

BC Energy Step Code in New Westminister

Compliance requirements at Building Permit, mid-construction & occupancy New Part 9 Residential Buildings

Purpose & Background

New Westminister City Council endorsed local implementation of the BC Energy Step Code on April 9 and December 10, 2018, with Building Bylaw requirements for the Step Code first coming into effect on March 31, 2019 for Part 9 residential buildings, and on January 1, 2020 for Part 3 multi-unit residential and commercial buildings¹.

The purpose of this bulletin is to inform applicants and designers of **new single detached and duplexes (semi-detached) homes, as well as laneway and carriage houses and Part 9 multi-unit residential buildings** regarding energy performance requirements and home energy labeling. This bulletin provides detail on the City’s regulatory and compliance requirements on new Part 9 residential at Building Permit application, at mid-construction stage and at final building inspection. If your application is a laneway or carriage house, or a project that is part of a Heritage Revitalization Agreement, your project will require design review by City staff prior to application for of a Building Permit. Please refer to the following City bulletins that may apply to your project:

Part 9 Residential Buildings Design Stage Review (incl. DP / rezoning)

- **Bulletin 4**
New detached Part 9 Buildings on Sites with Protected Heritage Buildings
- **Bulletin 5**
New Laneway and Carriage Houses
- **Bulletin 6**
New Part 9 Multi-Unit Residential Buildings (Townhouses and Small Multi-Unit Residential Buildings)

About the BC Energy Step Code

The BC Energy Step Code requires new buildings to meet higher energy efficiency standards than the minimum prescriptive requirements of the BC Building Code.

The Step Code is a province-wide performance standard requiring new buildings to attain higher energy performance by meeting set targets for the building envelope, mechanical system efficiency and airtightness. Energy modeling software and on-site air tightness testing is used to demonstrate Step Code compliance, indicating that the building meets the required performance level at the pre-construction stage as well as project completion.

The Step Code provides the design and construction industry an indication of what minimum energy performance requirements will be in subsequent Building Code updates. The Province has signaled that the base BC Building Code will increment over the next three update cycles, to reach a “net-zero energy ready” performance level by 2032. Over time, and supported by ongoing industry engagement, the City of New Westminister intends to incrementally raise minimum energy performance to the highest levels of the Energy Step Code in advance of 2032.

More information about the BC Energy Step Code is available at energystepcode.ca



Image 1: A Single Detached Home designed to meet Step 4 of the Step Code, with exterior insulation shown during construction.



Image 2: The same Single Family Home (shown in Image 1) built to Step 4 of the Step Code shown after construction was completed.

¹ The Council Report is available online at bit.ly/NewWestCouncilReport (see item #20)

Implementation

The BC Energy Step Code applies to all new Building Permit (BP) applications for new Part 9 residential buildings. As of January 1st, 2020, the City’s Building Bylaw requirement is Step 2 for laneway and carriage houses, and Step 3 for all other residential buildings.

To comply with the Step Code, builders must work with a Licensed Energy Advisor and/or a Registered Professional to ensure that the proposed design meets all applicable energy performance and administrative requirements.

All Registered Professionals are encouraged to follow the Joint Architectural Institute of BC and Engineers and Geoscientists BC Professional Practice Guidelines – Whole Building Energy Modelling Services².

Note for Laneway and Carriage Houses and Duplexes

Laneway and Carriage House applications require preliminary design review by City staff prior to Building Permit. During design review, applicants will need to provide the name of their Energy Advisor at the time of application, and Energy Model before a DP is issued. Applicants should also refer to Bulletin 5 - Part 9 Laneway and Carriage Houses for further guidance with respect to these project types.

For duplex (semi-detached) home applications, preliminary design review may also be required prior to Building Permit. Applicants are advised to check with Planning Department staff on design stage requirements applicable to their project.

In all cases, it is incumbent on applicants to ensure their proposed building design can meet the City’s Step Code requirements.

Passive Design Exclusion Zoning Bylaw Amendment

The City has made a Passive Design Exclusion Zoning Bylaw Amendment³ to allow incremental increases in FSR (density) in single detached zones to compensate for thicker insulated walls in higher performance buildings. This is available for single detached and laneway and carriage house projects incorporating thicker wall assemblies to achieve Step Code level 3 to Step Code level 5, as shown in the following table. At this time, the Passive Design Exclusion is not available for duplexes. Applicants must notify City staff that they will be pursuing one of the above FSR exemptions, or building height relaxations (Step Code level 5 or Passive House only), on their project.

Step Code Requirement	Increase in FSR (RS, NR and RQ zones)	Approximate Performance Improvement above current BC Building Code
Level 3	Increase in FSR by 0.01	20%
Level 4	Increase in FSR by 0.03	40%
Level 5	Increase in FSR by 0.05	50-70%

Working with an Energy Advisor

Energy Advisors are third-party consultants who have been registered by Service Organizations licensed by Natural Resources Canada (NRCAN) to deliver NRCAN’s EnerGuide Rating System (ERS), ENERGY STAR® for New Homes and R-2000 programs. An Energy Advisor can provide both energy modelling and airtightness testing – the two essential services needed to demonstrate compliance under the BC Energy Step Code for Part 9 buildings. For more information on energy advisors, including guidance for finding an energy advisor for your project, visit energystepcode.ca/energy-advisors/

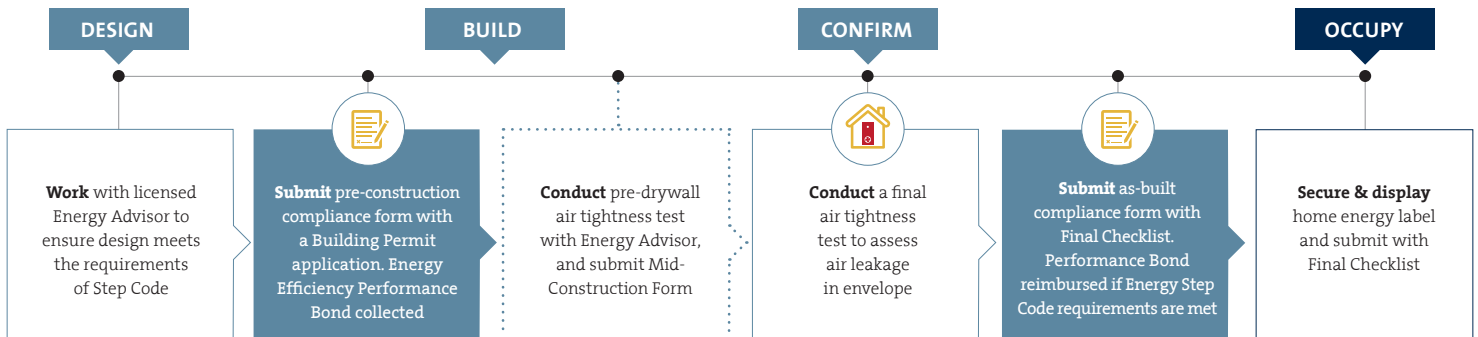
For Passive House projects, the City expects that a Certified Passive House Designer or Certified Passive House Consultant will be involved in developing the energy model using Passive House Planning Package (PHPP) version 9 or newer and submitting the necessary Step Code compliance forms, as per the requirements in this bulletin.

² Download AIBC and EGBC’s Joint Professional Practice Guidelines for Whole Building Energy Modelling Services here: www.egbc.ca/Practice-Resources/Professional-Practice-Guidelines

³ More information on this amendment can be found at: bit.ly/ZoningAmendmentBylaw7953

Application and review process for new Part 9 projects

(e.g. single detached, semi-detached, triplex and some townhouses)



Requirements at Building Permit Submission

All Building Permit applications for new single detached and semi-detached homes must demonstrate compliance with either the 9.36.6 Energy Step Code performance pathway using the EnerGuide Rating System OR 9.36.5 pathway listed in the Compliance Pathway Requirements table below.

It is recommended that applicants use conservative airtightness assumptions in energy models to avoid the risk of designing and constructing homes that will not meet performance requirements, and delaying occupancy at Final Building Inspection. The Province has developed the following bulletins regarding airtightness assumptions to guide Licensed Energy Advisors and Registered Professionals in this work:

B19-01	<i>Complying with Step 1 of the BC Energy Step Code for Part 9 Buildings</i>
B19-02	<i>Step 1 for Part 9 Buildings in the BC Energy Step Code: Airtightness, Enhanced Compliance and Compliance Paths</i>
B19-03	<i>Guidelines for Energy Advisors: Setting Airtightness Values for Energy Modelling of Part 9 Buildings for Compliance with the BC Energy Step Code</i>

Compliance Pathway Requirements at Building Permit Submission

The following documents must be submitted with the Building Permit application package

9.36.6 Energy Step Code performance path Licensed Energy Advisor or Registered Professional required	9.36.5 Registered Professional required
<ol style="list-style-type: none"> BC Energy Compliance Report – Performance Paths for Part 9 Buildings: Pre-Construction Form⁴ completed by a Licensed Energy Advisor or a Registered Professional. Sections A, B, D, E, and F of this form must be completed, as well as Section G where applicable. Printed copy of HOT2000 Full House report.* For each Licensed Energy Advisor, a copy of a valid certificate of insurance showing general liability insurance and errors and omissions insurance. For each Registered Professional, a copy of a valid professional liability certificate of insurance. Plan drawings clearly showing all energy efficiency upgrades and type of air barrier. 	<ol style="list-style-type: none"> BC Energy Compliance Report – Performance Paths for Part 9 Buildings: Pre-Construction Form³ completed by a Registered Professional. Sections A, B, C, E, and F of this form must be completed, as well as Section G where applicable. Printed copy of the HOT2000 Full house report or alternative energy model report** stamped and sealed by a Registered Professional.* For each Registered Professional, a copy of a valid professional liability certificate of insurance. Plan drawings clearly showing all energy efficiency upgrades and type of air barrier.

* Note that the City may contact the Energy Advisor or Registered Professional to submit the associated energy modeling files for auditing purposes.

** See Section 9.36.5.4 regarding Calculation Methods of the BC Building Code for guidance related to what to include in the energy modelling report

⁴ Download the *BC Energy Compliance Report – Performance Paths for Part 9 Buildings: Pre-Construction Form* here energystepcode.ca/compliance-tools-part9/

⁵ Download the *BC Energy Compliance Report: Mid-Construction Form* here energystepcode.ca/compliance-tools-part9/

Requirements at Mid-Construction Prior to Insulation Inspection

All Part 9 buildings must complete a mid-construction air tightness test prior to insulation inspection. This mid-construction (“pre-drywall”) test presents an opportunity to make cost-effective changes and improvements to the building’s air barrier to ensure that the target air tightness level will be met at the final air tightness test, prior to occupancy. Applicants must submit a complete **BC Energy Compliance Report: Mid-Construction Form**⁵ before a Building Official will conduct the Insulation Inspection, as summarized in the table below:

Compliance Pathway Requirements prior to Insulation Inspection	
9.36.6 Energy Step Code performance path Licensed Energy Advisor or Registered Professional required	9.36.5: Registered Professional required
<ol style="list-style-type: none"> 1. A mid-construction air tightness (“blower door”) test is required, with results reported in the BC Energy Compliance Report: Mid-Construction Form. A Licensed Energy Advisor must complete the air tightness test and form.* 	<ol style="list-style-type: none"> 1. A mid-construction air tightness (“blower door”) test is required, with results reported in the BC Energy Compliance Report: Mid-Construction Form. A Licensed Energy Advisor must complete the air tightness test, and the Registered Professional must complete the form.*

*Note: Please provide the Building Inspections department with minimum 48-hour advance notice of a scheduled test so that a Building Official may attend the testing, at the City’s discretion.

While applicants do not have to achieve the air tightness target for the specified Step Code performance level during the mid-construction air tightness test, the City strongly advises applicants to work with their Energy Advisor and/or Registered Professional to improve air barrier detailing and air sealing to the extent possible at mid-construction stage to avoid non-compliance at project completion. Applicants must achieve a mid-construction performance level no greater than 1.5 ACH above the final requirement of before a Building Official will complete the Insulation Inspection.

Requirements at Final Building Inspection

All Building Permit applications for new single detached and semi-detached homes must demonstrate compliance with either the 9.36.6 Energy Step Code performance pathway using the EnerGuide Rating System OR 9.36.5 pathway listed in the Compliance Pathway Requirements table below. Please see **Appendix 1** for more information regarding home energy labeling requirements.

Compliance Pathway Requirements at Final Building Inspection	
9.36.6 Energy Step Code performance path Licensed Energy Advisor or Registered Professional required	9.36.5: Registered Professional required
<ol style="list-style-type: none"> 1. A post-construction air tightness test is required. Please provide the Building Inspections department with minimum 48-hour advance notice of a scheduled test so that a Building Official may attend the testing, at the City’s discretion. 2. Submit the BC Energy Compliance Report – Performance Paths for Part 9 Buildings: As Built Form⁶ completed by a Licensed Energy Advisor or a Registered Professional, indicating post-construction air tightness (“blower door”) results and verification of all building energy efficiency upgrades. Sections A, B, D, E, and F must be completed, as well as Section G where applicable. 3. Revised printed copy of HOT2000 Full House report for each building as constructed.* The model must incorporate the post-construction 4. Door test result in the HOT2000 “n-file” energy model. 5. An EnerGuide Rating System label, Passive House Certification or other eligible home energy label affixed on or near the electrical panel. See Appendix 1 for information required for a valid comparable Home Energy Label. 	<ol style="list-style-type: none"> 1. A post-construction air tightness test is required. Please provide the Building Inspections department with minimum 48-hour advance notice of a scheduled test so that a Building Official may attend the testing, at the City’s discretion. 2. Submit the BC Energy Compliance Report – Performance Paths for Part 9 Buildings: As Built Form⁷ indicating post-construction air tightness (“blower door”) results and verification of all building energy efficiency upgrades. Sections A, B, C, E, and F must be completed, as well as Section G where applicable. 3. Revised HOT2000 Full House report or alternative energy model report for each building as constructed.* The model must incorporate the post-construction blower door test result in the HOT2000 or other energy model. 4. An EnerGuide Rating System label, Passive House Certification or other eligible home energy label affixed on or near the electrical panel. See Appendix 1 for information required for a valid comparable Home Energy Label.

*Note: The City may contact the Energy Advisor or Registered Professional to submit the associated software model files for auditing purposes.

⁶ Download the *BC Energy Compliance Report – Performance Paths for Part 9 Buildings: Pre-Construction Form* here energystepcode.ca/compliance-tools-part9/

⁷ Download the *BC Energy Compliance Report: Mid-Construction Form* here energystepcode.ca/compliance-tools-part9/

Non-compliance with Energy Step Code Requirements

If a building does not meet the BC Energy Step Code requirements following final air tightness (“blower door”) test at project completion, a Building Official may issue a Final Checklist at Final Inspection, subject to the following conditions being met:

- a) The applicant demonstrates that all reasonable measures were taken to improve the energy performance of the building after the initial post-construction blower door test.
- b) Another post-construction blower door test is conducted by a Licensed Energy Advisor or Registered Professional.
- c) The applicant submits a revised BC Energy Compliance Report – Performance Path for Part 9 Buildings: As-Built Form completed by the Licensed Energy Advisor or Registered Professional, indicating the updated post-construction blower door test results and verification of all building energy efficiency upgrades.
- d) The building constructed must demonstrate compliance with an alternative energy efficiency performance or prescriptive requirement set out in the BC Building Code for Part 9 construction.



Image 3: An air tightness (“blower door”) test during Mid-Construction Stage

Additional Information

BC Energy Step Code

- Receive up-to-date information by signing up for the Province of BC’s Energy Step Code Stakeholder Update newsletter bit.ly/EnergyStepCodeNewsletter
- To learn more about the BC Energy Step Code, including performance requirements, resources for industry, and upcoming events, visit energystepcode.ca
- For the latest technical bulletins related to the BC Energy Step Code and BC Building Code, please visit bit.ly/ESCTechnicalBulletins
- If you have additional questions regarding the BC Energy Step Code, visit energystepcode.ca/contact-us/ or email building.safety@gov.bc.ca.

City of New Westminister’s Implementation of the BC Energy Step Code

- Sign-up for email notifications whenever new information is available, including bulletin updates, education and engagement opportunities, and incentives and capacity building opportunities energysavenewwest.ca/sign-up-for-e-news/
- For information about the City of New Westminister’s implementation of the BC Energy Step Code, visit newwestcity.ca/energy-step-code
- For information on Energy Save New West’s High Performance New Home program with the latest program services and incentives available energysavenewwest.ca/new-homes/
- If you have additional questions regarding the City’s implementation of the Step Code, you can reach us at StepCodeInfo@newwestcity.ca



Additional Guidance for Applicants

The City of New Westminster has created a series of bulletins that describe how new Step Code requirements are addressed and captured through the development application process for various building typologies. These bulletins are summarized and linked below.

- 1** **Bulletin 1** – General Information for Applicants - **Planning or Development Applications and Building Permits**
- 2** **Bulletin 2** – Building Permit compliance requirements for BC Energy Step Code, New **Part 9 Single Family, Duplex, and Laneway and Carriage Houses**
- 3** **Bulletin 3** – Design Stage and Building Permit compliance requirements for BC Energy Step Code, New **Part 3 Multi-Unit Residential and Commercial Buildings**
- 4** **Bulletin 4** – Design Stage compliance requirements for BC Energy Step Code, **New Part 9 and Part 3 Buildings on Sites with Protected Heritage Buildings**
- 5** **Bulletin 5** – Design Stage compliance requirements for BC Energy Step Code, New **Laneway and Carriage Houses**
- 6** **Bulletin 6** - Part 9 Multi-Unit Residential Buildings **Townhouses and Small Multi-Unit Residential Buildings**

Rebates & Incentives

The City has developed educational materials and incentive programs to help the transition toward higher levels of energy performance in new construction.

For more information, visit:
energysavenewwest.ca/energy-step-code

Need more info?

For more information and resources on the BC Energy Step Code, including the implementation and design guides, costing study, technical resources, and FAQs, visit energystepcode.ca

Does your project include the protection of a heritage building?

Protected heritage buildings are currently exempt from the Step Code requirements while we research and develop best practice guides for heritage retrofits. The Step Code requirements outlined in this guide only apply to the new build. [Contact the Planning Department](#) if you have questions about HRA specific projects and requirements.



Additional questions about BC Energy Step Code in New Westminster?

Contact us at StepCodeInfo@newwestcity.ca or call **604.515.3818**

Appendix 1: Requirements for Home Energy Labels

As an administrative requirement at final building inspection, the City of New Westminster requires that an energy label be affixed to the electrical panel in each housing unit where an electrical panel is present.

The following energy labels are acceptable:

- EnerGuide Rating System energy label, OR
- Passive House Certificate, OR
- A comparable energy label including all required information.

The “comparable energy label” can be used when:

- Energy modellers are using software tested in accordance with ANSI/ASHRAE 140 Evaluation of Building Energy Analysis Computer Programs;
- Licensed Energy Advisors not registered with the EnerGuide Rating System use HOT2000 to model a home and produce a BC Energy Compliance Report, OR
- Licensed Energy Advisors are using HOT2000 but are unable to produce a formal EnerGuide Rating System home energy label (e.g., when Energy Advisors use HOT2000 to model a townhome or row home as-a-building rather than as a unit). Note also that when EnerGuide Rating System Energy Advisors are using alternative energy modeling and blower door test procedures they are not able to produce an EnerGuide home energy label.

“Comparable energy labels” must include the following information:

ADDRESS	<input type="checkbox"/> The street address of the home.
MODELLER	<input type="checkbox"/> The date that the evaluation was conducted. <input type="checkbox"/> The company name and name of energy modeler that conducted the evaluation. <input type="checkbox"/> The name of the entity that provides quality assurance.
ENERGY RATING	<input type="checkbox"/> Energy Rating: Energy consumption of the home in GJ per year, including baseloads. <input type="checkbox"/> Reference House Energy Rating: Reference house energy consumption in GJ per year, with baseloads.
ENERGY METRICS	<input type="checkbox"/> Breakdown of Rated Annual Energy Consumption by system: Percentage of total energy consumption in GJ per year by end use (space heating, space cooling, water heating, ventilation, lights & appliances, and other electrical). <input type="checkbox"/> Rated On-Site Renewable Energy Contributions: Energy generated annually from onsite renewable sources (solar PV, wind, solar hot water) <input type="checkbox"/> Rated Energy Intensity: Measured in GJ per square meter per year. <input type="checkbox"/> Rated Greenhouse Gas Emissions: Annual amount of greenhouse gases emitted in tons/year <input type="checkbox"/> Total Heated Floor Area: The total usable heated floor area of the building unit, including all above-grade heated areas regardless of ceiling height, and all below-grade heated areas with a ceiling height of more than 1.2m (i.e. basements).