BRITISH COLUMBIA | Office of Housing and Construction Standards

Provincial policy bulletin for cleaner, more energy efficient new construction

A best practices bulletin for local governments and other Authorities Having Jurisdiction for improving energy efficiency and reducing greenhouse gas emissions from new buildings

Version 1

September 2022

Contents

About this bulletin

The Province of British Columbia is proposing to introduce a new, opt-in Building Carbon Pollution Standard 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.

At the same time, the Province is also proposing to raise base energy efficiency requirements for new buildings by 20 per cent, equivalent to Step 3 for Part 9 buildings and Step 2 for Part 3 buildings.

This bulletin provides an overview of the Building Carbon Pollution Standard, the Province's intentions and policies regarding the Standard, and guidance for Authorities Having Jurisdiction (AHJ) who wish to implement the levels. It also discusses how the higher energy efficiency requirements may affect local bylaws, policies, and incentives.

The information provided here is a high-level summary for guidance only and is not a substitute for provincial legislation. It is not legal advice and should not be relied upon for that purpose. For further details contained in the Building Code Proposed Change Forms, financial and technical modelling, and PowerPoint presentations for general audiences, visit the public review homepage.

This document is analogous to the 2017 Provincial Policy Guide for Local Government Implementation of the BC Energy Step Code.

About proposed energy efficiency requirements

The introduction of the BC Energy Step Code in 2017 included a plan to gradually improve the energy efficiency of new buildings over time. It proposed energy efficiency improvements on the following timeline when compared to base 2018 BC Building Code requirements:

- 20 per cent better by 2022 (Step 3 for Part 9, Step 2 for Part 3)
- 40 per cent better by 2027 (Step 4 for Part 9, Step 3 for Part 3)
- 80 per cent better (i.e. net-zero energy ready) by 2032 (top Step for Part 3 and Part 9)

Now that 2022 is here, the Province is seeking to fulfill the commitment to 20 per cent energy efficiency.

The proposed base building code requirements that would take effect at the end of 2022 would require buildings to reach Step 3 for Part 9 buildings, and Step 2 for Part 3 buildings. However, there are some proposed technical changes from the existing Step Code requirements. These include a new prescriptive energy efficiency option for Part 9 buildings only, more airtightness testing options, introducing some National Building Code provisions, and new energy performance improvement compliance calculations.

Further details about proposed changes to energy efficiency requirements may be found on the public review homepage.

About the proposed Building Carbon Pollution Standard

The Province's latest climate plan (PDF) 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, the Province is proposing to add a new opt-in Building Carbon Pollution Standard to the BC Building Code by adding a new objective and functional statements, as well as Sections 9.37. and 10.3. of Division B of the BC Building Code. Further best practices guidance will also be released to help with consistent, orderly implementation based on feedback about the initial content of the bulletin.

Local governments may apply different levels 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 ready

This initial set of GHG 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.

Details for 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 CO_2e/m^2 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.

Figure 1: Proposed Part 3 metrics

(all GHGI targets in $kgCO_2e/m^2/year$)	Medium	Low	Zero Carbon Ready
MURB	7	3	1.8
Office	5	3	1.5
Retail	6	3	2
Hotel	9	4	2

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.

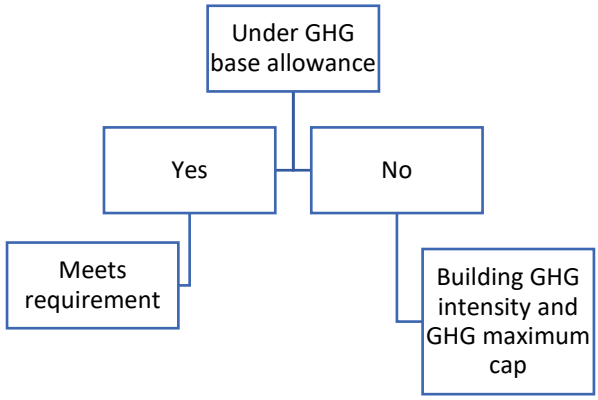
Despite changes, these GHGI targets still align with modelled points of decarbonization.

Details for Part 9 buildings

For Part 9 buildings, the new approach is a combination of the familiar GHGI approach from the City of Vancouver with some additional minimum and maximum emissions values, which is meant to combine the benefits of the intensity and total cap approaches.

Each dwelling unit gets a minimum carbon allowance associated with the Medium, Low, and Zero-Carbon target. If the dwelling unit exceeds the allowance, it must meet either a GHG or GHGI, whichever emits *the least annual GHG.*

Figure 2: Decision tree for Part 9 builders



Real world and modelled analysis showed that small homes greatly exceeded 6/3/1 GHGI targets yet have lower total GHG emissions than larger homes by nature of their small size. Some large homes could also meet those targets without the intended level of decarbonization. By combining both an absolute GHG and GHGI approach, both types of homes can meet targets and maintain consistent decarbonization approaches.

Finally, a prescriptive path to decarbonize buildings is being proposed as a third option, in part due to its relative simplicity and practicality for the Fort Nelson electricity grid, which as of 2022 has significantly higher emissions than the Integrated grid. It is also a viable option for buildings that follow the proposed prescriptive backstop for energy efficiency, and thus do not undergo energy modelling. More information on the proposed backstop may be found on the public review homepage.

Path 1

	GHG Base Allowance *(ideal for small houses)*
	kg CO2e per unit
Medium	1050
Low	440
Zero Carbon Ready	265

Path 2 (if building exceeds base allowances above)

	Building GHG Intensity *(ideal for medium-sized houses)*	**AND**	**GHG Maximum Cap** *(limits emissions of the largest houses)*
	$kgCO_2e/m^2/year$		kg CO2e per unit
Medium	6		2400
Low	2.5		800
Zero Carbon Ready	1.5		500

Path 3

	Action
Medium	Decarbonize heat
Low	Decarbonize both heat and hot water
Zero Carbon Ready	Fully decarbonized building

Legal authority

The Building Act General Regulation has established the reduction of energy efficiency and greenhouse gas emissions as "unrestricted matters", with the condition that local governments may not require buildings to be constructed except in conformance with:

- A Step of the BC Energy Step Code, as defined in Article 9.36.6.3. or 10.2.3.3. of Division B of the BC Building Code, and/or
- (as part of the proposed changes) A greenhouse gas reduction standard, as defined in the BC Building Code. Numbering will be finalized when the Ministerial Order is signed.

The GHG targets are available for local governments to reference in bylaws, policies and programs using authorities in the *Local Government Act*, *Community Charter*, *Building Act*, and Building Act General Regulation.

Best practices for the Building Carbon Pollution Standard

Relationship to the BC Energy Step Code and new baseline energy efficiency requirements

Local governments may reference GHG targets for buildings in their community, in addition to the BC Energy Step Code by referencing the carbon standard in a building or planning bylaw.

In 2022, the BC Building Code (BCBC) will increase energy efficiency requirements by 20% (i.e. Step 3 for Part 9 buildings, and Step 2 for Part 3 buildings). Further increases to energy performance in the BCBC are planned for 2027 and 2032. Local governments may pair any level of the Building Carbon Pollution Standard with either the base energy efficiency requirements effective at the time, or more ambitious ones, provided they are paths within the BC Building Code.

Monitoring

The Step Code Peer Network will monitor uptake of the Building Carbon Pollution Standard, and provide regular updates to the Province and the Energy Step Code Council.

How to implement

Local governments are advised to:

- Review this Policy Guide and any other guidance document published by the Province and Energy Step Code Council in the future.
- Consult with their local building and development industries on the adoption of these requirements.
- Seek to understand industry's readiness to implement these requirements. In particular, they should seek to understand the local challenges and opportunities to implement low-carbon building systems, especially heat pump space and water heating.
- Consider appropriate compliance and approvals processes.
- Consider whether introducing thermal conditioning permitting (I.e. heating permits, mechanical permits, etc.) to ensure compliance with the modeled systems assumed in GHG calculations aligns with existing permitting and inspection roles and responsibilities. These permitting processes should be coordinated with other local governments and inspection entities, and should be simple to follow and administer.
    - Local governments may wish to use common forms across jurisdictions to improve consistency for industry.
- Notify the Peer Network of their intention to conduct industry consultation; their adoption/ratification of GHG targets; and date of enactment.

Recommended approaches for Step Code communities

Local governments should introduce Energy Step Code and the Building Carbon Pollution Standard for buildings at a pace that reflects industry capacity and a regional approach.

The Province released a series of audio-video presentations for the public review process in September 2022. Episode 5 describes some potential scenarios and considerations for communities at different

stages of implementation. It is available as a video, podcast, and PowerPoint with speaking notes. For links to these resources, visit the public review homepage.

Minimum timelines

When local governments introduce Building Carbon Pollution Standard, local governments are advised to notify industry that they will be enforcing them at least 6 months prior to requirements coming into effect.

Take a regional approach and coordinate

The Province encourages local governments to take a coordinated, regional approach to consultation and implementation (e.g. through forums such as the BC Energy Step Code Local Government Peer Network; the Metro Vancouver Regional Engineering Advisory Committee Climate Action Sub-Committee; etc.). Move together with a neighbouring local government if at all possible.

In-stream requirements

Because the Building Carbon Pollution Standard will be voluntary at first, a grace period for in-stream applications may be considered.

Regarding energy efficiency, once the December 2022 changes to the 2018 BC Building Code come into effect, new building permit applications must comply with the minimum BC Building code requirements for energy efficiency in effect at the time of application.

Local governments that have adopted Step 4 or 5 for Part 9 buildings or Step 3 or 4 for Part 3 buildings will still be able to determine if new building permits need to comply with these higher Steps.

Planners should incorporate any resulting changes to the BC Building Code, BC Energy Step Code, and the Building Carbon Pollution Standard into discussions as early as possible when discussing complex applications that are not ready for development application submittal prior to enforcement of the changes to the BC Building Code.

Electrical extension fees

The structure of B.C. electrical utilities' tariffs can occasionally result in builders or developers needing to pay significantly higher extension fees (i.e. the cost of new electrical service) for larger electrical services; the structure of electrical tariffs mean that the cost of a larger electrical service can be difficult to predict.

There are at least three options to mitigate this issue:

- Revise electric utility extension fees in utility tariffs.
- A local building electrification fund, providing additional fund to buildings facing electrification challenges.
- Local governments allowing use of renewable natural gas (RNG) for compliance with requirements.

In advance of changes to utility extension fees in electric utility tariffs or introduction of an electrification fund, local governments are advised to allow compliance via RNG.

District energy systems

The City of Vancouver Energy Modeling Guidelines Version 2 referenced in the calculation of GHG emissions of buildings specify that "the emissions factor of a district energy system shall be provided by the utility (as agreed by the utility and the [authority having jurisdiction])"

Therefore, local governments should:

- Publish GHG emissions factors for the district energy systems operating in their communities, reflecting the lifetime emissions intensity of energy supplied by the district energy system modeled over the lifetime of a new building connected to the building, reported in units of kg CO2e/kWh. The emissions factor should reflect committed low-carbon energy sources.
- Plan to decarbonize district energy sources as soon as possible.
- Not establish GHG targets for buildings that cannot reasonably be achieved by buildings compelled to connect to district energy systems

The Province will consult further with district energy providers to determine appropriate guidance.