat pumps.
- Share information on how this proposed regulation aligns with actions the provincial and federal governments are bringing forward.

Describe proposed regulation and supports:

- Utilize City channels, social media and paid digital ads to provide clear information on the proposed policy: two time of replacement updates to our Building Bylaw that provide owners with options including electricity, heat pumps and high efficiency equipment using renewable gas, one change to air conditioning requirements, and new larger renovation requirements.
- Share information on home retrofit and energy support services and rebates.
- Illustrate what this proposed regulation means for people.

Inform on Heat Pumps benefits and rebates:

- As part of the overall awareness campaign, grow awareness of Heat Pumps, highlighting benefits and rebates: improved technology to reduce carbon footprint, switch to renewable energy, increase home comfort through heating and cooling.
- Amplify Heat Pump Exhibit at City facilities via digital, news release and earned media pitches.

Promote opportunities for input

- Direct residents to Shape Your City survey and workshops to provide input during engagement period, Jan 18 – March 6, 2022.

OVERVIEW OF COMMUNICATIONS TACTICS

Shape Your City webpage	A project website hosted on Shape Your City provided information and details of the proposed regulations, key dates and timelines, answers to commonly asked questions, videos, and links to feedback opportunities. During phase 3 engagement, over 2600 unique visitors spent time on these webpages. The highest daily website traffic count was on February 13, 2022 (653 visitors). 14% of people who filled out the comment form and 8% that attended a workshop said they heard about it through Shape Your City.
Videos	Staff recorded a presentation of the proposed regulations and how they were proposed. This presentation was uploaded to the City's YouTube channel , posted on the Shape Your City webpage, and shared with workshop attendees and people who were looking for additional information. The video was watched 129 times during phase 3.

	Two other videos were created and provided further information and context. One focused on how changing the way we heat space and hot water in buildings is a key climate action, and the other on the benefits of heat pumps, along with how they work and rebates available in Vancouver.
Earned and pitched media	<p>A news release on the program and ways to engage was circulated to nearly 900 recipients including journalists and media outlets signed-up to receive City news and media updates.</p> <p>During the engagement period, the following media outlets covered the proposed regulations and promoted opportunities to engage:</p> <ul style="list-style-type: none"> • CBC – What On Earth • CBC Radio – On the Coast • Global TV - 6pm news coverage (TV) and digital story with link • Daily Hive – Digital • Construct Connect – Digital • Viewpoint Vancouver – Digital
Social media	<p>Social media was used to tell people about the project and how to get involved. This included posts on Facebook, Instagram, Twitter and LinkedIn through the Greenest City and City of Vancouver channels.</p> <p>Two paid social media ad campaigns were created, the first promoted engagement and linked to the feedback form, and the second campaign promoted heat pump benefits and rebates. Paid ads helped target and expand reach.</p> <p>Home Heating and Cooling ads linking to the feedback form resulted in the following:</p> <ul style="list-style-type: none"> • Reach: 69,888 • Impressions: 372,211 • Link Clicks: 9,878 <p>Heat Pump benefits and available rebates, which ran for longer:</p> <ul style="list-style-type: none"> • Reach: 93,808 • Impressions: 581,589 • Link Clicks: 13,840 <p>30% of people who filled out the comment form and 16% of people who attended a workshop said they heard about it from social media.</p>
Heat Pump Educational Campaign	<p>An educational campaign on heat pumps accompanied the request for feedback. This campaign consisted of the following:</p> <p>10 transit shelter ads across the city</p> <p>Social media posts and paid social media ads</p> <p>A traveling heat pump display at community centres around Vancouver (ongoing) with brochures on heat pumps, benefits and rebates available</p> <p>Webinars and information, supported via our Bring it Home 4 Climate website</p> <p>Two videos with more information on heat pumps and how they support our transition off fossil fuels in home heating and cooling</p>
Amplifier network	The Climate Emergency amplifier network were provided with an overview of proposed Home Heating and Cooling program on December 1, with 14 members

	in attendance. The 128 members in the network were also asked to share information on how to participate with their members.
Reddit AMA	To answer questions about the proposed changes with the Home Heating and Cooling program, Green Building staff held an Ask Me Anything session on Reddit on Monday, February 14, 2022 from 12-1:30pm. Overall 26 questions were asked and answered during the AMA, and are still available for others to reference on Reddit.
Greenest City Newsletter	During the engagement period, information about the Home Heating and Cooling program and opportunities to provide comment, were included as the first feature topic in both the January and February Greenest City Newsletter. The January newsletter was sent to 6,582 recipients, with a 46% open rate, resulting in 133 click-throughs to the comment form and the February 15 message was sent to 6,590 recipients, with a 44.8% open rate, and 53 click-throughs to the comment form. 11% of people who filled out the comment form said they heard about it through the Greenest City newsletter.
Email to previous attendees	Information about the program, along with an invitation to share feedback through the online comment form or workshop sessions were sent to everyone who participated in the previous round of engagement for this project, including everyone who was interviewed, signed up for an interview or attended a focus group. In total, 60 people were invited.
Promotion to staff	A featured article was placed in Currents, the intranet portal for City staff, and circulated via the City Insider newsletter – along with an invitation to attend a staff webinar on the program.

ENGAGEMENT OBJECTIVES

- To work with a wide selection of Vancouver residents to shape the proposed regulation by explaining the rationale for initially limiting space heating time of replacement to large homes and exploring different size thresholds to balance these barriers against how solidly the initial regulations put us on track to meet or exceed our climate targets for detached homes
- To engage people living in detached homes to validate if the regulatory approach and green renovation supports available will address the barriers we heard during phase two engagement

OVERVIEW OF ENGAGEMENT TACTICS

As COVID-19 was still very much present in Vancouver during engagement, all workshops and feedback sessions took place online.

Online feedback form	An online feedback form was created to collect feedback on the proposed regulations. Linked on the Shape Your City page, this feedback form used a narrative approach that started with background information on commonly misunderstood topics around carbon emissions in Vancouver, before asking for feedback on the draft program. To make the content more readable, information was presented in with short paragraphs, plain language and accompanied with
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	white space and images. The form was live from January 19 to March 6 and had 514 completes.
Industry presentations	From January 13 – March 28 2022, fifteen industry stakeholder and professional groups representing professional associations, training institutions, equipment manufacturers and suppliers, and energy utilities met with City staff from the Green Buildings Team and Chief Building Official (CBO) Inspection Department. The purpose of these sessions was to present the draft regulation, answer questions, and receive industry feedback. Over 50 stakeholder representatives attended these sessions. For a complete list of groups involved, please see Appendix D.
Public workshops	<p>All public workshop sessions included:</p> <ul style="list-style-type: none"> • A staff presentation of the proposed regulations and how they made these decisions • A community energy coach provided an overview of the \$12,000 in available rebates for homeowners who are making the switch to lower emission heating products • Question and answer section • Discussion on the proposed regulations with feedback collected through chat, polls and notes from the discussion <p>Participants registered to these sessions through Eventbrite or the Green Building email address, and accommodations were offered by request.</p> <p>Two online public workshops were held to collect feedback:</p> <ul style="list-style-type: none"> • Wednesday, February 2, 7 – 8:30 pm - 12 registered, 5 attended • Saturday, February 26, 10 – 11:30 am - 40 registered, 22 attended <p><i>High attrition to online sessions is commonly seen.</i></p>
Partner workshops	<p>Several Climate Emergency Amplifier organizations requested to partner on a workshop for their members. These workshops followed the same format as the public workshops. Four of these online sessions were held:</p> <ul style="list-style-type: none"> ▪ Cool 'Hood champs: Thursday, Feb 17, 6:00 - 7:00 pm - 18 registered, 10 attended ▪ Dogwood: Tuesday, Feb 22, 7 - 8:30pm - 42 registered, 24 attended ▪ Temple Shalom: Thursday, Feb 17, 7:30-9pm – 18 registered, 9 attended ▪ David Suzuki Foundation: Thursday, Feb 24, 7-8:30pm – 51 registered, 15 attended
Staff workshop	<p>To share the draft regulations and get feedback from City of Vancouver staff, a staff lunch and learn was held on Wednesday, February 16 with 34 people in attendance.</p> <p><i>Note – the Green Building team has been working closely with staff from other departments to develop this proposed regulation. This session was specifically for a broader group who may be interested as a resident of Vancouver.</i></p>
Joint Advisory Committee Workshop	<p>On Thursday, February 10, a joint advisory committee workshop was held to get feedback on the draft regulations from representatives from the Council Advisory Committees.</p> <p>9 registered, 6 attended representing the Seniors' Advisory Committee, the Renters' Advisory Committee, the Racial and Ethno-Cultural Equity Advisory Committee, and the Persons with Disabilities Advisory Committee.</p>

Ask a question on Shape Your City	The Shape Your City page included a tool where anyone can publicly submit a question to the project team. During engagement we had 3 questions submitted and answered.
Email responses	<p>The green building email address was advertised on the website, comment form, workshops and the workshop registration forms as a way for people to provide additional comments or ask questions on the proposed regulation.</p> <p>In total this account received approximately 13 emails about this project from the general public.</p>

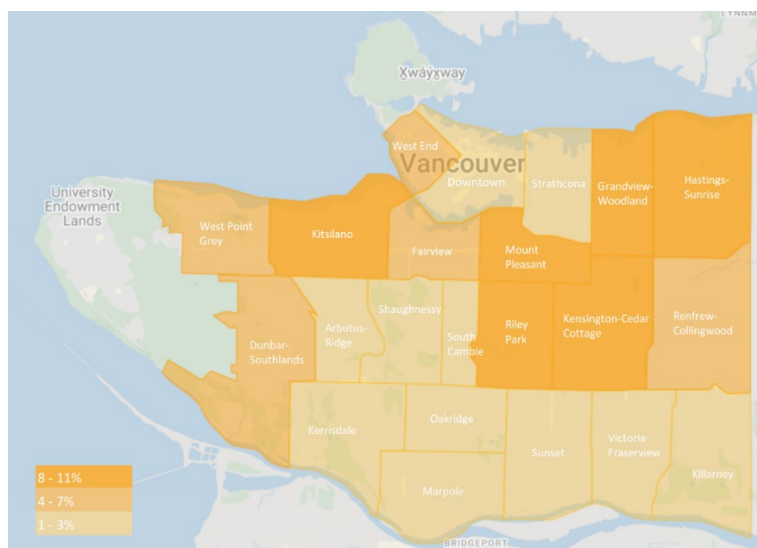
SECTION 3 – WHO WE HEARD FROM

ONLINE COMMENT FORM

In total, 514 comment forms were completed, which included 463 residents of Vancouver. The following values only represent the 463 Vancouver residents. This comment form is what is known as a convenience sample, meaning that people self-selected to participate. As such, opinions gathered are not reflective of all Vancouver residents.

Neighbourhood

- Responses came from every neighbourhood in Vancouver, as represented in the map below. Areas in darker orange had more responses.

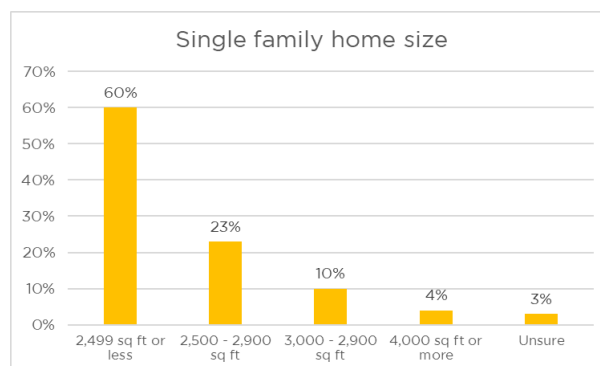
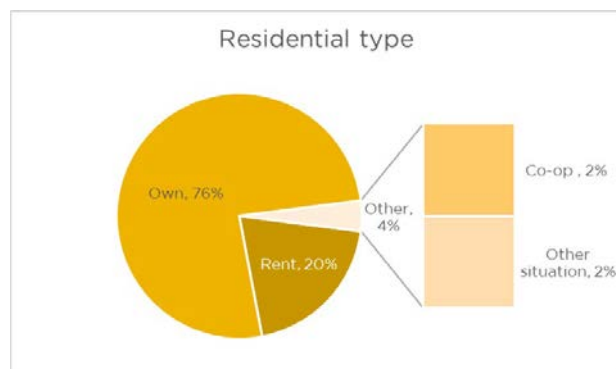
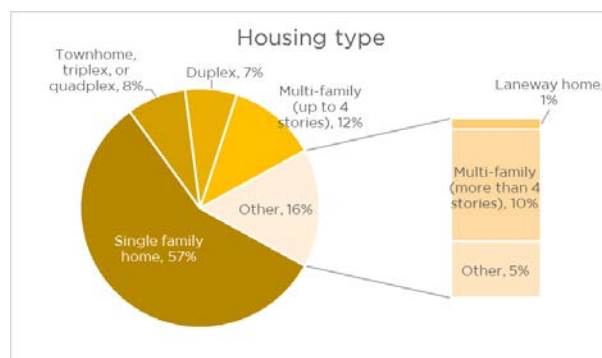


Distribution of responses to the comment form by neighbourhood

House type

- 250 owners of single family homes or duplexes in Vancouver that use natural gas shared their views

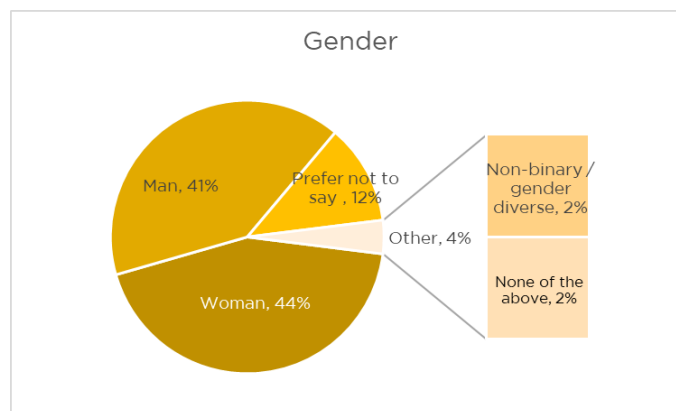
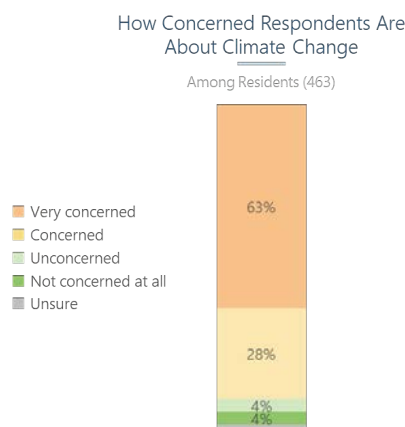
- Home type
 - Single family home – 57%
 - Duplex – 7%
 - Townhome, triplex or quadplex – 8%
 - Laneway home – 1%
 - Multi-family apartment/condo (up to 4 stories) – 12%
 - Multi-family apartment/condo (more than 4 stories) – 10%
 - Other – 5%
- For housing situation, 20% of respondents rent their home, 76% own, 2% live in a co-op, and 2% indicated another situation
- Of renters who lived in single family homes or duplexes, 44% rented the whole house, 20% rented a basement suite, and 36% rented a suite in the house that was not in the basement
- Of respondents living in single family homes or duplexes, the following house sizes were seen
 - 2,499 sq ft or less – 60%
 - 2,500-2,999 sq ft – 23%
 - 3,000-3,999 sq ft – 10%
 - 4,000 sq ft or more – 4%
 - Unsure – 3%
- 78% of Vancouver residents who responded used natural gas for heating or hot water



Demographics

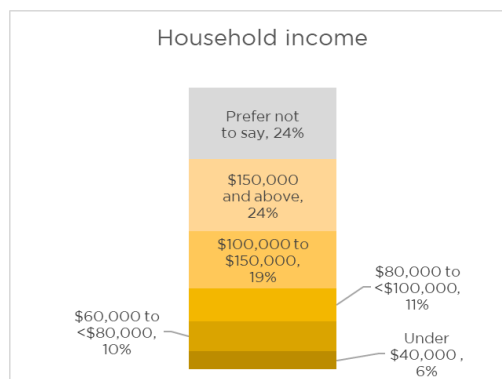
- Vancouver respondents are concerned about climate change with 63% indicating they are very concerned, and 28% indicated they are concerned. Only 8% were unconcerned or not concerned at all.

- Gender – There was a balance between people identifying as women (44%) and men (41%), 2% as non-binary/gender diverse, 2% as none of the above, and 12% preferred not to say

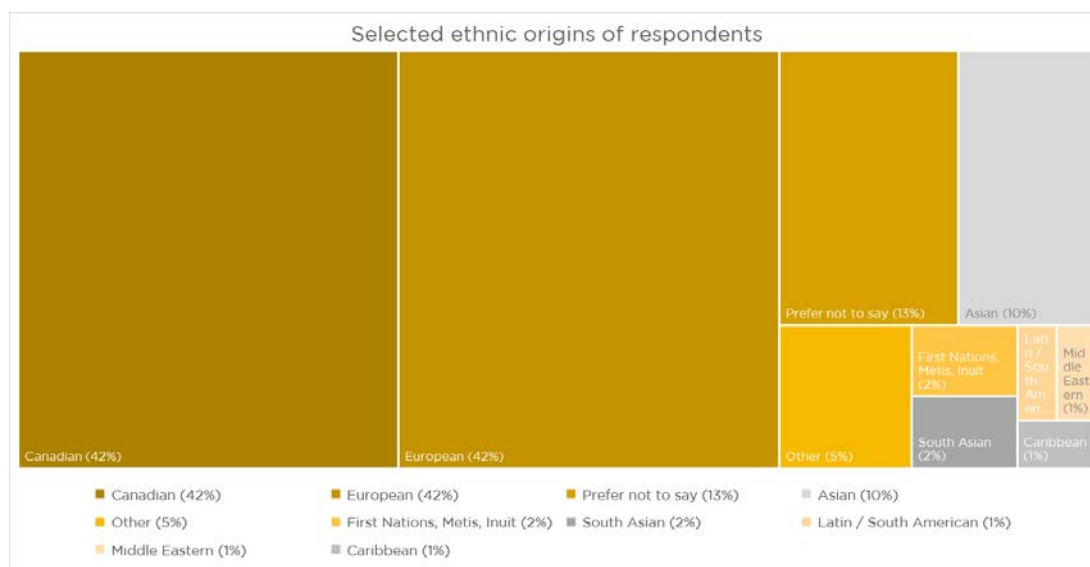


- Age range of Vancouver respondents:
 - under 29 - 7%
 - 30-39 - 21%
 - 40-49 - 23%
 - 50-59 - 18%
 - 60-69 - 19%
 - 70 and older - 13%

- Household income was
 - Under \$40,000 - 6%
 - \$40,000 to < \$60,000 - 7%
 - \$60,000 to < \$80,000 - 10%
 - \$80,000 to < \$100,000 - 11%
 - \$100,000 to \$150,000 - 19%
 - \$150,000 and above - 24%
 - Prefer not to say - 24%



- Vancouver participants listed their ethnic origins as follows: (note, participants were allowed to select more than one option)
 - Canadian - 42%
 - European - 42%
 - Asian - 10%
 - First Nations, Metis, Inuit - 2%
 - South Asian - 2%
 - Latin/South American - 1%
 - Middle Eastern - 1%
 - Caribbean - 1%
 - Other - 5%
 - Prefer not to say - 13%
- 12% of respondents worked in the building design or construction industry. Of these respondents, 60% were industry professionals (architects, engineers, planners, developers), 16% were a builder or worked in construction, 5% were in utilities and 2% worked in equipment manufacturing.



WORKSHOP ATTENDEES

When participants registered for a workshop through Eventbrite, they were asked a few demographic details. The following data is from two public workshops and the partner workshop hosted by the David Suzuki Foundation representing 36 attendees.

Home

- 69% of attendees to those sessions lived in a detached home or duplex
- 22% were renters and 78% owned their home

Heating

- 30% had electric furnace/baseboards
- 58% heated with natural gas
- 8% had a heat pump
- 3% used a oil furnace/boiler

Neighbourhood

- 8% lived in Downtown or the West End
- 22% lived in the Southeast – South of 16th and east of Main Street
- 14% lived in the Northeast – North of 16th and east of Main Street
- 11% lived in the Southwest – South of 16th and west of Main Street
- 19% lived in the Northwest – North of 16th and west of Main Street
- 25% did not live in the City of Vancouver

INDUSTRY ENGAGEMENT

We met with 15 industry groups that represent professional associations, training institutions, equipment manufacturers and suppliers, and energy utilities. A full list can be found in Appendix D.

SECTION 4 – WHAT WE HEARD

HOW FEEDBACK WAS ANALYZED

Sentis was hired to tabulate the data gathered through the online comment form. Questions were analyzed based on what Vancouver residents thought of the proposed regulations. Answers to open ended questions were coded, themed and summarized using Sentis' software. Direct quotes are included below in italics.

Workshop participants were asked to provide their thoughts on the proposed regulations in three primary ways: verbally through dialogue and workshop question and answer periods, through Webex chat, and through online polling. All questions, comments, and polling responses were recorded, compiled, and themed. Trends and outlier comments were then identified.

During consultation with industry groups, all questions, comments, and recommendations were recorded, compiled, and themed. As with workshop comments, trends and outlier comments were also identified.

OVERALL IMPRESSIONS

Considering all comments received from the online feedback form and public workshops, the majority of Vancouver respondents found the proposed regulations to be *about right*, with remaining respondents almost evenly balanced between *going too far* and *doesn't go far enough*. Consultations with industry professionals saw a similar support for the proposed regulations and the majority of workshop participants did not think the proposed updates went far enough.

"This approach seems very reasonable and non-disruptive. However, it is too late for a reasonable and slow approach. We need to be hurrying; we need to feel like we are all working together to combat climate change. We need to reduce emissions by a huge amount. We also need to focus on office buildings, places of work, vehicles, shipping, consumption." ~ Comment received through the online feedback form

The following themes were repeatedly heard across all public and industry respondents:

- **The cost of installation and operation.** Cost was a barrier that many homeowners anticipated. Available rebates and income qualified programs help ease capital cost, however the uncertainty of successfully obtaining financial support is a concern. There were also concerns that an electrical upgrade would be required to install electrical heating systems, which would add to costs. Energy Coaching services and the Bring It Home 4 Climate program was valued among participants as a way to help ease confusion and give more confidence to securing financial support. The operational electric or premium renewable gas costs to tenants was an additional concern, and expressed as a detail not mitigated by rebate incentives or energy coaching to homeowners or landlords.

"It's going to cost me personally more money that I'm not making. Wages are stuck in the past but everything else is up. There's no way to afford this. Barely getting by as it is and everything keeps going up." ~ Comment received through the online feedback form

- **Skeptical about renewable gas.** Many participants commented that renewable gas did not seem to be in alignment with Climate Emergency objectives. Concerns were also

raised about the premium cost of renewable gas and whether the energy provider (Fortis BC) will be able to meet demand. Scepticism regarding the reliable and long term source of methane was shared by many.

“The RNG is greenwashing – we know that individual houses do not get separate 100% RNG; it’s mixed into the pipeline – just an excuse to keep fracking and burning LNG. We have to switch to 100% electric, and if someone is going to all the expense and trouble of replacing space heat and HW systems – pls make them be zero emission electricity.”
~ Comment received through the online feedback form

“Get rid of natural gas completely. No sneaky back doors.” ~ Comment received through the online feedback form

- **Support services and navigating confusion around contractors.** The process of finding a suitable and fair contractor, sourcing the right equipment for a property’s unique needs, obtaining the appropriate permits, and securing financial support was described as “*confusing*” by many. Energy Coaching services and the Bring It Home 4 Climate program was valued among participants to help ease confusion and give more confidence to securing financial support, however several participants emphasized the importance of the City prioritizing the continuation of support services.

“If replacing all windows and putting in more insulation is complicated and expensive, what help will be available for that?” ~Comment received from an online workshop in answer to the question “What do we need to consider to ensure this is successful?”

- **Need for practitioner training.** Industry professionals repeatedly stated that practitioner training will be required for implementation to be successful.
- **Desire to go faster.** For each proposed update there were calls for the City to go faster and apply the changes to more building types, like more houses and multi-family buildings.

“Please let us move to all the other types of homes and buildings at the same time, we have no time to waste and we should be tackling more than just detached homes.”
~ Comment received through the online feedback form

Though not dominant among the majority of participants, additional feedback and concerns received included:

- Concern that there will not be enough electric supply capacity throughout the region with increased electrification. Connected, there was a desire for the City to incorporate backup systems and emergency measures into the policy.
- There was a concern about potential operational noise of heat pumps specifically in neighbourhoods where detached homes and living units are in close proximity to each other.
- Others commented that these regulations fall outside the mandate of the City.

Industry stakeholders

- Overall supportive of proposed regulations; pleased City staff have given attention to addressing anticipated concerns

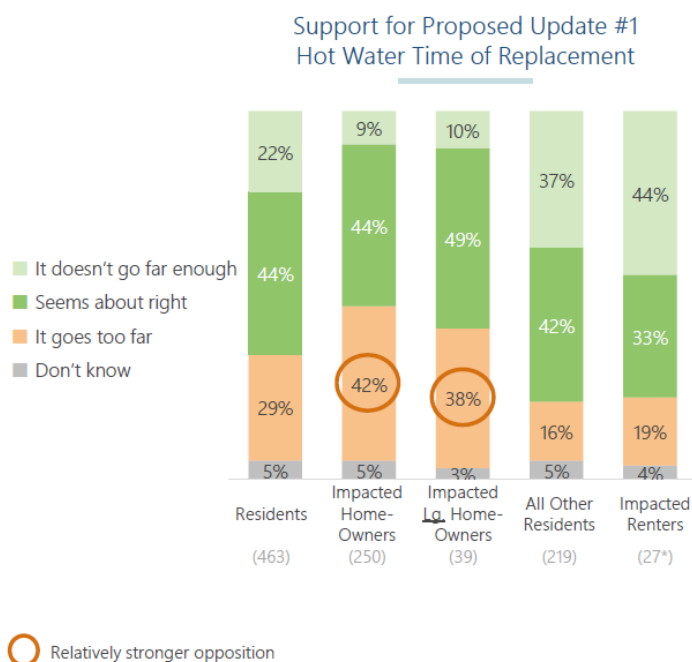
- Uncertainty with RNG; skeptical of energy provider to meet supply demand; skeptical of how City / energy provider will audit and monitor properties committed to RNG
- Training programs and upskilling opportunities for practitioners is needed to maintain high level of permitting compliance required for success; practitioners may resist change when complexity is added to their work
- Clear and comprehensive rebate programs and energy coaching services are needed to ensure cost to consumer is equitable

PROPOSED UPDATE 1: HOT WATER TIME OF REPLACEMENT

Feedback from the comment form

Overall, 44% of Vancouver respondents thought that this proposed policy seems about right, with 29% stating it goes too far, and 22% stating it didn't go far enough.

Looking closer, although most homeowners that use natural gas thought the policy seemed about right (44%), more thought it went too far (42%) while only 9% thought it didn't go far enough. This is the reverse pattern we see with renters living in detached homes or duplexes that use natural gas that were more likely to say the regulation doesn't go far enough (44%) than it goes too far (19%). A similar pattern was seen from residents not impacted by these regulations where 37% wanted to see the regulations go further, compared to only 16% stating it goes too far.



Comments received on the hot water time of replacement proposed update included concern about costs, concern that renewable natural gas is a loophole that shouldn't be included or too difficult to enforce, that this needs to happen sooner, it might require homes to upgrade their electrical supply, and that other equipment like high efficiency gas hot water, solar, on demand or tankless systems should be included, and that it should apply to other types of buildings too.

“Taking a simple \$700 hot water tank replacement and burdening the home-owner with a \$7,000 heat pump project is outrageous. In my current house, I don’t have sufficient power to run a heat pump in the required location, which would run \$2,500 just for electrical wiring alone.” ~ Comment received through the online feedback form

“Seems like a good idea but my concern is cost. We have natural gas for water, heating, and stove and our natural gas bill is reasonable. Our electricity bill, on the other hand, is so high and I’m scared that making the switch to electric for everything will impact our current quality of life.” ~ Comment received through the online feedback form

“I don’t trust that the “renewable” natural gas option will achieve the climate outcomes we need.” ~ Comment received through the online feedback form

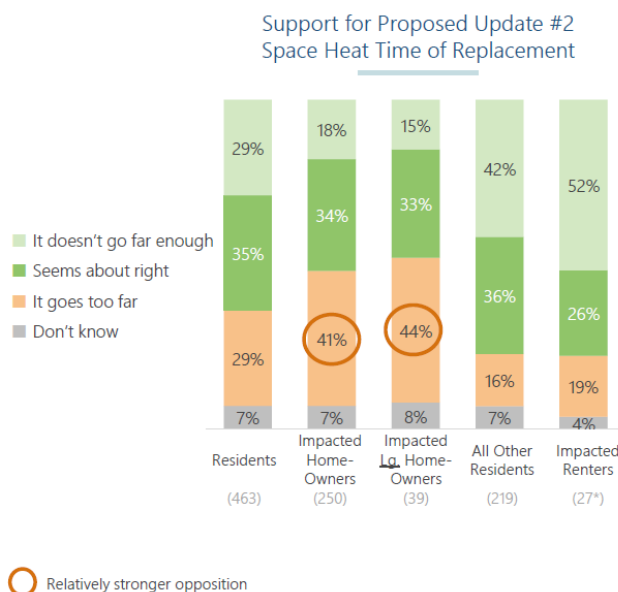
“RNG shouldn’t be an option for hot water. Nearly every mechanical room would be able to put in an electric tank to replace their gas-fired model. I don’t see a lot of need for the RNG option here.” ~ Comment received through the online feedback form

“This will apply to detached homes and duplexes. It is not clear if it would apply to my situation – a triplex in Kits. It would be good to clarify and extend it to triplexes, of which there are many in my neighbourhood. Why stop at duplexes?” ~ Comment received through the online feedback form

PROPOSED UPDATE 2: SPACE HEAT TIME OF REPLACEMENT

Feedback from the comment form

Overall, 35% of Vancouver respondents thought that the space heat time of replacement seems about right, with 29% of respondents thinking it doesn’t go far enough and 29% thought it goes too far. Digging deeper, homeowners who use natural gas were more inclined to say the proposed update goes too far, whereas residents who do not fall into that category and renters living in single family homes using natural gas, were more likely to say it doesn’t go far enough.



Comments on this regulation included concerns about costs, skepticism about renewable gas, a desire to move quicker and have this regulation apply to more buildings, and a concern that heat pumps are noisy.

"The forced conversion of gas space heating and gas hot water does not take into account that older detached homes were built around natural gas and thus electric panels were lower capacity 75 to 100 panels. To convert over to electric space heating and hot water will also require expensive retrofit at the same time to higher capacity electric panels and this required simultaneous retrofit has been ignored in the proposal is not currently eligible for any rebate program." ~ Comment received through the online feedback form

"I would not allow the renewable gas option unless there is some reason why a house cannot switch to electric. Also I think this should apply to all detached houses and duplexes (not just large ones)." ~ Comment received through the online feedback form

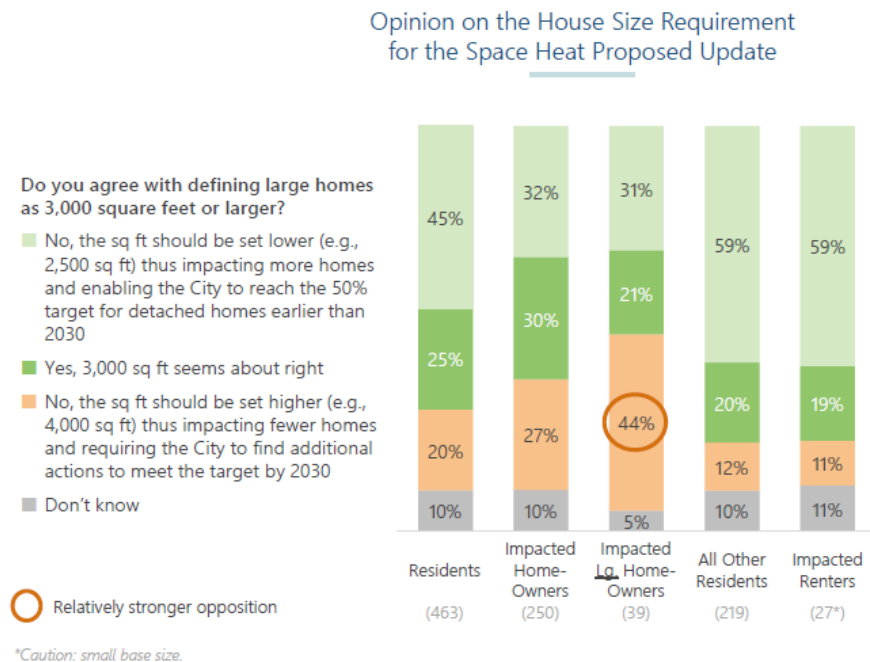
"Having a phased policy like this risks moving too slowly, given that furnaces have a lifespan of 20 years – building electrification is one of the easiest sectors to decarbonize and by 2042 our society will have bigger fish to fry." ~ Comment received through the online feedback form

"Why only 9% of homes as first eligibility? Do we not have to move faster on climate change?" ~ Comment received through the online feedback form

When asked about the size of house that the space heat proposed update should apply to, 25% of respondents thought the 3,000 sq ft seemed about right, while 45% wanted to see the size limit set lower (e.g. 2,500 sq ft) to capture more houses, whereas 20% thought the size should be set higher (e.g. 4,000 sq ft).

Looking deeper at the comment form data, more people living in large homes that use natural gas wanted to see a larger size limit (44%) than smaller (31%) with only 21%

thinking the 3,000 sq ft target seemed about right. Similarly to the previous pattern, renters living in detached homes and duplex that use gas and all other residents that are not impacted, wanted to see more aggressive action taken with 59% of respondents stating that the size should be set lower.



Top comments for this question included that people they wanted to see regulations apply to more or all homes, that the program isn't aggressive enough and should be done faster and apply to more homes. There were those who thought this shouldn't be applied to any sized home, there were concerns about the cost of upgrades, but also comments that if you own a home in Vancouver, you can afford to upgrade.

"A 2,500 sq ft home is still a big home! I don't see why these homes should be excluded. We live 2 adults + 2 children in 1,250sqft, so in my mind that is two family's worth of house."
~ Comment received through the online feedback form

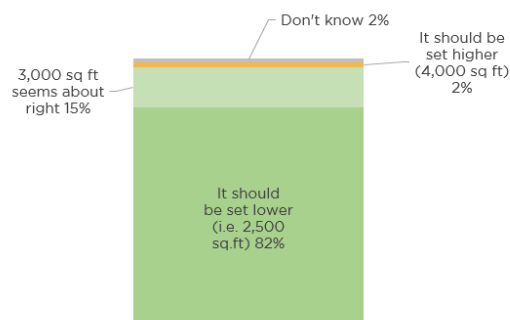
"I feel a real sense of urgency to shift our target dates forward a bit, considering the exceptional weather events we've had this year (and past years with forest fires)."
~ Comment received through the online feedback form

"This proposal is fundamentally unfair. If this cost is being pushed onto residents it should be pushed on to everyone!!" ~ Comment received through the online feedback form

Feedback from the public workshops

During the workshops, participants were also asked what size of house these regulations should apply to using polling. The majority of respondents from all workshops, wanted to see the size limits set lower to include more homes (82%), with 15% of respondents stating that 3,000 sq ft seems about right, and only 2% of participants thought the size limit should be set higher.

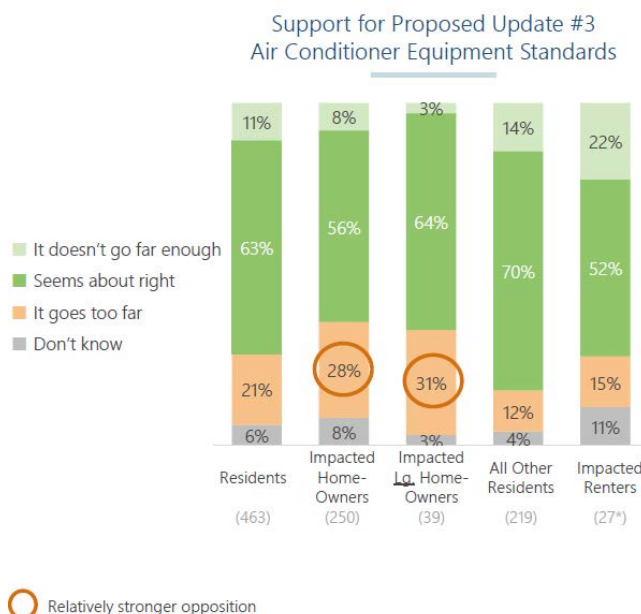
Do you agree with setting house size regulations at 3,000 sq ft?



PROPOSED UPDATE 3: AIR CONDITIONER EQUIPMENT STANDARDS

Feedback from the comment form

There was a high degree of support for proposed update 3 on air conditioner equipment standards. From the comment form, 63% of respondents thought the proposed regulation seems about right.



Commonly heard comments on this proposed regulation included that people thought it was a good idea, there were people concerned that heat pumps would be noisy, some stated that there was no need for air conditioning in Vancouver, and cost.

"As demand for air conditioning units will soar as we experience more heat dome events, it makes sense to implement this change as soon as possible to capture this growth."

~ Comment received through the online feedback form

“Concerned with noise of heat pumps. Fans are sufficient in Vancouver more than 90% of the time. Would hate to have a neighbour install a heat pump outside our windows or outside our garden or decks. Have yet to meet a quiet heat pump. Heat pumps are just exchanging one form of pollution to another --i.e., noise pollution.” ~ Comment received through the online feedback form

“Do not even need air conditioning. That unrequired cost of 'comfort' is supported by government, yet heating is going to cost more. Just stop all air conditioning.” ~ Comment received through the online feedback form

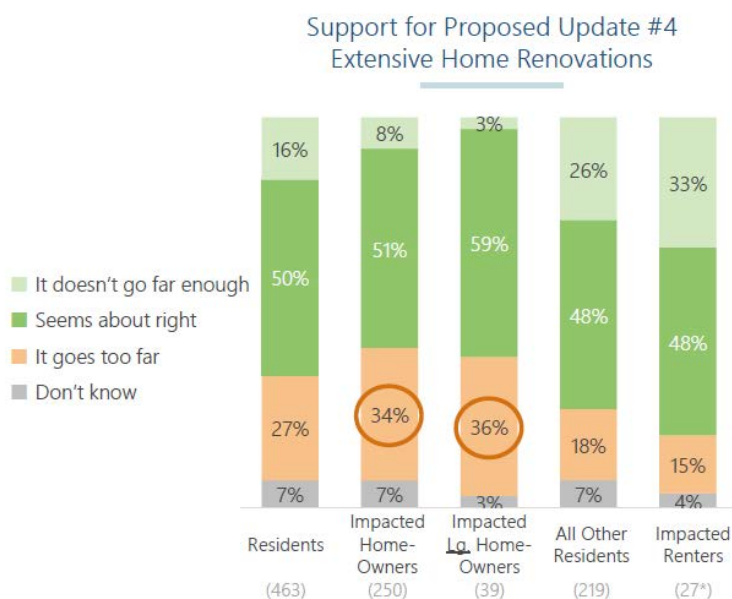
Feedback from Industry

Industry members were very supportive of this change as it would simplify the supply chain and would not need to stock both heat pumps and air conditioners in their warehouses.

PROPOSED UPDATE 4: EXTENSIVE HOME RENOVATIONS

Feedback from the comment form

There was strong support for proposed update 4, to require upgrades when extensive home renovations are undertaken. Overall, 50% of respondents thought the update seems about right, whereas 27% thought it went too far, and 16% thought it didn't go far enough. As with the other proposed updates, a similar pattern was seen, with owners who live in detached homes and duplexes that use natural gas expressing more often that the update goes too far, whereas renters in these homes and all other residents were more likely to say that it doesn't go far enough.



Relatively stronger opposition

Major themes from the comments included concern that it will add too much cost and renovations are already expensive, some said the threshold for major renovations should be lowered and others said the threshold should be higher. There were concern that this will lead to homes being demolished rather than renovated.

"It is already so expensive to renovate. You are making it so unaffordable and discouraging for being to renovate. You would rather people tear down homes than renovate. Very difficult city to work with." ~ Comment received through the online feedback form

"The city is already requiring significant (and unduly expensive) fees like municipal sewer lateral replacements and other required upgrades. Added requirements and costs will further encourage renos to take place without permits." ~ Comment received through the online feedback form

"I think this is a great initiative. I just wonder if the price couldn't be brought down even a touch further. Say \$200,000 or even \$150,000. I think people who are investing a quarter million in their home are often in this category of 'lipstick' reno, replacing all the finishes and ignoring the energy efficiency. But really when they are doing these lipstick reno's is the perfect time to do the efficiency measures. Is someone really going to come in 10 years later and rip out the nice finishes to do the energy efficiency?? Of course not, the time is now!" ~ Comment received through the online feedback form

"While I completely agree with proposed update 4, I am concerned with the dollar amount. \$250k does not go as far as it did 5 years ago and costs are continuing to rise. As a builder and renovator, I turn down clients that choose new "pretty things" over addressing the major issues with their home (like new insulation and new windows). Again, I fear people could choose to move toward the 'cash market'." ~ Comment received through the online feedback form

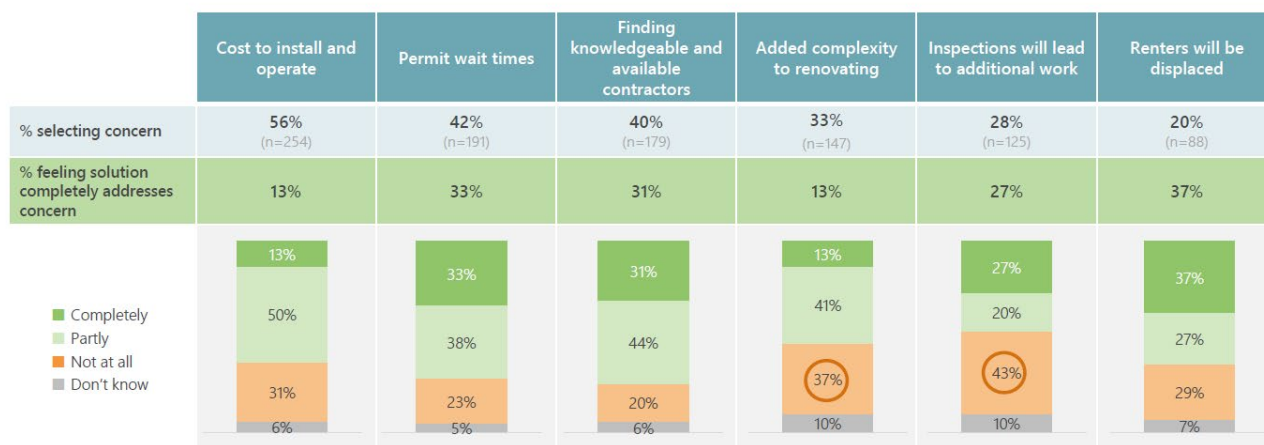
CONCERNS & PROPOSED SUPPORTS

In addition to the four proposed updates, participants were presented with a list of concerns that were heard during the second phase of public consultation, along with the supportive programs that the City has put in place or is planning to implement to address these concerns.

Participants could select any of the six concerns to learn more about the supports, and comment on whether they thought the supports presented impacted addressed the concern or not, and if not what else is needed. They were also given the option to add an additional barrier not listed.

The six concerns presented are as follows:

- Cost to install and operate
- Permit wait times
- Finding knowledgeable contractors / too much demand on contractors
- The added complexity to renovating
- Inspector visit leads to additional work
- Concern that renters will be displaced



Least satisfaction with proposed solutions

Costs to install and operate

This barrier was selected by 56% of participants. Although 63% of respondents felt the proposed solutions completely or partly met their concerns, 31% stated that the solutions did not.

The main themes heard when asked what else is needed

- Rebates or grants provided to upgrade electrical systems
- Assurance that rebates won't disappear over time
- Lower hydro rates so they are on par with the cost of natural gas
- Expensive
- More assistance for low income households and seniors
- These policies are government overreach

"We have to upgrade our electrical service to support a heat pump, total capital cost is about \$10,000, bringing up the capital cost quite a bit. Make sure to continue to offer rebates for this aspect, possibly include this in discussions with BC Hydro." ~ Comment received through the online feedback form

"I would appreciate a definitive answer from BC Hydro that they WILL in fact revise their rate structure." ~ Comment received through the online feedback form

"We have an older home and are in the process of switching from a fossil fuel furnace to a cold climate heat pump. In order to do this we have to upgrade our panel. In our case this I believe will be quite costly (we are awaiting quotes). I think that this is one area that the grants (\$500) don't address sufficiently." ~ Comment received through the online feedback form

Permit Wait Times

The proposed solutions to improve permit wait times completely (34%) or partly (38%) addressed people's concerns with only 24% indicated they didn't address concerns at all.

Main comments heard for this section:

- City permitting process is generally slow, and other permits should be sped up as well
- Skeptical that permits would be available within 48 hours
- City permitting process is complex and needs to be simplified
- That the details of the program sound good
- Concern about permitting cost

"This city has been ranked one of the slowest in providing permits so I can't imagine this would be any different." ~ Comment received through the online feedback form

"The proof is in the pudding. I'll believe things have improved when I see it. Based on our experience and that of many of our neighbours, we do not have confidence that permits will be provided quickly, efficiently, and in a manner that is not costly." ~ Comment received through the online feedback form

"Your bureaucratic processes discourage people like me from doing such upgrades. If people want to install a heat pump then I see no reason for the city to be involved as long as it is installed to code. I can change to led light bulbs without a permit." ~ Comment received through the online feedback form

Finding Knowledgeable and Available Contractors

The solutions presented to this challenge were well received with 44% of respondents stating the proposed solution partly addressed their concerns, and 31% said solutions completely addressed concerns, whereas 20% stated the solutions did not address concerns at all.

When asked what else is needed, main themes heard included:

- Need additional contractors / there is a shortage of contractors
- There needs to be more opportunities to train and educate contractors, make training more accessible
- Will add cost
- Contractors are not always knowledgeable about heat pumps or energy efficiency measures
- The City should provide more information

"That sounds like it would work but its not entirely clear that's enough contractors to do 1,800 heat pumps a year. Probably?" ~ Comment received through the online feedback form

"Retrain oil and gas workers, build a program with First Nations, talk to BCIT etc." ~ Comment received through the online feedback form

“Require all licensed residential builders to train and certify in energy efficiency ... provide the training platform and requirements and certification process ... support and empower builders in achieving this and make it a requirement to build in City of Vancouver.” ~ Comment received through the online feedback form

Added Complexity to Renovating

Overall, 54% of respondents stated the proposed solutions partly (41%) or completely (13%) addressed their concerns, and 37% stated the solutions did not address their concerns at all.

When asked what else is needed, main themes heard included:

- Concern about costs
- Need to reduce complexity – homeowners are not experts and don’t know where to start or what to do
- Concerned about other issues being discovered leading to additional upgrades
- More educational materials need to be made available

“It is all too costly for the average homeowner.” ~ Comment received through the online feedback form

“Most people, including myself, are not technically skilled enough to know how difficult or easy installing such a system is, and how reliable they are. I have heard both good and bad stories. Webinars on the topic aren't enough. I do have enough skill to assess the business case, and am still concerned.” ~ Comment received through the online feedback form

“What if the city requires that I upgrade my house to include a sprinkler system or have fire rated insulation? That would be much larger than to just replace a hot water boiler system or heat pump with the interior/exterior unit.” ~ Comment received through the online feedback form

Inspections May Lead to Additional Work

Overall, 43% of respondents found the solutions presented did not meet this concern at all, where as 20% thought it partly met concerns and 27% stated the solutions completely met their concerns.

When asked what else is needed, the following themes were heard:

- Inspectors are not reliable or have their own agenda
- Government overreach
- Homeowners will be discouraged from upgrading systems as they don’t want an inspection
- Too costly
- Inspectors always find other issues in old homes

“I find inspectors always come looking for other issues, things in the yard, in the suite or door handles. If they actually did just focus on the equipment that would be great but they

seem to like to look for other issues to write you up for.” ~ Comment received through the online feedback form

“I think homeowners are still weary and reluctant of 'inviting' additional inspections. Please provide concrete examples of when inspections have uncovered additional issues that must be address vs what things would be ignored.” ~ Comment received through the online feedback form

“You have no idea. This is the reason that people don't license their work, don't license basement suites, don't want inspectors or the City anywhere near their properties. Older properties should be left alone. This is by far the greenest thing to do.” ~ Comment received through the online feedback form

Displacement of Renters

Overall, 38% of commenters thought the proposed solutions completely addressed their concerns, 27% thought they partly addressed their concerns and 30% thought the solutions did not address their concerns at all.

Major themes heard when asked what else is needed included:

- Renovictions are a concern, need to be addressed and accounted for
- Ensure and enforce renters protections
- Unfair to landlord as they can't pass on costs to upgrade
- Renovations will take longer than 2 days
- More multi-family housing should be permitted to alleviate rental shortages

“The BC legislation is not nearly sufficient to prevent evictions. Any action by the city should not presume this to be the case. The city should put into place any measures it is able to under its legal jurisdiction to ensure renters are able to stay in their homes without having their rent (or other costs) increased.” ~ Comment received through the online feedback form

“I agree, that this change is fairly routine, and shouldn't impact an individuals tenure. If there are concerns around renters in single-family homes being evicted, then the tenant relocation/protection policy should apply to them as well.” ~ Comment received through the online feedback form

“The Tenant Relocation and Protection policy should be applied to all renter households, not just purpose-built rental buildings. Renters in the basement/laneway of a single detached owner are especially at risk to eviction from any expensive policy like this, so they should have full protection that other renters benefit from.” ~ Comment received through the online feedback form

“It is unclear how any of this would protect landlords/taxpayers. They need to pass on any mandated costs to the tenants. It appears that those costs cannot be covered by the tenants under the current BC rules.” ~ Comment received through the online feedback form

SECTION 5 – EVALUATION

Reach	
That we have at least 20 participants at each workshop	This was a difficult goal to achieve. Even when registration for a session was high, there was significant attrition. Given where we were in the pandemic, with people spending a lot of time on digital platforms, having attrition rates of 50% is not uncommon.
Demographic mix <i>Based on demographic information collected</i>	
That 100% of Vancouver neighbourhoods are represented	We achieved this target, and received comments from 100% of Vancouver neighbourhoods. See the figure in the “Who we heard from” section.
That the people who attend our workshops and fill out comment forms reflect the diversity of Vancouver	Unfortunately uptake on the workshop feedback forms was low, but based on the answers asked during registration, we did have people from all areas of the City participate.
Quality of engagement <i>Based on data collected from comment forms</i>	
75% of participants found their experience with the engagement to be valuable	64% of respondents to the comment form agreed or strongly agreed that participating in the engagement process was a valuable experience
75% of participants understood how their input would be used in the process	59% of respondents to the comment form agreed or strongly agreed that they understood how their input would be used
75% of participants felt that the information presented was clear and understandable	79% of respondents to the comment form agreed or strongly agreed that information presented was clear and understandable
Partnerships	
That we partner with at least 4 different organizations to hold workshops with their network	This was achieved with partner workshops held with Cool 'Hood champs, Dogwood, Temple Shalom, and the David Suzuki Foundation.
That 10 organizations share information about how to get involved to their networks	Members of the Climate Emergency Amplifier Network helped to share information about this opportunity with their network.
Coverage in media	
Track media coverage and sentiment with a goal of over six positive media pieces (radio, print and digital) accurately covering the draft regulation from end of January and May, 2022.	We reached our target of six positive media pieces. However, not all of the coverage went into detail about the proposed regulation. Some coverage highlighted Vancouver's progress transitioning to renewable energy in new construction and mentioned the proposed regulations along with many other cities looking to electrify and remove polluting fossil fuels from homes.
Track social media coverage and sentiment with a goal of posting over 20 informative posts across the City's social media channels during the engagement period, January 10 – February 28, 2022	Social media sentiment was generally positive or neutral. We received questions about heat pumps, particularly how well they work in colder weather and comments about sound levels.
Proactively respond to and correct misinformation on City channels, and inform the public through proactive media pitching.	City staff actively corrected misinformation on City social media channels. Some comments on paid ads took longer to respond to. Media pitches were done in conjunction with issuing the news release, and did not result in additional

	media pick-up, which could be due to competing priorities, low levels of controversy in the proposed changes, or other.
Adjust and add tactics based on public conversation and sentiment – i.e. add Reddit AMA and adjust social media to support better understanding of the proposed regulation and opportunities for input.	We did add a Reddit AMA, as there were many specific questions about various homes and their particular energy system, along with how heat pumps work. We add FAQs to our ShapeYouCity page and adjusted social media to respond to questions, and grow understanding of what was being proposed

This consultation did not see massive participation but that is alright. People tend to participate when they are connected to the topic, which is also why seeing such high participation from people who own and live in detached homes was unsurprising. People also tend to participate more in engagement processes when the topic is highly controversial. The media coverage and social media posts on these proposed updates was landing as reasonable – which was heard in the feedback received.

Numbers only tell part of the story. We were pleased to see all neighbourhoods reflected in the feedback. We also were heartened that 79% of respondents to the comment form agreed or strongly agreed that information presented was clear and understandable and 64% of respondents to the comment form agreed or strongly agreed that participating in the engagement process was a valuable experience.

To close the online workshops, participants were asked to put one word in the chat box that summarized their experience with the workshop. The word cloud to the right was created from the words provided – the larger the word, the more often it was mentioned.



SECTION 6 – WHAT WE WILL DO WITH WHAT WE HEARD

The three phases of engagement has helped shaped both regulatory approaches, and prioritized the support programs and resources needed to accelerate emissions-reduction retrofits in detached homes, while adequately supporting our most vulnerable residents. Defining equity and vulnerable citizens is an ongoing process in addition to this feedback, through the Climate Justice Charter, and Climate Equity Working Group feedback.

The feedback indicated strong support for proposed regulations #3 and #4, which are moving forward in this report. Time of replacement regulations (#1 and #2) also received balanced support overall. However, following preliminary internal analysis of implementation impacts these regulations will be further refined and brought in a subsequent report in early 2023.

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Appendix D – Industry engagement summary

From January to March, 2022, 15 industry stakeholder and professional groups were met with by City staff from the Green Buildings Team and Chief Building Official (CBO) Trades Inspection Department. Industry groups represented professional associations, training institutions, equipment manufacturers and suppliers, and energy utilities. The purpose of engagement was to present the four components of draft home heating and cooling regulations, answer questions and provide clarity on the proposal, and receive industry feedback.

Following 15 meetings with industry representatives, the feedback received was overall supportive of the proposed home heating and cooling regulations. Stakeholder representatives were pleased with the level of detail that covered many aspects of the proposed policies to address identified challenges. Representatives from most groups provided additional recommendations for amendments, letters of support, and comments for consideration.

The most recurring themes of feedback received included:

- Requested adjustments to equipment efficiency levels
- Training programs and upskilling opportunities for practitioners are needed to maintain the high level of permitting compliance required for success
- Ensure trades permits are simple and quick

Uncertainty with Renewable Natural Gas (RNG) was a dominant theme among industry groups, specifically surrounding the ability for the utility provider to meet the supply demand of RNG. Uncertainty was expressed as well surrounding the operational logistics of the auditing and monitoring processes of properties that would be required to ensure compliance. Overall, groups were satisfied with the proposed approach for auditing and obtaining compliance presented by City staff.

The expressed need for industry training and upskilling was a dominant theme among industry groups. Some groups anecdotally shared that some industry practitioners may resist change when the complexity of incorporating new equipment (heat pumps and associated electrification component) is added to their work. Groups agreed however that with the proposed timeline for policy implementation, the industry would have adequate time to adapt. The training opportunities available and in development shared by City staff were satisfactory to groups.

Some groups expressed concern regarding affordability of new and potentially complex equipment installations for home owners. When details of provincial and federal rebates currently available to property owners, as well as the Income Qualified Program provided by CleanBC were shared, groups expressed support.

Industry groups that we connected with include: professional associations, training institutions, equipment manufacturers and suppliers, and energy utilities.

Organization	Industry type	# representatives engaged
Architectural Institute of BC (AIBC): Building Enclosure Advisory Group	Professional Association	11
BC Hydro	Energy utility	2
BCIT Zero Emissions Buildings Learning Centre (ZEBLC)	Training institution	2

British Columbia Sustainable Energy Association (BCSEA)	Advocacy association	1
Canadian Association of Consulting Energy Advisors (CACEA)	Industry association	2
Canadian Institute of Plumbing & Heating (CIPH)	Industry association	2
Daikin	Equipment manufacturer	1
Engineers and Geoscientists British Columbia (EGBC)	Professional association	3
Fortis BC	Energy utility	5
Hearth Patio and BBQ Association	Industry association	11
Home Performance Stakeholder Council	Industry association	2
Heating, Refrigeration, and Air Conditioning Institute of Canada (HRAI)	Industry association	5
Thermal Environmental Comfort Association (TECA)	Industry association and training provider	3
Vancouver Heritage Foundation (VHF)	Non-profit advocacy association	2

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