

Breaking down how B.C.'s building code changes affect sustainability

New rules address energy, carbon, climate resilience

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Changes to British Columbia's building code are geared to elevating the sustainability of buildings in the key areas of energy, materials and climate resilience, a sustainability consultant and engineer told Sustainable Biz Canada.

Wendy Macdonald, with Vancouver-based, [RJC Engineers](#), spoke about updates to B.C.'s building code which were implemented last year and others being discussed for implementation in 2024 and 2025.

Changes to the code that took effect in [May 2023 affected energy efficiency targets and the Zero Carbon Step Code](#). From March 2024, [one living space per building must not exceed 26 C](#). The proposed change that may take place as early as spring 2024 would allow for [taller mass timber buildings](#). A [seismic requirements code change that will take place after March 2025](#) addresses embodied carbon.



Wendy Macdonald, a professional engineer and sustainability consultant at Vancouver-based RJC Engineers, has 17 years of experience in LEED consulting. (Courtesy Talk Shop Media)

As engineers, designers and contractors learn of changes to the codes, Macdonald said there will always be a "bit of reticence, a bit of concern with change." But the codes are

now known, so industries can adapt or learn from municipalities that have already adopted the higher-level step codes to have more sustainable buildings, she continued.

Addressing energy and carbon

Macdonald, who has 17 years of experience in LEED consulting, said the changes introduced in 2023 “have big implications to the sustainability of a building during operations.”

From May 1, 2023, the [BC Building Code](#) enforced a 20 per cent improvement in energy efficiency for most new buildings, and the Zero Carbon Step Code provided tools to local governments to lower emissions in new buildings.

The BC Energy Step Code sets provincial alignment on net-zero energy buildings, she said. With the change in May, any authority which did not previously sign on to enforce the BC Energy Step Code now must do so. Macdonald said it does more than require energy use disclosures by mandating a community must meet the energy target.

The Zero Carbon Step Code set voluntary carbon emission targets for the first time, according to Macdonald, which raises questions about how a building is sourcing its energy and if a building has a natural gas boiler.

The two changes are designed to meet commitments in the [CleanBC Roadmap](#) that aims to have all new buildings be zero carbon by 2030 and net-zero energy ready by 2032.

Requiring cool spaces

Coming in March 2024 is a regulation requiring the provision of one living space in each dwelling unit that is designed to not exceed 26 C. This applies to buildings such as townhomes, small apartment buildings and single-family dwellings. Macdonald said it recognizes the need for climate resilience, especially after a [heat wave that killed over 600 people in B.C. in 2021](#).

This requirement can be met with an envelope-first approach to reduce the reliance on mechanical or active heating and cooling to achieve thermal comfort, she said.

A building enclosure can be passively cooled by looking at the windows and insulation, applying less glazing, reducing air leakage and thermal bridging, and considering the direction a building is facing.

For active cooling, a heat pump can be used for air conditioning, Macdonald continued. Beside offering heating and cooling, she said heat pumps are two- to three-times more efficient than other heating and cooling systems, which further reduces a building's climate impact.

Impact on embodied carbon

Also proposed is the permitting of taller mass timber construction – from 12 storeys to a maximum of 18 storeys for residential and office buildings.

Mass timber is a building material regarded as a sustainable choice due to its carbon sequestration properties, and being an alternative to carbon-intensive concrete and steel.

Macdonald noted this mass timber code update addresses embodied carbon, and the building market may encourage more mass timber buildings due to its cost effectiveness and speed of use.

"As mandates and requirements start to show up around limiting the emissions from embodied carbon," she said, "I think the fact that the BC Building Code is allowing more mass timber will help support teams in achieving those targets."

Alterations to the seismic requirements were deferred to March 2025.

The standard for earthquake safety indirectly addresses embodied carbon because generally, more material is required to meet safety needs, generating more embodied

carbon. Macdonald said this is the challenge of meeting seismic requirements and balancing sustainability with safety.

For example, if a building collapses from an earthquake because it is addressing embodied carbon by thinning out its supports, that generates more embodied carbon by necessitating rebuilding, versus constructing it more robustly from the beginning.

“So all these things we can do to keep our buildings usable, loved, safe, that in itself supports sustainability.”

Meeting the changes

While the upcoming changes may induce some uncertainty for engineers, designers and contractors, Macdonald said people can prepare in advance.

Some municipalities have already adopted more ambitious steps than what the BC Building Code lays out, which she said can calm some fears around change.

She recommends companies “call on your trusted allies to help you through these changes,” and consult with experts in envelope-first design and mass timber buildings.