



Builders Breakfast June 14, 2023

Luke Dolan

- ▶ **Capital Home Energy**
- ▶ Vancouver, lower mainland, Whistler Sea to Sky, Vancouver Island, Sunshine Coast
 - 15 years of EnerGuide evaluations
 - Energy Advisor
 - Home Inspector
 - Energy Design Consultant
 - Consults to Builders on Built Green, EnerGuide and Net Zero Homes Program
 - Personally Evaluated over 6000 homes
 - Team of Professionally trained Energy Advisors
 - Founded trade association - CACEA
Canadian Association of Consulting Energy Advisors

www.capitalhomeenergy.com





BC Energy Step Code updates

May 1st 2023

- Zero Carbon
- Step 3 Mandatory
- New Compliance forms
- Small home updates



ZERO CARBON
STEP CODE

Origin of the new regulation



“By 2030, all new buildings will be zero carbon, and all new space and water heating equipment will meet the highest standards for efficiency.”



– *CleanBC Roadmap to 2030*



Roadmap to 2030



Staggered carbon performance tiers



Many types of buildings can be regulated under the **Zero Carbon Step Code**

Part 9:

Smaller + simpler buildings, specifically...



Homes and smaller residential buildings

Part 3:

Larger and more complex buildings, including...



Offices

Condos + apartments

Financial institutions

Retail + grocery stores



Compliance options **Part 9 homes**

Performance vs Prescriptive

Industry compliance: Homebuilders and the performance approach

Quantity of carbon pollution



Maximum GHG emissions per home per year

Intensity of carbon pollution



Maximum GHG intensity per home per year

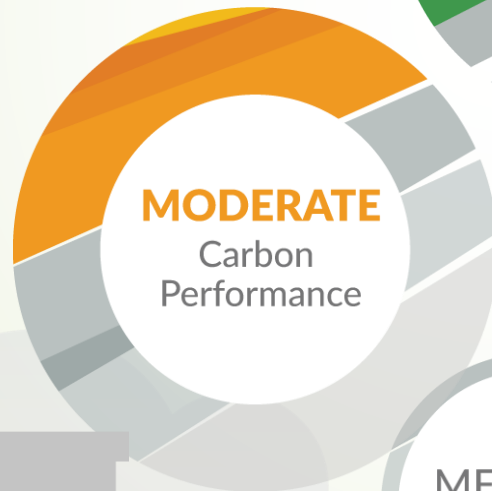
Staggered carbon performance tiers



No fossil fuels



Possible fossil fuel usage
Either heating or DHW systems
can be fossil fuel



Fossil fuels allowed



Industry compliance: Homebuilders and the prescriptive approach

**Zero Emissions
Equipment:**

SPACE HEATING



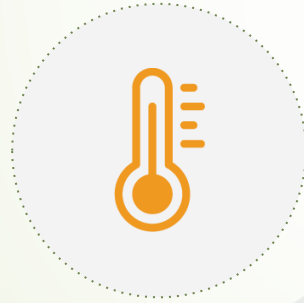
COOKING



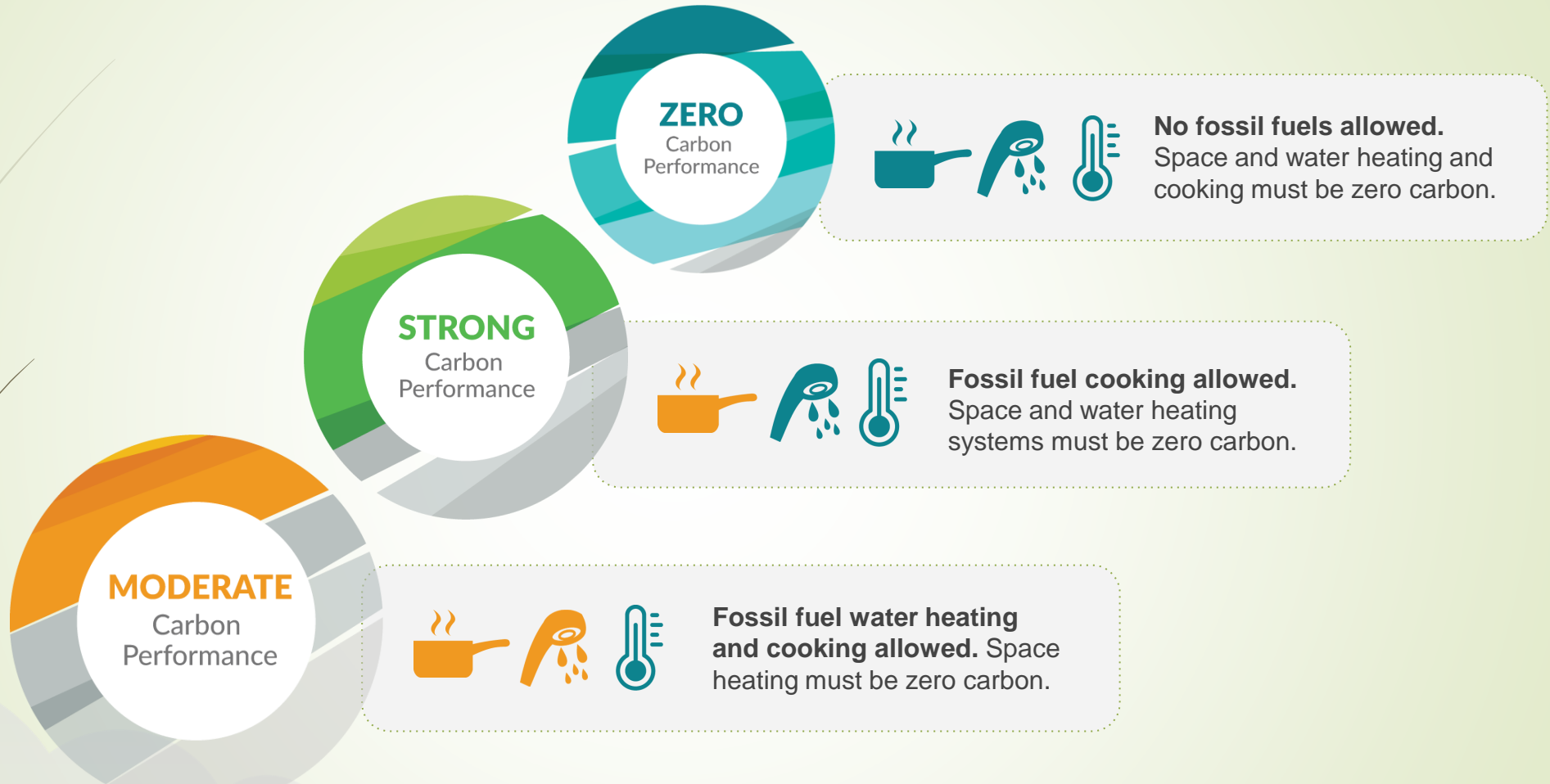
WATER HEATING



**Fossil Fuel
Equipment:**



Industry compliance: Homebuilders and the prescriptive approach



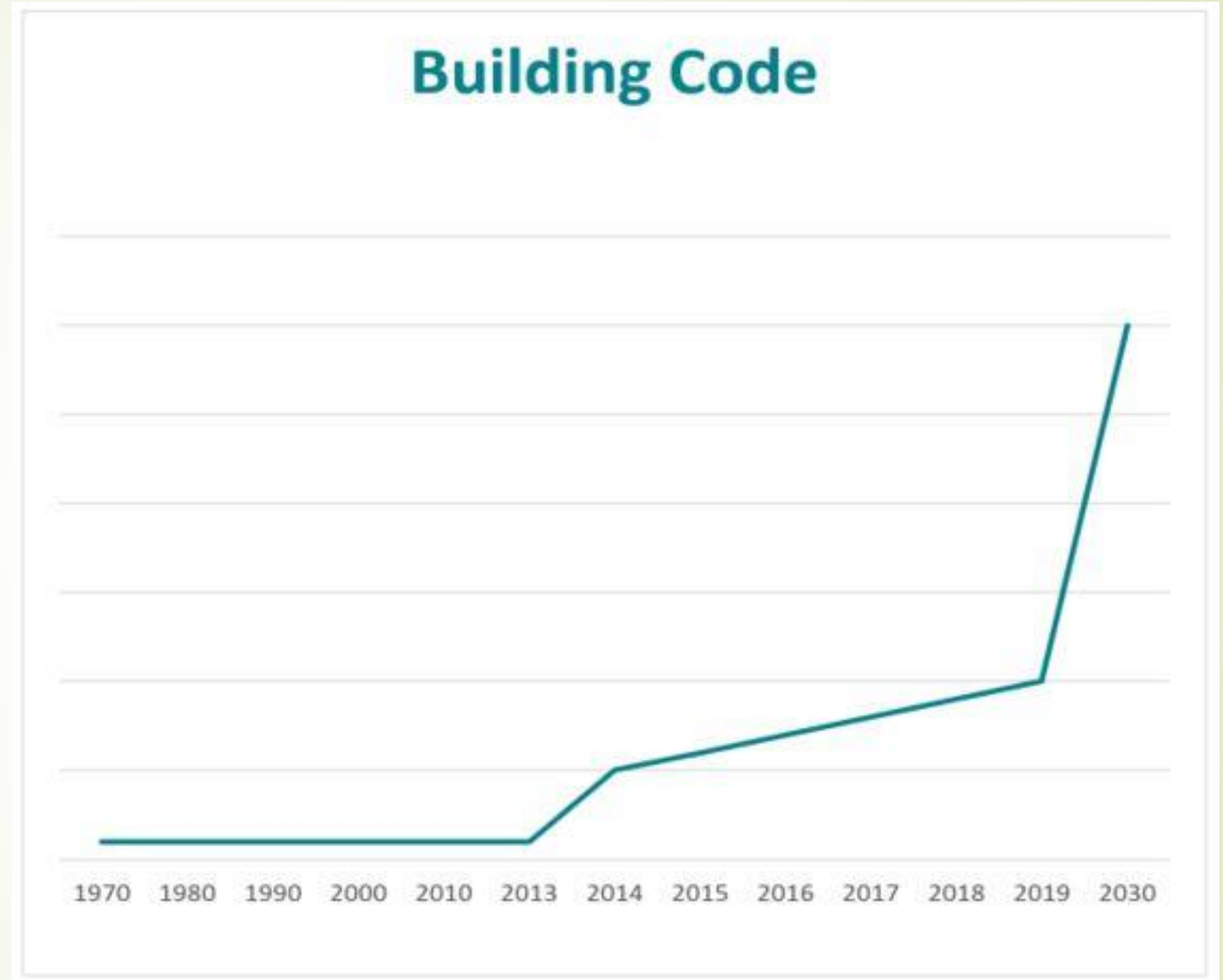
Exempted: Secondary heating equipment

- ▶ The Zero Carbon Step Code regulates primary space-heating equipment.
- ▶ Secondary heating systems are exempted
- ▶ Wood burning stoves OK
- ▶ “Decorative” Gas fireplaces OK



Confused yet ?

- A) Net Zero Ready
- B) Step 5
- C) Zero Carbon
- D) All of the above



May 1st 2023

- Step Code 3 mandatory across the province
- Option for AHJ to adopt 20% Prescriptive path must be voted in by council





Sea to Sky

Squamish

Whistler

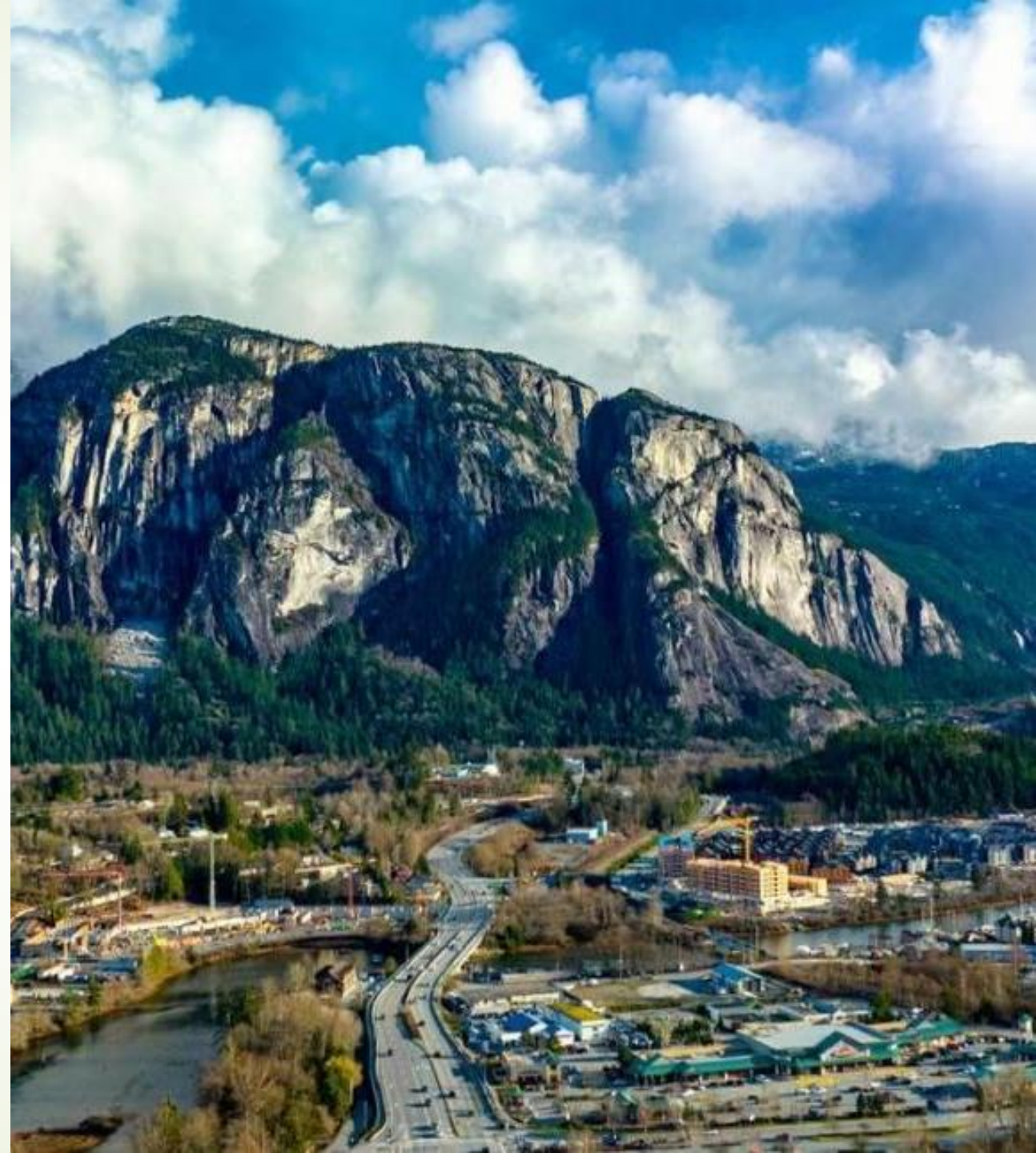
SLRD

Pemberton

District of Squamish

Part 9 Buildings	Phase 1 July 1, 2018	Phase 2 Jan 1, 2019	Phase 3 Jan 1, 2021
Part 9 Small Residential Buildings (1,000 sq. ft. and under in gross floor area, essential Carriage Homes)	Step 1		
Part 9 Residential Buildings (over 1,000 sq. ft. in gross floor area)	Step 2	Step 3	Step 4
Part 9 Commercial Buildings	Step 2		Step 3

Part 3 Buildings	Phase 1 July 1, 2018	Phase 2 Jan 1, 2019	Phase 3 Jan 1, 2021
Part 3 Residential Buildings Wood Frame	Step 3		Step 4
Part 3 Commercial Buildings	Step 2		Step 3



District of Squamish

- reduces the permitted maximum size of residential construction by one third if a high carbon energy source is used within the building
- Buildings that use only Low Carbon energy sources such as baseboard heaters, heat pumps and electric hot water tanks can build to full size.



LOW CARBON INCENTIVE PROGRAM SUSTAINABLE HOME ENERGY

Permitted Use	Zone	Maximum GHGI (kgCO ₂ e/m ² /y)
Accessory Dwelling Unit, Cottage Cluster	RS-1, RS-1A, RS-2	2
Single Unit Dwelling, Two-Unit Dwelling, Triplex, Townhouse	RS-1, RS-1A, RS-2, RS-3, RM-1, RM-2, RMH-2	1
Apartment	RM-2, RM-3	6
Mixed Use Residential	C-1, C-4	6

RMOW

- 2023 – No change
- Currently Step 3 and 4



RMOW's Proposed Approach – *LONG-TERM*

Building type		Approach*	
		January 2024	2026 onward
Part 9	Single Family Dwelling, duplex, or townhomes	Step 4 with Strong Carbon Performance (EL-3)	Step 4 with Zero Carbon Performance (EL-4)
	SFD or duplex with in-ground basement floor area exclusion	Step 5 with Strong Carbon Performance (EL-3)	Step 5 with Zero Carbon Performance (EL-4)
Part 3	Residential	Step 3 with Strong Carbon Performance (EL-3)	Step 3 with Zero Carbon Performance (EL-4)
	Commercial	Step 2 with Strong Carbon Performance (EL-3)	Step 3 with Zero Carbon Performance (EL-4)

*To be adopted by Council

SLRD

Squamish Lillooet Regional
District

- **Step 3 as of May 1st, 2023**
- **Zero carbon adoption
unknown**



Pemberton

- Currently enforcing Step 4 for Part 9
- Zero Carbon adoption unknown



Step Code

New compliance forms & Example House



BC STEP CODE COMPLIANCE CHECKLIST
PERFORMANCE PATHS FOR PART 9
BUILDINGS



Whistler Step 4

Emissions level 3 (Strong Carbon)

- Foundation – eff R-22
- AG wall – eff R-22
- Ceiling – eff R-37
- Windows – USI 1.22 SHGC 0.25
- ACH – 1.5
- Heating – NG Furnace & Air source heat pump
- DHW – Electric tank 80 gal
- **Compliant for Jan 1st, 2024, RMOW**

Step Code

New compliance forms

A: PROJECT INFORMATION

Building Permit #:		<h1>Pre Construction</h1>
Builder:	ACME Builders	
Project Address:	1234 Easy Street	
Municipality / District:	Whistler	
Postal Code:	V8E 1J7	
PID or Legal Description:		
		Building Type
		Single Detached
		# of Dwelling Units: 1

B: CODE COMPLIANCE SUMMARY

BC Building Code Performance Compliance Path:

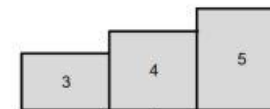
9.36.6. BC Energy Step Code

Energy Step Code

Step Required
4

Proposed Step Achieved
4

Achieved

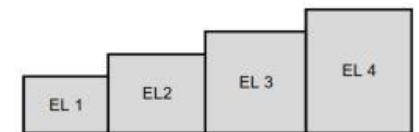


Required

Zero Carbon Step Code

Level Required
EL 3 - Strong

Proposed Level Achieved
EL 3 - Strong



Based on information provided by the builder & the following drawings:

Plan Author	Architect
Plan Version	2023 06 07
Plan Date	2023 06 07

C: COMPLETED BY

Full Name (Print):	Matheus Alfred-Olmedo	Date (YYYY-MM-DD):	6/12/2023
Company Name:	Capital Home Energy	Service Organisation:	Capital Home Energy
Phone:	604.562.0387, ext 404	Energy Advisor ID #:	1T07
Address:	102 - 2000 12th Ave W, Vancouver, BC V6J 2G2		
Email:	matheus@capitalhomeenergy.com		

Building characteristics

- Assemblies
(Nominal and Effective R/RSI values)
- Windows/Doors/skylights
(U/USI Values SHGC)
- Air barrier system
- Mechanical systems

D: BUILDING CHARACTERISTICS SUMMARY				
		Details (Assembly / System Type / Fuel Type / Etc.)	Average Effective RSI	
Roof / Ceilings	TJI @ 24" o/c R-40 batt		6.86	
Above Grade Walls	1.5" R-6 mineral wool, 2x6 @ 16" o/c R-22 batt		4.32	
Rim Joists / Floor Headers and Lintels	1.5" R-6 mineral wool, R-22 batt		4.32	
Floors Over Unheated Space	TJI @ 16" o/c R-31 batt		6.08	
Walls Below Grade	3" R-15 XPS, concrete, 1" R-5 + spray foam		4.08	
Slabs	Under slab: uninsulated			
		Performance Values		
Windows and glazed doors	Triple glazed, low-e, argon filled		USI	SHGC
			1.20	0.25
Doors	Insulated core doors		RSI	4.80
Air Barrier System & Location	Exterior taped house wrap		ACH	1.50
			NLA	0.85
			NLR	0.63
Space Heating/ Cooling	Principal	NG Furnace + ASHP	AFUE	95.00
			HSPF	9.00
	Supplementary	ASHP (heating and cooling)	SEER	18.00
			-	
Domestic Hot Water	Electric conventional water tank, 80 gal			
Ventilation	HRV @ 90 cfm min		% EFF	L/s
			65.00	42.50
Other				
Fossil Fuels	The building IS designed to use fossil fuels or has infrastructure for it			

Step Code compliance

- Step Code level
- MEUI
- % improvement
- TEDI
- % Heat Loss reduction
- Airtightness
- Zero Carbon Step Code
- Pass or Fail

E: 9.36.5. ENERGY PERFORMANCE COMPLIANCE

Complete this section if using the Energy Performance Compliance Path in Subsection 9.36.5.

Proposed House Energy Consumption (GJ/year)	
HVAC	
DHW Heating	
SUM	0

Reference House Rated Energy Target (GJ/year)	
HVAC	
DHW Heating	
SUM	0

The airtightness value used in the energy model calculations for the Proposed house is: _____
 Or Testing Target: 1.50 _____

The above calculation was performed in compliance with Subsection 9.36.5. of Division B: _____

F: 9.36.6. ENERGY STEP CODE COMPLIANCE

Proposed House Rated Energy Consumption (GJ/year):	51	Reference House Rated Energy Target (GJ/year):	125
			Proposed Calculations

Proposed House Metrics	Unit	Proposed Step Requirement	Proposed House Result	Proposed House Pass or Fail
Step Code Level	Step 3, 4 or 5	4		
Mechanical Energy Use Intensity (MEUI)	kWh/(m ² ·year)	60 (max)	37	Pass
% Improvement	%	40 (min)	59	
Thermal Energy Demand (TEDI)	kWh/(m ² ·year)	43 (max)	42	Pass
% Heat Loss Reduction	%	20 (min)	27	
Airtightness in Air Changes per Hour at 50 Pa differential	ACH @ 50 Pa	1.5 (max)	1.50	
Normalized Leakage Area	10 Pa (cm ² /m ²)	0.72 (max)	0.85	Pass
Normalized Leakage Rate	L/s/m ²	0.53 (max)	0.63	
Step Code Requirements Met:				Yes

Software Used: Hot 2000 Version: 11.11
 Heated Floor Area (m²): 386.90 Climate Data (Location): WHISTLER - NESTERS
 Building Volume (m³): 1191.30 Degree Days Below 18°C (HDD): 4178
 Building Surface Area (m²): 782.70
 FWDR: 20.4% % Of Space Cooled: More than 50%

G: ZERO CARBON STEP CODE

Proposed House Metrics			Unit	Proposed Level Requirement	Proposed House Result	Proposed House Pass or Fail
Zero Carbon Step Code Level			EL-1 - EL-4	EL 3 - Strong		
Total GHG			kg CO _{2e} / year	440 (max)	781	Fail
CO ₂ Per floor area with Max	Per Floor area		kg CO _{2e} /m ² /year	2.5 (max)	2	Pass
	Max		kg CO _{2e}	800 (max)	781	
Prescriptive	Heating		Zero Carb	Zero Carb	Carbon	Fail
	Hot Water		Zero Carb	Zero Carb	Zero Carb	
	All building systems, equipment and appliances			NA	Carbon	Carbon
Target Reached:						Yes

Pre-construction Hot2000 Model Details

- Assemblies
(Nominal and Effective R/RSI values)
- Windows/Doors/skylights
(U/USI Values SHGC)
- Mechanical systems

Pre Construction Hot2000 Model Details

Model 1

Building Envelope			
Above Ground Opaque Assemblies			
Assembly	Description	Effective RSI	Area (m2)
Overall Walls	-	4.305998534	330.6328
Endwall VS	1211421511	3.5909	19.35748
Main floor	1211421511	4.3507	131.5961
Main floor (attached)	1211421511	4.3351	32.05545
Second floor	1211421511	4.3536	147.6238
Overall Headers	-	5.206116747	36.05799
Header M/S	1800420510	5.205	14.86449
Header B/M	1800420510	5.2069	21.19351
Overall Floors	-	6.0767	6.4103
Exp S	3511106710	6.0767	6.4103
Overall Ceilings	-	6.862917227	184.6122
Flat B		6.6378	4.1063
Flat M		6.693	17.5782
Vault S1		6.88	46.641
Vault S2		6.8897	116.2867

Below Grade Opaque Assemblies			
Assembly	Description	Effective RSI	Area (m2)
Overall Foundation Walls	-	3.95	53.23344
Basement	Exterior: User specified; Interior: 000011	Exterior: 2.64;	53.23344
Overall Slabs	-	2.1133	145.1145
Basement	Unheated slab below frost line	2.1133	145.1145

Fenestrations and Doors				
Component	Type	U-Value W/(m2*K)	SHGC	Area (m2)
Main floor	Wall			
E5	1 x Picture USI 1.2	1.26	0.23	1.02
E6	1 x Hinged USI 1.2	1.17	0.26	1.25
E7	1 x Hinged USI 1.2	1.15	0.27	1.88
E8	1 x Hinged USI 1.2	1.19	0.26	1.3
N2	1 x Picture USI 1.2	1.31	0.22	0.63
S2	1 x Hinged USI 1.2	1.16	0.27	3.02
S3-4	2 x Slider USI 1.2	1.13	0.27	13.01
S5	1 x Hinged USI 1.2	1.13	0.28	4.09
W3	1 x Hinged USI 1.2	1.14	0.28	3.34
W4	1 x Hinged USI 1.2	1.14	0.28	3.34
W5	1 x Hinged USI 1.2	1.17	0.26	1.86
W6	1 x Hinged USI 1.2	1.17	0.26	1.86
W7	1 x Picture USI 1.2	1.26	0.23	1.02
Entry	Fibreglass polystyrene core	0.85		5.527731
D Entry	1 x Picture USI 1.4	1.254862593	0.1997	0.650321
D Entry	2 x Picture USI 1.4	1.326084074	0.2247	1.045159
Kitchen	Fibreglass polystyrene core	0.85		2.090318
D Kitchen	1 x Picture USI 1.4	1.24100273	0.1891	0.278709
Main floor (attached)	Wall			
Garage	Fibreglass polystyrene core	0.85		2.090318
Second floor	Wall			
E1	1 x Hinged USI 1.2	1.15	0.27	2.07
E2-3	2 x Picture USI 1.2	1.23	0.24	1.25
E4	1 x Hinged USI 1.2	1.15	0.27	1.88

EnerGuide HOIS

- ➔ Issued at Pre-permit and as-built
- ➔ EnerGuide Rating
- ➔ Energy usage breakdown
- ➔ Renewable Energy production
- ➔ Greenhouse Gas emissions

HOMEOWNER INFORMATION SHEET



Your EnerGuide* rating and this report are based on data collected and, where necessary, presumed from your evaluation. Rating calculations are made using standard operating conditions.



Rating: 105 gigajoules per year (GJ/year)

Heated floor area: 386.9 m² (4164.6 ft²)
 Rated energy intensity: 0.27 GJ/m²/year
 Evaluated by: M. Olmedo; Capital Home Energy
 Quality assured by: Capital Home Energy
 File number: 1T07P03000
 Data collected: August 20, 2021
 Year built: 2021

NRCan.gc.ca/myenerguide

HOW YOUR RATING IS CALCULATED:

I. Rated annual energy consumption 105 GJ/year
 II. Minus renewable energy contribution - 0 GJ/year
 Equals your **EnerGuide rating** = 105 GJ/year

I. Your rated annual energy consumption is the total amount of energy your house would use in a year based on the EnerGuide Rating System standard operating conditions. For your house, this includes 35.01 GJ of passive solar gain.

Energy Sources	Rated Consumption (GJ/year)	Equivalent Units (per year)	Greenhouse Gas Emissions (tonnes/year)
Natural gas	56	1512 m ³	2.9
Electricity	48	13388 kWh	0.2
Total	105		3.1

II. On-site renewable power generation systems can offset some or even all of your home's energy consumption. Renewable energy contributions are factored differently for your rating and your greenhouse gas emissions calculations.¹

On-Site Renewable Energy	Estimated Contribution (GJ/year)	Equivalent Units (per year)	Offset Greenhouse Gas Emissions (tonnes/year)
Electricity	0	0 kWh	0.0
Solar water heating	0	0	0.0
Total	0		0.0

HOW YOUR CONSUMPTION COMPARES:

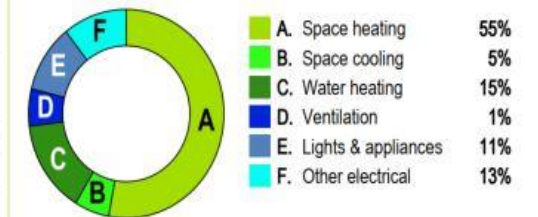
Compared to a typical new house, your house uses:

31.4% less energy;

38.1% less energy, when excluding the estimated energy consumption of lighting, appliances and electronics.

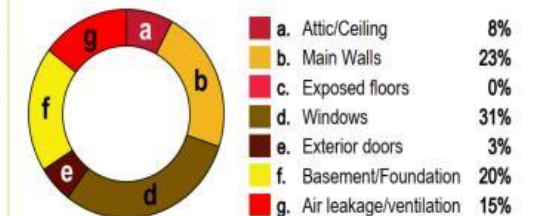
HOW YOUR RATED ENERGY IS USED:

The chart below represents the breakdown of rated annual energy consumption in your home under standard operating conditions. You can use these figures as a guide to help identify where you can lower home energy costs through proper home maintenance, efficient home operation, energy efficiency renovations or equipment replacement.



WHERE YOUR HOME LOSES HEAT:

Houses lose heat through their exterior shell, or building envelope. The chart below shows where and how your home loses heat. The quality and upkeep of your home can have a major impact on the amount of energy your heating and cooling systems use annually.



*EnerGuide is an official mark of Natural Resources Canada. Refer to the glossary section for an explanation of relevant terms.

EnerGuide HOIS

- Assemblies
(Nominal and Effective R/RSI values)
- Windows/Doors/skylights
(U/USI Values SHGC)
- Mechanical systems

HOUSE DETAILS

BUILDING ENVELOPE

ATTIC/CEILING

TYPE	INSULATION VALUE		AREA m ² (ft ²)
	Nominal RSI (R)	Effective RSI (R)	
Flat B: Flat	7.04 (40.0)	6.64 (37.7)	4.1 (44)
Flat M: Flat	7.04 (40.0)	6.69 (38.0)	17.6 (189)
Vault S1: Cathedral	7.04 (40.0)	6.88 (39.1)	46.6 (502)
Vault S2: Cathedral	7.04 (40.0)	6.89 (39.1)	116.3 (1252)

MAIN WALLS

TYPE	INSULATION VALUE		AREA m ² (ft ²)
	Nominal RSI (R)	Effective RSI (R)	
Endwall VS: 38x140 mm (2x6 in) Wood frame	4.94 (28.0)	3.59 (20.4)	19.4 (208)
Main floor (attached): 38x140 mm (2x6 in) Wood frame	4.94 (28.0)	4.34 (24.6)	32.1 (345)
Main floor: 38x140 mm (2x6 in) Wood frame	4.94 (28.0)	4.35 (24.7)	131.6 (1416)
Second floor: 38x140 mm (2x6 in) Wood frame	4.94 (28.0)	4.35 (24.7)	147.6 (1589)

EXPOSED FLOORS

TYPE	INSULATION VALUE		AREA m ² (ft ²)
	Nominal RSI (R)	Effective RSI (R)	
Floor: Exp S	5.46 (31.0)	6.08 (34.5)	6.4 (69)

WINDOWS

#	TYPE	U-factor W/m ² • °C (Btu/h • ft ² • °F)	RSI (R)
2	D Entry	1.3 (0.23)	0.75 (4.3)
2	N2	1.3 (0.23)	0.76 (4.3)
2	E5	1.3 (0.22)	0.79 (4.5)
1	D Entry	1.3 (0.22)	0.80 (4.5)
1	D Kitchen	1.2 (0.22)	0.81 (4.6)
2	E2-3	1.2 (0.22)	0.82 (4.6)
1	E8	1.2 (0.21)	0.84 (4.8)
3	E6	1.2 (0.21)	0.85 (4.9)
1	S2	1.2 (0.2)	0.86 (4.9)
3	E7	1.2 (0.2)	0.87 (4.9)
4	W3	1.1 (0.2)	0.88 (5.0)
2	S3-4	1.1 (0.2)	0.88 (5.0)
2	S5	1.1 (0.2)	0.89 (5.0)

WINDOWS (Continued)

#	TYPE	U-factor W/m ² • °C (Btu/h • ft ² • °F)	RSI (R)
Total window area: 72.59 m ² (781.3 ft ²)			

EXTERIOR DOORS

#	TYPE	U-factor W/m ² • °C (Btu/h • ft ² • °F)	RSI (R)
3	Fibreglass polystyrene core	1.2 (0.21)	0.85 (4.8)
Total door area: 9.71 m ² (104.5 ft ²)			

BASEMENT/FOUNDATION

TYPE	INSULATION VALUE		AREA m ² (ft ²)
	Nominal RSI (R)	Effective RSI (R)	
Basement concrete walls: exterior	2.64 (15.0)	2.64 (15.0)	79.9 (859)
Basement concrete walls: interior	0.90 (5.1)	0.98 (6.0)	79.9 (859)
Basement header	4.94 (28.0)	5.21 (29.6)	21.2 (228)
Basement slab	2.11 (12.0)	2.11 (12.0)	145.1 (1562)

AIRTIGHTNESS

Air leakage rate at 50 pascals	1.5 air changes/hour
Equivalent leakage area	667.3 cm ² (103 in ²)
Normalized leakage area	0.9 cm ² /m ² (1.2 in ² /100 ft ²)

MECHANICAL SYSTEMS

SPACE HEATING

TYPE	OUTPUT SIZE	EFFICIENCY
Condensing natural gas boiler	12 kW 41000 BTU/h	95% AFUE
Natural gas fireplace	2 kW 7000 BTU/h	65% Steady State
Design heating load: 10.60 kW – refer to glossary for details		

SPACE COOLING

TYPE	OUTPUT SIZE	EFFICIENCY
Central air conditioner	8.16 kW 28000 BTU/h	15 SEER
Design cooling load: 7.12 kW		

WATER HEATING

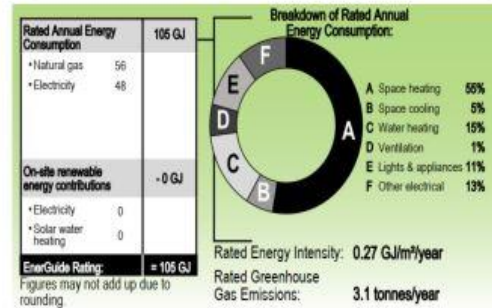
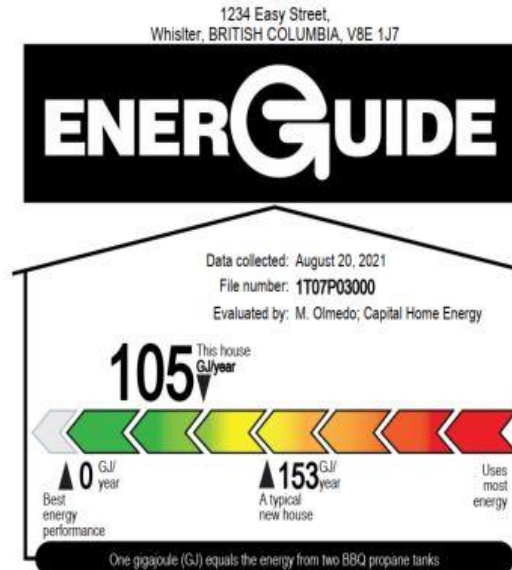
TYPE	TANK VOLUME	EFFICIENCY
Electric storage tank	303L (80 USG)	0.79 EF

WHOLE-HOME VENTILATION

TYPE	AIR FLOW RATE	EFFICIENCY
Heat recovery ventilator	42.48 L/s (90 cfm)	65%

EnerGuide HOIS

- EnerGuide Label
- Reference house rating
- Brief description of energy consumption and renewable contribution



The energy consumption indicated on your utility bills may be higher or lower than your EnerGuide rating. This is because standard assumptions have been made regarding how many people live in your house and how the home is operated. Your rating is based on the condition of your house on the day it was evaluated.

Quality assured by: Capital Home Energy

Visit NRCan.gc.ca/myenerguide



NEXT STEPS

If you have had a Renovation Upgrade Service, refer to your report for the roadmap to making your home more energy efficient. If you have not yet had a Renovation Upgrade Service, why not contact your service organization to learn what you can do to save on energy costs, reduce greenhouse gas emissions and improve home comfort?

Everyone uses energy in their house differently. This report was developed using standard operating conditions as explained in the glossary. Therefore, your EnerGuide rating will not match your utility bills.

UPGRADE CONSIDERATIONS

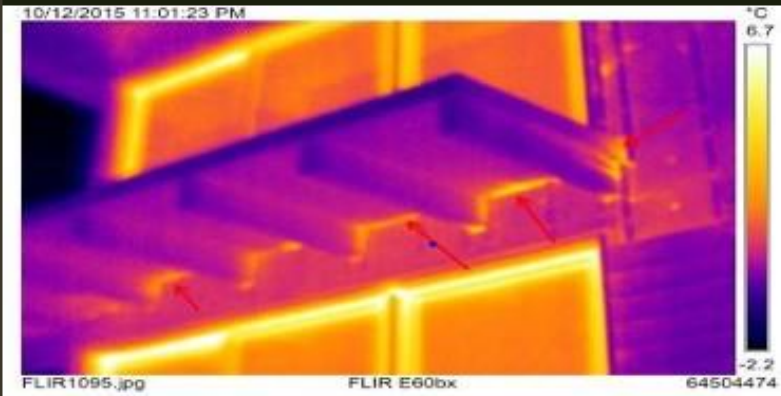
Before undertaking upgrades or renovations, find out about appropriate products and installation techniques, and ensure that all renovations meet local building codes and by-laws. Natural Resources Canada does not endorse the services of any contractor, nor any specific product, and accepts no liability in the selection of materials, products, contractors nor performance of workmanship.

Where your energy advisor has identified a potential health or safety concern such as insufficient outdoor air, risk of combustion fumes entering your house or risk of exposure to asbestos, they have endeavoured to provide a warning in this report. However, energy advisors are not required to have expertise in health and safety matters, and homeowners are solely responsible for consulting a qualified professional to determine potential hazards before undertaking any upgrades or renovations.

Visit us today at:

NRCan.gc.ca/myenerguide

New airtightness metrics



New airtightness metrics

- **ACH** – air changes per hour – volume-based metric
- **NLA** – normalized leakage area – total envelope area metric

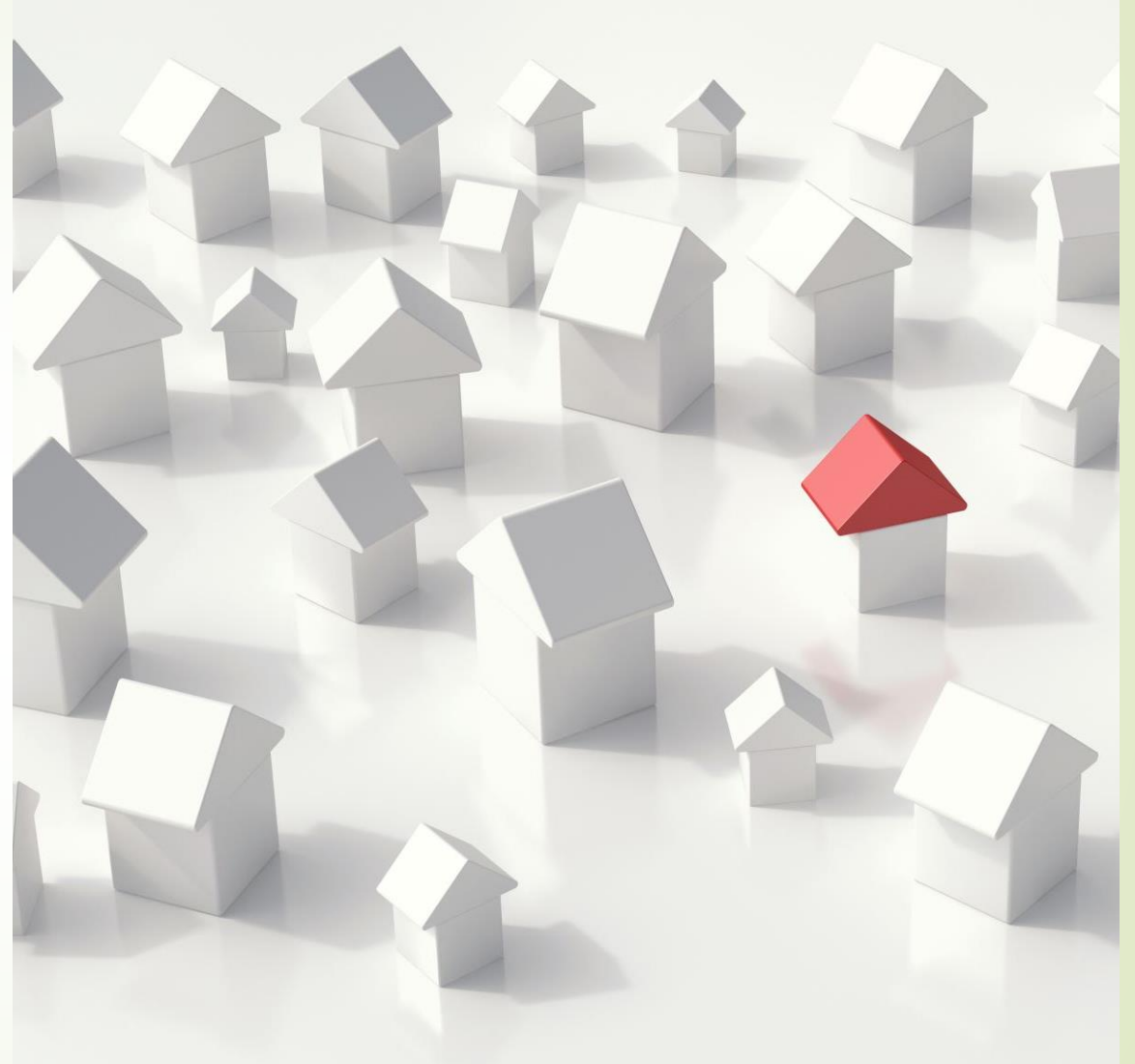
Size of hole in either in cm^2 or inches^2 per m^2 or ft^2

- **NLR** – normalized leakage rate – total envelope area metric

The quantity of air that leaks into or out of the building per hour, divided by the total envelope surface area (in m^2 or ft^2) at a differential pressure of 50 Pa

What does this mean ?

- New updated air tightness metrics
No longer just ACH
(air changes per hour)
- ACH Favors larger homes
volume-based metric
- Much easier for a smaller home to
achieve NLA, NLR



New airtightness metrics

Table 9.36.7.4.
Airtightness Levels
Forming Part of Sentence 9.36.7.4.(1)

<u>Airtightness Levels</u>	<u>Airtightness Metrics</u>		
	<u>ACH₅₀</u>	<u>NLA₁₀, cm²/m²</u>	<u>NLR₅₀, L/sxm²</u>
	<u>Maximum Airtightness Values</u>		
Step 3 <u>AL-1</u>	<u>2.5</u>	<u>1.20</u>	<u>0.89</u>
Step 4 <u>AL-3</u>	<u>1.5</u>	<u>0.72</u>	<u>0.53</u>
Step 5 <u>AL-4</u>	<u>1.0</u>	<u>0.48</u>	<u>0.35</u>

Step Code/Small Homes <300m³

- Laneway
- Coach house
- Small infill
- Auxiliary building
- Modular



Step Code energy modeling updates for small homes



Percent heat loss than reference house – required energy to heat the home

- ▶ Step 3 - Percent heat loss from 10% to 5 %
- ▶ Step 4 - Percent heat loss from 20% to 15 %
- ▶ Step 5 - Percent heat loss from 40% to 25 %

Step Code energy modeling updates for small homes



Percent better than reference house – Improvement

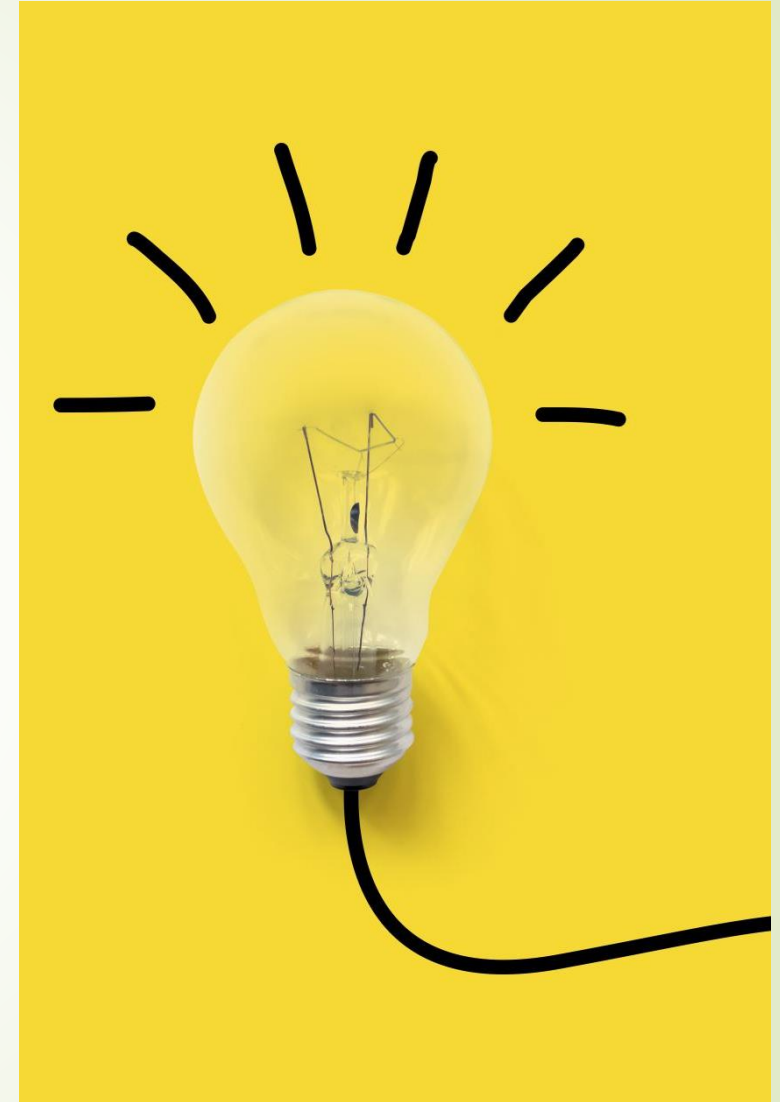
- **Step 3 - Percent improvement from 20% better than reference house to 10% better**
- **Step 4 - Percent improvement from 40% better than reference house to 30% better**
- **Step 5 - Percent improvement from 70% better than reference house to 60% better**

Conclusions – small homes

- ▶ **Small homes struggle with the Mechanical (MEUI) targets**

MEUI describes the mechanical energy use over a year, normalized per square metre of conditioned space

- ▶ **Relaxed metrics make it less challenging for Small homes to achieve Step 3 through 5**



Updates: Step 5 Compliance

- Step 5 now has percent better than reference target of 70%
- Meaning a Step 5 home will use 70% less energy than a min code or Step 1 house.



Conclusions – Step 5

- ▶ **Less challenging for all homes to achieve Step 5 with add metric**





Rebates

FortisBC New Home Rebates



Heating/Cooling load Calculations

CAN/CSA F280-12

Room by room heat loss calculations

Used to size heating and cooling systems



IDP

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LinkedIn

Thank you

Luke Dolan

Principal//Senior Energy Advisor

Capital Home Energy

604-562-0387 office

778-997-0386 cell

luke@capitalhomeenergy.com

Tommy Byun

General Manager//Senior Energy Advisor

Capital Home Energy

604-562-0387 office

604-970-8292 cell

tommy@capitalhomeenergy.com

www.capitalhomeenergy.com

