

# Public Review

## Vancouver Building By-law (VBBL)

### Proposed change to Low Carbon Materials and Construction

**Topic:** Low Carbon Materials and Construction

**Code change number:** 24-0022

**Code reference:** 10.4. Low Carbon Materials and Construction

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## Description of the proposed change

- Exemptions: Introduce an exemption for buildings with a floor area of less than 1,800 m<sup>2</sup>.
- Reduction Target Modification: Adjust the whole-building embodied carbon impacts limit from double of a baseline (i.e. 200% of a baseline) to require a minimum 10% reduction (i.e. 90% of a baseline).

## Justification

Operations of buildings in Vancouver are responsible for more than 50% of the city's total carbon emissions, amounting to 1.38 million tonnes in 2019. Additionally, an estimated 179,500 tonnes of carbon emissions annually are attributed to the manufacture, transport, use, and disposal of construction materials such as cement and steel. Although these emissions, known as embodied carbon, predominantly occur outside the city limits, Vancouver can play a crucial role in mitigating them. Efficient building design, material selection, and land use development are key methods for effectively reducing embodied carbon emissions.

Big Move 5 (Low-Carbon Construction Materials) of the Climate Emergency Action Plan (CEAP), ratified in October 2020, targets a 40% reduction in new buildings' embodied carbon by 2030 compared to 2018. The Embodied Carbon Strategy (Appendix K to CEAP) outlines four major actions to achieve this target, including the implementation of new building regulations to limit embodied carbon.

The initial embodied carbon regulations were approved in 2022 and subsequently integrated into the Building By-law by October 2023. These regulations mandated reporting and established an easy-to-achieve limit for the embodied carbon of all new Part 3 buildings (set at 200% of a standardized baseline in accordance with the CoV Embodied Carbon Guidelines).

Concurrently, additional modifications slated for 2025 were also approved in principle. These forthcoming amendments include requirements for a 10% or 20% reduction in embodied carbon, as well as a new mandate for responsible material sourcing. Staff were tasked with conducting further reviews of these proposed changes and to present final recommendations to Council in 2024.

The initial requirements implemented in 2023 helped to enhancing industry capacity and understanding of embodied carbon reduction challenges and solutions. The proposed modifications for 2025 are informed by insights from industry feedback, project case studies, and data derived from assessments conducted in accordance with the newly released CoV Embodied Carbon Guidelines of October 2023.

These adjustments, described below, aim to keep the requirements effective, practical, and aligned with the best practices in reducing embodied carbon emissions.

- Exemption for Small Projects: Exempt projects with a floor area under 1,800 m<sup>2</sup> to reduce regulatory burden on smaller-scale developments and streamline compliance efforts.
- Continued Reporting Requirement: Maintain the requirement for embodied carbon assessment and reporting to ensure continued industry capacity building and identification of reduction opportunities.
- Reduced Embodied Carbon Limit: Implementing a reduction in the embodied carbon limit, mandating a 10% reduction in whole-building embodied carbon emissions.
- Industry Leadership Credits: In the proposed 2025 changes approved in principle in 2022, responsible material sourcing criteria were proposed to be a mandatory requirement in the By-law. These requirements are moved to the Embodied Carbon Guidelines as optional embodied carbon reduction credits, referred to as Industry Leadership Credits. This transition aims to allow time to enhance industry capacity, incentivize best practices, and foster innovation. Projects can choose to get up to 5% of the total 10% reduction requirements through these embodied carbon reduction credits given for optional reporting of a selection of the following, regardless of whether embodied carbon reduction is achieved in the optional scopes reported. The full details of the Industry Leadership Credits and submission requirements will be available in Version 2 of the Embodied Carbon Guidelines. These optional credits include reporting of:
  - Embodied carbon of optional building elements (including MEP, interior, and site work)
  - Project-specific estimates for life cycle stages beyond production (including construction site emissions and building elements' lifespan)
  - Use of products with sustainability, transparency, or health certifications (including certified wood)
  - Use of circularity practices (including salvaging and design for deconstruction)

Additional prescriptive and prescriptive-like compliance paths were explored but were not added in this version of the Bylaw. The alternative paths explored included use of combustible construction or encapsulated mass timber construction, use

Of low-carbon structural materials, specifically low-carbon concrete, and reuse of the existing structure. The decision to not add these paths were based on the feedback received through industry expert group consultations. The industry experts advised the staff to keep the code language simple, refrain from prescriptive pathways that are not proven to consistently achieve the intended reductions and which already have simple pathways available in the existing structure, and continue requiring embodied carbon assessment to inform carbon and cost savings in building design, prepare the industry for future reduction requirements, and inform future policy and reduction targets.

## Proposed VBBL content

### Legend

Black Text – 2019 Vancouver Building By-law content

Black Underlined Text – Proposed modification to Vancouver Building By-law content

### **Division A**

#### **2.2.1.1. Objectives**

##### **OE2 Greenhouse Gas Emissions**

An objective of this By-law is to limit the probability that, as a result of design and construction of the building, including the building's systems, the production of greenhouse gases will be excessive. The risks of excessive greenhouse gas emissions addressed in this By-law are those caused by –

OE2.1 – excessive emissions as a result of the design and construction of the building, including the building's systems, and the energy consumed in the operation of those systems

OE2.2 – excessive greenhouse gas emissions as a result of manufacturing, transportation, construction, replacement, or disposal of the building or building components, and the energy consumed in the lifecycle of those components

**Division B**

**1.3.1.2. Applicable Editions**

Issuing Agency	Document Number	Title of Document	By-law Reference
CoV	<u>v1.02.0</u>	City of Vancouver Embodied Carbon Guidelines	10.4.1.2.(1)

**10.4.1.1 Application**

- 1) This Section applies to new buildings and additions described in Sentence 1.3.3.2.(1) of Division A, except where
  - a) the floor area of a new building or an addition is less than 1,800 m<sup>2</sup>.

**10.4.1.2 Low Carbon Materials and Construction**

- 1) A *building* shall be designed and constructed to achieve-reduce whole-building embodied carbon ~~impacts of not more than double that of a functionally equivalent baseline~~ by at least 10% compared to an acceptable benchmark, as determined in compliance with the City of Vancouver Embodied Carbon Guidelines, or as acceptable to the *Chief Building Official*.