

Mar 29, 2021
BUILDING DIVISION

BC Energy Step Code Requirements: Part 9 Single- and Two-Family Dwellings

DISCLAIMER: The information presented below is subject to addition and revision in future versions of this Building Division Bulletin. Notes below indicate some, but not all, items that may be revised. To be notified whenever this Bulletin is updated, sign up for email alerts at bit.ly/SurreyStepCodeAlerts.

Purpose and Background:

On Jul 23, 2018, Surrey City Council approved *Corporate Report R179*¹ that requires new buildings to be constructed to the energy efficiency requirements set under the BC Energy Step Code. This bulletin is provided to inform applicants and designers of new single- and two-family dwellings about the City of Surrey’s BC Energy Step Code and building energy labelling requirements.

- Refer to the **Additional Information** section at the bottom of this bulletin for additional Step Code information and resources.
- Refer to **Appendix 1** for details on the City’s building energy labelling requirements.
- BC Energy Step Code and associated requirements for other building types can be found in similar City bulletins for **Part 9 Multi-Family Residential Buildings** and **Part 3 Buildings**.

Implementation:

Effective Jan 1, 2021, Step 3 of the BC Energy Step Code will apply to all new building permit applications for single- and two-family buildings.

Building Type	Building Permits application filed before Jan 1, 2021	Building Permits application filed on or after Jan 1, 2021
Single- and two-family buildings	Step 1	Step 3

To comply with the BC Energy Step Code, builders must work with a Licensed Energy Advisor and/or a Registered Professional to ensure building designs meet all applicable energy performance and administrative requirements.

All Registered Professionals are expected to follow the Joint Architectural Institute of BC and Engineers and Geoscientists BC *Professional Practice Guidelines – Whole Building Energy Modelling Services*.²

¹ The July 2018 Council Report is available online. Any information in the Council Report that is inconsistent with City bylaws or bulletins should be considered out-of-date: https://www.surrey.ca/sites/default/files/corporate-reports/RPT_2018-R179.pdf

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

Rezoning and Development Permit Applications and Approvals:

As part of rezoning and development permit applications, applicants are expected to conduct energy modelling and provide a statement to the City that their proposed design will meet the City's Energy Step Code requirements in place at the time of the associated building permit application. This statement must be submitted prior to the City considering the rezoning and/or development permit application. It is incumbent on applicants to ensure their proposed building design will meet the City's Energy Step Code requirements. Any revisions to building design may require applicants to reapply for updated rezoning and/or development permit approvals.

Building Permit Submission Requirements:

All building permit applications for new single- and two-family buildings must demonstrate compliance with either the EnerGuide Rating System or 9.36.5 pathways listed in the Compliance Pathway Requirements table below. Be aware that in the future the City will require all building permit submission documents to be sealed and submitted electronically.

Applicants are expected to use conservative airtightness assumptions in energy models. Applicants that do not use a conservative airtightness assumption risk designing and constructing homes that will not meet the airtightness performance requirements and delaying occupancy at Final Building Inspection. The Province has developed several *Technical Bulletins*³ related to Step Code, including one focused on airtightness assumptions in energy modelling (B19-03).

Compliance Pathway Requirements at Building Permit Submission The following documents must be completed and submitted with the Building Permit application	
<u>City's Preferred Path</u>	
EnerGuide Rating System: <i>Licensed Energy Advisor</i>	9.36.5: <i>Registered Professional required</i>
<ol style="list-style-type: none"> 1. <i>BC Energy Compliance Report - Performance Paths for Part 9 Buildings: Pre-Construction form</i>⁴ completed by a Licensed Energy Advisor. Sections A, B, D, E, and F must be completed. Sections C and G should be completed if applicable. 2. Printed copy of HOT2000 Full House reports for both the proposed and reference buildings.* In defining model assumptions, use the "Lower Mainland-City of Vancouver" weather file and 18 inches for frost line depth. 3. For each Licensed Energy Advisor, a printed copy of valid liability insurance certificate. 4. Plan drawings clearly showing all energy efficiency upgrades and the type of air barrier. 	<ol style="list-style-type: none"> 1. <i>BC Energy Compliance Report - Performance Paths for Part 9 Buildings: Pre-Construction form</i>⁴ completed by Registered Professional who is a Qualified Modeller (QM) or overseeing a QM in the role of Energy Modelling Supervisor (EMS)**. Sections A, B, D, E, and F must be completed. Sections C and G should be completed if applicable. 2. Printed copy of energy model reports for both the proposed and reference buildings.* The report must be sealed by the QM or EMS.** In defining model assumptions in HOT2000, use the "Lower Mainland-City of Vancouver" weather file and 18 inches for frostline depth. 3. For each Registered Professional, a printed copy of a valid professional liability certificate of insurance. 4. Plan drawings clearly showing all energy efficiency upgrades and the type of air barrier.

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

**Practice Guidelines: Registered Professionals involved in building energy modelling are expected to follow the Joint Architectural Institute of BC and Engineers and Geoscientists BC Professional Practice Guidelines for *Whole Building Energy Modelling Services*.

³ Available here: <https://www2.gov.bc.ca/gov/content/industry/construction-industry/building-codes-standards/bc-codes/technical-bulletins>

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

Mid-Construction Blower Door Test Requirement prior to Insulation Inspection:

All Part 9 buildings must complete a mid-construction blower door test prior to Insulation Inspection. Applicants must submit a complete *Mid-Construction Verification Report*⁵ before a Building Official will conduct the Insulation Inspection. The Building Inspection Section may require two days advanced notice of the blower door test so that they may choose to attend this test.

For Step 1 projects, applicants do not need to achieve a specific mid-construction airtightness performance but are expected to take steps to improve performance as necessary before installing drywall.

For Step 3 projects, applicants must achieve a mid-construction performance ≤ 1.5 ACH above the final requirement of 2.5 ACH, for a maximum of 4.0 ACH, before a Building Official will complete an Insulation Inspection.

Compliance Pathway Requirements prior to Insulation Inspection	
<u>City's Preferred Path</u> EnerGuide Rating System: <i>Licensed Energy Advisor</i>	9.36.5: <i>Registered Professional required</i>
<ol style="list-style-type: none"> 1. Mid-construction blower door test conducted by Licensed Energy Advisor. 2. Printed copy of <i>Mid-Construction Verification Report</i>⁵ completed by Licensed Energy Advisor. The report must indicate mid-construction blower door test results and verification of all building energy efficiency upgrades. 	<ol style="list-style-type: none"> 1. Mid-construction blower door test conducted by Registered Professional. 2. Printed copy of <i>Mid-Construction Verification Report</i>⁵ completed by Registered Professional acting as the QM or EMS. The report must indicate mid-construction blower door test results and verification of all building energy efficiency upgrades.

Final Building Inspection Requirements:

All new single- and two-family buildings must demonstrate compliance with either the EnerGuide Rating System or the 9.36.5 pathway listed in the Compliance Pathway Requirements table below. The Building Inspection Section may require two days advanced notice of the blower door test so that they may choose to attend this test. Note the building energy label requirement and see **Appendix 1** for more information.

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Compliance Pathway Requirements at Final Building Inspection	
<u>City's Preferred Path</u> EnerGuide Rating System: <i>Licensed Energy Advisor</i>	9.36.5: <i>Registered Professional required</i>

⁵ Download the *BC Energy Compliance Report – Mid-Construction Verification Report for Part 9 Buildings*: here: <https://energystepcode.ca/compliance-tools-part9/>

<ol style="list-style-type: none"> 1. Post-construction blower door test must be conducted by Licensed Energy Advisor. 2. Printed copy of <i>BC Energy Compliance Report – Performance Paths for Part 9 Buildings: As-Built form</i>⁶ completed by Licensed Energy Advisor, indicating post-construction blower door test results and verification of all building energy efficiency upgrades. The Licensed Energy Advisor is required to verify that the constructed building and all energy-related components match the energy model and As-Built Compliance Report. Sections A, B, D, E, and F must be completed. Sections C and G should be completed if applicable. 3. Printed copy of revised HOT2000 Full House reports for both the building as constructed and the reference building*. The model must incorporate the post-construction blower door test result in the HOT2000 “n-file” energy model. 4. An EnerGuide Rating System label affixed on or near the electrical panel. 	<ol style="list-style-type: none"> 1. Post-construction blower door test must be conducted by Registered Professional is required. 2. Printed copy of <i>BC Energy Compliance Report – Performance Paths for Part 9 Buildings: As-Built form</i>⁶ completed by Registered Professional acting as the QM or EMS**, indicating post-construction blower door test results and verification of all building energy efficiency upgrades. The Registered Professional is required to verify that the constructed building and all energy-related components match the energy model and As-Built Compliance Report. Sections A, B, D, E, and F must be completed. In Section E, Registered Professional completing the report must include their Registration/License number after their name. Sections C and G should be completed if applicable. 3. Printed copy of revised energy model reports, sealed by the Registered Professional acting as QM or EMS, for both the building as constructed and the reference building*. The model must incorporate the post-construction blower door test result in the energy model. 4. EnerGuide Rating System, 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.
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*Note: The City may contact Energy Advisor or Registered Professional to submit the associated model files for auditing purposes.

**Practice Guidelines: Registered Professionals involved in building energy modelling are expected to follow the Joint Architectural Institute of BC and Engineers and Geoscientists BC Professional Practice Guidelines for Whole Building Energy Modelling Services.

Non-Compliance with Energy Step Code requirements:

If a building does not meet the BC Energy Step Code requirements after the post-construction blower door test, a Building Official *may* issue an inspection notice for occupancy if the following conditions are 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 Paths for Part 9 Buildings: As-Built form*⁶ 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.

⁶ Download the *BC Energy Compliance Report – Performance Paths for Part 9 Buildings: As-Built form* here: <https://energystepcode.ca/compliance-tools-part9/>

Additional Information:

BC Energy Step Code:

- Receive up-to-date information by signing up for the Province's BC Energy Step Code Stakeholder Update newsletter: bit.ly/StepCodeStakeholderNewsletter.
- To learn more about the BC Energy Step Code, including performance requirements, resources for industry, and upcoming events, visit energystepcode.ca.
- BC Building Code Technical Bulletins: <https://www2.gov.bc.ca/gov/content/industry/construction-industry/building-codes-standards/bc-codes/technical-bulletins>.
- 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 Surrey'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: bit.ly/SurreyStepCodeAlerts.
- For information about the City of Surrey's implementation of the BC Energy Step Code, visit www.surrey.ca/stepcode.
- If you have additional questions regarding the City's Implementation of the BC Energy Step Code, please email stepcode@surrey.ca.

Appendix 1: Requirements for Home Energy Labels

As an administrative requirement for occupancy, the City of Surrey 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” 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
- 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). Note also that when EnerGuide Rating System energy advisors are using alternate energy modelling and blower door testing procedures they are not able to produce an EnerGuide home energy label.

“Comparable energy labels” 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.
	<ul style="list-style-type: none"> • The company name and name of energy modeller that conducted the evaluation.
	<ul style="list-style-type: none"> • 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.
	<ul style="list-style-type: none"> • Reference House Energy Rating: Reference house energy consumption in GJ per year, with 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).
	<ul style="list-style-type: none"> • 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)
	<ul style="list-style-type: none"> • Rated On-site Renewable Energy Contributions: Energy generated annually from onsite renewable sources (solar PV, wind, solar hot water).
	<ul style="list-style-type: none"> • Rated Energy Intensity: Measured in gigajoules per square meter per year.
	<ul style="list-style-type: none"> • Rated Greenhouse Gas Emissions: Annual amount of greenhouse gases emitted in tons/year.
	<ul style="list-style-type: none"> • 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).