



Committee of the Whole Report

For the Meeting of July 21, 2022

To: Committee of the Whole **Date:** July 7, 2022

From: Karen Hoesé, Director, Sustainable Planning and Community Development

Subject: **Step Code Acceleration – Engagement Summary and Next Steps**

RECOMMENDATION

1. That Council direct staff to:
 - a. Prepare the necessary Building and Plumbing Regulation Bylaw amendments to adopt the approach to the BC Energy Step Code, and forthcoming BC carbon pollution standards outlined in Table 2 and Table 3 of this report following the release of the 2022 BC Building Code revision.
 - b. Through engagement and analysis, explore requiring benchmarking for new and existing Part 3 buildings and requiring home energy labelling for Part 9 buildings.
 - c. Develop educational communications to build public awareness and understanding of the benefits of decarbonization through electrification.
2. If Provincial regulations enabling local government to adopt carbon pollution standards do not come into effect with the next BC Building Code revision, that Council direct staff to prepare the necessary Building and Plumbing Regulation Bylaw amendments as outlined in Table 4 and Table 5 of this report, as an alternative to 1.a above.

EXECUTIVE SUMMARY

The purpose of this report is to provide Council with a summary of engagement on the BC Energy Step Code and BC carbon pollution standards, describe how the results of the engagement and further analysis has informed the recommended regulatory changes, and seek direction to prepare bylaw amendments.

In early 2022, an industry engagement process was launched as a collaboration between the City of Victoria, District of Saanich and the District of Central Saanich, with support from the Capital Regional District (CRD). During engagement, industry participants expressed support for focusing regulation on limiting greenhouse gas emissions from new construction contingent upon the provision of sufficient notice for regulatory changes. Analysis has been conducted on community emissions modelling, the regulatory tools available to reduce greenhouse gas (GHG) emissions, local Step Code compliance data, and a Provincial costing and energy modelling study that informs and supports the recommended regulatory changes.

One of the key findings of this analysis is that while the highest steps of the Step Code reduce overall energy use in buildings, the focus on efficiency rather than emissions results in buildings that continue to emit significant emissions over their lifetime. The forthcoming BC carbon pollution standards will regulate emissions directly. Focusing regulation on emissions rather than efficiency is the surest path to reducing emissions.

The recommendation, if implemented, will advance carbon pollution standards until mid-2025 when all new buildings will be required to meet a zero-carbon ready¹ standard and will also harmonize Step Code adoption with the Provincial schedule as they catch up with existing local building energy efficiency standards. The recommendation is specifically to implement the following adoption schedule for new buildings:

- Residential buildings between four and six storeys will be required to achieve Step 3 and a low carbon standard by July 1, 2024, and Step 3 and a zero-carbon ready standard by July 1, 2025.
- Residential buildings over six storeys and commercial buildings will be required to achieve Step 2 and a low carbon standard by July 1, 2024, and Step 2 and a zero-carbon ready standard by July 1, 2025.
- Low density residential buildings such as single-family dwellings, duplexes and townhouses will be required to achieve Step 3 and a low carbon standard by July 1, 2023, and Step 3 and a zero-carbon ready standard by January 1, 2025.

Engagement and analysis have demonstrated that the electrification of buildings is achievable for the building and development industry and will set the City up for success in achieving the necessary community greenhouse gas emission reductions.

These proposed regulatory changes fulfil actions in the City's Strategic Plan, and support goals in the OCP and Climate Leadership Plan. The goal of the engagement and analysis was to find a regulatory pathway to achieve the GHG emission reduction targets while striking a balance that would provide the building and development industry with sufficient notice to adjust to changing regulations. It is believed that the recommended approach achieves these goals.

PURPOSE

The purpose of this report is to provide Council with a summary of the regional Step Code engagement process, the forthcoming BC carbon pollution standards, and to seek direction to develop bylaws that will adopt carbon pollution standards for new buildings.

BACKGROUND

What Is Step Code?

The BC Energy Step Code is an optional compliance path in the BC Building Code that local governments may use to require a level of energy efficiency in new construction that goes above and beyond the requirements of the BC Building Code. The Step Code is divided into two main segments, steps that apply to Part 9 Residential buildings (single family dwellings, duplexes, triplexes, townhouses, and laneway homes), and steps that apply to Part 3 buildings (multi-unit, commercial, mixed use, office, and hotels).

¹ For a building to meet a zero-carbon ready standard, most will use electricity for all building systems. As the BC Hydro grid does not yet provide 100% renewable energy, these buildings are 'ready' to be zero-carbon upon the decarbonization of the grid, which is planned for 2030.

For Part 9 residential buildings, there are five ‘steps’ with each step increasing energy efficiency beyond the standard code requirements. Buildings will be 10% more efficient at Step 2, 20% more efficient at Step 3, 40% more efficient at Step 4 and 80% more efficient at Step 5. For most Part 3 buildings, there are four steps. Buildings will be 20% more efficient at Step 2, 40% more efficient at Step 3, and 80% more efficient at Step 4. For all building types, Step 1 requires the measurement of energy efficiency, but no increased efficiency requirements.

Step Code in Victoria

The BC Energy Step Code was first adopted in Victoria on November 1, 2018, with higher steps coming into effect on January 1, 2020. The current requirement is for high-rise, concrete residential and commercial buildings and small homes (garden suites) to reach Step 2, and single family homes, duplexes, townhomes and mid-rise, wood frame residential buildings to reach Step 3.

Council Direction

The City’s Strategic Plan (2019-2022) includes an action to expedite implementation of the BC Energy Step Code to reach upper steps to rapidly reduce emissions from new construction. At the November 14, 2019 meeting, Council directed staff to:

Adopt the strategies and directions contained within the High Impact Initiatives section of this report to meet the CLP [Climate Leadership Plan] and new policy direction objectives.

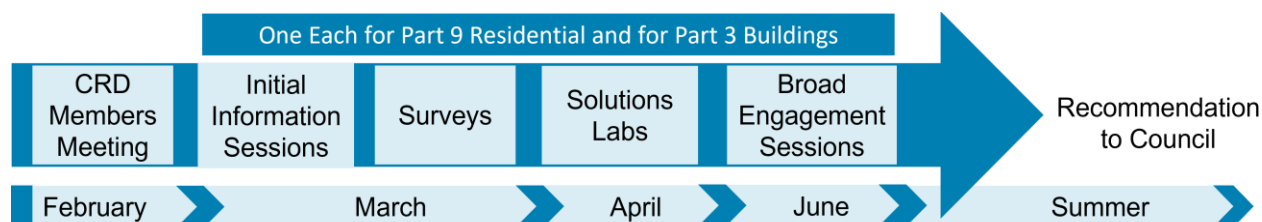
The following excerpt from High Impact Initiative Three: Low Carbon Step Code summarizes the direction and the intent:

In order to ensure that new builds at lower ‘steps’ avoid using fossil fuel heating systems, the City is proposing the introduction of a ‘Low Carbon Pathway’ included in the tiered steps, as an alternative compliance path. This approach would present a more direct path toward addressing carbon reduction in new construction, and would incentivize builders to meet zero emissions targets, through a relaxation of Step Code requirements in favour of zero-emissions heating systems. This gives the City more flexibility in simultaneously achieving lower carbon new builds, while still meeting BC Energy Step Code requirements, at or before 2032.

Since this direction from Council, staff have been collecting and analyzing data on local Step Code compliance, engaging at the provincial level regarding the development of BC carbon pollution standards, conducting an analysis of local, regional and provincial data and completing an industry engagement process. The industry engagement process was completed in collaboration with the District of Saanich and the District of Central Saanich, with support from the Capital Regional District (CRD). The industry engagement followed the process outlined in Diagram 1.

This report marks the completion of regional industry engagement and the additional analysis needed to inform the proposed regulatory changes.

Diagram 1: 2022 Regional Engagement Timeline



*Part 9 residential buildings are residential buildings which are three stories or less, 600m² or smaller; Part 3 buildings are all buildings larger than three stories and/or larger than 600m².

ISSUES & ANALYSIS

1. Technical Review

a. Greenhouse Gas Emissions Reductions

GHG emissions modelling has shown that to achieve the 80% reduction in community-wide emissions committed to in the Climate Leadership Plan, all new construction must be built to use 100% renewable energy by 2025. This should achieve the 7% of community emissions reductions from new construction that is projected to be necessary by 2050.

b. Implications of the BC Energy Step Code on GHG Emissions

In June 2019, the BC Energy Step Code Council published a report entitled “*Implications of the BC Energy Step Code on GHG Emissions*.” This report sought to understand the relationship between the BC Energy Step Code efficiency standards and GHG emissions reductions. The key finding was that while the Step Code reduces overall energy use in buildings, its focus on efficiency results in buildings that continue to emit significant emissions over their lifetime.

GHG emissions remain relatively high for some buildings and not others primarily because of the energy source for space heating and domestic hot water systems. Buildings that have mechanical systems that use natural gas emit far more GHGs than those that use electricity. According to the BC Building Code (BCBC), one gigajoule (GJ) of natural gas has approximately 17 times higher global warming potential than one GJ of electricity. This means that if a building uses 100 GJs of natural gas in a year it produces 5.1 tonnes of carbon dioxide equivalent (tCO₂e). If it uses 100 GJs of electricity, it produces 0.3 tCO₂e. This disparity in global warming potential is exacerbated by the relative efficiency of electric and gas fired equipment. In most cases, gas equipment is less efficient than electric equipment. This means that gas uses more energy to produce the same amount of heat.

As the primary cause of emissions from buildings is the energy source (i.e., electricity or gas) used for space and domestic hot water heating, it is the fuel source that must be addressed to consistently reduce emissions from new construction.

c. BC Carbon Pollution Standards

The BC carbon pollution standards are new regulations that are expected to be added to the BC Building Code in December 2022. It is expected to provide local governments with the ability to limit

GHG emissions from new construction. The BC carbon pollution standards will be available for municipalities to opt into and are expected to have four levels:

1. Measure-only (requires measurement of a building's emissions without reductions and is intended to build knowledge and capacity)
2. Medium carbon (in most cases, will require electrification of either space heating or domestic hot water systems)
3. Low carbon (in most cases, will require electrification of both space heating and domestic hot water systems)
4. Zero-carbon (in most cases will require the full electrification of a building)

In practice the BC carbon pollution standards use a GHG intensity (GHGi) and total GHG emission maximums to achieve the stated intent of each threshold. The details of these carbon pollution standards can be found in Attachment A: BC carbon pollutions standards.

d. Provincial Adoption Schedule

The Province has announced anticipated adoption dates for both the BC Energy Step Code and the BC carbon pollution standards. Table 1 outlines the expected adoption schedule.

Table 1: BC Adoption Schedule for Step Code and carbon pollution standards

BCBC	Dec. 2022	Dec. 2024	Dec. 2027	Dec. 2030	Dec. 2032
Expected Adoption	20% better efficiency and carbon optional regs	Medium carbon	Low carbon and 40% better efficiency	Zero carbon	80% better efficiency
Regulations	<i>Step Code and carbon pollution</i>	<i>Carbon Pollution</i>	<i>Step Code and carbon pollution</i>	<i>Carbon pollution</i>	<i>Step Code</i>

e. Building Permit Analysis

Energy models that have been submitted with building permits have been compiled to analyse the relationship between the GHG intensities of buildings and the energy systems that are being installed. A strong correlation has been found between electrification of major building systems and lower GHG intensities. In all cases, buildings that are fully electric meet or are very close to meeting proposed zero carbon ready standards. Conversely, buildings that use primarily natural gas are rarely able to achieve even the medium carbon standard. While not the majority, many buildings are being built fully electric by industry leaders.

f. Costing Analysis

Two costing studies were reviewed to better understand the potential cost implications of electrifying most, or all buildings' systems; one from the Building and Safety Standards Branch of the Provincial Government and a second by the City of Vancouver. These studies found that incremental capital costs for all building types fell within a range of 0.1% cost savings to a high of 2.2% increased costs. These costs varied depending on the electric systems that were chosen and will vary further depending on what is considered to be the baseline building. Operating costs were also analysed. The modelled operating cost implications varied from a savings of 7% to an annual cost increase of 2.2%.

The technical review has found that the building and development industry is technically capable of meeting both the low carbon and zero carbon ready standards today, and what is needed is time and clarity for industry to integrate new requirements into building, site planning and design. For more details, please see Attachment B: Technical Review: Step Code and Carbon Pollution Standards.

2. Summary of What We Heard Through Engagement

The building and development industry engagement included over 150 connections with professional builders, developers, home designers, architects, engineers, energy modellers and Energy Advisors in the region, and amounted to a general agreement to focus additional regulation on reducing GHG emissions rather than on increasing efficiency.

The first survey sought to better understand the challenges that industry would expect if they were required to meet the highest steps of the Step Code and if they were required to electrify major building systems. For the Step Code, the challenges identified were varied, but the most common challenges identified for all building types included concerns about the availability of appropriate equipment, incremental cost increases, design challenges, availability of appropriate expertise and lack of consumer demand for energy efficient buildings. When those involved in building Part 9 buildings were asked whether they felt there were barriers to implementing low carbon energy (electric) space heating systems in new Part 9 buildings, most (71%) said no. When asked about electric hot water systems most (63%) also said no. Those who said there were challenges (17% and 29% respectively) identified incremental cost, availability of equipment and low confidence in relatively new technology as barriers.

When those involved in building Part 3 buildings were asked whether they felt there were barriers to implementing low carbon energy (electric) space heating systems in new Part 3 buildings, half (50%) said no, 31% said yes. For those that said there were barriers, the top three picks were availability of appropriate equipment, confidence in relatively new practices/equipment and electric servicing. When those involved in building Part 3 buildings were asked about electric hot water systems the most common (44%) response was that there are barriers, 37% said that there weren't barriers. The top challenges identified for hot water systems were operating costs, electrical servicing and incremental cost increases.

This initial survey was focused on identifying challenges and barriers that were discussed in detail by two Solutions Labs that were convened on April 20, 2022. The key outcomes from both the Part 9 and Part 3 solutions labs were:

- there is agreement on the need for carbon emission reductions
- there is support for focusing regulation on greenhouse gas emissions reduction; efficiency is secondary
- current Step Code requirements do not fundamentally change how buildings are built, accelerating to higher steps could
- significant lead time and/or grandfathering before new regulations come into effect is desired, and the lead time needed varies by building type and depending on the regulatory change
- construction costs are a key concern
- simplicity in messaging, keep policy simple and easy to understand
- education/training – labour market challenges a concern
- the housing availability and affordability challenge is a core consideration that forms a backdrop for this work
- decarbonizing is technically possible and is achievable by the building industry

- consumer understanding is lagging, consumers don't typically understand the benefits of efficiency and decarbonization
- builder and trades training would support new efficiency and carbon regulations
- regional consistency remains a priority
- how the FortisBC grid and renewable natural gas (RNG) will contribute is an open question
- BC Hydro grid capacity and connection process is an ongoing concern.

The final phase of engagement included four opportunities for submitting feedback. The primary method was through two virtual engagement sessions during which participants were asked to participate in several polls which amounted to a short survey by the end of the session. The polls were also compiled into a survey which was open for participation from June 2 to June 13. For those that had more detailed feedback than the survey allowed, one-on-one meeting time slots were advertised although none were completed.

The polls demonstrated that there is a high level of agreement with the proposed adoption scenarios for both Part 9 and Part 3 buildings with just two in each category expressing serious disagreement. In both the Part 9 and Part 3 polls "Fully Agree" was the most common response (35% for Part 9 and 46% for Part 3). Because of the support for the adoption pathway that was presented to industry, there are no substantive changes between it and the adoption pathways that are recommended.

When asked to elaborate upon points of contention or reservations, some felt that timelines for adoption could be faster or that the Step Code could be advanced more quickly. For those that did not fully agree due to concerns about how ambitious the proposed approach is, the concerns varied from the need for backups due to perceived reliability issues with electricity, concerns about regional consistency and concerns about municipal capacity to enforce new regulation. Please see Attachment C – Final Engagement Report: Step Code and Carbon Pollution Standards to review detailed feedback received.

3. Recommended Adoption Timelines and Actions

The goals of the recommended approach are to minimize the number of changes, provide adequate notice to industry and meet required GHG emissions reductions. The proposal is to advance the BC carbon pollution standards until mid-2025 when all new buildings will be required to meet zero carbon ready standards and to harmonize with the Provincial advancement of the Step Code as they catch up with existing local building energy efficiency standards. Table 2 and Table 3 provide additional detail by building type including the step of the Step Code that is and will be required.

Table 2: Part 3 BC carbon pollution standards and Step Code Adoption Schedule

Part 3	Current Bylaw	Proposed Bylaw		
	January 1, 2020	Effective with Bylaw Adoption	July 1, 2024	July 1, 2025
RESIDENTIAL (Group C) Between 4 and 6 storey	Step 3	Measure and Report GHGi	Step 3 AND <u>Low</u> Carbon	Step 3 AND <u>Zero</u> Carbon Ready
RESIDENTIAL (Group C) Over 6 storey	Step 2		Step 2 AND <u>Low</u> Carbon	Step 2 AND <u>Zero</u> Carbon Ready
COMMERCIAL (Group D and E)	Step 2		Step 2 AND <u>Low</u> Carbon	Step 2 AND <u>Zero</u> Carbon Ready
ASSEMBLY/ CARE (Group A & B)	Not currently required	Step 1		

Table 3: Part 9 BC carbon pollution standards and Step Code Adoption Schedule

Part 9	Current Bylaw	Proposed Bylaw	
	January 1, 2020	July 1, 2023	January 1, 2025
RESIDENTIAL (Group C)	Step 3	Step 3 AND <u>Low</u> Carbon	Step 3 AND <u>Zero</u> Carbon Ready

a. Alternative Adoption Approach

There is a risk that the 2022 BCBC Revision may not provide the ability for local governments to regulate carbon emissions directly. While the Building and Safety Standards Branch has made it clear that is their intention, it is possible that it may not happen. To mitigate this risk and ensure that the City stays on track with reducing emissions from new buildings the following ‘step back’ option is proposed for each building type. This option would provide that if an owner voluntarily meets the relevant carbon pollution standards, then they are not required to move up to the higher step at the prescribed timeline. Research indicates it is likely most projects would choose to meet the proposed BC carbon pollution standards rather than the highest step making emissions reductions likely, although not guaranteed. Table 4 and Table 5 provide the specific detail of the alternative proposal.

Table 4: Part 3 Carbon Pollution Limit and Step Code Adoption Schedule

Part 3	Current Bylaw	Proposed Bylaw		
	January 1, 2020	Mar. 1, 2023	July 1, 2024	July 1, 2025
RESIDENTIAL (Group C) Between 4 and 6 storey	Step 3	Measure and Report GHGi	Step 4 OR Step 3 AND <u>Low Carbon</u>	Step 4 OR Step 3 AND <u>Zero Carbon Ready</u>
RESIDENTIAL (Group C) Over 6 storey	Step 2		Step 4 OR Step 2 AND <u>Low Carbon</u>	Step 4 OR Step 2 AND <u>Zero Carbon Ready</u>
COMMERCIAL (Group D & E)	Step 2		Step 3 OR Step 2 AND <u>Low Carbon</u>	Step 3 AND Step 2 AND <u>Zero Carbon Ready</u>
ASSEMBLY/ CARE (Group A & B)	Not currently required.	Step 1		

Table 5: Part 9 Carbon Pollution Limit and Step Code Adoption Schedule

Part 9	Current Bylaw	Proposed Bylaw	
	January 1, 2020	July 1, 2023	January 1, 2025
RESIDENTIAL (Group C)	Step 3	Step 5 OR Step 3 AND <u>Low Carbon</u>	Step 5 OR Step 3 AND <u>Zero Carbon Ready</u>

The recommendation includes this alternate approach in the event the BCBC updates do not include opportunities for local governments to regulate carbon emissions directly.

4. Projects Required to Connect to District Energy Systems

There are some properties in Victoria that are required to connect to district energy systems such as those at the Dockside Green development. The GHG emissions factor of the district energy system will be different from that of the FortisBC and BC Hydro grid. The difference in emissions factor and the requirement for new developments to connect means that these projects will require special consideration in the drafting of the final bylaw. Exactly how these instances will be handled is yet to be determined and requires additional analysis and discussion.

5. Support Needed for Industry

The City has a Senior Energy Specialist position that is currently in recruitment and is envisioned to support the implementation of the BC Energy Step Code and the BC carbon pollution standards. This position will coordinate training with industry and government partners such as BC Hydro and the Province, and work on permitting compliance verification. Ensuring that industry is aware of existing Provincial and BC Hydro incentives that support electrification will be critical to easing the transition to fully electric buildings and in encouraging the Province and BC Hydro to continue to offer these incentives.

Consumer education was identified during engagement as an important component in the transition to Zero Carbon buildings. A newly developed City education program called *Climate Friendly Homes* will seek to inform residents of the benefits of electrification of existing buildings, it could be expanded to include new buildings in addition to existing buildings. This will assist builders and developers in the design and sales stages.

6. Next Steps

Should Council direct staff to proceed with the recommended approach, amendments to the City's Building and Plumbing Bylaw will be required to implement these actions, and staff would bring the bylaw amendments forward for consideration of first and second readings.

If the bylaw amendments are approved, ongoing monitoring of compliance will also be needed to ensure that new buildings are achieving the emissions reductions necessary to meet the needs identified in the community energy modelling. This monitoring can take place in the following ways:

- evaluating energy models submitted for building and occupancy permits
- through potential benchmarking and home energy labelling requirements.

Ongoing industry engagement and public education efforts to increase awareness of the benefits of decarbonizing new construction will also be part of implementation.

In recognition of the relatively long timelines associated with the recommended regulation adoption and those associated with most building projects, a two to three-year monitoring period is recommended following any regulation changes Council may choose to adopt. A report would be brought forward to Council at the end of this monitoring period, providing an evaluation of outcomes against the GHG emissions reductions required of new construction.

OPTIONS & IMPACTS

Option 1 (Recommended)

Direct staff to prepare Building and Plumbing Regulation Bylaw amendments as outlined in Table 2 and 3 in this report and bring these amendments for first and second reading following the release of the 2022 BCBC Revision. This option is the most effective way to achieve the GHG emission reductions required of new construction to meet the City's climate commitments.

Option 2 – Alternative Adoption Approach (also Recommended)

Alternatively, if Provincial regulations enabling local government to adopt carbon pollution standards do not come into effect with the next BC Building Code revision, that Council direct staff to prepare necessary Building and Plumbing Regulation Bylaw amendments as outlined in Table 4 and Table 5 of this report.

Accessibility Impact Statement

The proposed adoption of the BC carbon pollution standards will not impact accessibility in any obvious way. However, the increasing use of heat pumps in units, corridor and common areas could lead to increased thermal comfort during heat events for those with limited mobility. This will increase the livability of all buildings.

2019 – 2022 Strategic Plan

This project is focused on implementing Action 10 listed under Strategic Plan Objective 6, Climate Leadership and Environmental Stewardship.

Impacts to Financial Plan

There are no impacts anticipated to the Financial Plan if Council approves the recommendation. The additional staff time required to ensure the transition to zero carbon ready buildings is already accounted for in the creation and resources of the Senior Energy Specialist position.

Official Community Plan Consistency Statement

This initiative is consistent with the OCP and is focused on implementing direction provided in Section 12: Climate Change and Energy, in particular goal 12 (B): New and existing buildings are energy efficient and produce few greenhouse gas emissions.

CONCLUSIONS

The proposed regulatory changes fulfil actions in the City's Strategic Plan and support goals in the OCP and Climate Leadership Plan. The goal of the engagement and analysis was to find a regulatory pathway to achieve the GHG emission reduction targets while striking a balance that would provide the building and development industry sufficient notice to adjust to changing regulations. It is believed that the recommended approach achieves these goals.

Respectfully submitted,

Derek de Candole
Community Energy Specialist
Community Planning Division

Karen Hoese, Director
Sustainable Planning and
Community Development Department

Report accepted and recommended by the City Manager.

List of Attachments

- Attachment A: BC Carbon Pollution Standards
- Attachment B: Technical Review: Step Code and Carbon Pollution Standards
- Attachment C: Final Engagement Report: Step Code and Carbon Pollution Standards