

BC ZERO CARBON STEP CODE FREQUENTLY ASKED QUESTIONS V1.0

Town of View Royal
Development Services Department
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This FAQ answers the following questions:

1. What is the BC Zero Carbon Step Code?
2. What is the BC Energy Step Code?
3. What is the difference between the Zero Carbon Step Code and the Energy Step Code?
4. How is Carbon Performance measured?
5. How is compliance achieved?
6. How are fireplaces affected?
7. How are barbeques and outdoor kitchens affected?
8. What is a prescribed versus performance requirement?
9. Is there enough electricity in BC to meet increasing demand?
10. What about embodied carbon?

1. What is the Zero Carbon Step Code?

The BC Zero Carbon Step Code, previously referred to as the Carbon Pollution Standard, sets performance requirements for greenhouse gas (GHG) emissions for new construction and groups them into levels of emissions or “steps” for different types of buildings.

The Zero Carbon Step Code refers to systems and devices¹ that convert fuel into energy and includes heating and cooling equipment, domestic hot water equipment, ventilation equipment as well as cooktops and laundry drying equipment.

Local governments can choose to require or incentivize builders to meet one or more steps of the Zero Carbon Step Code as an alternative to the BC Building Code’s prescriptive requirements.

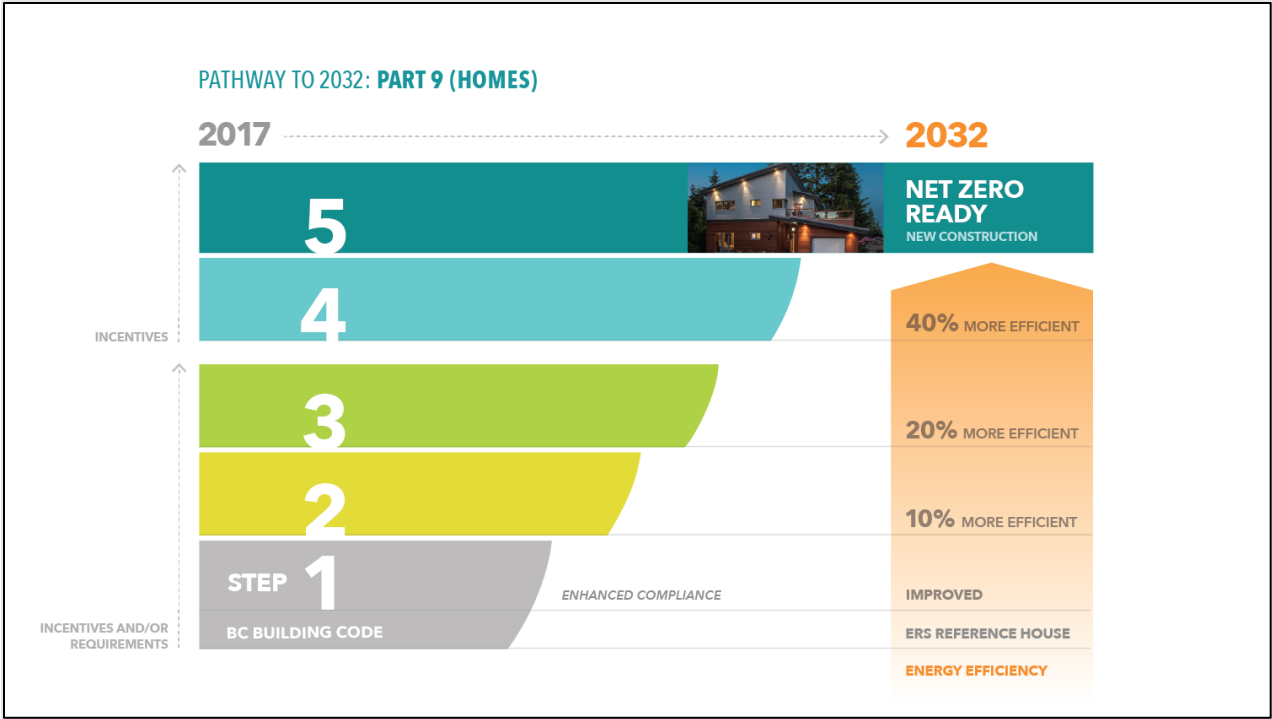
Each step of the Code has a different GHG emissions intensity per square metre of building. It is a performance-based system, i.e. an energy advisor would calculate the GHG emissions for a building design and work with the builder on modifications to meet a Zero Carbon Step Code level.

2. What is the Energy Step Code?

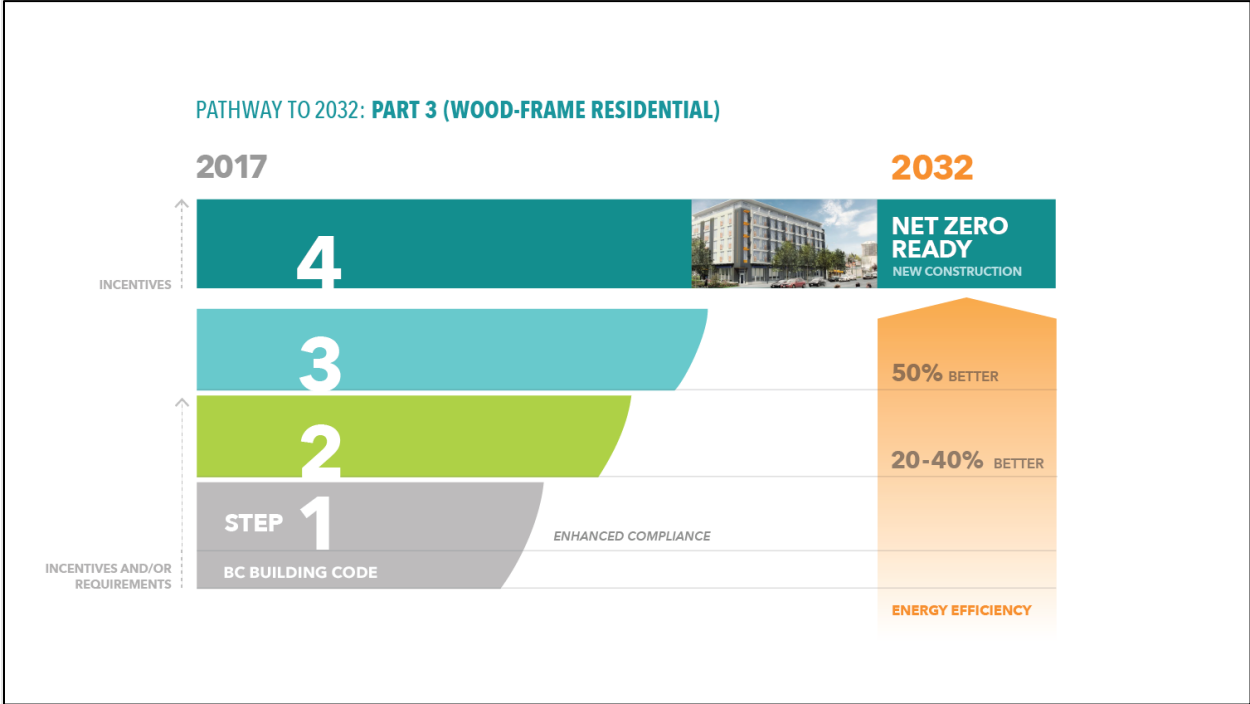
The BC Energy Step Code² is a part of the BC Building Code that sets performance requirements for energy efficiency for new construction and groups them into “steps” for different types of buildings.

¹ https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/bulletins/b23-03_zero_carbon_step_code.pdf

² energystepcode.ca



Source: energystepcode.ca



Source: energystepcode.ca

Historically, the BC Building Code has taken a prescriptive, regulatory approach on how buildings are constructed. While buildings would be insulated structurally sound, they were not necessarily energy efficient in terms of heating and cooling.

Energy efficiency was first introduced as a Building Code objective in 2008. The goal is for all new construction to be Net Zero Ready by 2032. Net Zero Ready means a building will generate as much clean energy as it consumes.

This means major changes to how buildings are constructed. The Net Zero Ready standard is not one that the industry can meet overnight. Over time, as high-performance designs, materials, and systems become increasingly available and cost-effective, the building industry will integrate new techniques into all new buildings. The Energy Step Code facilitates this structural shift through the following:

a. Incremental targets

The Building Code will require progressively higher Energy Step Code levels from 2017 to 2032.

b. Performance based metrics

Instead of prescribing how a building is built, a builder can use different techniques to achieve the steps. Modelling is done at the building permit stage and there is performance monitoring during the construction process to ensure the require Step Code level is achieved.

c. Voluntary higher levels

Local governments can choose to require or incentivize builders to meet one or more steps of the BC Energy Step Code as an alternative to the code's prescriptive requirements.

3. What is the difference between the Energy Step Code and the Zero Carbon Step Code?

Both codes are part of the BC Building Code. The Energy Step Code is focussed on the energy efficiency of buildings, which includes these primary metrics:

- Air Changer per Hour (ACH₅₀) - how much air leaks through the building envelope
- Thermal Energy Demand Intensity (TEDI) - the amount of annual heating energy needed to maintain a stable interior temperature
- Mechanical Use Intensity (MEUI) - the efficiency of mechanical equipment

The Zero Carbon Step Code focuses on GHG emissions from building operations, namely space heating, water heating and indoor cooking.

4. How is Carbon Performance measured?

The Zero Carbon Step Code sets a maximum annual amount of GHG emissions for a building, based on the proposed occupancy and the size of the building. The primary measure of GHG emission intensity (GHGi) is kilograms of carbon dioxide equivalent per square metre, per year (kg CO₂e/m²/year). The details of the standards can be found on the provincial [BC Energy Step Code website](#) and the [convenience copy of the BC Building Code](#) update.

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

Building Code excerpt

The Building Code sets out GHG emission rates for different fuel types that an Energy Advisor uses to model emissions for a proposed building, and changes to the design may be necessary to achieve the emission level. The results would be included in building permit application submissions.

5. How is compliance achieved?

A builder must demonstrate to local building officials that their design and the constructed building meets the Zero Carbon Standard requirements. A completed Pre-Construction and As-Built Compliance Report/Checklist (Part 9) or Energy Design Report (Part 3) would be submitted to the Town.

6. How are fireplaces affected?

Fireplaces are not part of the Zero Carbon Step Code at this time.

7. How are barbeques and outdoor kitchens affected?

Outdoor cooking is not part of the Zero Carbon Step Code at this time.

8. What is a prescribed standard versus a performance standard?

A prescribed standard is a stated requirement. It should be noted that local governments do not have much authority to directly set prescribed standards in how buildings are constructed because that authority is with the BC Building Code. For example, a local government may not require that all windows on a building be triple paned.

A performance standard is a target. For example, a local government may set GHG emission standards, and a builder could choose to use an air source heat pump, ground source heat pump, or electric baseboards as a low carbon heating system to achieve the target.

9. Is there enough electricity in BC to meet increasing demand?

BC Hydro is the largest producer of electricity in the province. The *CleanBC Roadmap to 2030*³ states: “BC Hydro is preparing an Integrated Resource Plan (IRP), which outlines how BC Hydro plans to provide reliable, affordable and clean electricity to meet customer demand now and into the future. It considers BC Hydro’s 20-year projections of electricity demand in B.C. The IRP includes high and low load ranges and scenarios to account for a range of potential impacts,

³ https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf

including support of CleanBC as policies and regulations are implemented and electrification ramps up to help achieve 2030 emissions reduction targets.”

10. What about embodied carbon?

Embodied carbon is the carbon emissions associated with materials and construction processes throughout the whole lifecycle of a building (or infrastructure). It includes material extraction, transportation, manufacturing, construction, use (excluding operation), maintenance, repair, replacement, refurbishment, deconstruction, end of life processing, and disposal⁴.

Municipalities do not have specific legislation to regulate embodied carbon currently.

REFERENCES

Date	Title	Description	Link
May 1, 2023	BC Building and Safety Standards Branch information bulletin	Zero Carbon Step Code British Columbia Building Code 2018 Revision 5	https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/bulletins/b23-03_zero_carbon_step_code.pdf
Accessed July 2023	Energy Step Code	Main website	https://energystepcode.ca/
Accessed July 2023	CleanBC Roadmap to 2030	Climate Action Plan	https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf
July 2021	Province enables increased investments in renewable gas, hydrogen	News release	https://news.gov.bc.ca/releases/2021EMLI0046-001286
May 1, 2023	Zero Carbon Step Code British Columbia Building Code 2018 Revision 5	Information Bulletin Building and Safety Standards Branch	https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/bulletins/b23-03_zero_carbon_step_code.pdf
Sept. 2019	Bringing embodied carbon upfront	World Green Building Council document	https://worldgbc.s3.eu-west-2.amazonaws.com/wp-content/uploads/2022/09/22123951/WorldGBC_Bringing_Embodied_Carbon_Upfront.pdf

⁴ https://worldgbc.s3.eu-west-2.amazonaws.com/wp-content/uploads/2022/09/22123951/WorldGBC_Bringing_Embodied_Carbon_Upfront.pdf