City of Port Moody

City Initiatives and Planning Committee

Date: July 16, 2024
Submitted by: Community Development Department – Policy Planning Division
Subject: Potential Approach and Timeline to Advance Requirements of the Energy Step Code and the Zero Carbon Step Code for New Buildings

Purpose

To present information related to a potential framework and timeline for new Part 9 and Part 3 Buildings in Port Moody to advance requirements of the Energy Step Code and the Zero Carbon Step Code.

Recommended Resolution(s)

THAT the report dated July 16, 2024, from Community Development Department – Policy Planning Division regarding Potential Approach and Timeline to Advance Requirements of the Energy Step Code and the Zero Carbon Step Code for New Buildings be received for information;

AND THAT staff report back with a proposed framework and timeline for new Part 9 and Part 3 buildings to advance requirements of the Energy Step Code and the Zero Carbon Step Code, including amendments to Building Bylaw No. 3200 and Corporate Policy – 13-6870-2019-03 – BC Energy Step Code Rezoning Applications.

Executive Summary

The Province has included the BC Energy Step Code (ESC) and the BC Zero Carbon Step Code (ZCSC) in the BC Building Code as opt in tools for Local Governments to advance energy efficiency and reduce carbon emissions in their communities ahead of the Provincial timeline for implementation. Based on previous direction by Council this report outlines a potential framework and timeline to advance the ESC and ZCSC for Part 9 and Part 3 buildings beginning January 1, 2025, with a focus on increasing energy efficiency and zero carbon climate resilient new buildings. A potential phased implementation of ESC and ZCSC is presented to reach the highest steps in advance of the Provincial timeline with a framework and timeline aligning with neighbouring municipalities such as Burnaby and New Westminster addressing the building industry's desire for regional consistency. With this potential approach, new construction buildings in Port Moody would lock in lower emissions and heating costs through electrification over the lifecycle of a building while avoiding expensive retrofits needed to address the region's more frequent extreme weather events. Additionally, buildings

constructed to maintain safe indoor air quality and temperatures would be standard and do more to protect Port Moody residents from the region's increasingly hot and smoky summers.

Background

The BC Energy Step Code was introduced in 2017 as an opt-in better than base code energy efficiency standard for new buildings (Energy Step Code). Local Governments can choose to adopt levels of the Step Code into their Building Bylaws, in advance of the Provincial timeline, which the City has done. This was through the following motions at the July 9, 2019, Regular Council meeting, with Council endorsing an early adoption strategy for implementation of the BC Energy Step Code:

> *RC19/329*
> THAT the proposed early adoption strategy for the Energy Step Code be endorsed as recommended in the report dated June 12, 2019, from the Planning and Development Department – Policy Planning Division regarding Energy Step Code Early Adoption Strategy;
>
> AND THAT Corporate Policy – 13-6870-2019-03 – BC Energy Step Code Rezoning Requirements be endorsed;
>
> AND THAT staff be directed to report back with Building Bylaw amendments to support the proposed BC Energy Step Code early adoption strategy.

In addition, at the March 14, 2023, Regular Council meeting, Council received a report for information entitled Energy Step Code and Zero Carbon Step Code Stakeholder Engagement (March 2023 Council report included as **Attachment 1**).

On May 1, 2023, the Province included an opt-in Zero Carbon Step Code (ZCSC) into the BC Building Code, in addition to the existing Energy Step Code (ESC). The ESC and the ZCSC are separate but complementary regulations. The ESC addresses the energy-efficiency performance of new buildings, whereas the ZCSC targets the carbon-emissions performance. Similar to the ESC, local governments can choose to adopt into their Building Bylaws a level of carbon performance in the ZCSC.

Relevant sections of the British Columbia Building Code

The creation of a new Zero Carbon Step Code (ZCSC) was enacted by the Province (Ministry of Housing, Building and Safety Standards Branch), by amending the Building Act General Regulation (Ministerial Order No. M40) and the BCBC (Ministerial Order No. BA2023 8). For Part 3 Buildings, Energy Step Code and Zero Carbon Step Code are implemented by Sections 10.2 (Energy Efficiency) and 10.3 (Greenhouse Gas Emissions) of the BC Building Code (BCBC). The relevant sections of the BCBC for Part 9 buildings are Sections 9.36.6 and 9.37. Part 9 means buildings 3 storeys and under and a building footprint less than 600m^2, such as single-family homes, duplexes, townhomes, and small apartments. Part 3 means buildings over 3 storeys or a building footprint more than 600m^2, such as larger apartment and office buildings.

Discussion

Buildings in Port Moody currently account for 46% of total community GHG emissions. Each new building that uses natural gas or other fossil fuels results in GHG emissions that contribute to global warming and our GHG inventory and will result in a requirement for future retrofits. In September 2022 Council adopted the Climate Ready Homes and Buildings Plan, a comprehensive strategy outlining specific actions the municipality, residents, and business owners can take to make homes and buildings in Port Moody climate ready. Through the Plan, Port Moody has committed to the following target for new buildings to reduce operational GHG emissions: “by 2025 (latest 2030), all new and replacement heating and hot water systems are zero emissions”.

The Climate Ready Homes and Buildings Plan includes an action to accelerate adoption of the BC Energy Step Code (ESC), which was supported by stakeholders during the Plan’s stakeholder engagement, including representatives from the building community. On February 14, 2023, Council endorsed the Phase Two Climate Action Implementation Strategy, outlining 45 actions for staff to implement in 2023 and 2024. One of the 2023 Phase Two actions is the forementioned action to accelerate ESC requirements.

Overview of the Energy Step Code and Zero Carbon Step Code

Enacted by the Province in April 2017, the ESC is a compliance path in the BC Building Code (BCBC) for energy efficiency standards rooted in a performance-based approach. This approach establishes a set of metrics that must be demonstrated through energy modelling and airtightness testing to prove compliance. Various metrics define the steps of the ESC, progressing from enhanced base code compliance at Step 1 to zero-energy ready at the highest step. Different building types have different numbers of steps. The steps are categorized into Lower and Upper Steps according to building types. Local governments can reference the ESC to require and/or incentivize more energy efficient buildings locally in advance of Provincial-wide regulation in 2023.

Since the ESC focuses on energy efficiency and does not directly result in greenhouse gas (GHG) reductions, the Province has developed the Zero Carbon Step Code (ZCSC). Using a similar Step Code approach, the ZCSC is a voluntary opt-in stepped performance standard for new buildings that limits GHG emissions from new construction. Buildings complying with the ZCSC must demonstrate to local building officials that the design and the constructed building meets the committed Zero Carbon Step Code metrics, measured in kg CO_2e. The addition of the ZCSC in the Building Code provides a clear definition and compliance pathway for Low Carbon Energy Systems (no longer needing definition by local governments) which supports electrification of new construction and reduction of GHG emissions. Similar to the Energy Step Code (ESC), the Province has indicated the intent to incrementally increase the required level of the ZCSC (i.e. decreasing levels of greenhouse gas emissions) in future Building Code updates to meet the CleanBC target of Zero Carbon new buildings by 2030. Port Moody staff actively participate in the Local Government Step Code Peer Network, where Port Moody and many other local governments have worked alongside the Province to provide input into the development of the ZCSC.

The ZCSC establishes Emission Levels, which includes a measure only option. The Emission Levels align with specified modelled performance values for an upper limit of greenhouse gas

emissions from a new building. A detailed description of emission limits associated with each Emission Level is presented in **Attachment 2**. In general, the requirements of the Emission Levels are:

- Emission Level 1 (Measure-only) – requires measurement of a building's emissions without reductions;
- Emission Level 2 (Moderate carbon) – in general requires electrification of either space heating or domestic hot water systems;
- Emission Level 3 (Strong carbon) – in general requires electrification of both space heating and domestic hot water systems; and
- Emission Level 4 (Zero carbon ready) – in general requires the full electrification of a building.

Current Port Moody ESC Requirements

Between February 2019 and May 2019, staff engaged with the local building industry on developing a draft adoption strategy of ESC requirements in Port Moody. A summary of engagement was presented to Council alongside the recommended ESC early adoption strategy. A staff Interdepartmental Energy Step Code Working Group, along with the Community Energy Association, developed a proposed early adoption strategy for the ESC that reflects building industry and staff input. This approach was endorsed by Council on July 9, 2019, and implemented on January 1, 2020. In summary, Port Moody's current ESC requirements and policies are enforced through the following processes:

Corporate Policy

Development applications with rezoning required are subject to the BC Energy Step Code Corporate Policy. The policy asks for a commitment to build to an ESC level above Port Moody Building Bylaw ESC requirements in addition to installation of a low carbon energy system that meets a GHG intensity of 6kgCO_2e/m^2 /year (approximately equivalent to ZCSC EL-2).

Building Bylaw

Buildings with applicable occupancy types seeking a building permit are subject to ESC requirements. New Part 9 buildings must meet Step 3 of the ESC and Part 3 buildings must meet Step 3 or Step 2 with installation of a low carbon energy system as defined above, depending on the occupancy type.

Based on modelling completed by consultants to understand measures required to meet GHG reduction targets in the Climate Ready Homes and Buildings Plan, the following Step Code requirements were recommended:

- Adopt the highest steps of the BC Energy Step Code:
    - Step 5 for Part 9 buildings by 2025; and
    - Step 4 for Part 3 buildings by 2025.

- Adopt Zero Carbon Step Code requirements for Part 3 and Part 9 buildings in 2023 and increase stringency in 2025:
    - 2023: 2.5 – 4 kg CO_2e/m^2 / year (equivalent to ZCSC EL-3); and
    - 2025: 1.5 – 2 kg CO_2e/m^2 / year (equivalent to ZCSC EL-4).

Regional Implementation

At this time, 29 local municipalities will be implementing the Zero Carbon Step Code at various Emissions Levels (EL) for new construction (by the end of 2024) (Table.1). These jurisdictions represent a wide range of climate zones and population sizes throughout B.C.'s south coast, Vancouver Island, and Okanagan regions. 8 Municipalities are implementing the highest level of the ZCSC (EL-4) for both Part 9 and Part 3 buildings including neighbouring Burnaby and New Westminster amongst others. A number of other municipalities also currently have Council direction to engage with the building community to establish a timeline to reach the highest steps of each step code.

Table.1 – Examples of some of the Municipalities and the Zero Carbon Step Code Emission Level (EL) they will have implemented by the end of 2024.

Part 9	EL-1	EL-2	EL-3	EL-4
Burnaby			x	
Central Saanich				x
Esquimalt				x
Langley Township		x		
Nanaimo				x
Nelson			x	
New Westminster				x
North Cowichan			x	x
North Vancouver	x		x	
Richmond		x	x	x
Saanich				x
Victoria				x
View Royal				x
West Vancouver			x	
Whistler			x	
Part 3	**EL-1**	**EL-2**	**EL-3**	**EL-4**
Burnaby				x
Colwood				x
Esquimalt				x
Nanaimo				x
New Westminster	x			
North Cowichan				x
North Vancouver District			x	
Richmond	x	x		
Saanich				x
University of British Columbia		x		
Victoria				x
View Royal				x
West Vancouver			x	
Whistler			x	

Potential Implementation Approach

The City could choose to update Building Bylaw No. 3200 and Corporate Policy – 12-6870-2019-03 (BC Energy Step Code Rezoning Applications) to include Emission Level (EL-4) in the ZCSC, to advance with the ESC ahead of the provincial timeline. This approach would serve two functions: 1) long term reduction of carbon emissions (ZCSC); and 2) reduction of energy consumption (ESC). Implementing the first set of requirements could start on January 1, 2025, followed by an incremental increase in the ESC for 2027, as detailed in Tables 2 and 3 below.

The potential timeline is in alignment with the required action to meet the City's Climate Emergency Declaration targets for emission reductions outlined in the Climate Action Plan and Climate Ready Homes and Buildings Plan and is in alignment with the direction set by Council in March 2023. The potential framework and timeline (Table 2 and 3) are further in alignment with neighbouring municipalities such as Burnaby and New Westminster addressing the building industry's desire for regional consistency. It also incorporates discussions with City building and

planning staff and the building industry that the ZCSC is easier to implement in practice than higher steps (4 and 5) of the ESC, hence a more gradual progression of the ESC is incorporated into the potential implementation approach. This more gradual progression of the ESC still achieves Step 5 for Part 9 buildings by January 1, 2027 (5 years before the Province's timeline) and Step 4 for Part 3: Group C occupancies by January 1, 2027 (5 years before the Province's timeline) and Step 3 for Part 3: Group D and E occupancies by January 1, 2027, which is consistent with the Province's timeline. Finally, the potential implementation framework and timeline were presented to the Climate Action Committee on May 27, 2024, and endorsed unanimously *CAC24/013*.

Under the potential implementation approach, in-stream rezoning applications that have progressed to second reading by December 31, 2024, would not be subject to the new requirements. Applications that have received zoning adoption but do not have a building permit would also not be subject to the new ZCSC requirements. These projects would proceed through the development approval and building permit process according to the current requirements for building energy efficiency and carbon performance established by the existing Energy Step Code Rezoning Applications Policy. Any rezoning applications that have not received second reading by December 31, 2024, would be subject to the updated rezoning policy on January 1, 2025.

Table.2 – Potential Part 9 Buildings implementation timeline for the ESC and ZCSC.

Part 9 Buildings (Residential)	Current	January 1, 2025	January 1, 2027	January 1, 2030
Single or two family dwellings	Step 4 No carbon requirements	Step 4 EL-4 Zero Carbon Ready	Step 5 EL-4 Zero Carbon Ready	Step 5 EL-4 Zero Carbon Ready
Laneway and carriage Dwellings				
Townhomes and apartment buildings up to 3 storeys				
Implementation Building permits received on or after the dates noted above are subject to the new requirements. **Notes** EI - 4 Zero Carbon Ready = Space, water and cooking must be zero carbon (e.g. electrified).				

Table.3 – Potential Part 3 Buildings implementation timeline for the ESC and ZCSC.

Part 3 Buildings	Current	January 1, 2025	January 1, 2027	January 1, 2030
Group C: Residential Occupancies, six stories or less	Step 3 or Step 2 with LCES (EL-2)	Step 3 EL-4 Zero Carbon Ready	Step 4 EL-4 Zero Carbon Ready	Step 4 EL-4 Zero Carbon Ready
Group C: Residential Occupancies, six stories or more				
Group C: Hotels and Motels	Step 2			
Group D Offices (Businesses and Personal Services)	Step 2	Step 2 EL-4 Zero Carbon Ready	Step 3 EL-4 Zero Carbon Ready	Step 3 EL-4 Zero Carbon Ready
Other Group D and E (Mercantile) occupancies	Step 2			
Implementation In-stream rezoning applications that have progressed to 2nd Reading by December 31, 2024 would not be subject to the new requirements. These projects would proceed through the development approval and building permit process according to the current requirements for building energy efficiency and carbon performance. **Notes** LCES = Low Carbon Energy System - equivalent to Emission Level (EL-2) of the Zero Carbon Step Code.				

Electrical grid capacity for ZCSC

The electrification of vehicles, heating and cooling systems can have a significant impact on reducing GHG emissions and meeting climate action targets. However, there are questions around provincial capacity to meet future needs. Following is a summary of actions BC Hydro has reported to address this question:

- BC Hydro's Integrated Resource Plan lays out what load growth will look like and how the Utility will supply the province with clean electricity from accelerated electrification from electric vehicles, heat pumps and new legislation and policies from all government levels including the Zero Carbon Step Code.
- Next year Site C hydro dam will be added to help meet growing demand, supplying BC with an additional eight per cent of its current electrical supply. This is enough to power nearly half a million homes, or 1.7 million electric vehicles per year.
- The Utility has a competitive Call for Power underway as a key step in increasing electrification across the province. The Call for Power will add about 3000 gigawatt hours per year of clean and renewable electricity – the equivalent of about five per cent of British Colombia's current supply, or enough to power 270,000 homes. The Call for Power is expected to be the first in a series of calls in the coming years.
- Additional actions the Utility are taking to meet growing electrification demands include accelerating or extending the timing of several near-term actions, including actions on energy efficiency, demand response, industrial load curtailment, electricity purchase agreement renewals and utility-scale batteries.

- BC Hydro has also released a 10-Year Capital Plan containing $36 billion in community and regional infrastructure investments across B.C. This new plan represents an increase of about 50 per cent in investments over their previous capital plans and reflects the province's growing demand for electricity over time from residential, commercial, transportation and industrial sectors. The plan includes spending of approximately $9.4 billion on electrification and green house gas reduction, $5.3 billion to address load growth and increased customer connections, and $21 billion to sustain existing capital assets, dam safety and reliability.
- At a regional level, BC Hydro has reported they are investing $7.2 billion in the Lower Mainland (including the Port Moody area) to support residential housing growth, residential electrification and electrification of transit and industrial electrification. Investments include several new substations and five redevelopments/expansions, as well as three regional transmission capacity expansions.

Electric Heating Options and Climate Resilience

The ZCSC does not provide guidance on what technology should be installed in order to meet the specified emission limits associated with each carbon performance level. Consideration should be made for the use of electric heat pumps compared to resistive electric baseboard heating to meet the carbon performance requirements. Electric heat pumps are more energy efficient (reduce load on electric grid) and less expensive to operate (reduce energy bill costs for homeowner) compared to resistive electric baseboard heating. Electric heat pumps also provide cooling which will increase resilience of the home as the City adapts to warmer summers and increasing frequency of extreme heat events. This initiative is focused on new construction, which will reduce the future need to conduct cooling system retrofits on buildings being built today.

Staff are exploring further if it is possible for Port Moody to enact regulations to encourage or require the use of heat pumps in new construction allowing for mechanical cooling and reducing the demand on the electrical system as opposed to resistive electric baseboard heating. This work will be completed in Q3-Q4 2024. Currently the Province is exploring options in the next Building Code update to include a temperature limit requirement in one living space in new construction to minimize overheating during extreme weather events. At this time, there is no clear indication of when new regulations may be released.

Back-up heating systems

The District of North Vancouver, District of Saanich, City of Richmond and other municipalities currently provide direction on back-up heating systems to applicants and energy advisors for Step Code compliance. Due to a limitation in the energy modelling software and approach, a new Part 9 building can install fossil fuel redundant or backup equipment (e.g. a natural gas fireplace) without capturing the potential energy used from that equipment as part of Zero Carbon Step Code compliance. This could lead to new Part 9 buildings being modelled to achieve the "Zero Carbon Performance Level" (GHG Emission Level 4), despite, in practice, using fossil fuels and emitting significant GHG emissions. This is not in alignment with Port Moody's climate goals and targets. Staff are looking at options for back-up heating systems and will provide a recommendation when reporting back with policy and bylaw updates.

Training and resources for the Building Industry

There are many clear and effective in person and online resources and training available to the building industry across the province to help with adhering to the ZCSC. Some examples of these include:

- The British Columbia Institute of Technology, University of Northern British Columbia, and Vancouver Island University offer hands-on courses to teach building industry professionals how to build more energy-efficient buildings;
- BC Housing incorporated the BC Energy Step Code into its continuing professional development requirements for homebuilders;
- Engineers and Geoscientists BC (EGBC) and the Architectural Institute of BC (AIBC) created compliance tools, templates, and professional practice guidelines;
- The Building Officials Association of BC (BOABC) and the Canadian Home Builders' Association - British Columbia (CHBA-BC) now include both step codes in their training;
- The Step Code Committee and its subcommittees support implementation with research and guidance;
- ZEBx and the Zero Emissions Innovation Centre provide ongoing resources for industry and local governments to help the building community design and build to the ESC and ZCSC helping support the transition.

Other Option(s)

THAT staff be given direction on an alternative potential framework and timeline for the acceleration of BC Energy Step Code and implementation of Zero Carbon Step Code Building requirements.

Financial Implications

Through the 2023 Capital Plan and the Phase Two Climate Action Implementation Strategy, Council approved $8,500 to support Step Code stakeholder engagement if required. There are no additional financial impacts.

Communications and Public Engagement Initiatives

Extensive engagement with the building industry and relevant stakeholders has already been undertaken by multiple neighbouring municipalities resulting in a perceived level of readiness and support of implementing ZCSC and ESC among local builders. As most of the builders who work in Port Moody have already participated in one of these sessions, staff recommends an informing approach.

Feedback from Building Division staff who are in regular contact with the building industry further note that reaching higher levels of the ESC is more difficult to achieve than implementing the highest level of the ZCSC. This is a similar finding noted in surrounding municipalities. This input has been reflected in the more gradual potential increase of the ESC compared to the ZCSC (Tables 2 and 3). For reference, **Attachment 3** includes additional details on the engagement completed by other municipalities.

Finally, the potential implementation framework and timeline was presented to the Climate Action Committee on May 27, 2024, and was endorsed unanimously *(CAC24/013)*.

Council Strategic Plan Goals

The recommendations in this report align with the following Council Strategic Plan Goal(s):

- Strategic Goal 2.2 – Advance climate change mitigation and adaptation; and
- Strategic Goal 3.3 – Enhance community wellbeing.

Attachment(s)

1. Council Report, March 2023 – Energy Step Code and Zero Carbon Step Code Stakeholder Engagement.
2. BC Zero Carbon Step Code compliance requirements.
3. Summary of ZCSC Engagement conducted in the City of Burnaby, City of Victoria, District of Saanich, District of Central Saanich, City of Richmond.

Report Author

Christopher Brown, MSc BSc
Senior Sustainability and Energy Coordinator

Report Approval Details

Document Title:	Potential Approach and Timeline to Advance Requirements of the ESC and the ZCSC for New Buildings.docx
Attachments:	- Attachment 1 - Council Report 2023 - Energy Step Code and Zero Carbon Step Code Stakeholder Engagement.pdf - Attachment 2 - BC Zero Carbon Step Code compliance requirements.pdf - Attachment 3 - Summary of ZCSC Engagement conducted in other Municipalities.pdf
Final Approval Date:	Jul 8, 2024

This report and all of its attachments were approved and signed as outlined below:

Mary De Paoli, Manager of Policy Planning - Jul 4, 2024

Kate Zanon, General Manager of Community Development - Jul 5, 2024

Stephanie Lam, City Clerk and Manager of Legislative Services - Jul 8, 2024

Lindsay Todd, Manager of Communications and Engagement - Jul 8, 2024

Paul Rockwood, General Manager of Finance and Technology - Jul 8, 2024

Anna Mathewson, City Manager - Jul 8, 2024

Attachment 1
Considered at the July 16, 2024, CIPC meeting
18
Attachment 1
Considered at the March 14, 2023, Regular Council meeting
70

City of Port Moody
Report/Recommendation to Council

Date: March 2, 2023
Submitted by: Community Development Department – Policy Planning Division
Subject: Energy Step Code and Zero Carbon Step Code Stakeholder Engagement

Purpose
To provide Council information on communicating with the local building industry on accelerated Energy Step Code requirements and implementation of Zero Carbon Step Code requirements in Port Moody.

Recommended Resolution(s)

THAT the report dated March 2, 2023 from the Community Development Department – Policy Planning Division regarding Energy Step Code and Zero Carbon Step Code Stakeholder Engagement be received for information.

Background
Through the following motions at the July 9, 2019, Regular Council meeting, Council endorsed an early adoption strategy for implementation of the BC Energy Step Code:

> *RC19/329*
> THAT the proposed early adoption strategy for the Energy Step Code be endorsed as recommended in the report dated June 12, 2019 from the Planning and Development Department - Policy Planning Division regarding Energy Step Code Early Adoption Strategy;
>
> AND THAT Corporate Policy - 13-6870-2019-03 - BC Energy Step Code Rezoning Requirements be endorsed;
>
> AND THAT staff be directed to report back with Building Bylaw amendments to support the proposed BC Energy Step Code early adoption strategy.

Discussion

In September of 2022 Council adopted the Climate Ready Homes and Buildings Plan[1], a comprehensive strategy outlining specific actions the municipality, residents, and business owners can take to make homes and buildings in Port Moody climate ready. Through the Plan, Port Moody has committed to the following target for new buildings to reduce operational GHG emissions:

- by 2025 (latest 2030), all new and replacement heating and hot water systems are zero emissions.

The Climate Ready Homes and Buildings Plan includes an action to accelerate adoption of the BC Energy Step Code (ESC), which was supported by stakeholders during the Plan's stakeholder engagement, including representatives from the building community. On February 14, 2023 Council endorsed the Phase Two Climate Action Implementation Strategy, outlining 45 actions for staff to implement in 2023 and 2024. One of the 2023 Phase Two actions is the forementioned action to accelerate ESC requirements.

Overview of the Energy Step Code and Zero Carbon Step Code

Enacted by the Province in April 2017, the ESC is a compliance path in the BC Building Code (BCBC) for energy efficiency standards rooted in a performance-based approach. This approach establishes a set of metrics that must be demonstrated through energy modelling and airtightness testing to prove compliance. Various metrics define the steps of the ESC, progressing from enhanced base code compliance at Step 1 to zero-energy ready at the highest step. Different building types have different numbers of steps. The steps are categorized into Lower and Upper Steps according to building types. Local governments can reference the ESC to require and/or incentivize more energy efficient buildings locally in advance of Provincial-wide regulation in 2023. More details on the ESC can be found on the Energy Step Code webpage[2].

Since the ESC focuses on energy efficiency and does not directly result in greenhouse gas (GHG) reductions, the Province has developed the Zero Carbon Step Code (ZCSC). Using a similar Step Code approach, the ZCSC is a voluntary opt-in stepped performance standard[3] for new buildings that limits GHG emissions from new construction. Buildings complying with the ZCSC must demonstrate to local building officials that the design and the constructed building meets the committed Zero Carbon Step Code metrics, measured in kg CO_{2e}. The ZCSC has four levels:

- EL-1 (Measure-only): requires measurement of a building's emissions without reductions, and is intended to build knowledge and capacity;
- EL-2 (Medium carbon): in most cases, will require decarbonization of either space heating or domestic hot water systems;

[1] Port Moody Climate Ready Homes and Buildings Plan: https://www.portmoody.ca/en/city-hall/climate-action-plan.aspx#Climate-Ready-Homes-and-Buildings-Plan
[2] BC Energy Step Code: https://energystepcode.ca/
[3] Zero Carbon Step Code (Revision 5 Convenience Copy): https://energystepcode.ca/app/uploads/sites/257/2023/02/BCBC-2018-Revision-5-Convenience-Copy.pdf?mc_cid=ac626dfe4a&mc_eid=151d34db87

- EL-3 (Low carbon): in most cases, will require decarbonization of both space heating and domestic hot water systems; and
- EL-4 (Zero-carbon): in most cases, will require the full decarbonization of a building.

Port Moody staff actively participate in the Local Government Step Code Peer Network, where Port Moody and many other local governments have worked alongside the Province to provide input into the development of the ZCSC. Several local governments have expressed interest in consulting on and implementing the ZCSC including the City of Victoria[4] and District of Saanich[5] who have already moved ahead.

Current Port Moody ESC Requirements

Between February 2019 and May 2019, staff engaged with the local building industry on developing a draft adoption strategy of ESC requirements in Port Moody. A summary of engagement[6] was presented to Council alongside the recommended ESC early adoption strategy. A staff Interdepartmental Energy Step Code Working Group, along with the Community Energy Association, developed a proposed early adoption strategy for the ESC that reflects building industry and staff input. This approach was endorsed by Council on July 9, 2019, and implemented on January 1, 2020. In summary, Port Moody's current ESC requirements[7] and policies are enforced through the following processes:

> **Corporate Policy:** Development applications with rezoning required are subject to the BC Energy Step Code Corporate Policy. The policy asks for a commitment to build to an ESC level above Port Moody Building Bylaw ESC requirements in addition to installation of a low carbon energy system that meets a GHG intensity of 6kgCO_{2e}/m^2/year (approximately equivalent to ZCSC EL-2).
>
> **Building Bylaw:** Buildings with applicable occupancy types seeking a building permit are subject to ESC requirements. New Part 9 buildings must meet Step 3 of the ESC and Part 3 buildings must meet Step 3 or Step 2 with installation of a low carbon energy system as defined above, depending on the occupancy type.

Upcoming Provincial ESC and Carbon Regulations

BC Building Code changes[8] to enable energy efficiency Energy Step Code requirements across the Province and provide an opt-in Zero Carbon Step Code were signed by the Minister of Housing in February 2023. These Code changes will take effect on May 1, 2023, meaning that starting May 2023:

- most new construction in BC will be 20% more energy efficient than base 2018 BC Building Code (similar to Step 3 for Part 9 buildings and Step 2 for Part 3 buildings); and
- all BC local governments have the option to enforce the Zero Carbon Step Code.

[4] City of Victoria Step Code commitments: https://www.victoria.ca/EN/main/residents/planning-development/development-services/green-buildings.html
[5] District of Saanich Step Code commitments: https://www.saanich.ca/assets/Community/Documents/Planning/sustainability/Step-Code-FAQ.pdf
[6] Summary of ESC Engagement 2019: https://www.portmoody.ca/en/city-hall/public-consultations.aspx#BC-Energy-Step-Code
[7] Port Moody ESC Requirements: https://www.portmoody.ca/en/city-hall/bc-energy-step-code.aspx
[8] BCBC 2018 Revision 5 changes: https://energystepcode.ca/requirements/?mc_cid=ac626dfe4a&mc_eid=151d34db87#bcbc-2018-rev-4

To prepare for these upcoming building code changes staff recommend consulting with stakeholders.

Stakeholder Consultation Approach

The purpose of engaging with stakeholders is to:

- ensure the building community is aware of upcoming BCBC changes;
- discuss and provide feedback on accelerating ESC requirements and implementing ZCSC requirements; and
- understand what supports the building community will need to meet accelerated and new requirements.

Based on modelling completed by consultants to understand measures required to meet GHG reduction targets in the Climate Ready Homes and Buildings Plan, the following Step Code requirements are recommended:

- adopt the highest steps of the BC Energy Step Code:
  - Step 5 for Part 9 buildings by 2025; and
  - Step 4 for Part 3 buildings by 2025.

- adopt Zero Carbon Step Code requirements for Part 3 and Part 9 buildings in 2023 and increase stringency in 2025:
  - 2023: 2.5 – 4 kg CO_{2e}/m^2/ year (equivalent to ZCSC EL-3); and
  - 2025: 1.5 – 2 kg CO_{2e}/m^2/ year (equivalent to ZCSC EL-4).

These modelled recommendations will form the basis for engagement with the building community to garner feedback, understand compliance challenges, and determine solutions. Through cross-jurisdictional collaboration, there may be opportunities to partner with other local governments on stakeholder consultation activities as many communities are beginning engagement and policy adjustments in advance of May 1, 2023. Staff will explore and collaborate on stakeholder engagement activities as opportunities become available.

Current and Previous Port Moody Building Community Support

Since adoption of the Energy Step Code in Port Moody in 2019, the City has implemented multiple initiatives to support the building community in transitioning to high performance, low carbon building practices including:

StepWin Pilot: In 2019 the City partnered with Lambda Science to offer home builders free access to an Energy Step Code modelling tool called Properate[9] (formerly StepWin) that allowed builders to input their home design and find multiple cost-effective ways of designing their project to be ESC compliant. This pilot ended in 2021, however, builders can still access the tool.

Airtightness Workshop: Staff in partnership with the Community Energy Association scheduled a free in person airtightness workshop in 2019 designed to provide hands-on training for building airtight homes. Unfortunately, the event was cancelled due to low registration.

[9] Properate (formerly StepWin): https://properate.io/

Airtightness Testing Rebate: Since 2021 Port Moody has offered an incentive program, funded by BC Hydro, for mid-construction airtightness tests for Part 9 buildings. The purpose of this rebate program is to help local Part 9 building teams gain the knowledge and skills necessary to build airtight homes that will meet current and future requirements of the BC Energy Step Code.

Through the engagement process staff will seek to understand any additional support measures required for builders to achieve proposed requirements. Should Council endorse staff to proceed with stakeholder engagement, staff will report back in 2023 with results of engagement and recommended ESC and ZCSC requirements for Council consideration.

Other Option(s)

THAT staff be given direction on alternative stakeholder consultation methods or processes for acceleration of BC Energy Step Code and implementation of Zero Carbon Building requirements.

Financial Implications

Through the 2023 Capital Plan and the Phase Two Climate Action Implementation Strategy, Council approved $8,500 to support Step Code stakeholder engagement. This funding will be used to support in person and virtual engagement events and surveys.

Communications and Civic Engagement Initiatives

Consultation with builders, developers, and other stakeholder groups will inform the development of draft accelerated Step Code requirements. Staff will present results of stakeholder engagement alongside recommendations for changes to local Step Code requirements for Council consideration.

Council Strategic Plan Objectives

Accelerating adoption of the Energy Step Code and implementing the Zero Carbon Step Code is consistent with the strategic outcomes in the area of Environmental Leadership identified in the 2019-2022 Council Strategic Plan. With the current Council Strategic Plan reaching maturity at the end of 2022, several phase two climate actions will be recommended to be integrated with the new Council Strategic Plan, including the acceleration of Energy Step Code requirements action.

Report Author

Laura Sampliner, BES
Senior Sustainability and Energy Coordinator

Report Approval Details

Document Title:	Energy Step Code and Zero Carbon Step Code Stakeholder Engagement.docx
Attachments:	
Final Approval Date:	Mar 6, 2023

This report and all of its attachments were approved and signed as outlined below:

Mary De Paoli, Manager of Policy Planning - Mar 2, 2023 - 11:28 AM

Kate Zanon, General Manager of Community Development - Mar 3, 2023 - 1:13 PM

Lindsay Todd, Manager of Communications and Engagement - Mar 3, 2023 - 4:13 PM

Paul Rockwood, General Manager of Finance and Technology - Mar 3, 2023 - 4:43 PM

Tim Savoie, City Manager - Mar 6, 2023 - 9:45 AM

Considered at the July 16, 2024, CIPC meeting

Attachment 2 - BC Zero Carbon Step Code Compliance requirements

Part 9 - Small Residential Buildings, excerpt from the BC Building Code

9.37.1.3 Compliance Requirements

1) *Buildings* conforming to the requirements of any GHG Emission Levels EL-1 to EL-4 shall be designed and constructed to conform to one of the GHG emission compliance options in Table 9.37.1.3

Table 9.37.1.3.
Greenhouse Gas Emissions
Forming part of Sentence 9.37.1.3 (1)

GHG Emission Level	GHG Emission Compliance Options					
	Maximum GHG Emissions by House, Expressed in kg CO_{2e}/year	or	Maximum GHG Emissions by House[1]		or	Reduction of GHG Emissions by Energy Source of Building Systems[2]
			Maximum GHGI of the House, Expressed in kgCO_{2e}/m_2/year	Maximum GHG Emissions by House Expressed in kgCO_{2e}/year		
EL-1	Measure only		Measure only			N/A
EL-2	1050	or	6.0	2400	or	Energy sources supplying heating systems have an emissions factor ≤0.011 kgCO_{2e}/kWh
EL-3	440		2.5	800		Energy sources supplying heating and service water heating systems have an emissions factor ≤ 0.011 kgCO_{2e}/kWh
EL-4	265		1.5	500		Energy sources supplying all building systems including equipment and appliances, have an emissions factor ≤0.011 kgCO_{2e}/kWh

Notes to Table 9.37.1.3:

(1) Compliance for this option is demonstrated by meeting both the GHGI and the GHG emission requirements for each house

(2) Reductant or back-up equipment for the systems and equipment listed in Sentence 9.36.5.4.(1) is permitted to be excluded, provided it is equipped with controls and is not required to meet the space-conditioning load of the house

2) The emissions factors associated with the use of energy utilities consumed by the *building's* systems shall be
   a) 0.011 kg CO_{2e}/kWh for electricity, and
   b) 0.180 kg CO_{2e}/kWh for natural gas

Part 3 - Multi-unit residential over three storeys and most office and commercial buildings

10.3.1.3 Compliance Requirements

1) *Buildings* conforming to the requirements of any of the GHG Emissions Levels EL-1 to EL-4 shall be designed and constructed to conform to Table 10.3.1.3 based on *occupancy*.

Table 10.3.1.3
Greenhouse Gas Emissions
Forming Part of Sentence 10.3.1.3.(1)

GHG Emission Level	Maximum GHGI of the Building, Expressed in kgCO_{2e}/m_2/year			
	Residential Major Occupancy		Business and Personal Service and Mercantile Major Occupancies	
	Hotels and Motels	Other Residential Occupancies	Offices	Other Business and Personal Service and Mercantile Occupancies
EL-1	Measure only			
EL-2	9.0	7.0	5.0	6.0
EL-3	4.0	3.0	3.0	3.0
EL-4	2.0	1.8	1.5	2.0

2) The emissions factors associated with the use of energy utilities consumed by the *building's* systems shall be
   a) 0.011 kg CO_{2e}/kWh for electricity, and
   b) 0.180 kg CO_{2e}/kWh for natural gas

Summary of ZCSC Engagement conducted in the City of Burnaby, City of Victoria, District of Saanich, District of Central Saanich, City of Richmond

City of Burnaby

Undertook engagement with the building community by way of a presentation at a Builder Breakfast on September 26, 2023, an online survey, and correspondence with representatives of the Urban Development Institute. From their ZCSC Council report (December 2023) the highlights of Burnaby's public survey were as follows:

- 20 surveys were completed.
- Most respondents reported as being moderately to very well informed about Energy Step Code and Zero Carbon Step Code.
- For Part 9 buildings, respondents identified a number of challenges with building to the highest steps of the Energy Step Code (beyond Step 3), including the time it takes to master construction details, availability of required expertise, and ensuring performance at completion.
- For Part 9 buildings, most respondents reported that there are no barriers to implementing Zero Carbon Ready electric space and hot water systems.
- For Part 3 buildings, respondents identified several challenges to building to higher steps of the Energy Step Code, including design impacts to building form, incremental cost increases, and availability of required expertise.
- For Part 3 buildings, the majority of respondents reported that there are no barriers to implementing zero carbon ready electric space heating systems, but some challenges were still noted, including electrical service and availability of appropriate equipment.

The survey also contained open ended questions. Notable responses are synthesized as follows:

- Survey respondents said there were "no barriers" to implementing Zero Carbon Ready electric space and hot water systems, though some noted challenges for large, complex buildings, including electrical service and availability of appropriate equipment.
- Several respondents identified that the period of notice is too short and that projects already in the design phase under the current Green Building policy, but not able to achieve 2nd Reading by the end of the year would require significant redesign.
- Several respondents identified advancing to Step 3 of the Energy Step Code by January 1, 2024 would be challenging for high rises >6 stories and that this policy change would effect buildings already under design to meet the current low carbon energy system compliance pathway.
- The potential for additional electrical connection fees and infrastructure if projected electric load could not be met was noted.

- One anonymized comment in the public feedback stated: “I do not anticipate any challenges as long as other jurisdictions continue to advance alongside Burnaby and there is good training/education for builders and building officials.”

The full survey results can be found here: Report (escribemeetings.com)

City of Victoria, District of Saanich and District of Central Saanich

With the support of the Capital Regional District they completed comprehensive industry engagement in 2022 alongside technical analysis which supported the implementation of the ZCSC and resulted in their current approved Council direction. Their staff worked together with the Urban Development Institute (UDI), the Canadian Home Builders Association (CHBA) and the Vancouver Island Construction Association (VICA). The Technical Review and Final Engagement Report presented to their Council in August 2022 is presented in Attachment 5.

Over 150 connections were made with Professional Builders, developers, home designers, Architects, Engineers, energy modellers and Energy Advisors which amounted to a general agreement to focus additional regulation on reducing GHG emissions rather than on accelerating energy efficiency requirements. Their process of engagement involved three phases including:

- Two information sessions;
- Two industry surveys;
- Two solution labs;
- Two final engagement sessions; and
- One-on-one meetings and phone calls.

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 yes there are barriers, 37% said that there were no barriers. The top challenges identified for hot water systems were operating costs, electrical servicing, and incremental cost increases.

The full Final Engagement Report can be found here: Attach3-Final-Engagement-Rpt-StepCode.pdf (saanich.ca)

City of Richmond

In the process of approving the ZCSC in Burnaby, staff engaged the larger building development community (Urban Development Institute members) on two separate occasions regarding the proposed amendment that would integrate ZCSC requirements with the City's Energy Step Code framework. Staff presented proposed bylaw requirements at an in-person UDI-City of Richmond Liaison Committee meeting on June 28, with 12 members of the development community attending. A second one-hour engagement session (webinar) was held on July 12, with 16 participants.