

This form clarifies the design option chosen for a new building, addition or major alteration to comply with NBC Section 9.36.

All calculations must be completed by a competent person* (or design professional if NECB 2017 is used) and be attached to this form to be considered complete and accepted for review.

* **Competent Person** means a person, firm or corporation who is knowledgeable and experienced in the application of NBC Section 9.36. for the design of buildings and/or building systems.

Project Address		Application Number (Office Use):	
Occupancy Class			
Floor Area (m²)		Climate Zone	7B

Design Option:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prescriptive		Trade-Off	Performance
Complete Section 'A'		Complete Sections 'A & B'	Complete Section 'C'

Section A: Prescriptive

HRV / ERV: Yes No

<u>Conversions:</u>	
R = 5.678 x RSI	U = 1 / RSI

Effective Thermal Resistance of Above Ground Opaque Building Assemblies (RSI)			
Assembly	w/ HRV	w/o HRV	Proposed
Ceilings below attics	10.43	10.43	
Cathedral / Flat roofs	5.02	5.02	
Walls & Rim joists	3.08	3.85	
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	1.40 <i>or</i>	
	Minimum Energy Rating	≥ 29	
One door exception	Maximum U-Value	2.60	
Attic hatch	Minimum RSI _{eff}	2.60	
Skylights	Maximum U-Value	2.40	

Effective Thermal Resistance of Below-Grade or In-Contact-With-Ground Opaque Building 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	

Section A: Prescriptive (Continued)

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 / Gain Calculations	<input type="checkbox"/> Calculations were prepared in conformance with CSA F280			_____ BTU
Nomenclature	AFUE= annual fuel utilization efficiency, E _t = thermal efficiency			
Water Heater 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 ≤ (0.472V) - 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, Part 431, Subpart G	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 completed by a competent person and attached to this form in order to be considered complete and 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 NBC 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 NBC 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.

Full modelling summary reports for the reference and proposed house, completed by a competent person and generated from Hot 2000 v15 or an ANSI/ASHRAE 140 compliant software, is required to be submitted with this form in order to be considered complete and 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 Hot 2000 v15 or ANSI/ASHRAE 140 compliant?		<input type="checkbox"/> Yes	<input type="checkbox"/> No

Declaration			
Firm Name		Name	
Address		Phone	
Address		Email	
<p><i>I hereby certify that the calculations submitted were prepared in full accordance with the operation procedures of the software and:</i></p> <p><input type="checkbox"/> Subsection 9.36.5. of NBC 2015,</p> <p><input type="checkbox"/> EnerGuide Rating System v15 w/ variance greater than or equal to 5% above the Reference Model (attach supporting documents)</p> <p><input type="checkbox"/> Alternative Solution – Specify: _____ (attach supporting documents)</p>			
Date		Signature	