

April
2020

TECHNICAL BULLETIN NO. 1-2020

SUBJECT:

Energy Step Code and CleanBC program update

REFERENCE:

BC Housing Design Guidelines and Construction Standards
May 2019

SUBJECT:

BC Housing Design Guidelines and Construction Standards May 2019 - revision to Section 2 Energy and Environmental Design. The change is to take effect immediately on new projects and projects that have not gone past Design Development approval from BC Housing.

PURPOSE:

To align BC Housing's energy performance targets with BC Building Code 2018 Revision 2 and BC Housing's GHG reduction target with the provincial Climate Change Accountability Act, legislated update December 25th, 2019. BC Building Code 2018 has issued Revision 2, effective December 12th, 2019. Revision 2 includes changes to BC Energy Step Code to better reflect colder climate conditions outside of Climate Zone 4. The Province also announced interim GHG reduction targets.

DESCRIPTION:

The changes to BC Housing Guidelines and Construction Standards 2019 are:

Section 2 - Energy and Environmental Design

- **1.0 Sustainability Goals**
1.3.1; 1.3.2
- **2.0 Building and Energy Performance**
2.1.1.1; 2.1.1.2; 2.1.3; 2.1.4
- **4.0 Energy Efficient Products, Incentives and Energy Assessment**
4.1.1; 4.6

DESCRIPTION:**Section 2 - Energy and Environmental Design****1.0 Sustainability Goals****1.3.1 Reduce energy consumption level and GHG emissions**

Revise as follows:

1.3.1.2 BC Housing will reduce its greenhouse gas (GHG) emissions from PRHC owned and leased buildings relative to 2010 baseline by 50% by 2030 to align with the CleanBC Plan.

1.3.1.3 BC Housing monitors and reports energy consumption and related GHG emissions to the BC Government for all PRHC owned and leased buildings under the legal requirement of Bill 44 - Climate Change Accountability Act (formerly titled Greenhouse Gas Reduction Target Act) and the Carbon Neutral Government Regulation. The emissions data, GHG reduction actions and plans and statement of relevant carbon offsets applied, are submitted by BC Housing as a Carbon Neutral Action report to the BC Government. The reports are made publicly available every year by the end of June.

1.3.2 Achieve BC Housing's Building and Energy Performance Targets

BC Housing established the following minimum Performance Targets for all new projects:

- Thermal Energy Demand Intensity (TEDI) (kWh/m²/yr)
- Total Energy Use Intensity (TEUI) (kWh/m²/yr)
- Greenhouse Gas Intensity (GHGI) (kgCO₂/m²)
- Envelope Air Leakage Rate (EALR_{n75}) (L/s/m²)
- Interior Partitions Air Leakage Rate (IPALR_{n50}) (L/s/m²)
- Peak Thermal Load (PTL) (W/m²)
- Mechanical Energy Use Intensity (MEUI) (kWh/m²/yr)

Where required by the local by-laws, the BC Housing's Buildings and Energy Performance Targets should be achieved in addition to the municipal requirement of achieving other third-party certification. Consult the re-zoning and energy by-law requirements of the Municipality having jurisdiction before establishing the performance criteria for the project.

2.0 Building and Energy Performance

2.1 REQUIREMENTS

2.1.1.1 Change the Article title to “Part 3 Projects - Less than 7 Storeys:”

Remove wording “Combustible (i.e. wood frame)”

Change the table in this article as follows:

| Climate Zone ¹ | Step Code Level | GHGI (kgCO ₂ /m ²) | EALR _{N75} (L/s*m ² @75 Pa) | IPALR _{N50} (l/s/m ² @50 Pa) |
|--|-----------------|--|--|---|
| 4 ² | Step 4 | 5.5 | 2.0 | 1.2 |
| 5 ³ | Step 3 | 5.5 | | |
| 6 ⁴ , 7 ⁵ , 8 ⁵ | Step 3 | 6.0 | | |

1 Climate Zone is based on Heating Degree Days (HDD) below 18°C for 25 years period ending in 2006 as per BC Building Code Appendix C - Division B Climatic and Seismic Information for Building Design in Canada.

2 Less than 3000 HDD

3 3000 to 3999 Heating Degree Days (HDD)

4 4000 to 4999 Heating Degree Days (HDD)

5 Greater than 4999 Heating Degree Days (HDD)

2.1.1.2 Change the Article title to “Part 3 Projects - 7 Storeys and higher:”

Remove wording “Non combustible (i.e. concrete)”

Change the table in this article as follows:

| Climate Zone ¹ | Step Code Level | GHGI (kgCO ₂ /m ²) | EALR _{N75} (L/s*m ² @75 Pa) | IPALR _{N50} (l/s/m ² @50 Pa) |
|--|-----------------|--|--|---|
| 4 ² , 5 ³ , 6 ⁴ , 7 ⁵ , 8 ⁵ | Step 3 | 6.0 | 2.0 | 1.2 |

1 Climate Zone is based on Heating Degree Days (HDD) below 18°C for 25 years period ending in 2006 as per BC Building Code Appendix C - Division B Climatic and Seismic Information for Building Design in Canada.

2 Less than 3000 HDD

3 3000 to 3999 Heating Degree Days (HDD)

4 4000 to 4999 Heating Degree Days (HDD)

5 Greater than 4999 Heating Degree Days (HDD)

2.1.3 Thermal Comfort Evaluation

Revise as follows:

2.1.3 Thermal Comfort Evaluation: A thermal comfort evaluation is required for all passively cooled buildings (i.e. buildings without full mechanical cooling in all occupied spaces). For all BC Housing buildings, it shall not exceed more than 20 overheating hours per year for any zone and must adhere to the City of Vancouver Energy Modelling Guidelines.

2.1.4 Whole Building Airtightness Testing

Revise as follows:

- 2.1.4** Whole Building Airtightness Testing: Whole building airtightness shall be tested and reported. The Envelope Air Leakage Rate is to be confirmed through mandatory testing performed in accordance with the requirement of the Provincial Energy Step Code. Until the air leakage rate confirmed through testing is available, an air leakage rate determined in accordance with the City of Vancouver Energy Modelling Guidelines shall be used. If a more stringent placeholder is used as an assumption in the energy model, the building is to be designed and constructed with the intention of meeting the modelled air leakage target. The architect must work closely with the whole team but especially the mechanical and electrical engineer, envelope consultants, and contractor to ensure the design details and contractor's responsibilities are met. The airtightness testing result shall be submitted by the contractor at substantial completion. Refer to Section 4 Division 7 Thermal Bridging and Airtightness.

The buildings that do not achieve the airtightness target, the contractor must find and seal the sources of air leakage (using techniques such as visual inspection, smoke testing, and/or thermal imaging), and then re-test. Where the building is still unable to meet the target, a follow up report must be provided by the architect in coordination with the contractor. The report shall include the findings of a visual air barrier inspection, any air leaks that were found and sealed, remaining sources of air leakage and why they could not be sealed, and recommendations for future buildings to achieve the target.

4.0 Energy Efficient Products, Incentives and Energy Assessment

4.1 ENERGY EFFICIENT SYSTEMS

4.1.1 Heating, Ventilation, Air Conditioning (HVAC) Systems:

Add the following sentence at the end of first paragraph:

All make up air units (MUA) shall be high efficiency condensing model if using natural gas as a source.

4.6 ENERGY ASSESSMENT AND ENERGY CONSERVATION MEASURES (ECM)

Revise as follows:

- 4.6.3** Project team should implement ECM to achieve a 50% GHG emission reduction target in line with CleanBC requirements. Consult with BC Housing's Energy Management Team.