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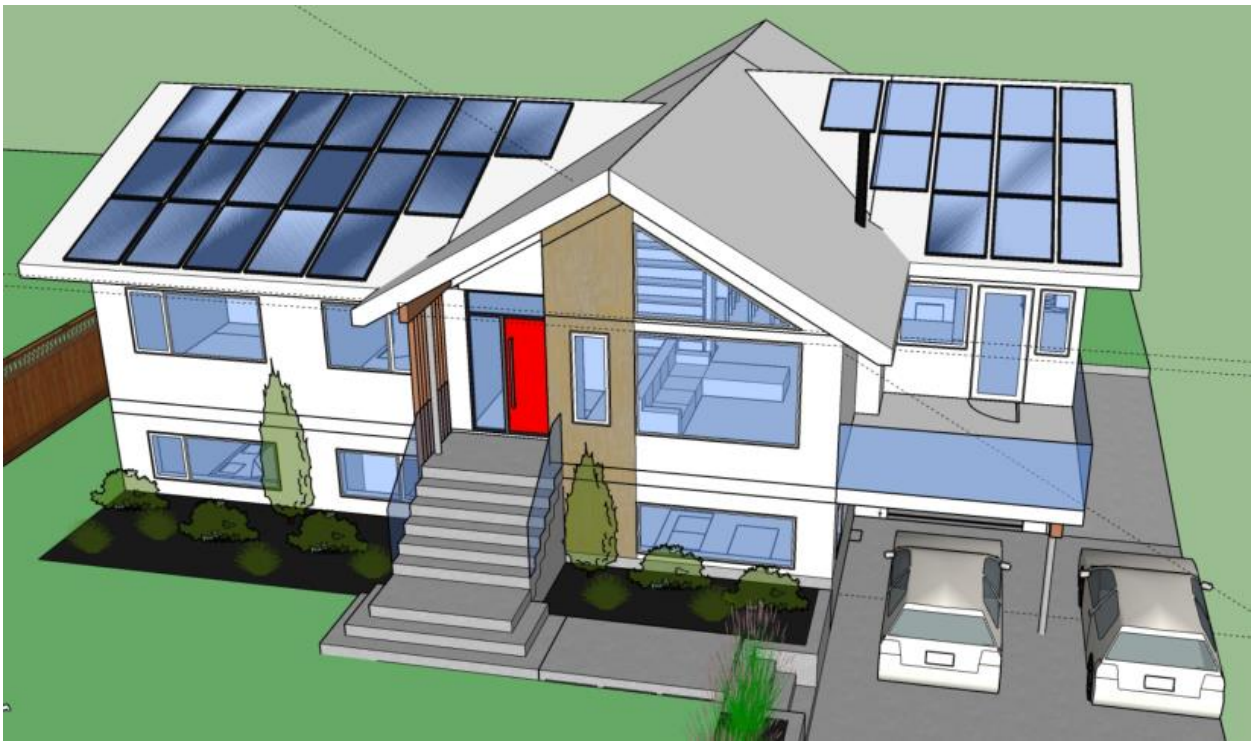
Net Zero Energy Design Summary



CHBA's NetZero Compliance for:

[redacted]

June 8, 2022

Table 1 – NetZero Metrics and Compliance

	NetZero Requirements	Option 2
Does the house achieve NetZero rating?	**NetZero: Yes** **NetZero Ready: Yes (future install)**	Yes
Required Renewable Energy Production (GJ/year)	**Match or exceed Annual Energy Consumption**	41.37 GJ/year (41.12 GJ/year produced)
EnerGuide Rating (GJ/year)	**0* GJ/year**	**0* GJ/year**
Air Tightness (ACH @ 50 Pa)	**Attached: 2.0 ACH @ 50 Pa** **Detached: 1.5 ACH @ 50 Pa**	**1.5** ACH @ 50 Pa
Envelope % better than Reference House	**33% better**	44.57% better

Table 2 - Base and Proposed Details – Mechanical Systems

	Component	NetZero Min. Requirements	Option 2
Mechanical Components	Ventilation	See CHBA Net Zero Home Labeling Program Technical Requirements **Section 4.0** for details	HRV with 75% SRE @ 75 cfm min *Model: TBA*
	Primary Heating System		Air source heat pump with back-up electric element *Model: TBA*
	Air conditioning or Heat Pump		Heat pump 10 HSPF and 20 SEER *Model*: TBA
	Fireplaces		Advanced airtight wood stove *Model: TBA*
	Hot Water		Electric integrated heat pump hot water tank, 50 gal, 3.15 UEF *Model: TBA*
	Drain Water Heat Recovery		N/A *Model: N/A*
Renewable Energy Components	Solar panel total surface area and orientation	No specific technical requirements; indicate potential to install enough renewable energy generation to offset Annual Energy Consumption	South, @ 22.65° slope ~30 panels @ 594 sq. ft.
	PV Cell Specifications		19.5% *Model: TBA*
	Other Renewable Production		N/A

Table 3 - Base and Proposed Details – Opaque Envelope

Requirements for Climate Zone 4

	Component	Net Zero Min. Requirements	Option 2
Envelope Components	Slab Insulation (under slab)	See Technical Procedures Section 3.3	Uninsulated *Effective R-0*
	Below Grade Walls	Effective R-11.3	2” R-10 GPS, 2x4 @ 16” o/c R-14 batt *Effective R-22*
	Pony Walls	Effective R-15.8	2x6 @ 16” o/c R-24 batt or spray foam *Effective R-18*
	Floor between foundation and main floor	N/A	2x10 @ 16” o/c R-20 acoustic batt
	Above Grade Walls	Effective R-15.8	2x6 @ 16” o/c R-24 batt or spray foam *Effective R-18*
	Headers/box joist	Effective R-15.8	R-28 batt or spray foam *Effective R-20*
	Exposed Floors	Effective R-26.5	2” R-8 EPS, 2x10 @ 16” o/c R-28 batt *Effective R-32*
	Flat and Vaulted Ceilings	Effective R-26.5	**N/A**
	Attic and Scissor Roof	Effective R-39.2	2X4 truss @ 24” o/c R-60 batt, 12” heel *Effective R-60*
	Air Barrier	N/A	Poly Vapour barrier and spray foam
	Vapor Barrier	N/A	Vapour barrier paint
Air Tightness		1.5 ACH @ 50 Pa OR 0.75 cm^2/m^2 OR 0.57 $L/s/m^2$	1.5 ACH @50 Pa

Table 4 - Base and Proposed Details – Fenestration and Door Characteristics

	Component	Net Zero Min. Requirements	Option 2
Windows and Doors	Windows	**Qualified**, double-glazed, argon-filled, insulating spacer	USI: 1.00 or lower SHGC: 0.25 or higher
	Skylights	Double-glazed, argon-filled, insulating spacer	N/A
	Doors	One door exempted; all others Energy Star Qualified	R-4.8 Insulated fiberglass or equivalent
	Fenestration and Door to Wall Ratio	N/A	23.2% fenestration and door to wall ratio

Table 5 - Base and Proposed Details – Reduced Operating Conditions

	Component	Net Zero Min. Requirements	Option 2
Reduced Operating Conditions	**Lighting**	**ENERGY STAR qualified** systems. Annual energy consumption of system must be lower than ERS v15 default settings	75% CFL or LED installed
	Clothes Washer		916 kWh/year Design **or Lower, Energy Star Qualified**
	Clothes Dryer		197 kWh/ year Design **or Lower, Energy Star Qualified**
	Dishwasher		260 kWh/ year Design **or Lower, Energy Star Qualified**
	Refrigerator		639 kWh/ year Design **or Lower, Energy Star Qualified**
	Range		565 kWh/ year Design **or Lower, Energy Star Qualified**

For ENERGY STAR qualified appliances, visit https://www.energystar.gov/productfinder/

Table 6 – Required Step Code Metrics

Climate Zone: 4
Heating Degree Days (HDD): 2910 North Vancouver
Heated Floor Area: Over 210 m²
Cooling System: No (yes)

	Step Code Metric	Step 1	Step 2	Step 3	Step 4	Step 5
Mechanical	% better than reference house	0%	10%	20%	40%	No target (report score)
	Mechanical Energy Usage Intensity (MEUI) (kWh/m²·year)	No target (report score)	60 kWh/m²·year 65 w/ cooling	50 kWh/m²·year 55 w/ cooling	40 kWh/m²·year 45 w/ cooling	25 kWh/m²·year 30 w/ cooling
Air Tightness	ACH @ 50 Pa	No target	**3.0** ACH @ 50 Pa	**2.5** ACH @ 50 Pa	**1.5** ACH @ 50 Pa	**1.0** ACH @ 50 Pa
Envelope	Thermal Energy Demand Intensity (TEDI) (kWh/m²·year)	No target (report score)	43 kWh/m²·year	38 kWh/m²·year	28 kWh/m²·year	19 kWh/m²·year
	Building envelope % better	No target (report score)	5%	10%	20%	50%

Table 7 - Projected Step Code Metrics by Design

	PROJECTIONS	Option 2
Ratings	Projected Step Code Level	Step 4
	Projected EnerGuide Score (GJ/year)	41 GJ/year
	ERS Reference House (GJ/year)	83 GJ/year
Mechanical	% better than reference house	72.70%
	Mechanical Energy Usage Intensity (MEUI) (kWh/m²·year)	17 kWh/m²·year
	Air Tightness (ACH @ 50 Pa)	1.50
Envelope	Thermal Energy Demand Intensity (TEDI) (kWh/m²·year)	27 kWh/m²·year
	Building Envelope % Better	38%