Construction Code Authority of Saskatchewan

BUILDING PERMIT APPLICATION
NBC SECTION 9.36. - ENERGY EFFICIENCY COMPLIANCE FORM
Zone 7B

Application:
NBC 2015 Section 9.36., as per Article 9.36.1.3., applies to the design and construction of all *new buildings, additions*, and *major alterations* including:

- *buildings* of *residential occupancy* to which Part 9 applies;
- *buildings* containing *business and personal services, mercantile or low hazard industrial* occupancies to which Part 9 applies to whose combined floor area does not exceed 300 m^2, excluding parking garages serving residential occupancies; and,
- *buildings* containing any mixture of the above two.

Energy Performance compliance applies only to:

- houses with or without a secondary suite; and,
- buildings containing only dwelling units and common spaces whose floor area does not exceed 20% of the floor area of the building.

Notes:
NBC Section 9.36. of the NBC applies to *new buildings, additions and major alterations*. This form provides for the requirements for *new buildings* and *additions. Major alterations* may not be required to satisfy all requirements included. Contact the *authority having jurisdiction* to determine which requirements will apply for a specific *major alteration* project.

Definitions:
Addition means any conditioned space that is added to an *existing building* that increases the building's floor surface area by more than 10 m^2.
Alteration means a change or extension to any matter or thing or to any occupancy regulated by The Uniform Building and Accessibility Standards Act. In the context of the Code:

Minor alteration means a stand-alone project for which a permit is required:

- often isolated or small in scope;
- does not involve structural elements;
- does not impact systems in other areas of the building;
- does not affect the operation of the fire alarm or sprinkler systems; and,
- does not make the means of egress non-compliant with the Code.

Major alteration means:

- Everything requiring a permit that does not fall under the scope of *minor alteration*; and,
- Where other systems need to be considered. These systems might be indirectly linked to the alteration project as the project does not intend to change these systems but their operation or compliance may be affected by other changes involved in the alteration (e.g., heating system and ventilation system after an extensive building envelope upgrade).

Competent person means a person, firm, or corporation, acceptable to the local authority, who is knowledgeable and experienced in the application of the National Building Code of Canada Section 9.36. for the design of buildings and/or building systems.
Ground oriented dwelling units includes:

- traditional individual detached houses with or without a secondary suite;
- semi-detached houses or duplexes (doubles) where each house may contain a secondary suite;
- row houses without secondary suites; and,
- row houses with secondary suites where firewalls are constructed in accordance with NBC Sentence 9.10.11.2.(1).

This means construction and footprint of the base building. The term does not apply to stacked dwelling units or multiple unit residential buildings other than those specifically mentioned above.
Other project types, means any project not related to ground-oriented dwelling units.
This includes the entire base building and any interior construction completed for occupancy (owned or tenant improvements/fitout).

Construction Code Authority of Saskatchewan

BUILDING PERMIT APPLICATION
NBC SECTION 9.36. - ENERGY EFFICIENCY COMPLIANCE FORM
Zone 7B

*This form clarifies the design direction chosen for *new buildings, additions*, and *major alterations* to comply with NBC Section 9.36.

All calculations are required to be completed by a *competent person (or design professional if NECB used for design)* and attached to this form to be accepted for review.

Project Information	
Project Address	BPA Number (Office use only)
Occupancy Class: _____ Floor Area (m^2): _____ Climate Zone: **Zone 7B**	
Design Option: (select one) ☐ Prescriptive (See Section A) ☐ Trade-Off (See Section B) ☐ Performance (See Section C)	

Section A: Prescriptive

HRV / ERV: Yes ☐ No ☐

Conversions:	
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**	**Office Use**
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 over garage	4.86			
Thermal Characteristics of Fenestration, Doors and Skylights (U)				
Assembly	**Efficiency**		**Proposed**	**Office Use**
Windows & Doors	Maximum U-Value = 1.40 or Minimum Energy Rating ≥ 29			
One door exception	Maximum U-Value = 2.60			
Attic hatch	Maximum U-Value = 2.60			
Skylights	Maximum U-Value = 2.40			
Effective Thermal Resistance of Below-Grade or In-Contact-With-Ground Opaque Buildings Assemblies (RSI)				
Assembly	**w/ HRV**	**w/o HRV**	**Proposed**	**Office Use**
Foundation Walls	2.98	3.46		
Slab On Grade With Integral Footing	2.84	3.72		
Unheated floors: (does not apply to crawl spaces)				
Below Frost Line	uninsulated	uninsulated		
Above Frost Line	1.96	1.96		
Heated Floors	2.84	2.84		

Calculations of RSI_{eff} for the above assemblies are required to be submitted.

HVAC Equipment Performance Requirements					
Equipment	**Capacity KW**	**Standard**	**Min. Efficiency**	**Proposed**	**Office Use**
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	Calculations were prepared in conformance with CSA F280 No			Yes / No BTU:	
Nomenclature	**AFUE**= annual fuel utilization efficiency, **E_t** = thermal efficiency				

Water Heaters Performance Requirements					
Equipment	**Capacity KW**	**Standard**	**Min. Efficiency**	**Proposed**	**Office Use**
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 10 CFR, Part 43l, Subpart G	E_t ≥ 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

To be completed and submitted for review by a *competent person*

□ 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 be 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.

All calculations are required to 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.

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.

To be completed and submitted for review by a *competent person**

Input parameters		**Reference Model**	**Proposed Model**
Airtightness (air exchanges per hour @ 50 Pa)			
Thermal mass (MJ/m^2 ^{o}C)			
Ventilation rate (l/s)			
HRV Efficiency			
Fenestration and door to wall ratio (FDWR) – reference (%)			
Direction of front elevation (clearly circle one)			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 title		**Version**	
Is software Hot 2000 v15 or ANSI/ASHRAE 140 compliant?		Yes / No	

Declaration

I hereby certify that the calculations submitted were prepared in full accordance with NBC 2015 Subsection 9.36.5. or EnerGuide Rating System and the operation procedures of the software**.**

_____
Print Name

_____ _____
Business Name Address

_____ _____
Email Phone Number

_____ _____
Signature Date

The full modelling report generated by Hot 2000 v15 or an ANSI/ASHRAE 140 compliant software package is required to be submitted.