

PROPOSED CHANGE: New Targets for the BC Energy Step Code

CHANGE NUMBER: BCBC2018-R202-ESC

CODE REFERENCE: British Columbia Building Code 2018 – Part 10 of Division B

DESCRIPTION OF THE PROPOSED AMENDMENT:

Revised energy targets based on climate zone are proposed for Part 3 buildings outside of climate zone 4, and new energy targets are proposed for several occupancies typical of public sector buildings.

PROBLEM/BACKGROUND/RATIONALE FOR CHANGE:

The British Columbia Building Code 2018 (BCBC) contains BC Energy Step Code targets for Part 3 buildings in all climate zones. However, these targets are limited to three occupancy classifications and do not differentiate between the climate zones. The Province has also committed to improving the energy efficiency of public sector buildings in CleanBC, building types that are not currently addressed in the Energy Step Code.

The proposed change will establish Energy Step Code targets that are more appropriate for colder climate zones and for public sector buildings. The targets in this proposed change are based on analysis from two reports published in 2018: *BC Energy Step Code Development for Public Sector Buildings*¹, and the *2018 Metrics Research Full Report Update*².

The following marked-up code language is the proposed final code language proposed as a mid-cycle revision to the BCBC 2018. Comments submitted should focus on the changes noted. Changes from the BCBC 2018 to the National Building Code 2015 are not identified.

JUSTIFICATION/EXPLANATION:

In most instances, the lowest incremental cost of meeting the highest step for the occupancy archetypes modelled for the BC Energy Step Code Metrics Research Report remains below 2%; and in all instances, the lowest incremental cost is less than 2.6%.

Lowest incremental capital costs for public sector buildings to achieve the best Energy Use Intensity performance is within 5% of base capital cost for each archetype modelled.

¹ <http://energystepcode.ca/app/uploads/sites/257/2019/06/BC-Step-Code-Public-Sector-Buildings-Report.pdf>

² http://energystepcode.ca/app/uploads/sites/257/2018/09/2018-Metrics_Research_Report_Update_2018-09-18.pdf

2018 PROPOSED BRITISH COLUMBIA CODE LANGUAGE (~~Deleted text~~ / Added text):

10.2.3.1. Application

- 1) This Subsection applies to *buildings* containing any of the following *major occupancies*:
- a) *assembly*, as described in Tables 10.2.3.3.-A, 10.2.3.3.-B, 10.2.3.3.-C and 10.2.3.3.-D, but not including laboratories described in Subsection 6.3.4. or arenas or pools,
 - b) *treatment*, as described in Table 10.2.3.3.-E, but not including laboratories described in Subsection 6.3.4.,
 - c) *care*, as described in Table 10.2.3.3.-F,
 - d) *residential*,
 - e) *business and personal services*, or
 - f) *mercantile*.

(See Note A-10.2.3.1.)

A-10.2.3.1. Application of Subsection 10.2.3. The Energy Step Code targets are not intended to apply to arenas, pools or laboratories.

10.2.3.3. Compliance Requirements

- 1) *Buildings* and *major occupancies* conforming to the requirements of any of Steps 1 to 4 shall be designed and constructed to conform to the applicable energy performance requirements in Tables 10.2.3.3.-A ~~to and~~ 10.2.3.3.-B.

Table 10.2.3.3.-A
Energy Performance Requirements for Schools
Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m ² •year)	Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m ² •year)
Less than 3000	1	Conform to Part 8 of the NECB	
	2	150	45
	3	130	30
	4	100	12
3000 to 3999	1	Conform to Part 8 of the NECB	
	2	180	62
	3	150	40
	4	110	25
4000 to 4999	1	Conform to Part 8 of the NECB	
	2	200	90
	3	170	60
	4	110	30
Greater than 4999	1	Conform to Part 8 of the NECB	
	2	240	120
	3	200	85
	4	115	40

Table 10.2.3.3.-B
Energy Performance Requirements for Libraries
Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m ² •year)	Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m ² •year)
Less than 3000	1	Conform to Part 8 of the NECB	
	2	120	45
	3	92	35
	4	55	11
3000 to 3999	1	Conform to Part 8 of the NECB	
	2	140	55
	3	105	45
	4	60	15
4000 to 4999	1	Conform to Part 8 of the NECB	
	2	160	70
	3	125	65
	4	60	24
Greater than 4999	1	Conform to Part 8 of the NECB	
	2	200	100
	3	155	80
	4	65	32

Table 10.2.3.3.-C
Energy Performance Requirements for Colleges
Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m²•year)	Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m²•year)
Less than 3000	1	Conform to Part 8 of the NECB	
	2	165	20
	3	145	15
	4	130	6
3000 to 3999	1	Conform to Part 8 of the NECB	
	2	180	28
	3	165	20
	4	130	11
4000 to 4999	1	Conform to Part 8 of the NECB	
	2	190	42
	3	180	35
	4	130	11
Greater than 4999	1	Conform to Part 8 of the NECB	
	2	215	65
	3	185	46
	4	130	15

Table 10.2.3.3.-D
Energy Performance Requirements for Recreation Centres
Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m ² •year)	Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m ² •year)
Less than 3000	1	Conform to Part 8 of the NECB	
	2	130	15
	3	105	11
	4	75	7
3000 to 3999	1	Conform to Part 8 of the NECB	
	2	150	25
	3	120	20
	4	90	10
4000 to 4999	1	Conform to Part 8 of the NECB	
	2	160	40
	3	130	35
	4	90	20
Greater than 4999	1	Conform to Part 8 of the NECB	
	2	180	62
	3	145	48
	4	100	30

Table 10.2.3.3.-E
Energy Performance Requirements for Hospitals
Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m ² •year)	Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m ² •year)
Less than 3000	1	Conform to Part 8 of the NECB	
	2	365	75
	3	300	20
	4	265	10
3000 to 3999	1	Conform to Part 8 of the NECB	
	2	375	75
	3	320	22
	4	300	10
4000 to 4999	1	Conform to Part 8 of the NECB	
	2	375	80
	3	320	35
	4	305	15
Greater than 4999	1	Conform to Part 8 of the NECB	
	2	385	80
	3	325	40
	4	305	20

Table 10.2.3.3.-F
Energy Performance Requirements for Care Centres
Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m ² •year)	Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m ² •year)
Less than 3000	1	Conform to Part 8 of the NECB	
	2	130	45
	3	120	30
	4	100	15
3000 to 3999	1	Conform to Part 8 of the NECB	
	2	130	45
	3	120	35
	4	110	22
4000 to 4999	1	Conform to Part 8 of the NECB	
	2	135	50
	3	120	35
	4	110	22
Greater than 4999	1	Conform to Part 8 of the NECB	
	2	135	55
	3	120	40
	4	110	22

Table 10.2.3.3.-AG
Energy Performance Requirements for ~~Residential Occupancies~~ Hotels and Motels

Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m ² •year)	Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m ² •year)
Less than 3000	1	Conform to Part 8 of the NECB	
	2	170	30
	3	140	20
	4	120	15
3000 to 3999	1	Conform to Part 8 of the NECB	
	2	170	30
	3	145	21
	4	130	16
4000 to 4999	1	Conform to Part 8 of the NECB	
	2	170	30
	3	145	25
	4	130	18
Greater than 4999	1	Conform to Part 8 of the NECB	
	2	170	32
	3	150	28
	4	145	20

Table 10.2.3.3.H
Energy Performance Requirements for Other Residential Occupancies
 Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m ² •year)	Building Envelope – Maximum Thermal Energy Demand Intensity, kWh/(m ² •year)
Less than 3000	1	Conform to Part 8 of the NECB	
	2	130	45
	3	120	30
	4	100	15
3000 to 3999	1	Conform to Part 8 of the NECB	
	2	130	45
	3	120	35
	4	110	22
4000 to 4999	1	Conform to Part 8 of the NECB	
	2	135	50
	3	120	35
	4	110	22
5000 to 5999	1	Conform to Part 8 of the NECB	
	2	135	55
	3	120	40
	4	110	22
6000 to 6999	1	Conform to Part 8 of the NECB	
	2	150	60
	3	140	50
	4	125	35
Greater than 6999	1	Conform to Part 8 of the NECB	
	2	180	90
	3	160	75
	4	140	60

Table 10.2.3.3.-B
Energy Performance Requirements for Business and Personal Services or Mercantile Occupancies
Forming part of Sentences 10.2.3.3.(1) and (2)

Degree-Days Below 18°C	Step	Offices	Other Group D and E <i>Occupancies</i>	Offices	Other Group D and E <i>Occupancies</i>
		Equipment and Systems – Maximum Total Energy Use Intensity, kWh/(m ² •year)		<i>Building Envelope</i> – Maximum Thermal Energy Demand Intensity, kWh/(m ² •year)	
Less than 3000	1	Conform to Part 8 of the NECB			
	2	130	170	30	30
	3	100	120	20	20
3000 to 3999	1	Conform to Part 8 of the NECB			
	2	130	170	30	30
	3	100	125	20	25
4000 to 4999	1	Conform to Part 8 of the NECB			
	2	130	170	30	45
	3	100	130	20	30
Greater than 4999	1	Conform to Part 8 of the NECB			
	2	130	190	30	55
	3	110	150	20	40