

Part 3 Step Code Solutions Lab Briefing

This document is intended to ensure that all participants in the solutions lab have a base level of information on the BC Energy Step Code, the Provincial Carbon Pollution Standards that are in development, and the options that are being considered by participating local governments to reduce carbon emissions from new construction.

1.0 Step Code Part 3 Adoption to Date in Participating Local Governments

The City of Victoria, District of Saanich and District of Central Saanich have adopted the BC Energy Step Code, their adopted Steps to date are outlined in Table 1 below. For a more detailed refresher on the BC Energy Step Code for Part 9 buildings, please see [Appendix A](#) and the Capital Region Step Code Industry Workshop Information Sessions presentations available here: www.saanich.ca/stepcode.

Table 1: Step Code Adoption in Victoria, Saanich and Central Saanich

Building Type	Compliance Requirement
Part 9 Buildings	Step 3
Part 9 – 111.5 m ² or less*	Step 2
Part 3 – residential wood frame building six stories or less	Step 3
All other Part 3 Buildings	Step 2

*Central Saanich does not have this relaxation for small buildings

2.0 Provincial Carbon Pollution Standards (in development)

The Province of BC is introducing greenhouse gas (GHG) reduction targets for new buildings into the BC Building Code, which local governments may reference in their building or zoning bylaws. These targets will enable local governments to regulate the emissions of new construction in their communities.

In February 2022, the Province released a policy bulletin, which provides an overview of the GHG targets, the Province's intentions and policies regarding the targets, and guidance for Authorities Having Jurisdiction who wish to implement the GHG targets. Local government staff in the Capital Region have been aware of this provincial work through participation in the Local Government Step Code Peer Network. The content in Sections 2.1 and 2.2 below, is a direct excerpt from the provincial bulletin.

2.1 About the greenhouse gas reduction targets

The CleanBC Roadmap to 2030 (the Roadmap) commits to zero-carbon new construction in B.C. by 2030, and commits to phasing in emissions targets into the BC Building Code starting in 2024. The Roadmap commits to enabling local governments to adopt GHG targets for new buildings. Minimum province-wide emissions requirements for new buildings will be phased in between 2024 and 2030. This works towards the goal of consistent, province-wide standards using an ever-rising 'floor' of minimum standards, similar to the BC Energy Step Code.

To accomplish this, new GHG targets will be introduced to the BC Building Code.

Local governments may apply different tiers of GHG reduction, which establishes maximum modeled emissions levels for new construction for different building types. The levels are as follows:

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

This initial set of targets is for the most commonly built buildings in B.C., which are small buildings (e.g.: single-family homes, duplexes, etc.), multi-unit residential buildings like apartments and condominiums, office buildings, and mercantile buildings (e.g. malls). Targets for other buildings may be established at a later date.

2.2 How it works: Part 3 buildings

For Part 3 buildings, the new approach builds on the familiar approach currently used by the City of Vancouver, where buildings must meet a greenhouse gas intensity (GHGI) of 6, 3, or 1 kg CO₂e/m² of floor area.

The BC Building Code will include similar targets, but differentiated between occupancy types. In most cases, GHGIs are slightly increased, with the exception of office.

These targets were made to be achievable at Step 2 in all climate zones in B.C. Changes were made because modeling showed that some archetypes, like hotels, are harder to decarbonize due to high energy use from laundries and pools.

Offices are generally easier to decarbonize due to lower heat and hot water demand, thus they have more stringent targets.

Despite changes, these GHGI targets still align with modelled points of decarbonisation.

3.0 Provincial Timelines

The CleanBC Roadmap to 2030 indicates the following timelines:

- Timeline for regulatory low carbon pollution standards requirements:
 - 2022 – measure GHGs & local government “opt-in”

Figure 1: Proposed Part 3 metrics

(all GHGI targets in kgCO ₂ e/m ² /year)	Medium	Low	Zero Carbon Ready
MURB	7	3	1.8
Office	5	3	1.5
Retail	6	3	2
Hotel	9	4	2

- 2024 – medium carbon
- 2027 – low carbon
- 2030 – zero carbon
- Timeline for energy efficiency regulatory requirements in the BC Building Code:
 - 2022 – Step 3 (Part 9), Step 2 (Part 3)
 - 2027 – Step 4 (Part 9), Step 3 (Part 3)
 - 2030/32 – Step 5 (Part 9), Step 4 (Part 3)
- After 2030, all new space and water heating equipment sold and installed in BC will be at least 100% efficient

4.0 Current Council Direction Based on Community Engagement

Based on considerable engagement and GHG modelling completed in the development of their respective climate plans, the Councils in the City of Victoria, District of Saanich and District of Central Saanich have set direction to staff to meet the following targets:

- Highest steps of the BC Energy Step Code by 2025
- 100% renewable energy and/or net-zero carbon in new construction by 2030
- 50% community-wide GHG emission reductions by 2030

The City of Victoria and District of Saanich have also directed staff to:

- Accelerate adoption of net-zero carbon new construction/quickly decarbonize new construction
- Integrate a carbon/GHG emissions cap into Step Code adoption
- Adopt the highest Steps of the Step Code by 2025 (in the City of Victoria this is for most buildings and then 2027 for some part 3 buildings)

For more detail on local Council direction related to GHG emissions in new construction, please see the following:

- City of Victoria Climate Leadership Plan, 2018, (specifically p24-27), available online here: [City of Victoria Climate Action Plan.pdf](#) and [2019 Climate Action Strategy - Proposed Programs and Initiatives](#) (p. 192-218)
- District of Saanich Climate Plan, 2020 (specifically p24, p51-52), available online here: www.saanich.ca/climateplan and the recent report to Council on this engagement available here: https://saanich.ca.granicus.com/GeneratedAgendaViewer.php?view_id=1&clip_id=609
- District of Central Saanich Climate Leadership Plan, 2020, (specifically p19), available here: [climate_leadership_plan_2020_update2021.pdf \(centralsaanich.ca\)](#)

5.0 Draft Options for Accelerating GHG Reductions from Part 3 new Construction – for Engagement

This section outlines draft options for accelerating GHG reductions from new construction for Part 3 buildings (Tables 2, 3 and 4). It has been based upon; alignment with direction from local Councils, information related to forthcoming provincial legislation, analysis of best practice from adoption by other local governments in BC and feedback from the first phase of engagement with industry in March 2022, including survey results. Note, key findings from the industry survey results will be presented in the solutions lab and a summary will be made available shortly after.

It is important to note that the options and associated timelines outlined in Tables 2, 3 and 4 are intended as a starting point for discussion with stakeholders in the solutions lab. A mix of options may also be considered.

Table 2: Draft Options for Part 3 Residential and Hotels, 6 Storeys or Fewer

Option		Requirement	Adoption Date
Option 1	Efficiency Pathway	Step 4	June 2023
Option 2	Hybrid Efficiency / Low Carbon Pathway	Step 4 OR BCBC Step 3 with Low Carbon Construction*	June 2023
		Step 4 OR BCBC Step 3 with Zero Carbon Construction*	January 2025
Option 3**	Low Carbon Requirement Pathway**	BCBC Step 3 AND Low Carbon Construction*	June 2023
		BCBC Step 3 AND Zero Carbon Construction*	January 2025

* The definition of Low and Zero Carbon will relate to the proposed Part 3 metrics in the provincial policy bulletin.

**This option is not available today but is expected to be provided as an option with the release of the 2022 BCBC update, which is anticipated to integrate the provincial low carbon pollution standards.

Table 3: Draft Options for Part 3 Residential and Hotels, 7 Storeys+

Option		Requirement	Adoption Date
Option 1	Efficiency Pathway	Step 3	June 2023
		Step 4	January 2027
Option 2	Hybrid Efficiency / Low Carbon Pathway	Step 3 OR BCBC Step 2 with Low Carbon Construction*	June 2023
		Step 3 OR BCBC Step 2 with Zero Carbon Construction*	January 2025
Option 3**	Low Carbon Requirement Pathway**	Step 2 AND Low Carbon Construction*	June 2023
		Step 2 AND Zero Carbon Construction*	January 2025

* The definition of Low and Zero Carbon will relate to the proposed Part 3 metrics in the provincial policy bulletin.

**This option is not available today but is expected to be provided as an option with the release of the 2022 BCBC update, which is anticipated to integrate the provincial low carbon pollution standards.

Table 4: Draft Options for Part 3 Commercial Buildings (Office & Retail)

Option		Requirement	Adoption Date
Option 1	Efficiency Pathway	Step 3	June 2023
Option 2	Hybrid Efficiency / Low Carbon Pathway	Step 3 OR Step 2 with Low Carbon Construction*	June 2023
		Step 3 OR Step 2 with Zero Carbon Construction*	January 2025
Option 3**	Low Carbon Requirement Pathway**	Step 2 AND Low Carbon Construction*	June 2023
		Step 2 Minimum AND Zero Carbon Construction*	January 2025

* The definition of Low and Zero Carbon will relate to the proposed Part 3 metrics in the provincial policy bulletin.

**This option is not available today but is expected to be provided as an option with the release of the 2022 BCBC update, which is anticipated to integrate the provincial low carbon pollution standards.

Appendix A – BC Energy Step Code Refresher

What is the BC Energy Step Code?

The BC Energy Step Code is a provincial standard that establishes progressive performance steps in energy efficiency for new buildings from the current BC Building Code level to net zero energy ready buildings by 2030. More information on the Step Code is available here: [Energy Step Code](#) and in [Section 9.36.6 and 10.2 of the BC Building Code](#).

The Step Code is organized into Lower and Upper Steps according to building types as shown in the Figure 2 below.



Figure 2: Definition of Lower and Upper Steps by Building Type

To achieve the Lower Steps, building and design professionals and trades can rely on conventional building designs with careful air-sealing practices. They should engage an energy modeller early to select the most cost effective way to meet the performance requirements.

To achieve the Upper Steps, builders and designers would need to adopt a more integrated approach to building design and may need to incorporate more substantial changes in building design, layout, framing techniques, mechanical system selection, and materials.

Part 3: Residential Wood Frame, Concrete and Commercial

To meet the requirements of a given step of the BC Energy Step Code, a whole-building energy model of the proposed building design must be completed prior to construction to demonstrate to local government building officials that the building’s modelled design meets or exceeds a set of required metrics. After construction, the responsible party must submit letters of assurance to confirm that the building meets the specifications set out in the energy model.

The Step Code for Part 3 buildings has two primary metrics to regulate compliance:

1. Thermal Energy Use Intensity (TEUI) is a metric of the energy used over a year by the building, estimated by using an energy model in accordance with [BCBC Article 10.2.3.4.](#), normalized per square metre of floor area of conditioned space and expressed in kWh/(m²/year), for all of the following combined: a) space-heating equipment, b) space-cooling equipment, c) fans, d) interior and exterior lighting devices, e) service water heating equipment, f) pumps, g) auxiliary HVAC equipment h) receptacle loads and miscellaneous equipment, i) appliances, and j) elevators and escalators.
2. Thermal Energy Demand Intensity (TEDI) is a metric of the annual heating required by the building for space conditioning and for conditioning of ventilation air, estimated by using an energy model in accordance with [BCBC Article 10.2.3.4.](#), normalized per square metre of floor area of conditioned space and expressed in kWh/(m²/year), taking into account all of the following: a) thermal transmittance of above-ground walls and roof-ceiling assemblies, b) thermal transmittance of floors and walls in contact with the ground, or space that is not conditioned space, c) thermal transmittance and solar heat gain of windows, doors and skylights, d) air leakage through the air barrier system, e) internal heat gains from occupants and equipment, and f) heat recovery from exhaust ventilation.