



2018 Metrics Update Summary

Introduction

The Energy Step Code Council is recommending a number of extensions and minor improvements to the BC Energy Step Code that will allow more communities to participate in the transition to net-zero energy ready buildings. Collectively, we refer to these proposed changes as the **2018 Metrics Update**.

The Council prepared this summary to outline the changes and their anticipated impacts on stakeholders. [Eight companion documents](#) provide details of the proposed changes for Part 3 and Part 9 buildings for each Climate Zone. A full costing analysis of the proposed changes is available in an updated [2018 Metrics Research Report](#) from BC Housing.

At a high level, the 2018 Metrics Update aims to accomplish three goals:

- It will ensure builders can reach the Upper Steps — Steps 4 and 5 for homes and other simple buildings — in colder climates.
- It will correct a part of the standard in which certain large single-detached homes could potentially use more energy than those built to the minimum requirements of the BC Building Code.
- It will make the BC Energy Step Code available to communities outside southwestern BC that may wish to use it to incentivize and/or require larger and more complex high-performance buildings.

The 2018 Metrics Update is just that—an update. The fundamentals of the regulation remain unchanged. We've heard loud and clear that industry needs predictability and consistency. This update is part of our commitment to supporting communities and builders who want to put the standard to work. It will make the BC Energy Step Code easier to implement and more widely available.

We devote the balance of this document to a description of the proposed changes, grouped as they apply to projects covered under both Part 9 and Part 3 of the BC Building Code. The former involve

changes to metrics, the latter involve increasing coverage. If adopted, these recommendations would likely take effect in December.

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.

We describe the specific changes for Part 9 buildings below.

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

The Energy Step Code Council is recommending expanding the offering of BC Energy Step Code metrics that apply to Part 3 buildings. These 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.

We describe the specific changes for Part 3 buildings below.

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.