REGINA Infinite Horizons | City of Regina

ENERGY EFFICIENCY COMPLIANCE FORM

Section 9.36 of the National Building Code of Canada

This form is intended to clarify the design direction chosen to comply with Section 9.36 of the current National Building Code of Canada (NBC) and ensure the minimum code requirements are met.
To be completed and submitted for review by a *competent person

Address		**Application Number (Office Use):**	
Occupancy Class			
Floor Area		**Climate Zone**	7A

Design Option:

☐ Prescriptive — Complete Section 'A'

☐ Trade-Off — Complete Sections 'A & B'

☐ Performance — Complete Section 'C'

Section A: Prescriptive

All calculations and specifications must be attached to this form to be considered complete and be accepted for review.

Conversions:	
R = 5.678 x RSI	**U = 1 / RSI**

HRV / ERV: Yes ☐ No ☐

Effective Thermal Resistance of Above Ground Opaque Building Assemblies (RSI)			
Assembly	**w/ HRV**	**w/o HRV**	**Proposed**
Ceilings below attics	8.67	10.43	
Cathedral / Flat roofs	5.02	5.02	
Walls & Rim joists	2.97	3.08	
Floors over unheated spaces	5.02		
Floors within garage	4.86		
Thermal Characteristics of Fenestration, Doors and Skylights (U)			
Assembly	**Efficiency**		**Proposed**
Windows & Doors	Maximum U-Value 1.60 or Minimum Energy Rating > 25		
One door exception	Maximum U-Value 2.60		
Attic hatch	Maximum RSI_{eff} 2.60		
Skylights	Maximum U-Value 2.70		
Effective Thermal Resistance of Below-Grade or In-Contact-With-Ground Opaque Buildings Assemblies (RSI)			
Assembly	**w/ HRV**	**w/o HRV**	**Proposed**
Foundation Walls	2.98	3.46	
Slab On Grade With Integral Footing	2.84	3.72	
Unheated Floor Below Frost Line	uninsulated	uninsulated	
Unheated Floor Above Frost Line	1.96	1.96	
Heated Floors	2.84	2.84	

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HVAC Equipment Performance Requirements				
Equipment	**Capacity KW**	**Standard**	**Min. Efficiency**	**Proposed**
Gas Fired Furnace w or w/o A/C	≤ 65.9	CSA P.2	AFUE≥ 92%	
	> 65.9 & ≤117.23	CAN/CSA-P.8	E_t ≥78.5%	
Electric Boiler	≤ 88	(1)		
Gas Fired Boiler	≤ 88	CSA P.2	AFUE ≥ 90%	
	> 88 & ≤ 117.23	AHRI BTS	E_t ≥ 83%	
Other				
Heat Loss/Heat Gain Calculation	☐ Calculations were prepared in conformance with CSA F280			_____ BTU
Nomenclature	**AFUE**= annual fuel utilization efficiency, **E_t**= thermal efficiency			

Water Heaters Performance Requirements				
Equipment	**Capacity KW**	**Standard**	**Min. Efficiency**	**Proposed**
Tank Storage Electric	≤ 12 kW (50 L to 270 L capacity)	CAN/CSA-C191	SL ≤ 35 + 0.20V (top inlet)	
			SL ≤ 40 + 0.20V (bottom inlet)	
	≤ 12 kW (>270 L and ≤ 454 L capacity)		SL ≤ (O.472V) - 38.5 (top inlet)	
			SL≤ (0.472V) - 33.5 (bottom inlet)	
	>12 kW (>75 L capacity)	ANSI Z21.10.3/CSA 4.3 & DOE 10 CFR, Part 431, Subpart G	$S = 0.30 + 27 / V_m$	
Tank Storage Gas Fired	< 22 kW	CAN/CSA-P.3	EF ≥ 0.67 — 0.0005V	
	≥ 22 kW	ANSI Z21.10.3/CSA 4.3	E_t ≥80% and standby loss≤rated Input/(800 + 16.57)(√V)	
Tankless Gas Fired	≤ 73.2 kW	CAN/CSA-P.7	EF ≥ 0.8	
	> 73.2 kW	ANSI Z21.10.3/CSA 4.3 and DOE 10CFR,Part43I,SubpartG	E ≥ 80%	
Tankless Electric	No standard addresses the performance efficiency; however, their efficiency typically approaches 100%			
Other				
Nomenclature	**EF** = energy factor in %/h, **E_t** = thermal efficiency **S** = standby loss in %h, **SL** = standby loss in W, **V**= volume **V_m** = measured storage volume in US gallons			

(1) Must be equipped with automatic water temperature control. No standard addresses the performance efficiency; however their efficiency typically approaches 100%

Section B: Trade Off

All calculations must be attached to this form to be considered complete and be accepted for review. The location and extent of assemblies used in the calculation shall be clearly identified on the drawings by hatch or note.

☐ Opaque to opaque – One or more above-ground opaque building envelope assemblies are permitted to be less than required, provided one or more above-ground opaque building envelope assemblies are increased to more than required.

- Walls and joist type roofs must maintain minimum 55% of the required RSI_{eff}
- All other assemblies must maintain minimum 60% of the required RSI_{eff}
- The sum of the areas of all traded assemblies divided by their RSI_{eff} must be less than or equal to what it would have been if all assemblies had met 9.36.2.6

☐ Transparent to transparent – One or more windows are permitted to be less than required, provided one or more windows are increased to be more than required.

- The traded windows must have the same orientation.
- The sum of the areas of all traded windows divided by their RSI_{eff} must be less than or equal to what it would have been if all windows had met 9.36.2.7

☐ Opaque to transparent – This option is meant to allow reduced insulation for factory-constructed buildings with a low floor to ceiling height and a fenestration and door area to gross wall area ratio of 15% or less.

Section C: Performance

This option is available only to houses with or without secondary suites, and buildings that contain only dwelling units with common spaces that are less than 20% of the building's total floor area.

The modelling summary reports for both the reference and proposed house generated from Hot2000 or the ANSI/ASHRAE 140 compliant software are required to be attached to this form to be considered complete and be accepted for review.

Input parameters		**Reference Model**	**Proposed Model**
Airtightness (air exchanges per hour @ 50 Pa)			
Heat Loss/Heat Gain			
HRV efficiency			
Thermal mass (MJ/m^{20}C)			
Ventilation rate (l/s)			
Fenestration and door to wall ratio (FDWR) – reference (%)			
Direction of front elevation (clearly circle one)		N NE E SE S SW W NW	N NE E SE S SW W NW
Area of windows and doors	Front elevation (m^2)		
	Rear elevation (m^2)		
	Left elevation (m^2)		
	Right elevation (m^2)		
	Total area of windows (m^2)		
	Total area of opaque doors (m^2)		
Energy use (GJ)			

Software Information			
Software title		**Version**	
Is software Hot2000 or ANSI/ASHRAE 140 compliant?	Yes / No		

Declaration			
Name		**Firm**	
Address		**Phone**	
Email		**Signature**	

I hereby certify that the calculations submitted were prepared in full accordance with the operation procedures of the software and:

- ☐ *Subsection 9.36.5 of the 2015 NBC*
- ☐ *Alternative Solution - Energuide Rating System v15 w/ variance greater than or equal to 5% above the Reference Model (attach supporting documents)*
- ☐ *Alternative Solution – Specify: _____ (attach supporting documents)*

***Competent person* is defined as a person who is familiar and fluent with building design under Section 9.36 of the NBC and acceptable to the Authority Having Jurisdiction.**