CITY OF SALMON ARM

ZERO CARBON STEP CODE (ZCSC)

Currently the City's Building Bylaw addresses only the *Energy Step Code*, and requires achievement of Step 3 (of 5 levels) which focuses on energy efficiency of a building (but not the emissions that result). The Province has provided a schedule for construction performance to increase to Level 4 by 2027 and Step 5 by 2032.

The ***Zero Carbon Step Code*** (ZCSC) is a new tool to help local governments and the provincial government meet their climate greenhouse gas emission reduction targets. It focuses on ***decarbonizing building operations*** via space and hot water heating systems, and in some cases cooking equipment.

The Zero Carbon Step Code has four levels of increasing stringency:

	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Description:	Measure only	Moderate Carbon	Strong Carbon	Zero Carbon
Prescriptive approach	No reductions required, just measurement of emissions	Electrification of space heating OR hot water system	Electrification of space heating AND hot water system	Full electrification of building - includes appliances
Performance approach	Measure only	Max: 6 kgCO2e/m2/yr And 2400 kgCO2e/yr	Max: 2.5 kgCO2e/m2/yr And 800 kgCO2e/yr	Max: 1.5 kgCO2e/m2/yr And 500 kgCO2e/yr

The Province has provided no clear schedule for the implementation of the Zero Carbon Step Code other than requiring EL-1 in November 2023, and achieving **EL-4 by 2030**.

For Part 9 (simple) buildings there are three options for meeting the ZCSC:

- with the prescriptive approach to compliance, a builder simply discloses the equipment that they will install in the home; OR
- homes can fall below a lower threshold of GHG emissions (this will most often be used for very small homes); OR
- with the performance approach the builder can use energy modelling to determine GHGI (total emissions per square metre of the home), and for some homes also the GHG quantity (total emissions house will produce).

For Part 3 (i.e. larger / complex) buildings, there is only a performance approach and a single GHGI target must be met.

For all calculations, the emissions factors used are 0.011kgCO_2e/kWh for electricity, and 0.180 CO_2e/kWh for natural gas.

Supplementary heating equipment must be included in the emissions modelling, while redundant or backup equipment appears to be excluded from emissions calculations.

Table 9.37.1.3 below is from the BC Building Code and it relates the same information as Table 2 (with additional information), providing and overview of GHG and GHGI requirements for Part 9 buildings (homes). This is information required for the performance approach.

Table 9.37.1.3.
Greenhouse Gas Emissions
Forming part of Sentence 9.37.1.3.(1)

GHG Emission Level	GHG Emission Compliance Options					
	Maximum GHG Emissions by House, Expressed in kg CO_{2e}/year	or	Maximum GHG Emissions by House[1]		or	Reduction of GHG Emissions by Energy Source of Building Systems[2]
			Maximum GHGI of the House, Expressed in $kgCO_{2e}/m^2$/year	Maximum GHG Emissions by House, Expressed in $kgCO_{2e}$/year		
EL-1	measure only		measure only			N/A
EL-2	1050		6.0	2400		Energy sources supplying heating systems have an emissions factor ≤ 0.011 $kgCO_{2e}$/kWh
EL-3	440		2.5	800		Energy sources supplying heating and service water heating systems have an emissions factor ≤ 0.011 $kgCO_{2e}$/kWh
EL-4	265		1.5	500		Energy sources supplying all building systems, including equipment and appliances, have an emissions factor ≤ 0.011 $kgCO_{2e}$/kWh

Notes to Table 9.37.1.3.:
(1) Compliance for this option is demonstrated by meeting both the GHGI and the GHG emission requirements for each house.
(2) Redundant or back-up equipment for the systems and equipment listed in Sentence 9.36.5.4.(1). is permitted to be excluded, provided it is equipped with controls and is not required to meet the space-conditioning load of the house.

Table 10.3.1.3 from the BC Building Code relates the ZCSC requirements for different Part 3 (complex) building types.

Table 10.3.1.3.
Greenhouse Gas Emissions
Forming Part of Sentence 10.3.1.3.(1)

GHG Emission Level	Maximum GHGI of the *Building*, Expressed in $kgCO_{2e}/m^2$/year			
	Residential Major Occupancy		*Business and Personal Service* and *Mercantile Major Occupancies*	
	Hotels and Motels	Other *Residential Occupancies*	Offices	Other *Business and Personal Service* and *Mercantile Occupancies*
EL-1	measure only			
EL-2	9.0	7.0	5.0	6.0
EL-3	4.0	3.0	3.0	3.0
EL-4	2.0	1.8	1.5	2.0