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Energy Step Code: Part 9 Single Family Dwellings and Duplexes

No.: BUILDING-38
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This bulletin is to provide Owners, Applicants, Contractors, and Builders with the requirements and future targets of the BC Energy Step Code for new single family dwellings and duplexes.

Summary

- All permit applications for new single-family dwellings and duplexes are subject to the Energy Step Code.
- There are two compliance pathways requiring either an Energy Advisor or a Registered Professional that owners can take to meet Energy Step Code Requirements.

What is the BC Energy Step Code?

The BC Energy Step Code is a provincial energy efficiency code which has set out performance based targets for new buildings to meet. These standards have been set to encourage the construction of energy efficient and airtight buildings, making all new buildings net zero ready by 2032. For more information on the **BC Energy Step Code overview for Part 9 buildings**, please refer to bulletin Building-37.

An Energy Advisor or a Registered Professional is required to take part in all new project developments to:

- Develop energy models for new building projects.
- Provide guidance on meeting airtightness and energy performance requirements.
- Verify installation of energy efficiency components.
- Conduct required blower door tests to measure building airtightness.

General Requirements

- All permit applications for new single-family dwellings and duplexes are subject to the Energy Step Code.
- Documentation of Energy Step Code compliance is required at three (3) stages:
 1. Building Permit application.
 2. Insulation and sheathing building inspection.
 3. Final building inspection.

All Energy Step Code reports and supporting documents specified in this bulletin must be sent to energyreports@richmond.ca with the site address and report title in the email subject (e.g. "6911 No 3 Rd – Pre-construction Report").

See over →

Requirements for Building Permit Application

Part 9 of the BC Building Code (BCBC) provides two paths for compliance, Energy Step Code, which requires an Energy Advisor, and Energy Performance, which requires a Registered Professional. The following highlights the requirements for each compliance path.

Note: Electronic (email) submissions must be made prior to Building Permit application.

a) Compliance Pathway: 9.36.6 – Energy Step Code <i>Certified Energy Advisor (licenced by Natural Resources Canada) required</i>		
Document	Electronic (Email ¹)	Paper (Permit application package)
1. BC Energy Compliance Report: Pre-Construction Form, including Section F , completed by a Certified Energy Advisor.	✓	✓
2. HOT2000 Full House Report for both reference and proposed houses.	✓	--
3. Confirmation email from the City of Richmond, acknowledging receipt of files submitted electronically (emailed).	✓	✓
4. Plan drawings clearly showing all energy efficiency upgrades noted in Section B of the BC Energy Compliance Report: Pre-Construction Form. First page of Pre-construction Form must be duplicated on the assemblies sheet of the drawings.	✓	✓
5. For each Energy Advisor, a copy of a valid certificate of insurance for no less than \$2 million of general liability insurance and \$1 million in errors and omissions insurance.	Electronic <i>or</i> paper	
6. Copy of the Energy Advisor's City of Richmond Business License.	Electronic <i>or</i> paper	
b) Compliance Pathway: 9.36.5 – Energy Performance <i>Registered Professional required</i>		
Document	Electronic (Email)	Paper (Permit Application package)
1. BC Energy Compliance Report: Pre-Construction Form, including Section F , completed by a Registered Professional.	✓	✓
2. Full energy modelling report ² signed and sealed by a Registered Professional for both reference and proposed houses.	✓	--
3. Electronic copy of the building energy model.	✓	--
4. Confirmation email from the City of Richmond, acknowledging receipt of files submitted electronically (emailed).	✓	✓
5. Plan drawings clearly showing all energy efficiency upgrades noted in Section B of the BC Energy Compliance Report: Pre-Construction Form. Please list all upgrades on the front sheet of plan drawings.	✓	✓
6. For each Registered Professional, Schedules A, B, E, and F, and a certificate of insurance.	Electronic <i>or</i> paper	
7. Copy of the Registered Professional's City of Richmond Business License.	Electronic <i>or</i> paper	

NOTE: Specifications outlined in the Pre-construction report will be used as reference for building inspections.

See attached →

¹ energyreports@richmond.ca

² As per AIBC and EGBC's Joint Professional Practice Guidelines for Whole Building Energy Modelling Services (2018)

Requirements for Building Inspection

The following must be submitted electronically *prior* to booking the Insulation inspection:

- **BC Energy Compliance Report:** Mid-Construction form completed by the Energy Advisor or Registered Professional. The form must indicate pre-drywall blower test results and verification of all building energy efficiency upgrades. The Building Inspector must be given two days advanced notice of the blower door test so that they may choose to attend this test.

NOTE: A pre-drywall blower door test result that is **more than 25% above** the applicable Step's requirement **OR** any envelope assembly downgraded compared to the approved design will result in the requirement of improved airtightness and/or the thermal performance of the building envelope. Additional energy modelling may be required to demonstrate the building is on track to comply.

Requirements at Final Building Inspection

The following must be submitted electronically *prior* to booking the Final building inspection:

1. **Post-construction blower door test** conducted by an Energy Advisor or a Registered Professional. The Building Inspector must be given two days advanced notice of the blower door test so that they may choose to attend this test.
2. **As-Built Compliance Report** and supporting documents as outlined in the following table.

a) Compliance Pathway: 9.36.6 – Energy Step Code	
Document	Electronic (Email)
1. BC Energy Compliance Report: As-Built Form, including Section F, completed by an Energy Advisor, indicating post-construction blower door test results and verification of all building efficiency upgrades. NOTE: The post-construction blower door test result must be used by the Energy Advisor in the HOT2000 model of the As-Built house.	✓
2. HOT2000 Full House Report for both the As-Built and Reference houses.	✓
3. Confirmation email from NRCan, accepting the HOT2000 “N-file” corresponding to the As-Built HOT2000 Full House Report.	✓
b) Compliance Pathway: 9.36.5 – Energy Performance	
Document	Electronic (Email)
1. BC Energy Compliance Report: As-Built Form, including Section F, completed by a Registered Professional, indicating post-construction blower door test results and verification of all building efficiency upgrades.	✓
2. Full House Report or alternative energy modelling report, stamped and sealed by a Registered Professional for both the As-Built and Reference houses.	✓
3. Copy of the As-Built energy model.	✓

Home Energy Labels

Upon approval of the As-Built energy model, the homeowner will receive an EnerGuide Rating System home energy label from Natural Resources Canada. **The City of Richmond requires that the EnerGuide label, or a “comparable” home energy label, be affixed on or near the electrical panel within each dwelling unit in each building.** See Appendix 2 for more details.

See over →

Non-compliance with the Energy Step Code

If a building does not meet the Energy Step Code targets, the Building Inspector may issue an inspection notice for occupancy if the applicant demonstrates that all reasonable measures were taken to improve the energy performance of the building, to the satisfaction of the Building Inspector, and meet the following:

1. **A second post-construction blower door test** conducted by licensed Energy Advisor or Registered Professional.
2. **A revised BC Energy Compliance Report: As-Built** form completed by the Energy Advisor or Registered Professional, indicating revised post-construction blower door test results and verification of all building energy efficiency upgrades. Additional energy modeling may be required to demonstrate improvement of the performance.
3. Compliance with an alternative performance-based energy efficiency standard or prescriptive requirements set out in Part 9 of the Building Code.

References

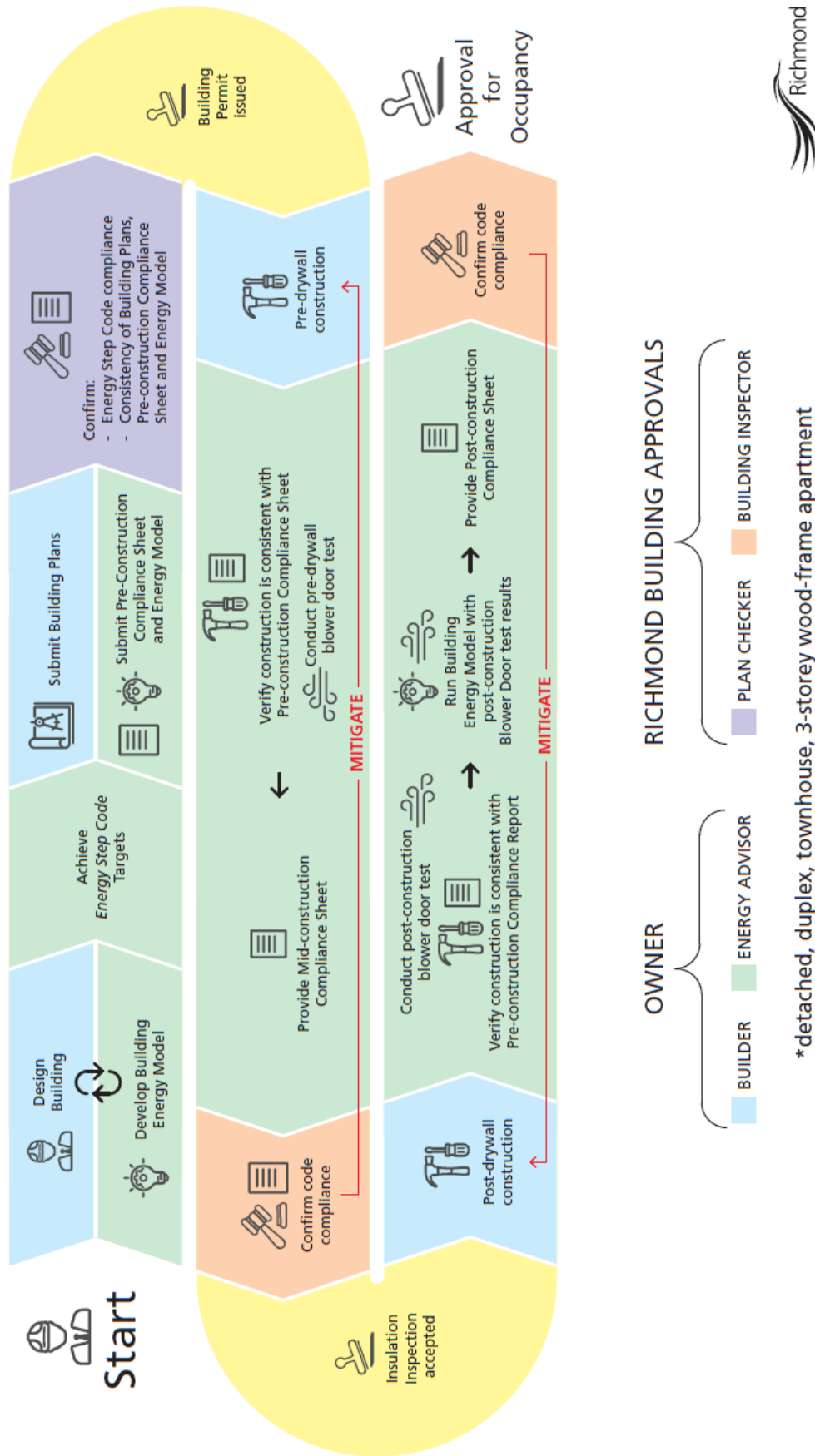
- BC Energy Step Code: [EnergyStepCode.ca](https://www.energystepcode.ca)
- BC Energy Compliance Reports: [EnergyStepCode.ca/Compliance-Tools-Part9](https://www.energystepcode.ca/Compliance-Tools-Part9)
- City of Richmond [Bulletin Building-37: Energy Step Code: Part 9 Buildings Overview](#)
- City of Richmond [Bulletin Building-39: Energy Step Code: Part 9 Townhouses and Apartments](#)
- City of Richmond [Official Community Plan](#)

Should you have any questions or comments concerning this bulletin, please contact the City of Richmond's Sustainability Department via the main City phone line 604-276-4000.

See attached →

Appendix 1: Energy Step Code Regulatory Process

How the Energy Step Code fits into the Building Permit Process for new Part 9* Residential Development



Appendix 2: Requirements for Home Energy Labels

As an administrative requirement, the City of Richmond requires that an energy label be affixed on or next 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 as defined below

A “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;
- Energy advisors not registered with the EnerGuide Rating System use Hot2000 to model a home and produce a BC Energy Compliance Report; OR
- Registered 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); OR
- Energy advisors are using alternative energy modelling tools and blower door testing procedures and hence are not able to produce an EnerGuide home energy label.

A “comparable” energy label must include the following information:

Address:	<ul style="list-style-type: none"> • The street address of the home.
Modeller:	<ul style="list-style-type: none"> • The date that the evaluation was conducted. • The company name and name of energy modeller that conducted the evaluation. • The name of the entity that provides quality assurance.
Energy Rating:	<ul style="list-style-type: none"> • Energy Rating: Energy consumption of the home in GJ per year, including baseloads. • Reference House Energy Rating: Reference house energy consumption in GJ per year, including baseloads.
Energy Metrics:	<ul style="list-style-type: none"> • Rated Annual Energy Consumption: Energy consumption GJ per year, broken down by fuel type (Natural Gas, Electricity, Oil, and Propane). • Breakdown of Rated Annual Energy Consumption by system: Percentage of total energy consumption GJ per year by end use (space heating, space cooling, water heating, ventilation, lights & appliances, and other electrical) • Rated On-site Renewable Energy Contributions: Energy generated annually from onsite renewable sources (solar PV, wind, solar hot water). • Rated Energy Intensity: Measured in GJ per square meter per year. • Rated Greenhouse Gas Emissions: Annual amount of greenhouse gases emitted in tonnes of CO₂ per year. • 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).