



BRIEFING NOTE FOR INFORMATION

Date: December 21, 2017

Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing

Title: British Columbia Building Code Amendments

Issue: The British Columbia Building Code was amended in April 2017 to add requirements for the Energy Step Code. Additional editorial amendments are needed to improve clarity for building code users.

SUMMARY:

- **Minor amendments to the BC Energy Step Code and Letters of Assurance make editorial corrections and respond to feedback from stakeholders.**
- **This regulation removes a barrier for secondary suites in energy efficient homes, allowing suites to use simple and low cost ventilation systems.**
- **This regulation will also require widows in houses to have the same fall protection features as multi-family residential buildings, reducing the risk of serious injury to children and adults.**

BACKGROUND:

The Energy Step Code is a set of incremental energy-efficiency targets for new buildings. It reduces citizens' energy bills, supports climate action and aligns with the federal government's national target for "Net Zero Energy Ready" buildings in 2030.

In April 2017, the Energy Step Code was adopted as an amendment to the British Columbia Building Code Regulation as a voluntary compliance path for builders.

The attached Minister's Order includes proposed changes to the BC Building Code to address stakeholder feedback.

DISCUSSION:

The Province consulted four stakeholder associations on the clarity of the language used in BC Building Code compliance documents known as Letters of Assurance. The four associations are: the Architectural Institute of British Columbia; the Building Officials' Association of British Columbia; Engineers and Geoscientists British Columbia (formerly the Association of Professional Engineers and Geoscientists of British Columbia); and the Union of BC Municipalities.

Based on the feedback received, minor amendments to the BC Building Code are proposed in the attached Minister's Order, including amendments to Letters of Assurance in Division C and the Energy Step Code.

Although these changes are primarily editorial, accurate and consistent language helps to reduce confusion for code users (including industry, local governments, building officials, and professionals), delays in permit approvals, and associated impacts on construction costs.

The Energy Step Code currently requires builders to install a ducted ventilation system, which is a potential cost barrier to the construction of a secondary suite. A minor amendment is proposed to allow secondary suites to rely on a less complicated and less expensive ventilation system, which is already acceptable for houses and suites in the BC Building Code, although not for the Energy Step Code. This change will ensure that builders do not need to decide between building an energy efficient house or a secondary suite.



The attached Minister's Order also contains one proposed amendment to the BC Building Code that is related to fall protection from windows. The proposed amendment would require single family homes to meet the same fall protection requirements for windows that are applied to all other residential buildings. Under the current code requirements, single family homes are exempt from fall protection requirements for windows due to a lack of evidence of falls and injuries. Evidence is now available and it is clear that opening windows do present a particular risk of fall, injury and death to children, and the rationale to exempt single family homes is no longer supported by the available evidence. The National Building Code of Canada is currently considering a similar change, and the City of Vancouver has already removed this exemption from the Vancouver Building Bylaw.

FINANCIAL IMPLICATIONS:

- None

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December 20, 2017



BRIEFING NOTE FOR INFORMATION

Date: April 6, 2018

Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing

Title: Mid-Rise Wood-Frame Construction

Issue: Industry concern regarding provisions for mid-rise wood-frame construction proposed for the 2018 British Columbia Building Codes.

Briefing: Minister's Council on April 9, 2018

SUMMARY:

- **The Building and Safety Standards Branch (BSSB) is developing the 2018 British Columbia Building, Plumbing, and Fire Codes (2018 BC Codes), which are based substantially on the National Building, Plumbing, and Fire Codes of Canada (2015 NBC).**
- **British Columbia (BC) is a leader in facilitating innovative construction by adopting “made-in-BC” standards for six-storey wood frame construction, resulting in over 140 wood-frame mid-rise buildings across the province since 2009.**
- **The 2015 NBC enables six-storey wood frame construction across Canada, with allowances for a larger floor area and more occupancy types (e.g., commercial buildings), albeit with a building frontage requirement that is opposed by some BC-based stakeholders.**
- **BSSB is evaluating the feasibility of implementing a revised approach to the 2015 NBC to address stakeholder concerns, while maintaining public safety.**

BACKGROUND:

In 2009, BC was the first jurisdiction in Canada to increase residential wood-frame construction from four to six-storeys. The National Research Council of Canada (NRC) followed BC's lead by introducing provisions in the 2015 NBC for similar buildings with broader design permissions and compensatory measures, which permits a larger building area and occupancies other than residential, such as for retail and commercial use.

The 2015 NBC has a requirement that 25 percent of the building's perimeter be located within 15 meters of a street, which is to aid in the evacuation of persons as well as enable fire department access to the building. This presents a challenge for many BC developers, as some development sites are long-infill lots, or mid-block, which is not conducive to orienting a building with 25 percent of its perimeter facing a street.

To mitigate impact to financial investments of projects in the development phase, BSSB proposed two compliance paths whereby a developer could either build to the existing 2012 BC Code provisions with no street frontage requirement, or to the new 2015 NBC provisions for mid-rise wood construction with a 25 percent street frontage requirement. The use of wood is considered an economically advantageous material for constructing buildings up to six storeys, which aligns with the Province's affordable housing goals.

To gather feedback on the proposed dual compliance path, BSSB consulted technical experts in the fall of 2017 and launched a public online survey from December 2017 through February 2018. These consultations confirmed industry's concern regarding the potential economic impact of the proposed 25 percent requirement to future developments.



DISCUSSION:

BSSB's proposed dual compliance path addresses the concern of stranded assets for developments based on the 2012 BC Codes. However, this approach does not enable mixed-use larger building footprints allowed under the 2015 NBC (i.e., 1,500m², instead of 1,200m²), unless the building has at least 25 percent frontage.

The NRC developed the 25 percent frontage requirement in response to input from, and a consensus with the firefighting community nationally. It is noted there is not a long history of wood-frame construction elsewhere in Canada, compared to BC's nine years. Incidentally, Ontario adopted mid-rise wood provisions in their provincial building code with a 10 percent frontage requirement and additional compensatory measures. As part of its ongoing evaluation, BSSB is analyzing the Ontario approach as well as other jurisdictions with similar requirements for mid-rise wood-frame construction in their building codes.

In the targeted expert review last fall, 40 percent supported the proposal, 27 percent supported it with changes, and 33 percent were opposed; the latter largely from the development community. In the public review that ended in February 2018, support for a dual compliance path was much higher (72 percent), but the wood industry and the development community continued to be opposed, primarily due to the 25 percent frontage requirement. BSSB originally proposed to limit the effective period of the mid-rise provisions in the 2012 BC Codes; however, due to expert feedback the time limit was removed for the public review.

BSSB is in regular contact with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Forestry Innovation Investment (FII) Ltd. (Ministry of Jobs, Trade and Technology), the Canadian Wood Council, and WoodWorks!BC to inform these agencies of the 2018 BC Code development process.

FII has provided BSSB with \$50,000 to research "made-in-BC" provisions that would enable the expanded building footprint and occupancy types in the 2015 NBC, while relaxing or eliminating the 25 percent frontage requirement. This research was not available in time for the public review, and as such, the findings have not been released. The proposed options, if viable, will be based on best practices across North America and internationally, evidence from analysis of construction fires, design practices and firefighting capacity, and a critical review by staff with a lens of upholding public safety and fire protection, particularly during construction.

If the FII funded research identifies an acceptable approach to resolving barriers associated with the 25 percent frontage requirement, a revised regulatory approach will be included in the 2018 BC Codes. BSSB will undertake targeted consultation with key stakeholders to confirm technical accuracy and ensure alignment with achieving affordable, safe, and functional housing in British Columbia.

BSSB intends to submit a Minister's Regulation to adopt the next edition of the BC Codes in mid-June 2018, with an effective date of December 2018.

FINANCIAL IMPLICATIONS:

- None

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DATE APPROVED:

Roger Lam OBO
March 23, 2018

March 27, 2018



BRIEFING NOTE FOR INFORMATION

Date: June 10, 2018
Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing
Title: Mid-Rise Combustible Construction in the British Columbia Building Code
Issue: Proposed BC variation from the National Building Code requirement for 25 percent street frontage for mid-rise wood buildings.

SUMMARY:

- **The 2018 British Columbia Building Code will include new mid-rise combustible construction requirements from the model 2015 National Building Code and retain some of British Columbia's higher fire-resistance requirements.**
- **The Building and Safety Standards Branch worked with industry stakeholders to develop a solution to replace the National Building Code requirement that 25 percent of the building's perimeter face a street, while maintaining an acceptable level of safety and addressing industry concerns.**
- **The Ministry is proposing to publish the new mid-rise combustible construction British Columbia Building Code requirements in July 2018 with an effective date in December 2018.**

BACKGROUND:

The 2015 National Building Code (National Code) introduced provisions for mid-rise combustible construction with greater design permissions, balanced with greater fire safety measures. The Building and Safety Standards Branch (BSSB) evaluated the National Code provisions and have included them in the next edition of the British Columbia Building Code (BC Code). However, the new National Code requirement that 25 percent of the building's perimeter face a street presented economic challenges for British Columbia (BC) developers. Building lots with less than 25 percent street frontage would no longer be economically viable, should the BC Code adopt this requirement.

BSSB staff developed a code change that provided an alternative to the 25 percent requirement and invited targeted stakeholders and the public to review and comment on the proposed change between November 2017 and February 2018. Eighty-five percent of respondents supported the proposed change or supported with changes. However, many respondents indicated that the 25 percent requirement was too restrictive.

DISCUSSION:

Since 2009, BC's provisions for mid-rise combustible construction have achieved an acceptable level of performance. However, the 2015 National Code's greater design permissions are generally favoured by industry and allow greater use of wood.

Forestry Innovation Investment Ltd. supported BSSB to conduct additional research and technical analysis on fire safety and wood construction. This work helped to inform the proposed solution: adopt the 2015 National Code provisions for mid-rise combustible buildings with a variation to require 10 percent street frontage and exterior cladding with increased fire resistance.

The participants in the targeted review were invited again, between May 31, 2018 and June 11, 2018, to comment on the revised solution. All respondents, including industry representatives that were concerned with the impacts of the 25 percent requirement, have indicated their support of the revised 10 percent



solution. This solution also aligns with concurrent national code development of an additional option to the 25 percent requirement.

BC continues to participate in the national code development system to promote the use of wood in mid-rise construction.

Industry representatives have informed BSSB that the solution proposed will not affect the economic viability of lots that have been purchased and/or slated for development.

FINANCIAL IMPLICATIONS:

None

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DATE APPROVED:

July 9, 2018

July 10, 2018



BRIEFING NOTE FOR INFORMATION

Date: July 10, 2018
Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing
Title: 2018 British Columbia Building and Plumbing Codes
Issue: Minister's Order to Adopt the 2018 British Columbia Building and Plumbing Codes

SUMMARY:

- **The British Columbia Building and Plumbing Codes apply to building construction and renovation throughout British Columbia, except for some federal lands and the City of Vancouver.**
- **The Ministry plans to publish the next edition of the British Columbia Building and Plumbing Codes in July 2018 with an effective date in December 2018.**
- **The Ministry will collaborate with partners to develop education and training materials to support implementation of the new codes.**
- **The 2018 British Columbia Building and Plumbing Codes are based on the 2015 National Codes with some changes specific to BC, most notably changes to accessibility and mid-rise wood construction (refer to attached Briefing Notes).**

BACKGROUND:

The British Columbia Building, Plumbing, and Fire Codes (BC Codes) are based substantially on the model National Building, Plumbing and Fire Codes (National Codes). The National Codes are updated approximately every five years and British Columbia (BC) adopts most of the national requirements into the subsequent editions of the BC Codes.

The Building and Plumbing Codes are enacted under the *Building Act*. The Fire Code is enacted under the *Fire Services Act*. A briefing note and regulation to enact the BC Fire Code will be forwarded separately.

The National Codes are developed through a consensus based committee process with representation from all provinces, related industries, and the public. Changes made to the National Codes are developed by the committees and then subject to public review. Code changes are evaluated based on adequate justification, technical merit, as well as cost and enforcement implications.

In April 2016, the Building and Safety Standards Branch (BSSB) began evaluating the 2015 National Code language for clarity, intent, technical justification, and potential cost enforcement implications. The Branch evaluated other potential impacts to the industry including; constructability, required education, availability of products, technology, and skills, as well as the overall impact on the health and safety code objectives.

In recognition of the rigorous review process by the National Code committees and the Province's existing commitment to harmonize with the model National Codes, most of the changes to the National Codes are recommended for adoption into the BC Codes.

The 2018 BC Codes will be based on the 2015 National Codes with some changes specific to BC, which reflect the unique needs of BC's geography, climate, and construction sector. These changes are summarized in Appendix A. In addition, two of the more complex topics; accessibility and mid-rise wood-frame requirements are summarized in the briefing material attached.



DISCUSSION:

The BSSB conducted a two-phased consultation to seek feedback on the priority code changes specific to BC. Phase 1 (November 2017 - February 2018) invited targeted stakeholders to provide expert feedback on proposed changes related to accessibility, mid-rise wood, energy efficiency, and fenestration. Phase 2 (December 2017 – February 2018) invited the public to review and provide comments, through an online survey, on 19 priority code changes including: accessibility, energy efficiency, mid-rise wood, stair safety, radon, and asbestos.

The public review revealed that 90 percent of respondents support most of the proposed code changes. Some concerns were raised with respect to the balance between safety and cost, clarity of code requirements, and consistent code enforcement. Specific suggestions for improved clarity in code language were incorporated where appropriate.

A proposal to adopt the National Code requirements to regulate outdoor air quality at building sites was rejected due to cost and enforcement concerns raised in the public review. BSSB will continue to work with industry and the National Code committees to develop suitable requirements.

Although 41 percent of stakeholders do not support BC's proposal to reject the National Code permission for spiral stairs, it is not recommended to adopt the national permission due to safety concerns. Research shows that the short and inconsistent sizes of walking surfaces are hazardous and lead to increased trips, falls, and injury. In addition, spiral stairs are difficult for persons with visual impairments, so excluding this permission supports the Province's accessibility targets.

BC Housing, in collaboration with BSSB, the Building Officials' Association of BC, the Architectural Institute of BC, Engineers and Geoscientists BC, and other stakeholders, is developing code education and training materials.

A Minister's Order to adopt the 2018 BC Codes has been prepared and is included in this package for approval. Queen's Printer is working to make electronic and printed versions of the BC Codes available as soon as possible.

The BC Codes will be in effect December 10, 2018, and will apply to building permits that are applied for on or after that date. Buildings currently under construction are permitted to conform to the 2012 BC Codes, to avoid the financial implications of a change of regulation mid-construction. The effective date provides industry with some time to adjust their practices and update training materials prior to implementation of the new BC Codes. This implementation approach is consistent with previous editions of the BC Codes.

FINANCIAL IMPLICATIONS:

None.

Attachments: (3)

1. Summary of Significant Code Changes Presented for Public Review
2. Accessibility in the British Columbia Building Code (IBN #237720)
3. Mid-Rise Combustible Construction in the British Columbia Building Code (IBN #237722)

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July 10, 2018



Attachment 1

Summary of Significant Code Changes Presented for Public Review British Columbia Building and Plumbing Code

British Columbia Building Code	
Topic	Accessibility
Recommendation	Transition to the National Building Code (NBC) approach and retain the British Columbia (BC) provisions that offer the greatest level of accessibility.
Rationale	The proposed changes will require a higher level of accessibility in buildings, and will align with the requirements of the 2015 NBC and other Canadian jurisdictions.
Stakeholder Feedback	90 percent support or support with changes 10 percent do not support
Topic	Asbestos
Recommendation	Remove all direct references to asbestos containing products from the BC Building Code because of the potential risk to the health and safety of building occupants.
Rationale	The BC Building Code currently contains several direct references to asbestos containing materials. Due to health concerns related to asbestos containing materials, it is proposed that all direct permissions for these be removed from the BC Building Code. Airborne particulate asbestos from handling or disturbing asbestos-containing materials can cause adverse health effects.
Stakeholder Feedback	100 percent support or support with changes
Topic	Energy Efficiency Standards
Recommendation	Reference the 2016 edition of ASHRAE 90.1 and the 2015 National Energy Code for Buildings (NECB).
Rationale	BC is committed to improving energy performance in buildings by aligning with the federal government's goal of requiring net-zero energy ready buildings in the NBC by 2030. Increasing the energy efficiency of buildings in the 2018 BC Building Code by updating the code to reference newer editions of ASHRAE 90.1 and the NECB is an integral step to meeting this goal and to preparing BC's building industry for the adoption of the NBC 2030. These updated standards are also consistent with energy efficiency requirements in other Canadian jurisdictions.
Stakeholder Feedback	87 percent support or support with changes 13 percent do not support
Topic	Exit Signs
Recommendation	Retain the 2012 BC Building Code referenced standards for exit signs.
Rationale	Exit signs are required to conform to the above noted standards. Though the 2015 NBC has changed to reference the 2011 version of both these standards, the change does not reflect the deletion of some relevant directional symbols from



	ISO 3864-1.
Stakeholder Feedback	97 percent support or support with changes 3 percent do not support
British Columbia Building Code	
Topic	Factory-Constructed Buildings
Recommendation	Re-insert the portion of the appendix note related to factory-constructed buildings conforming to CSA A277 "Procedure for Factory Certification of Buildings" as amended.
Rationale	To recognize the benefits of the CSA A277 factory certification procedure and provide guidance on building code enforcement related to factory-constructed buildings.
Stakeholder Feedback	97 percent support or support with changes 3 percent do not support
Topic	Fire Protection Between Adjacent Buildings
Recommendation	Clarify the requirements for fire protection between buildings.
Rationale	The proposed clarification aligns the language and intent with Part 3 where, if a building is divided into fire compartments, it is permitted but not mandatory to calculate the area of the exposing building face for each fire compartment. The proposed change aligns the requirements of Part 9 with those of Part 3.
Stakeholder Feedback	98 percent support or support with changes 3 percent do not support
Topic	Heritage Buildings
Recommendation	Update the table of alternate compliance methods for heritage buildings with references current to the next BC Building Code and some editorial corrections. The table has been renamed to link to the correct code requirement for heritage buildings.
Rationale	The table of alternate compliance methods for heritage buildings must be updated with the correct cross references each time a new version of the NBC is adopted as the base for the BC Building Code.
Stakeholder Feedback	95 percent support or support with changes 5 do not support
Topic	Mid-Rise Combustible Construction
Recommendation	Adopt the 2015 NBC provision for mid-rise combustible buildings with a variation to require a single compliance path, whereby 100 percent of the exterior cladding has increased fire resistance and 10 percent of the building's perimeter be located within 15 m of a street or streets.
Rationale	This requirement combines NBC's expanded design permissions to allow increased use of wood, retains BC's higher fire-resistance requirement for cladding, and maintains an acceptable level of safety. This recommended change directly addresses concerns raised by the design community and wood industry stakeholders.
Stakeholder Feedback	100 percent targeted stakeholders support



Topic	Radon
Recommendation	Change the application of radon protection requirements to defer to the data established by the authority having jurisdiction and, in the absence of such data, to a revised table in the BC Building Code.
Rationale	Evidence of indoor radon levels exceeding Health Canada guidelines has been found in many areas that are currently exempt from providing a means to address high radon concentrations in the future (e.g., a rough-in for a subfloor depressurization system). Building codes and revisions to building codes are challenged to keep pace with the increasingly available radon data known to local authorities.
Stakeholder Feedback	91 percent support or support with changes 9 percent do not support
British Columbia Building Code	
Topic	Stairs – Dimensions of Tapered Treads
Recommendation	Adopt most of the NBC requirements and code structure for stairs, but do not adopt the permissions in the 2015 NBC for dimensions of tapered treads.
Rationale	<p>Research shows, in general terms, rectangular tread runs smaller than an average foot or shoe (less than about 200 mm or 10”) are hazardous and lead to increased trips, falls, and injuries. Changes in stair rise and/or run are also proven to be hazardous, unless a landing is provided in between the changes in height.</p> <p>A stair that is safer and easier to navigate not only benefits all users, but is of greater importance to users with physical or visual limitations. The changes to the 2015 NBC allow short tread runs in spiral stairs, mixed flights, and changes in stair run within a flight, which may reduce the level of safety for users.</p> <p>Spiral stairs, which are different from winders, have never been permitted in the BC Bode and this decision will maintain status quo in the industry. Spiral stairs are also inconsistent with the increased focus on greater accessibility in buildings.</p>
Stakeholder Feedback	88 percent support or support with changes 12 percent do not support
Topic	Stairs – Handrails in Curved Stairs
Recommendation	Delete the redundant requirement for two handrails on a curved stair.
Rationale	The requirement for two handrails on a curved stair is redundant and conflicts with Part 9 requirements for dwelling units.
Stakeholder Feedback	95 percent support or support with changes 5 percent do not support
Topic	Stairs – No Spiral Stairs
Recommendation	Do not adopt the permissions in the 2015 NBC for spiral stairs and mixed flights containing both curved and straight stairs within a dwelling unit.
Rationale	Research shows, in general terms, rectangular tread runs that are smaller than an average foot or shoe (less than about 200 mm or 10”) are hazardous and lead to increased trips, falls, and injuries. Changes in stair rise and/or run are also proven to be hazardous, unless a landing is provided between the changes in height.



	A stair that is safer and easier to navigate not only benefits all users, but is of greater importance to users with physical or sensory limitations. The changes to the 2015 NBC allow short tread runs and changes in stair run within a flight by allowing spiral stairs and mixed flights, which may reduce the level of safety for users.
Stakeholder Feedback	59 percent support or support with changes 41 percent do not support
Topic	Windows, Doors and Skylights
Recommendation	<ol style="list-style-type: none"> 1. Permit windows, doors, and skylights tested to either the 2008 or 2011 edition of AAMA/WDMA/CSA 101/I.S.2/A440, "NAFS –North American Fenestration Standard/Specification for Windows, Doors, and Skylights" (NAFS). 2. Permit either the 2009 or 2017 version of A440S1, "Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS – North American Fenestration Standard/Specification for Windows, Doors and Skylights" (Canadian Supplement).
Rationale	The proposed changes: allow industry time to sell and install existing products that have been tested to NAFS 2008 and the Canadian Supplement 2009; establish an acceptable and consensus-based level of health and safety; and harmonize referenced standards for windows, doors and skylights with the 2015 NBC. Some adjustments to original public review proposals were made due to comments received.
Stakeholder Feedback	99 percent support 1 percent do not support

British Columbia Plumbing Code

Topic	Asbestos in the Plumbing Code
Recommendation	Remove all direct permissions in the BC Plumbing Code to asbestos containing products.
Rationale	Airborne particulate asbestos from handling or disturbing asbestos-containing materials can cause adverse health effects.
Stakeholder Feedback	95 percent support or support with changes 5 percent do not support
Topic	Plumbing Fixtures
Recommendation	Relocate plumbing fixture efficiency requirements from the BC Building Code to the BC Plumbing Code. Some new plumbing fixture efficiency requirements are adopted from the 2015 National Plumbing Code of Canada.
Rationale	Plumbing fixture efficiency requirements are proposed to be adopted from the model National Plumbing Code.
Stakeholder Feedback	97 percent support or support with changes 3 percent do not support



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CLIFF #237720
(X-REF. #232926)

Attachment #2: IBN #237720 – Accessibility in the British Columbia Building Code

BRIEFING NOTE FOR INFORMATION

Date: July 10, 2018
Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing
Title: Accessibility in the British Columbia Building Code
Issue: The 2018 British Columbia Building Code includes new requirements for accessibility based on the model 2015 National Building Code of Canada.

SUMMARY:

- The British Columbia Building Code establishes the minimum accessibility requirements for buildings in British Columbia.
- The Ministry is proposing to publish the new accessibility requirements in the Building Code in July 2018 with an effective date in December 2018.
- The proposed changes support Building a Better BC for People with Disabilities and the Province's 10-year action plan. Ministry staff continue to collaborate with partners to promote greater accessibility for buildings in British Columbia.

BACKGROUND:

For the past 40 years, accessibility requirements in the British Columbia Building Code (BC Code) have surpassed national and other provincial building code requirements. The requirements in the National Building Code (National Code) were substantially updated in 2015 by incorporating existing requirements from other Canadian jurisdictions. Basing the next edition of the BC Code on the National Code requirements increases accessibility for persons with disabilities, enhances harmonization between the two codes, and supports British Columbia's (BC's) ability to integrate accessibility provisions into subsequent editions of the BC Code.

For the 2018 BC Code, the Building and Safety Standards Branch (BSSB) engaged a nationally recognized consultant to prepare a report with recommendations to ensure accessibility in the BC Code continues to surpass the National Code. The recommended changes for the 2018 BC Code improve on the requirements in the 2015 National Code, providing improved accessibility in small retail shops, and common areas of condominium and apartment buildings, as well as other changes.

The accessibility requirements of the 2018 BC Code will exceed the current 2012 BC Code and the 2015 National Code. It will also permit greater flexibility in design choices by offering the Canadian Standards Association's "Accessible Design for the Built Environment" standard as an optional compliance path. Some examples of BC's unique requirements that will be retained include: requiring elevators in more buildings, requiring more universal accessible washrooms, and construction requirements for adaptable dwelling units.

DISCUSSION:

In February 2018, BSSB invited targeted stakeholders and the public to review and provide comments on the proposed accessibility requirements. Ninety percent of respondents either supported the proposals or supported with changes. The BSSB reviewed the public feedback and have incorporated these changes, including specific suggestions for more inclusive language, into the 2018 BC Code.

Several respondents suggested the proposed changes do not adequately increase accessibility. It should be noted that these code changes are the first in a series of changes anticipated as government works towards



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the commitments of Building a Better BC for People with Disabilities, which includes developing the most accessible building code in Canada by 2024.

In addition to the general education efforts for the BC Code, a new edition of the Building Access Handbook will be created to supplement the BC Code and provide explanatory text and illustrations to assist code users to understand the complexity of accessibility requirements.

The BSSB plans to convene an Accessibility Working Group, comprised of advocates, industry groups, and government ministries, to advise the government of future proposed accessibility enhancements to subsequent editions of the BC Code.

FINANCIAL IMPLICATIONS:

None

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DATE APPROVED:

July 9, 2018

July 10, 2018



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Attachment #3: IBN #237722 – Mid-Rise Combustible Construction in the BC Building Code

CLIFF #237722
(X-REF. #234883)



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BRIEFING NOTE FOR INFORMATION

Date: June 10, 2018
Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing
Title: Mid-Rise Combustible Construction in the British Columbia Building Code
Issue: Proposed BC variation from the National Building Code requirement for 25 percent street frontage for mid-rise wood buildings.

SUMMARY:

- The 2018 British Columbia Building Code will include new mid-rise combustible construction requirements from the model 2015 National Building Code and retain some of British Columbia's higher fire-resistance requirements.
- The Building and Safety Standards Branch worked with industry stakeholders to develop a solution to replace the National Building Code requirement that 25 percent of the building's perimeter face a street, while maintaining an acceptable level of safety and addressing industry concerns.
- The Ministry is proposing to publish the new mid-rise combustible construction British Columbia Building Code requirements in July 2018 with an effective date in December 2018.

BACKGROUND:

The 2015 National Building Code (National Code) introduced provisions for mid-rise combustible construction with greater design permissions, balanced with greater fire safety measures. The Building and Safety Standards Branch (BSSB) evaluated the National Code provisions and have included them in the next edition of the British Columbia Building Code (BC Code). However, the new National Code requirement that 25 percent of the building's perimeter face a street presented economic challenges for British Columbia (BC) developers. Building lots with less than 25 percent street frontage would no longer be economically viable, should the BC Code adopt this requirement.

BSSB staff developed a code change that provided an alternative to the 25 percent requirement and invited targeted stakeholders and the public to review and comment on the proposed change between November 2017 and February 2018. Eighty-five percent of respondents supported the proposed change or supported with changes. However, many respondents indicated that the 25 percent requirement was too restrictive.

DISCUSSION:

Since 2009, BC's provisions for mid-rise combustible construction have achieved an acceptable level of performance. However, the 2015 National Code's greater design permissions are generally favoured by industry and allow greater use of wood.

Forestry Innovation Investment Ltd. supported BSSB to conduct additional research and technical analysis on fire safety and wood construction. This work helped to inform the proposed solution: adopt the 2015 National Code provisions for mid-rise combustible buildings with a variation to require 10 percent street frontage and exterior cladding with increased fire resistance.

The participants in the targeted review were invited again, between May 31, 2018 and June 11, 2018, to comment on the revised solution. All respondents, including industry representatives that were concerned with the impacts of the 25 percent requirement, have indicated their support of the revised 10 percent



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solution. This solution also aligns with concurrent national code development of an additional option to the 25 percent requirement.

BC continues to participate in the national code development system to promote the use of wood in mid-rise construction.

Industry representatives have informed BSSB that the solution proposed will not affect the economic viability of lots that have been purchased and/or slated for development.

FINANCIAL IMPLICATIONS:

None

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BRIEFING NOTE FOR INFORMATION

Date: September 4, 2018
Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing
Title: Accessibility in the British Columbia Building Code
Issue: The 2018 British Columbia Building Code includes new requirements for accessibility.

SUMMARY:

- **The British Columbia Building Code (BC Building Code) establishes the minimum accessibility requirements for the construction of buildings in British Columbia.**
- **The 2018 edition of the BC Building Code was adopted July 16, 2018 with an effective date of December 10, 2018.**
- **The 2018 BC Building Code requires a greater level of accessibility than the previous edition. The changes support both Building a Better BC for People with Disabilities and the Province's 10-year action plan.**
- **Ministry staff continue to collaborate with partners to promote greater accessibility for buildings in British Columbia.**

BACKGROUND:

For the past 40 years, accessibility requirements in the BC Building Code have surpassed national and other provincial building code requirements. The requirements in the National Building Code (National Code) were substantially updated in 2015 by incorporating existing requirements from other Canadian jurisdictions. Basing the 2018 edition of the BC Building Code on the National Code requirements increases accessibility for persons with disabilities, enhances harmonization between the two codes, and supports British Columbia's (BC's) ability to integrate improved accessibility provisions into subsequent editions of the BC Building Code.

Most of the accessibility requirements in the 2018 BC Building Code are adopted from the 2015 National Code. The National Code is developed by committee, with input from the provinces and territories, and is vetted through nation-wide public reviews. BC typically adopts the National Code content unchanged, unless BC-specific priorities require a unique made-in-BC solution.

For the 2018 BC Building Code, the Building and Safety Standards Branch (BSSB) engaged a nationally recognized consultant with significant BC-based experience to prepare a report with recommendations to ensure BC's unique variations continue to surpass the National Code. The changes in the 2018 BC Building Code improve on the requirements of the 2012 BC Building Code as well as the 2015 National Code, providing improved accessibility in small retail shops, and common areas of condominium and apartment buildings, among other changes.

In February 2018, BSSB invited the public to comment on BC's unique proposed accessibility changes. During that same period, BSSB invited targeted stakeholders to review and provide comments on the proposed accessibility changes. The targeted stakeholders that were invited included; Disability Alliance BC; Social Planning and Research Council (SPARC); CNIB BC Yukon Division Advisory Board; Rick Hansen Foundation; Greater Vancouver Association of the Deaf; BC Housing; Ministry of Health; and the SDPR Accessibility Secretariat. Public and targeted review comments were received both directly and anonymously.



DISCUSSION:

In February 2018, BSSB invited targeted stakeholders and the public to review and provide comments on the proposed accessibility requirements. As outlined in Attachment #1, ninety percent of respondents either supported the proposals or supported with changes. The BSSB reviewed the public feedback and have incorporated these changes, including specific suggestions for more inclusive language, into the 2018 BC Building Code.

Some respondents suggested the proposed changes do not adequately increase accessibility. It should be noted that these code changes are the first in a series of changes anticipated as government works towards the commitments of Building a Better BC for People with Disabilities, which includes developing the most accessible building code in Canada by 2024.

In addition to the general education efforts for the BC Building Code, a new edition of the Building Access Handbook will be created to supplement the 2018 BC Building Code and provide explanatory text and illustrations to assist code users to understand the complexity of accessibility requirements. The BSSB has published bulletin B18-05 Accessibility in the 2018 British Columbia Building Code which describes what is new since the 2012 edition.

The BSSB plans to convene an Accessibility Working Group, comprised of advocates, industry groups, and government ministries, to advise the government of future proposed accessibility enhancements to subsequent editions of the BC Building Code.

Information Briefing Note 237720 that accompanied the briefing package for the adoption of the 2018 BC Building Code is attached.

FINANCIAL IMPLICATIONS:

s.13,s.17

Attachments: 2

1. Summary of Accessibility Code Changes Presented for Public Review
2. Briefing Note for Information 237720, Accessibility in the British Columbia Building Code

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APPROVED BY:

Greg Steves, Assistant Deputy Minister
Office of Housing and Construction Standards

Jacqueline Dawes, Deputy Minister

DATE APPROVED:

September 4, 2018

September 4, 2018



Attachment 1

Summary of Significant Code Changes Presented for Public Review

British Columbia Building Code	
Topic	Accessibility
Recommendation	Transition to the National Building Code (NBC) approach and retain the British Columbia (BC) provisions that offer the greatest level of accessibility.
Rationale	The proposed changes will require a higher level of accessibility in buildings, and will align with the requirements of the 2015 NBC and other Canadian jurisdictions.
Stakeholder Feedback	90 percent support or support with changes 10 percent do not support



Attachment 1. Briefing Note for Information 237720, Accessibility in the British Columbia Building Code



BRIEFING NOTE FOR INFORMATION

Date: July 10, 2018
Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing
Title: Accessibility in the British Columbia Building Code
Issue: The 2018 British Columbia Building Code includes new requirements for accessibility based on the model 2015 National Building Code of Canada.

SUMMARY:

- **The British Columbia Building Code establishes the minimum accessibility requirements for buildings in British Columbia.**
- **The Ministry is proposing to publish the new accessibility requirements in the Building Code in July 2018 with an effective date in December 2018.**
- **The proposed changes support Building a Better BC for People with Disabilities and the Province's 10-year action plan. Ministry staff continue to collaborate with partners to promote greater accessibility for buildings in British Columbia.**

BACKGROUND:

For the past 40 years, accessibility requirements in the British Columbia Building Code (BC Code) have surpassed national and other provincial building code requirements. The requirements in the National Building Code (National Code) were substantially updated in 2015 by incorporating existing requirements from other Canadian jurisdictions. Basing the next edition of the BC Code on the National Code requirements increases accessibility for persons with disabilities, enhances harmonization between the two codes, and supports British Columbia's (BC's) ability to integrate accessibility provisions into subsequent editions of the BC Code.

For the 2018 BC Code, the Building and Safety Standards Branch (BSSB) engaged a nationally recognized consultant to prepare a report with recommendations to ensure accessibility in the BC Code continues to surpass the National Code. The recommended changes for the 2018 BC Code improve on the requirements in the 2015 National Code, providing improved accessibility in small retail shops, and common areas of condominium and apartment buildings, as well as other changes.

The accessibility requirements of the 2018 BC Code will exceed the current 2012 BC Code and the 2015 National Code. It will also permit greater flexibility in design choices by offering the Canadian Standards Association's "Accessible Design for the Built Environment" standard as an optional compliance path. Some examples of BC's unique requirements that will be retained include: requiring elevators in more buildings, requiring more universal accessible washrooms, and construction requirements for adaptable dwelling units.

DISCUSSION:

In February 2018, BSSB invited targeted stakeholders and the public to review and provide comments on the proposed accessibility requirements. Ninety percent of respondents either supported the proposals or supported with changes. The BSSB reviewed the public feedback and have incorporated these changes, including specific suggestions for more inclusive language, into the 2018 BC Code.

Several respondents suggested the proposed changes do not adequately increase accessibility. It should be noted that these code changes are the first in a series of changes anticipated as government works towards



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CLIFF #237720
(X-REF. #232926)

the commitments of Building a Better BC for People with Disabilities, which includes developing the most accessible building code in Canada by 2024.

In addition to the general education efforts for the BC Code, a new edition of the Building Access Handbook will be created to supplement the BC Code and provide explanatory text and illustrations to assist code users to understand the complexity of accessibility requirements.

The BSSB plans to convene an Accessibility Working Group, comprised of advocates, industry groups, and government ministries, to advise the government of future proposed accessibility enhancements to subsequent editions of the BC Code.

FINANCIAL IMPLICATIONS:

None

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Greg Steves, Assistant Deputy Minister
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Jacqueline Dawes, Deputy Minister

DATE APPROVED:

July 9, 2018

July 10, 2018



BRIEFING NOTE FOR INFORMATION

Date: November 9, 2018
Prepared For: Honourable Selina Robinson, Minister of Municipal Affairs and Housing
Title: 2018 BC Building Code

SUMMARY:

- **The Ministry published the 2018 edition of the British Columbia Building and Plumbing Codes in July 2018, with an effective date December 10, 2018.**
- **Proposed amendments expand the application of the BC Energy Step Code for large buildings to all regions of the province and to update current technical requirements to address concerns raised by stakeholders.**
- **Minor amendments are needed to correct two typographical errors that misidentify the communities of Qualicum Beach and Jordan River as having a risk of radon gas.**
- **The Building and Safety Standards Branch will monitor new radon data as it becomes available and work with stakeholders to further develop BC Building Code requirements.**

BACKGROUND:

Energy Step Code

The BC Energy Step Code became part of the British Columbia Building Code (BCBC) in April 2017 as a voluntary energy-efficiency standard for small residential buildings across the province, and large (taller than three storey) residential, office and retail buildings in southwest British Columbia.

Local government and industry stakeholders have asked the Province to make the Energy Step Code for large buildings available in all regions of British Columbia, and to amend some of the current technical requirements of the Energy Step Code to adjust energy performance requirements and ensure more cost-effective outcomes in the coldest regions of the Province and for small houses.

Radon

Radon is an invisible, odorless, and tasteless radioactive gas that results from uranium breaking down in soil and rock. Radon is a health risk when it accumulates in elevated levels within enclosed spaces. It is only able to be detected after a home or building is constructed, occupied, and tested. Health Canada estimates 3,200 lung cancer deaths occur each year due to radon exposure in houses and buildings.¹

Where radon is known to be an issue, the 2018 BC Building Code requires homes to have an extended rough-in installed below the concrete at the time of construction. The rough-in includes a pipe that extends from below the concrete basement floor and through the roof of the building, allowing radon to be exhausted outdoors rather than accumulate in the home. The rough-in can be activated by adding a fan to the pipe after testing has been done to determine if activation is needed.

The proposed amendments to the Building Code will correct two typographical errors that have mistakenly identified Qualicum Beach and Jordan River as communities where radon is known to be an issue. The

¹ <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radon-what-you-need-to-know.html>



Ministry of Municipal Affairs and Housing is not aware of data which would support identifying these communities as having elevated radon levels.

A plain-language summary of the Energy Step Code amendments is included as Appendix 1, and a Minister's Order to amend the BC Building Code is included as Appendix 2.

DISCUSSION:

Energy Step Code

The Building and Safety Standards Branch (BSSSB) worked with the Energy Step Code Council to develop the amendments to the Energy Step Code through a consensus-based consultation process.

The amendments ensure improved building energy performance for the steps most likely to be adopted by local governments in bylaw (Steps 1, 2, and 3), while addressing affordability concerns for small homes and colder regions of the Province. Research commissioned by BC Housing indicates that in most cases the amended requirements up to Step 3 can be achieved for less than two percent incremental construction cost (a much smaller increment if land costs are included).

Ministry staff held five webinars over the summer with stakeholders from across the province to review the amendments and gather feedback. Stakeholders were generally supportive of the amendments, although some raised concerns about affordability where requirements have been increased in southwest British Columbia to reflect best practices. BSSB shared information about anticipated costs and energy savings of the proposed amendments, based on the BC Housing research analyzing the proposed amendments.²

In September 2018, the proposed set of amendments received the unanimous support of the Energy Step Code Council, and the proposed amendments have been shared on the Energy Step Code Council website. The amendments will be effective December 10, 2018 with the 2018 BCBC and will apply to building permits applied for on or after that date only in those communities that have adopted the Energy Step Code; see Appendix 3 (middle and right columns).

BC Housing has prepared comprehensive training based on the amendments, including an illustrated guide intended for homebuilders.

Radon

The radon requirements in the 2018 BC Building Code defer to the radon data established by the authority having jurisdiction (local government or regional district) and, in the absence of such data, to a revised table in the Building Code. Qualicum Beach and Jordan River were mistakenly identified as areas requiring a radon rough-in, when in fact a rough-in is not required. If left uncorrected, this typographical error in the 2018 BC Building Code may cause confusion in these communities and lead to the installation of radon rough-ins where they are not necessary.

Although these locations were mistakenly included, this has highlighted the lack of available data on radon risk in different areas of BC. As more data across the province becomes available, BSSB will evaluate the BC Building Code requirements related to radon rough-ins. This evaluation will consider requiring radon rough-ins in all areas of the province, as well as requirements for active radon mitigation systems, and harmonization with the National Building Code.

² http://energystepcode.ca/app/uploads/sites/257/2018/09/2018-Metrics_Research_Report_Update_2018-09-18.pdf



Ministry of
Municipal Affairs
and Housing

Ministry staff will continue to work with the Ministry of Health, the BC Lung Association, and the National Research Council to ensure that the BC Building Code provides adequate protection against radon, without creating unnecessary costs for new homes.

FINANCIAL IMPLICATIONS:

- None

Attachments: (4)

1. BCBC – 2018 Energy Amendments Summary
2. Minister's Order Amending the British Columbia Building Code
3. Energy Step Code Local Government Adoption Table
4. Ministerial Order Distribution Form

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November 9, 2018

November 9, 2018



Proposed 2018 Metrics Update Summary

Introduction

This document describes proposed BC Energy Step Code metrics changes as they apply to buildings covered under both Part 9 and Part 3 of the BC Building Code. The former involve changes to metrics, the latter involve increasing coverage. A full costing analysis of the proposed changes is available in an updated [2018 Metrics Research Report](#) from BC Housing. The proposed changes have been endorsed by the Energy Step Code Council.

Changes Applicable to Part 9 Buildings

The 2018 Metrics Update proposes five minor improvements to the BC Energy Step Code relevant to houses and small buildings three storeys or less that have a building area no more than 600 square metres. This category includes single-detached homes, duplexes, townhomes, small apartment buildings, and small stores, offices, and industrial shops.

1. Align Actual Performance Outcomes with Expectations: Update TEDI Targets

Issue

Thermal Energy Demand Intensity, or TEDI, is a measure of the amount of annual heating energy needed to maintain a building's stable interior temperature, taking into account heat loss through the envelope and so-called passive gains such as the warmth generated by sunlight, body heat, and appliances and lighting. At the moment, cold-climate builders may find it difficult, if not impossible, to meet the TEDI targets for the Upper Steps, Steps 4 and 5 for houses. Meanwhile, unless adjusted, certain large single-detached homes in the province's southern regions could potentially consume more energy than those built to the minimum requirements of the BC Building Code.

Recommendation

Adjust the TEDI targets to ensure that all regions in British Columbia have a realistic and attainable roadmap to a net-zero-energy-ready future.

Impact

These changes will lead to more reasonable costs to reach the Upper Steps in the north, and a modest increase in assumed compliance costs for Lower Steps in the province's milder regions. The 2017 Metrics Research Report identified that many homes could achieve Steps 2 or 3 with no cost premium. This was due to the TEDI targets being achievable without any improvement in construction. The recommended changes will ensure that Step 2 and 3 buildings achieve improvements over the BC Building Code, which will now involve modest costs in line with Step 2 and 3 in other regions. The cost premiums needed to deliver on the requirements of the Steps 1 through 3 are consistent with the general findings of the [2017 Metrics Research Report](#).

2. Close a Potential Loophole: Remove PTL as a Compliance Option

Issue

Peak Thermal Load, or PTL, is a measure of the maximum amount of energy needed to heat a building on the coldest day of the year. The BC Energy Step Code currently allows builders to use either PTL or TEDI to demonstrate they have met the regulation's envelope-performance requirements. However, under certain specific conditions, PTL may allow a much lower level of energy-efficiency performance than would otherwise be required.

Recommendation

Remove PTL as a compliance option in the BC Energy Step Code. Following the change, builders will use TEDI alone to demonstrate they are meeting the envelope-performance requirements.

Impact

We do not anticipate this change will have a measurable impact on local government programs or builders. However, it will instead ensure fairness across the board. TEDI remains a compliance path that has cost-effective outcomes for builders and achieves more consistent efficiency improvements for homeowners.

3. Improve Fairness for Builders of Smaller Homes: Introduce Exceptions to MEUI Targets for Small Homes

Issue

Mechanical Energy Use Intensity, or MEUI, is a measurement of the amount of energy that a given building will use over the course of a year for space heating and cooling, ventilation, and domestic hot water. Those building small homes to very high energy-performance levels will find the MEUI requirements exceptionally difficult to reach. This places small homes at an unfair disadvantage.

Recommendation

Adjust MEUI to increase the energy budget permitted for small buildings. This should take the form of a formula, or table of MEUI targets that will vary with building size.

Impact

This update will make the effort required to build to a particular step for a small home comparable to the effort required for all other homes. This change will only have an impact on small homes. This update should also result in a correction to the Best Practices Guide for Local Governments to no longer suggest that smaller homes build to a lower step, since the update would automatically correct for size.

4. Enable Higher Steps in Colder Climates: Establish Improved MEUI Targets for All Regions

Issue

The current BC Energy Step Code includes no climate specific targets for MEUI for Climate Zones 7 and 8, making it less applicable for those regions. For some steps in the warmer climate zones, the targets may permit a lower level of efficiency than the prescriptive BC Building Code.

Recommendation

Adjust the MEUI targets in all climate zones to ensure that all regions in B.C. have a realistic roadmap to net-zero energy ready and ensure the levels of effort are more comparable between the steps in all climate zones.

Impact

This update will result in different impacts, depending on where you are in the province. Northern communities will have new targets that are achievable in very cold climates. The Okanagan, Prince George, and mid- and northern-Vancouver Island will see MEUI targets that are slightly more stringent,

ensuring that outcomes are not below the current BC Building Code. In the Lower Mainland and Southern Vancouver Island, MEUI will be slightly easier to achieve, so that outcomes are closer to the expected 10%, 20% and 40% energy-efficiency improvements.

5: Remove Barriers to Cooling: Adjust MEUI Targets to Include Cooling

Issue

The BC Energy Step Code does not currently address cooling needs. Adding cooling to the MEUI targets (described above) will ensure that efficient homes remain comfortable and healthy if and when the need for active cooling arises as climate conditions change.

Recommendation

Adjust the requirements for MEUI to anticipate cooling and encourage energy-efficient cooling equipment choices.

Impact

We do not anticipate this change will have a measurable impact on local government programs or builders. However, it will offer builders an additional option to allow for the provision of mechanical cooling in the BC Energy Step Code.

Changes Applicable to Part 3 Buildings

Part 3 buildings are four storeys and taller and have a footprint greater than 600 square meters. The category includes larger apartment buildings, condos (stratas), shopping malls, office buildings, and restaurants.

1. Offer the Standard Throughout the Province

Issue

The BC Energy Step Code currently only offers targets for Part 3 buildings located in Climate Zone 4, the southwest region of the province. Communities in other regions of the province—for example cities in the interior and northern regions—cannot use the standard to incentivize or require high-performance Part 3 buildings.

Recommendation

Allow the BC Energy Step Code to apply to Part 3 buildings in all regions of the province, and establish appropriate metrics for all regions.

Impact

Communities and builders outside the Lower Mainland and Southern Vancouver Island will be able to use the BC Energy Step Code for Part 3 Buildings. This does not have an impact on existing Part 3 targets.

2. Establish Distinct Targets for Hotels and Motels

Issue

Hotels and motels require more energy for hot water than other residential buildings, and they also have relatively higher occupant densities. This will increase their energy use per unit of floor area, and make it more difficult for these buildings to reach the Total Energy Use Intensity (TEUI) requirements of the BC Energy Step Code. Hotels and motels also have greater opportunity for heat recovery, and the envelope requirements (TEDI) do not take this into account.

Recommendation

Relax the allowable TEUI targets for hotels and motels, and make the TEDI targets slightly more stringent.

Impact

Developers of hotels and motels will be able to more affordably meet the performance requirements of the BC Energy Step Code, while making improvements in building efficiency with effective heat recovery. This change will not impact existing targets for other residential buildings.

3. Establish Distinct Targets for Offices

Issue

Office buildings typically have lower total energy demands than many other types of Part 3 buildings. As a result, they will have an easier time meeting targets when compared with similar building types.

Recommendation

Establish distinct targets for office buildings.

Impact

Office buildings will require a similar level of effort to achieve each step as other buildings types. The findings of the 2017 Metrics Research Report have been updated to address the cost implications of these changes, and are not expected to lead to significant changes in construction costs or methods.

**ORDER OF THE MINISTER OF
MUNICIPAL AFFAIRS AND HOUSING**

Building Act

Ministerial Order No.

I, Selina Robinson, Minister of Municipal Affairs and Housing, order that immediately after the British Columbia Building Code Order, Ministerial Order No. BA 2018 1 (the “Order”) becoming effective on December 10, 2018, the Order is amended as set out in the attached Schedule.

Schedule

1 Book I (General) of the British Columbia Building Code established by the British Columbia Building Code Order, Ministerial Order No. BA 2018 1, is amended as set out in this Schedule.

Changes to Division B - Part 1

2 Table 1.3.1.2. of Division B is amended

(a) by adding the following items:

ASHRAE	ANSI/ASHRAE/IES 90.1	Energy Standard for Buildings Except Low-Rise Residential Buildings	10.2.2.2.(1) <u>A-10.2.2.2.</u>
CCBFC	NRCC	National Energy Code of Canada for Buildings	10.2.2.2.(2) <u>A-10.2.2.2.</u>

and

(b) by repealing the following item:

ASHRAE	ANSI/ASHRAE 90.1-2016	Energy Standard for Buildings Except Low-Rise Residential Buildings	10.2.2.1.(1)
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and substituting the following:

ASHRAE	ANSI/ASHRAE/IES 90.1-2016	Energy Standard for Buildings Except Low-Rise Residential Buildings (except Subsection 8.4.2.)	10.2.2.1.(1) <u>A-10.2.2.2.</u>
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and

(c) by repealing the following item:

CCBFC	NRCC 56191	National Energy Code of Canada for Buildings 2015	A-2.1.1.2.(6) ⁽⁴⁾ A-2.2.1.1.(1) ⁽⁴⁾ A-3.2.1.1.(1) ⁽⁴⁾ Table 3.10.1.1.(1) 9.36.1.3.(1) 9.36.1.3.(4) 9.36.3.1.(2) 9.36.4.1.(2) 10.2.2.1.(1) Table 10.2.3.3.-A Table 10.2.3.3.-B 10.2.3.4.(1) A-9.36.1.3. A-9.36.2.4.(1) A-9.36.3.10.(1) A-9.36.4.2.(1) A-9.36.5.2. A-10.2.3.3.(2) A-10.2.3.4.(1) A-10.2.3.4.(2) A-10.2.3.4.(3) A-2.2.8.1.(1) ⁽⁵⁾
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and substituting the following:

CCBFC	NRCC 56191	National Energy Code of Canada for Buildings 2015	A-2.1.1.2.(6) ⁽⁴⁾ A-2.2.1.1.(1) ⁽⁴⁾ A-3.2.1.1.(1) ⁽⁴⁾ Table 3.10.1.1.(1) 9.36.1.3.(1) 9.36.1.3.(4) 9.36.3.1.(2) 9.36.4.1.(2) A-9.36.1.3. A-9.36.2.4.(1) A-9.36.3.10.(1) A-9.36.4.2.(1) A-9.36.5.2. 10.2.2.1.(1) <u>10.2.2.2.(2)</u> <u>10.2.2.2.(3)</u> <u>10.2.2.2.(4)</u> Table 10.2.3.3.-A Table 10.2.3.3.-B 10.2.3.4.(1) <u>10.2.3.4.(4)</u> <u>A-10.2.2.2.</u> A-10.2.3.3.(2) <u>A-10.2.3.4.</u> A-2.2.8.1.(1) ⁽⁵⁾
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and

(d) by repealing the following item:

CoV	2017	City of Vancouver Energy Modelling Guidelines	10.2.3.4.(1)
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and substituting the following:

CoV	<u>Version 2.0</u>	City of Vancouver Energy Modelling Guidelines	10.2.3.4.(1) <u>10.2.3.4.(3)</u> <u>10.2.3.4.(4)</u> <u>A-10.2.3.4.</u>
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Changes to Division B - Part 9

3 Article 9.36.6.2. of Division B is repealed and the following substituted:

9.36.6.2. Definitions

(See Note A-9.36.6.2.)

1) For the purpose of this Subsection, the term “mechanical energy use intensity” shall mean a metric of the energy used over a year by the *building*, estimated by using an energy model in accordance with Article 9.36.6.4., 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) service water heating equipment,
- e) pumps, and
- f) auxiliary HVAC equipment (see Note A-9.36.6.2.(1)(f)).

2) For the purpose of this Subsection, the term “EnerGuide Rating % lower than EnerGuide Reference House” shall mean the metric that results when, using HOT2000 software, version 11 or newer and Natural Resources Canada’s EnerGuide Rating System, version 15 or newer, the energy consumption of the following are compared:

- a) the proposed *building*, not including the EnerGuide assumed electric base loads, and
- b) the corresponding automatically-generated reference house, not including the EnerGuide assumed electric base loads.

3) For the purpose of this Subsection, the term “thermal energy demand intensity” shall mean 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 Article 9.36.6.4., 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 with 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.

4) For the purpose of this Subsection, the term “Step” shall mean a Step referred to in Tables 9.36.6.3.-A to 9.36.6.3.-G.

4 Article 9.36.6.3. of Division B is repealed and the following substituted:

9.36.6.3. Compliance Requirements

1) *Buildings* conforming to the requirements of any of Steps 1 to 5 shall be designed and constructed to conform to the applicable energy performance requirements in Tables 9.36.6.3.-A to 9.36.6.3.-G.

Table 9.36.6.3.-A
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is less than 3000⁽¹⁾
 Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of <i>Building Equipment and Systems</i>	Performance Requirement of <i>Building Envelope</i>
1	N/A	EnerGuide Rating % lower than EnerGuide Reference House: not less than 0% lower energy consumption or conform to Subsection 9.36.5.	
2	≤ 3.0	EnerGuide Rating % lower than EnerGuide Reference House: not less than 10% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 35 kWh/(m ² •year)

Table 9.36.6.3.-A (continued)
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is less than 3000⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of Building Equipment and Systems	Performance Requirement of Building Envelope
3	≤ 2.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 20% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 30 kWh/(m²•year)
4	≤ 1.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 40% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 20 kWh/(m²•year)
5	≤ 1.0	<u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 15kWh/(m²•year)

Notes to Table 9.36.6.3.A:

(1) See Sentence 1.1.3.1.(1) and Table C-2 in Appendix C.

Table 9.36.6.3.-B
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is 3000 to 3999⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of Building Equipment and Systems	Performance Requirement of Building Envelope
1	N/A	EnerGuide Rating % lower than EnerGuide Reference House: not less than 0% lower energy consumption or conform to Subsection 9.36.5.	
2	≤ 3.0	EnerGuide Rating % lower than EnerGuide Reference House: not less than 10% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 45 kWh/(m²•year)
3	≤ 2.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 20% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 40 kWh/(m²•year)

Table 9.36.6.3.-B (continued)
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is 3000 to 3999⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of <i>Building Equipment and Systems</i>	Performance Requirement of <i>Building Envelope</i>
4	≤ 1.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 40% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 30 kWh/(m ² •year)
5	≤ 1.0	<u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 20kWh/(m ² •year)

Notes to Table 9.36.6.3.B:

(1) See Sentence 1.1.3.1.(1) and Table C-2 in Appendix C.

Table 9.36.6.3.-C
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is 4000 to 4999⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of <i>Building Equipment and Systems</i>	Performance Requirement of <i>Building Envelope</i>
1	N/A	EnerGuide Rating % lower than EnerGuide Reference House: not less than 0% lower energy consumption or conform to Subsection 9.36.5.	
2	≤ 3.0	EnerGuide Rating % lower than EnerGuide Reference House: not less than 10% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 60 kWh/(m ² •year)
3	≤ 2.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 20% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 50 kWh/(m ² •year)
4	≤ 1.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 40% lower energy consumption or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 40 kWh/(m ² •year)

Table 9.36.6.3.-C (continued)
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is 4000 to 4999⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of Building Equipment and Systems	Performance Requirement of Building Envelope
5	≤ 1.0	<u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 25kWh/(m ² •year)

Notes to Table 9.36.6.3.C:

(1) See Sentence 1.1.3.1.(1) and Table C-2 in Appendix C.

Table 9.36.6.3.-D
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is 5000 to 5999⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of Building Equipment and Systems	Performance Requirement of Building Envelope
1	N/A	<u>EnerGuide Rating % lower than EnerGuide Reference House:</u> <u>not less than 0% lower energy consumption</u> or <u>conform to Subsection 9.36.5.</u>	
2	≤ 3.0	<u>EnerGuide Rating % lower than EnerGuide Reference House: not less than 10% lower energy consumption</u> or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 80 kWh/(m ² •year)
3	≤ 2.5	<u>EnerGuide Rating % lower than EnerGuide Reference House: not less than 20% lower energy consumption</u> or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 70 kWh/(m ² •year)
4	≤ 1.5	<u>EnerGuide Rating % lower than EnerGuide Reference House: not less than 40% lower energy consumption</u> or <u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 55 kWh/(m ² •year)
5	≤ 1.0	<u>the applicable mechanical energy use intensity requirements in Table 9.36.6.3.-G</u>	thermal energy demand intensity ≤ 35kWh/(m ² •year)

Notes to Table 9.36.6.3.D:

(1) See Sentence 1.1.3.1.(1) and Table C-2 in Appendix C.

Table 9.36.6.3.-E
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is 6000 to 6999⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	<u>Airtightness</u> <u>(Air Changes per Hour at 50 Pa Pressure Differential)</u>	<u>Performance Requirement of</u> <u>Building Equipment and Systems</u>	<u>Performance Requirement of</u> <u>Building Envelope</u>
<u>1</u>	<u>N/A</u>	<u>EnerGuide Rating % lower than EnerGuide Reference House:</u> <u>not less than 0% lower energy consumption</u> <u>or</u> <u>conform to Subsection 9.36.5.</u>	
<u>2</u>	<u>≤ 3.0</u>	<u>EnerGuide Rating % lower than</u> <u>EnerGuide Reference House: not less</u> <u>than 10% lower energy consumption</u> <u>or</u> <u>the applicable mechanical energy use</u> <u>intensity requirements in Table</u> <u>9.36.6.3.-G</u>	<u>thermal energy demand intensity</u> <u>≤ 100 kWh/(m²•year)</u>
<u>3</u>	<u>≤ 2.5</u>	<u>EnerGuide Rating % lower than</u> <u>EnerGuide Reference House: not less</u> <u>than 20% lower energy consumption</u> <u>or</u> <u>the applicable mechanical energy use</u> <u>intensity requirements in Table</u> <u>9.36.6.3.-G</u>	<u>thermal energy demand intensity</u> <u>≤ 90 kWh/(m²•year)</u>
<u>4</u>	<u>≤ 1.5</u>	<u>EnerGuide Rating % lower than</u> <u>EnerGuide Reference House: not less</u> <u>than 40% lower energy consumption</u> <u>or</u> <u>the applicable mechanical energy use</u> <u>intensity requirements in Table</u> <u>9.36.6.3.-G</u>	<u>thermal energy demand intensity</u> <u>≤ 65 kWh/(m²•year)</u>
<u>5</u>	<u>≤ 1.0</u>	<u>the applicable mechanical energy use</u> <u>intensity requirements in Table</u> <u>9.36.6.3.-G</u>	<u>thermal energy demand intensity</u> <u>≤ 50 kWh/(m²•year)</u>

Notes to Table 9.36.6.3.E:

(1) See Sentence 1.1.3.1.(1) and Table C-2 in Appendix C.

Table 9.36.6.3.-F
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is more than 6999⁽¹⁾
 Forming Part of Sentence 9.36.6.3.(1)

Step	<u>Airtightness</u> (Air Changes per Hour at 50 Pa Pressure Differential)	<u>Performance Requirement of Building Equipment and Systems</u>	<u>Performance Requirement of Building Envelope</u>
<u>1</u>	N/A	<u>EnerGuide Rating % lower than EnerGuide Reference House:</u> <u>not less than 0% lower energy consumption</u> <u>or</u> <u>conform to Subsection 9.36.5.</u>	
<u>2</u>	≤ 3.0	<u>EnerGuide Rating % lower than</u> <u>EnerGuide Reference House: not less</u> <u>than 10% lower energy consumption</u> <u>or</u> <u>the applicable mechanical energy use</u> <u>intensity requirements in Table</u> <u>9.36.6.3.-G</u>	<u>thermal energy demand intensity</u> <u>$\leq 120 \text{ kWh}/(\text{m}^2 \cdot \text{year})$</u>
<u>3</u>	≤ 2.5	<u>EnerGuide Rating % lower than</u> <u>EnerGuide Reference House: not less</u> <u>than 20% lower energy consumption</u> <u>or</u> <u>the applicable mechanical energy use</u> <u>intensity requirements in Table</u> <u>9.36.6.3.-G</u>	<u>thermal energy demand intensity</u> <u>$\leq 105 \text{ kWh}/(\text{m}^2 \cdot \text{year})$</u>
<u>4</u>	≤ 1.5	<u>EnerGuide Rating % lower than</u> <u>EnerGuide Reference House: not less</u> <u>than 40% lower energy consumption</u> <u>or</u> <u>the applicable mechanical energy use</u> <u>intensity requirements in Table</u> <u>9.36.6.3.-G</u>	<u>thermal energy demand intensity</u> <u>$\leq 80 \text{ kWh}/(\text{m}^2 \cdot \text{year})$</u>
<u>5</u>	≤ 1.0	<u>the applicable mechanical energy use</u> <u>intensity requirements in Table</u> <u>9.36.6.3.-G</u>	<u>thermal energy demand intensity</u> <u>$\leq 60 \text{ kWh}/(\text{m}^2 \cdot \text{year})$</u>

Notes to Table 9.36.6.3.F:

(1) See Sentence 1.1.3.1.(1) and Table C-2 in Appendix C.

Table 9.36.6.3.-G
Mechanical Energy Use Intensity Requirements
Forming Part of Sentence 9.36.6.3.(1)

Heating Degree-Days of Building Location, ⁽¹⁾ in Celsius Degree-Days	Amount of the Building's Conditioned Space Served by Space-Cooling Equipment	Step	Floor Area of Conditioned Space (m ²)					
			≤ 50	51 to 75	76 to 120	121 to 165	166 to 210	> 210
			Mechanical Energy Use Intensity, kWh/(m ² ·year)					
<u>Less than 3000</u>	<u>Not more than 50%</u>	<u>2</u>	<u>135</u>	<u>120</u>	<u>90</u>	<u>75</u>	<u>65</u>	<u>60</u>
		<u>3</u>	<u>120</u>	<u>100</u>	<u>75</u>	<u>63</u>	<u>53</u>	<u>50</u>
		<u>4</u>	<u>90</u>	<u>80</u>	<u>60</u>	<u>48</u>	<u>40</u>	<u>40</u>
		<u>5</u>	<u>65</u>	<u>55</u>	<u>40</u>	<u>30</u>	<u>25</u>	<u>25</u>
	<u>More than 50%</u>	<u>2</u>	<u>170</u>	<u>148</u>	<u>108</u>	<u>85</u>	<u>73</u>	<u>65</u>
		<u>3</u>	<u>155</u>	<u>128</u>	<u>93</u>	<u>73</u>	<u>60</u>	<u>55</u>
		<u>4</u>	<u>125</u>	<u>108</u>	<u>78</u>	<u>58</u>	<u>48</u>	<u>45</u>
		<u>5</u>	<u>100</u>	<u>83</u>	<u>58</u>	<u>40</u>	<u>33</u>	<u>30</u>
<u>3000 to 3999</u>	<u>Not more than 50%</u>	<u>2</u>	<u>145</u>	<u>130</u>	<u>100</u>	<u>85</u>	<u>75</u>	<u>70</u>
		<u>3</u>	<u>135</u>	<u>115</u>	<u>90</u>	<u>78</u>	<u>68</u>	<u>65</u>
		<u>4</u>	<u>100</u>	<u>90</u>	<u>70</u>	<u>58</u>	<u>50</u>	<u>50</u>
		<u>5</u>	<u>70</u>	<u>60</u>	<u>45</u>	<u>35</u>	<u>30</u>	<u>30</u>
	<u>More than 50%</u>	<u>2</u>	<u>180</u>	<u>158</u>	<u>118</u>	<u>95</u>	<u>83</u>	<u>75</u>
		<u>3</u>	<u>170</u>	<u>143</u>	<u>108</u>	<u>88</u>	<u>75</u>	<u>70</u>
		<u>4</u>	<u>135</u>	<u>118</u>	<u>88</u>	<u>68</u>	<u>58</u>	<u>55</u>
		<u>5</u>	<u>105</u>	<u>88</u>	<u>63</u>	<u>45</u>	<u>38</u>	<u>35</u>
<u>4000 to 4999</u>	<u>Not more than 50%</u>	<u>2</u>	<u>160</u>	<u>145</u>	<u>115</u>	<u>100</u>	<u>90</u>	<u>85</u>
		<u>3</u>	<u>145</u>	<u>125</u>	<u>100</u>	<u>88</u>	<u>78</u>	<u>75</u>
		<u>4</u>	<u>105</u>	<u>95</u>	<u>75</u>	<u>63</u>	<u>55</u>	<u>55</u>
		<u>5</u>	<u>80</u>	<u>70</u>	<u>55</u>	<u>45</u>	<u>40</u>	<u>40</u>
	<u>More than 50%</u>	<u>2</u>	<u>195</u>	<u>173</u>	<u>133</u>	<u>110</u>	<u>98</u>	<u>90</u>
		<u>3</u>	<u>180</u>	<u>153</u>	<u>118</u>	<u>98</u>	<u>85</u>	<u>80</u>
		<u>4</u>	<u>140</u>	<u>123</u>	<u>93</u>	<u>73</u>	<u>63</u>	<u>60</u>
		<u>5</u>	<u>115</u>	<u>98</u>	<u>73</u>	<u>55</u>	<u>48</u>	<u>45</u>
<u>5000 to 5999</u>	<u>Not more than 50%</u>	<u>2</u>	<u>185</u>	<u>170</u>	<u>140</u>	<u>125</u>	<u>115</u>	<u>110</u>
		<u>3</u>	<u>165</u>	<u>145</u>	<u>120</u>	<u>108</u>	<u>98</u>	<u>95</u>
		<u>4</u>	<u>120</u>	<u>110</u>	<u>90</u>	<u>78</u>	<u>70</u>	<u>70</u>
		<u>5</u>	<u>95</u>	<u>85</u>	<u>70</u>	<u>60</u>	<u>55</u>	<u>55</u>
	<u>More than 50%</u>	<u>2</u>	<u>220</u>	<u>198</u>	<u>158</u>	<u>135</u>	<u>123</u>	<u>115</u>
		<u>3</u>	<u>200</u>	<u>173</u>	<u>138</u>	<u>118</u>	<u>105</u>	<u>100</u>
		<u>4</u>	<u>155</u>	<u>138</u>	<u>108</u>	<u>88</u>	<u>78</u>	<u>75</u>
		<u>5</u>	<u>130</u>	<u>113</u>	<u>88</u>	<u>70</u>	<u>63</u>	<u>60</u>

Table 9.36.6.3.-G (continued)
Mechanical Energy Use Intensity Requirements
Forming Part of Sentence 9.36.6.3.(1)

Heating Degree-Days of Building Location, ⁽¹⁾ in Celsius Degree-Days	Amount of the Building's Conditioned Space Served by Space-Cooling Equipment	Step	Floor Area of Conditioned Space (m ²)					
			≤ 50	51 to 75	76 to 120	121 to 165	166 to 210	> 210
			Mechanical Energy Use Intensity, kWh/(m ² ·year)					
6000 to 6999	Not more than 50%	2	205	190	160	145	135	130
		3	185	165	140	128	118	115
		4	135	125	105	93	85	85
		5	105	95	80	70	65	65
	More than 50%	2	240	218	178	155	143	135
		3	220	193	158	138	125	120
		4	170	153	123	103	93	90
		5	140	123	98	80	73	70
More than 6999	Not more than 50%	2	225	210	180	165	155	150
		3	200	180	155	143	133	130
		4	150	140	120	108	100	100
		5	115	105	90	80	75	75
	More than 50%	2	260	238	198	175	163	155
		3	235	208	173	153	140	135
		4	185	168	138	118	108	105
		5	150	133	108	90	83	80

Notes to Table 9.36.6.3.-G:

(1) See Sentence 1.1.3.1.(1) and Table C-2 in Appendix C.

2) Except as permitted by Sentence (3),

- a) energy performance shall be calculated in conformance with Article 9.36.6.4., and
- b) airtightness shall be tested in accordance with Article 9.36.6.5.

(See Note A-9.36.6.3.(2).)

3) *Buildings* designed and constructed to conform to Step 5 of any of the Tables referred to in Sentence (1) and to the Passive House Planning Package, version 9 or newer, are deemed to comply with this Subsection if the energy model according to which the *building* is designed and constructed is prepared by a Certified Passive House Designer, or Certified Passive House Consultant, who is approved by the Passive House Institute.

5 Article 9.36.6.4. of Division B is repealed and the following substituted:

9.36.6.4. Energy Modelling

1) Energy modelling shall be performed using a computer program that employs calculation methods that have been tested in accordance with ANSI/ASHRAE 140, "Evaluation of Building Energy Analysis Computer Programs" with variations in the computer program from the range recommended therein reported in accordance with Division C.

2) Energy modelling shall conform to

- a) Subsection 9.36.5.,
- b) the EnerGuide Rating System, version 15 or newer (see Note A-9.36.6.4.(2)(b)), or
- c) Clauses 10.2.3.4.(1)(a) and (b) and Sentences 10.2.3.4.(3) and (4). (See Note A-9.36.6.4.(2)(c).)

- 3) The Performance Requirement of Building Equipment and Systems and the Performance Requirement of Building Envelope required under Sentence 9.36.6.3.(1) shall both be modelled using the same
- a) energy modelling methods, and
 - b) climatic data, *soil* conditions, operating schedules and temperature set-points.
- 4) For *buildings* conforming to the requirements of any of Steps 2 to 5, energy modelling shall account for the air leakage rate derived in accordance with Article 9.36.6.5.
(See Note A-9.36.6.4.(4).)

6 Sentence 9.36.6.5.(1) of Division B is repealed and the following substituted:

- 1) *Buildings* shall be tested for airtightness in accordance with
- a) CAN/CGSB 149.10, "Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method",
 - b) ASTM E 779, "Standard Test Method for Determining Air Leakage Rate by Fan Pressurization", or
 - c) USACE Version 3, "Air Leakage Test Protocol for Building Envelopes", or
 - d) the applicable standards and requirements of the EnerGuide Rating System, Version 15 or newer.

7 Note A-9.36.6.2. of Division B is repealed and the following substituted:

A-9.36.6.2. Floor Area in the Energy Step Code. The words floor area, as used in Sentence 9.36.6.2.(1), Sentence 9.36.6.2.(3), Sentence 9.36.6.3.(1), Sentence 10.2.3.2.(1), and Sentence 10.2.3.2.(2) of Division B, and Sentence 2.2.8.3.(3) of Division C are not italicized, to differentiate them from the defined term floor area in Article 1.4.1.2. of Division A.

Different modelling approaches identify the applicable floor area in various ways (e.g. modelled floor area, heated floor area, treated floor area, etc.) and the use of the words floor area in Sentence 9.36.6.2.(1), Sentence 9.36.6.2.(3), Sentence 9.36.6.3.(1), Sentence 10.2.3.2.(1), and Sentence 10.2.3.2.(2) of Division B, and Sentence 2.2.8.3.(3) of Division C is intended to accommodate the various modelling approaches.

8 Note A-9.36.6.4.(2)(c) of Division B is repealed and the following substituted:

A-9.36.6.4.(2)(c) NECB. Although the energy model calculation methods of the NECB are permitted to be used, the results of those calculations must reflect the definitions and the requirements related to mechanical energy use intensity and thermal energy demand intensity as set out in Articles 9.36.6.2. and 9.36.6.3., and not the Annual Energy Consumption as required by Part 8 of the NECB.

Changes to Division B-Part 10

9 Subsection 10.2.2. of Division B is repealed and the following substituted:

10.2.2. Design and Construction

10.2.2.1. Design and Construction

- 1) Except as permitted in Article 10.2.2.2., *buildings* shall be designed and constructed to conform to
- a) ANSI/ASHRAE/IES 90.1, "Energy Standard for Buildings Except Low-Rise Residential Buildings" (except Subsection 8.4.2.),
 - b) the NECB, or
 - c) Subsection 10.2.3.
- 2) Where a *building* contains one or more *major occupancies* that conform to Subsection 10.2.3., the remaining *major occupancies* shall comply with Clause (1)(a) or (b).

10.2.2.2. Application to Existing Buildings

(See Note A-10.2.2.2.)

1) Where a *building* or *major occupancy* designed and constructed to conform to any version of ANSI/ASHRAE/IES 90.1, “Energy Standard for Buildings Except Low-Rise Residential Buildings” is altered, rehabilitated, or renovated, or there is a change in *occupancy*, the energy performance of the *alteration*, rehabilitation, renovation, or change in *occupancy* shall comply with Clause 10.2.2.1.(1)(a) or (c).

2) Notwithstanding Article 1.1.1.1. of Division A of the NECB, where a *building* or *major occupancy* designed and constructed to conform to any version of the NECB is altered, rehabilitated, or renovated, or there is a change in *occupancy*, the energy performance of the *alteration*, rehabilitation, renovation or change in *occupancy*, shall comply with Clause 10.2.2.1.(1)(b) or (c).

3) Notwithstanding Article 1.1.1.1. of Division A of the NECB, where a *building* or *major occupancy* designed and constructed to conform to any version of Subsection 10.2.3. is altered, rehabilitated, renovated, or there is a change in *occupancy*, the energy performance of the *alteration*, rehabilitation, renovation, or change in *occupancy*, shall comply Clauses 10.2.2.1.(1)(b) or (c).

4) Notwithstanding Article 1.1.1.1. of Division A of the NECB, where a *building* or *major occupancy* that is not described in Sentences (1) through (3) is altered, rehabilitated, renovated, or there is a change in *occupancy*, the energy performance of the *alteration*, rehabilitation, renovation, or change in *occupancy* shall comply with Sentence 10.2.2.1.(1).

10 Article 10.2.3.1. of Division B is repealed and the following substituted:

10.2.3.1. Application

1) This Subsection applies to *buildings* containing any of the following *major occupancies*:

- a) *residential*,
- b) *business and personal services*, or
- c) *mercantile*.

(See Sentence 1.1.3.1.(1) and Table C-2 in Appendix C.)

11 Article 10.2.3.2. of Division B is repealed and the following substituted:

10.2.3.2. Definitions

(See Note A-9.36.6.2.)

1) For the purpose of this Subsection, the term “total energy use intensity” shall mean a metric of the energy used over a year by the *building*, estimated by using an energy model in accordance with 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 (see A-9.36.6.2.(1)(f) in Appendix A),
- h) receptacle loads and miscellaneous equipment,
- i) appliances, and
- j) elevators and escalators.

2) For the purpose of this Subsection, the term “thermal energy demand intensity” shall mean 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 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.

(See Note A-10.2.3.2.(2).)

3) For the purpose of this Subsection, the term “Step” shall mean a Step referred to in Tables 10.2.3.3.-A and 10.2.3.3.-B.

12 Article 10.2.3.3. of Division B is repealed and the following substituted:

10.2.3.3. Compliance Requirements

1) *Buildings* and *major occupancies* conforming to the requirements of any of Steps 1 to 4 shall be designed and constructed to conform to the applicable energy performance requirements in Tables 10.2.3.3.-A and 10.2.3.3.-B.

Table 10.2.3.3.-A
Energy Performance Requirements for Residential Occupancies
Forming part of Sentences 10.2.3.3.(1) and (2)

Step	Hotels and Motels	Other Group C Occupancies	Hotels and Motels	Other Group C Occupancies
	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m²·year)		Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m²·year)	
1	Conform to Part 8 of the NECB			
2	<u>170</u>	130	<u>30</u>	45
3	<u>140</u>	120	<u>20</u>	30
4	<u>120</u>	100	<u>15</u>	15

Table 10.2.3.3.-B
Energy Performance Requirements for Business and Personal Services or Mercantile Occupancies
Forming part of Sentences 10.2.3.3.(1) and (2)

Step	Offices	Other Group D and E Occupancies	Offices	Other Group D and E Occupancies
	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m²·year)		Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m²·year)	
1	Conform to Part 8 of the NECB			
2	<u>130</u>	170	<u>30</u>	30
3	<u>100</u>	120	<u>20</u>	20

2) Except as permitted by Sentence (3),

- a) energy performance shall be calculated in conformance with Article 10.2.3.4., and
- b) airtightness shall be tested in accordance with Article 10.2.3.5.

(See Note A-10.2.3.3.(2).)

3) *Buildings* and *major occupancies* designed and constructed to conform to Step 4 of Table 10.2.3.3.-A or to Step 3 in Table 10.2.3.3.-B, and to the Passive House Planning Package, version 9 or newer, are deemed to comply with this Subsection provided the energy model according to which the *building* or the *major occupancy* of the *building* is designed and constructed is prepared by a Certified Passive House Designer, or Certified Passive House Consultant, who is approved by the Passive House Institute.
(See also Sentence 10.2.2.1.(2).)

13 Article 10.2.3.4. of Division B is repealed and the following substituted:

10.2.3.4. Energy Modelling

(See Note A-10.2.3.4.)

- 1) Except as required by Sentence (2), for *buildings* and *major occupancies* conforming to the requirements of any of Steps 1 to 4, energy modelling shall conform to
 - a) the applicable requirements of Part 8 of the NECB, and
 - b) the City of Vancouver Energy Modelling Guidelines.
- 2) Except as permitted by Sentence (3), energy modelling for *buildings* and *major occupancies* conforming to the requirements of any of Steps 2 to 4 shall account for the air leakage rate derived in accordance with Article 10.2.3.5.
- 3) Until the air leakage rate determined by Sentence (2) is available, an air leakage rate determined in accordance with the City of Vancouver Energy Modelling Guidelines shall be used.
- 4) In case of conflict between the provisions of the NECB and the City of Vancouver Energy Modelling Guidelines, the provisions of the City of Vancouver Energy Modelling Guidelines shall govern.

14 The Following Note is added:

A-10.2.2.2. Energy Requirements for Alterations to Buildings and Major Occupancies. Alterations, rehabilitation, renovations and changes of occupancy to existing buildings or major occupancies that were originally designed and constructed to previous editions of the ANSI/ASHRAE/IES 90.1 standard are to comply with the edition of the ANSI/ASHRAE/IES 90.1 standard referenced in this Code, or the requirements of Subsection 10.2.3. Alterations, rehabilitation, renovations and changes of occupancy to existing buildings or major occupancies that were originally designed and constructed to previous editions of the NECB or Subsection 10.2.3. are to comply with the edition of the NECB referenced in this Code, or to Subsection 10.2.3. Existing buildings or major occupancies that were not designed and constructed to any version of the ANSI/ASHRAE/IES 90.1 standard, the NECB or Subsection 10.2.3. may use the edition of the ANSI/ASHRAE/IES 90.1 standard or the NECB referenced in this Code, or Subsection 10.2.3. for alterations, rehabilitation, renovations and changes in occupancy.

Sentence 1.1.1.2.(1) of Division A states that the level of building performance shall not be decreased below a level that already exists. For example, a new occupancy may be permitted a higher lighting power density by the ANSI/ASHRAE/IES 90.1 standard or the NECB than the lighting power density that was permitted for a previous occupancy. This does not constitute a decrease in the level of building performance, provided the design meets the minimum requirements of the relevant Code or standard.

15 Note A-10.2.3.4. is repealed and the following substituted:

A-10.2.3.4. Energy Modelling

Energy Model Calculations for Steps 2 to 4

Notwithstanding the requirements of Part 8 of the NECB, a reference building and building energy target are not required for compliance with the requirements of Steps 2 to 4 in Article 10.2.3.3. The performance requirements of Table 10.2.3.3.-A. and Table 10.2.3.3.-B. are used to determine compliance.

Air Leakage Rate in Energy Model Calculations

The requirement to account for the air leakage rate as tested in all energy model calculations, other than for Step 1 buildings, supersedes the NECB air leakage rate requirements. For buildings that must conform to the requirements of any of Steps 2 to 4, higher than expected air leakage may require the building design to be altered and the energy model calculations to be repeated. Alternatively, the air leakage rate could be retested after making alterations to the air barrier system to attain the desired air leakage rate.

Air Leakage Rate in Energy Model Calculations for Step 1

Although the air leakage rate as tested of the building need not be used for the purposes of conforming with Part 8 of the NECB and Sentence 10.2.3.4.(2), Article 2.2.9.1. of Division C requires that the air leakage rate as tested be used in the calculation of the total energy use intensity and thermal energy demand intensity for reporting purposes on the drawings and specifications. This will typically require Step 1 energy model calculations to be redone after the airtightness test. It is not intended that the results of the airtightness test for buildings that must conform to the requirements of Step 1 influence the compliance of the building with Article 10.2.3.3.

Air Leakage Rate

Section 2.4. of the City of Vancouver's Energy Modelling Guidelines provides guidance on determining infiltration/air leakage rates for buildings conforming with Section 10.2.3. at the design stage.

Changes to Division B - Appendix C

16 Table C-4 of Division B is amended by repealing the following items:

Jordan River	Required
Qualicum Beach	Required

and substituting the following:

Jordan River	<u>Not</u> Required
Qualicum Beach	<u>Not</u> Required

Changes to Division C - Part 2

17 Article 2.2.2.1. of Division C is repealed and the following substituted:

2.2.2.1. General Information Required

- 1) Sufficient information shall be provided to show that the proposed work will conform to this Code and whether or not it may affect adjacent property.
- 2) Plans shall be drawn to scale and shall indicate
 - a) the nature and extent of the work or proposed *occupancy* in sufficient detail to establish that, when completed, the work and the proposed *occupancy* will conform to this Code,
 - b) the applicable edition of the Code,
 - c) whether the *building* is designed under Part 3 or Part 9,
 - d) the *major occupancy* classifications of the *building*,
 - e) the *building area* and *building height*,
 - f) the number of *streets* the *building* faces,
 - g) the *accessible* entrances, work areas and washrooms,
 - h) the *accessible* facilities particular to the *occupancies*, and

-
- i) the energy compliance path to which the *building* conforms, and, where a *building* conforms to Subsection 9.36.6. or 10.2.3. of Division B, the Step to which it conforms.
- 3) When proposed work is changed during construction, information on the changes shall comply with the requirements of this Section for proposed work.

18 Article 2.2.8.3. of Division C is repealed and the following substituted:

2.2.8.3. House Performance Compliance Calculation Report

- 1) A house performance compliance calculation report shall be provided in accordance with Sentence (2) for each proposed house design.
- 2) In addition to the drawings and specifications required in Article 2.2.8.2., the house performance compliance calculation report shall include
- a) a project information section containing
 - i) the name or identifier of the project,
 - ii) a description of the project,
 - iii) the address of the project,
 - iv) the name and version of the calculation tool,
 - v) the geographic region in which the proposed house is to be built, and
 - vi) the identifier for the climatic data set used for analysis,
 - b) a summary of the characteristics of the *building* envelope, HVAC system and service water heating system reflecting the information provided in Article 2.2.8.2.,
 - c) an energy performance data summary containing
 - i) the annual energy consumption of all energy sources calculated for the proposed house (see Note A-2.2.8.3.(2)(c)(i)), and
 - ii) the house energy target of all energy sources calculated for the reference house,
 - d) where a software program is used to determine compliance,
 - i) the name of the software program(s), and
 - ii) a list of any adaptations made by the user to the software relating to input or output values, and
 - e) a statement that the calculation was performed in compliance with
 - i) Subsection 9.36.5. of Division B,
 - ii) Sentence 9.36.6.3.(3) of Division B,
 - iii) Sentence 9.36.6.4.(2) of Division B, or
 - iv) Sentence 9.36.6.4.(3) of Division B.
- 3) Where a building complies with Subsection 9.36.6. of Division B, the energy performance data summary in Clause (2)(c) shall also contain
- a) the floor area of conditioned space used for the energy modelling calculations (see Note A-9.36.6.2. of Division B),
 - b) the mechanical energy use intensity,
 - c) the thermal energy demand intensity,
 - d) where applicable, the EnerGuide Rating % lower than EnerGuide Reference House for the *building*,
 - e) for *buildings* conforming to Step 1, the airtightness of the *building* as tested, derived in accordance with Article 9.36.6.5. of Division B, and recorded in air changes per hour at 50 Pa, and
 - f) for *buildings* conforming to any of Steps 2 to 5, the airtightness of the *building* as tested that is accounted for in accordance with Sentence 9.36.6.4.(4) of Division B, and derived in accordance with Article 9.36.6.5., recorded in air changes per hour at 50 Pa.

4) The mechanical energy use intensity in Clause (3)(b), the thermal energy demand intensity in Clause (3)(c), and the EnerGuide Rating % lower than EnerGuide Reference House in Clause (3)(d) shall account for the airtightness referenced in Clause (3)(e) or (f), as applicable.

19 Article 2.2.9.2. of Division C is repealed and the following substituted:

2.2.9.2. Information Required

1) For *buildings* and *major occupancies* that are designed and constructed in compliance with Subsection 10.2.3. of Division B, design drawings, specifications, or an energy design report shall indicate

- a) the total energy use intensity as defined by Sentence 10.2.3.2.(1) of Division B,
- b) the energy use intensity of major energy services separately, including
 - i) space heating,
 - ii) space cooling,
 - iii) service water heating,
 - iv) lighting, and
 - v) other plug loads,
- c) the thermal energy demand intensity as defined by Sentence 10.2.3.2.(2) of Division B, and
- d) the air leakage rate as derived in accordance with Sentence 10.2.3.4.(3). of Division B, and recorded in $L/(s \cdot m^2)$ at 75 Pa.

2) For *buildings* and *major occupancies* that are designed and constructed in compliance with Subsection 10.2.3. of Division B, before an owner occupies or receives permission to occupy the *building*, an energy report shall indicate

- a) the total energy use intensity as defined by Sentence 10.2.3.2.(1) of Division B,
- b) the energy use intensity of major energy services separately, including
 - i) space heating,
 - ii) space cooling,
 - iii) service water heating,
 - iv) lighting, and
 - v) other plug loads,
- c) the thermal energy demand intensity as defined by Sentence 10.2.3.2.(2) of Division B,
- d) for *buildings* conforming to Step 1, the air leakage rate as tested, derived in accordance with Article 10.2.3.5. of Division B, and recorded in $L/(s \cdot m^2)$ at 75 Pa, and
- e) for *buildings* conforming to any of Steps 2 to 4, the air leakage rate as tested that is accounted for in accordance with Sentence 10.2.3.4.(2) of Division B and derived in accordance with Article 10.2.3.5. of Division B, recorded in $L/(s \cdot m^2)$ at 75 Pa.

3) The total energy use intensity in Clause (2)(a) and the thermal energy demand intensity in Clause (2)(c) shall account for the airtightness referenced in Clause (2)(d) or (e), as applicable.

ATTACHMENT 3

Consulting	Solely Voluntary Incentive Program	Regulation**
City of Burnaby	City of Campbell River	Township of Langley
District of Saanich	Comox Valley Regional District	City of North Vancouver
District of North Saanich	City of Kimberley	District of West Vancouver
District of Central Saanich	District of Sparwood	District of North Vancouver
District of Oak Bay		District of Squamish
City of Duncan		RM of Whistler
City of Nanaimo		City of New Westminster*
City of Kamloops		City of Surrey*
District of Peachland		City of Richmond
District of Summerland		City of Victoria*
City of Kelowna		
City of West Kelowna		
City of Vernon	* Council has approved BC Energy Step Code framework in principle. Bylaw changes and final notification are pending.	
City of Penticton		** Some offer incentive programs as well
District of Lake County		
Village of Anmore	Learn more at: https://energystepcode.ca/implementation_updates/	
Village of Belcarra		
City of Port Moody		
City of Nelson		

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Withheld pursuant to/removed as

s.12;s.14