

The National Building Code (NBC) 2010 Edition Requirements Including – the December 21, 2012 Amendments, which also References the National Energy Code for Buildings (NECB) 2011 Edition

GENERAL INFORMATION

Implementation Date of New National Building Code (National Energy Code for Buildings) Requirements

Please be advised that on December 21, 2012 Revisions and Errata were made to the 2010 Edition of the National Building Codes. These Revisions, are being administered as of January 1, 2013, and will be fully implemented Yukon wide as of April 1, 2013.

The 2012 Revisions incorporate energy efficiency requirements for housing and small buildings into Part 9 of the 2010 Edition, National Building Code of Canada (NBC). Buildings containing non-residential occupancies, whose combined total floor area exceeds 300 m² (3229 Sq Ft) or medium hazard industrial occupancies shall comply with the National Energy Code for Buildings (NECB). Buildings or portions of buildings that are not required to be conditioned spaces are exempted from the energy efficiency requirements.

Modelling of a Dwelling

Under the National Building Code, some trade-offs are allowed between envelope assemblies, heating and ventilation systems, as well as door and window assemblies. These trade-offs must be shown, through energy modelling, to cause the house as a system to meet the intent of the National Energy Code for Buildings (NECB).

This code requires computer modelling to be done by a qualified person, such as, but not limited to, an EnerGuide Certified Energy Auditor. The audited plan information must be provided during the building permit application process, and will include the following items to prove compliance:

- drawings showing the design of all envelope assemblies
- specifications of materials used
- calculations and/or out-puts from the modelling substantiating compliance

Total Window Area

If a modelling approach is used, or when NECB trade-offs are desired, the maximum practical fenestration area (window/door area) which will satisfy the modelling process acceptable to NECB, is approximately 17% - 22% of the total wall area of the dwelling. The 17% percentage is a good upper limit to use to optimize the window area/wall area ratio during the design process.

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Mechanical System Minimum Performance Efficiency Rating

<u>Mechanical Systems</u>	
Heating System	Minimum Performance
Air Source Heat Pumps - split	SEER 14.5 EER 11.5 HSPF 7.1
Air Source Heat Pumps – single package	SEER 14.0 EER 11.0 HSPF 7.0
Gas Fired Boilers	AFUE ≥ 90%
Oil Fired Boilers	AFUE ≥ 85%
Gas Fired Warm Air Furnaces	AFUE ≥ 92%
Oil Fired Warm Air Furnaces	AFUE ≥ 85%
Gas Fired Unit Heaters	E t 82%
Oil Fired Unit Heaters	E t 80%
Solid Burning Fuel Appliances	EPA 40 CFR or CSA B415.1
fireplaces must be sealed direct vent and pilot light on demand or intermittent ignition	
Service Water Heating	
Gas fired Hot Water Tanks and Tankless Heaters	80%
Oil Tired Tankless Hot Water Heaters	80%
Oil Fired Hot Water Tank	78%
Heat Recovery Ventilators (Sensible Recovery Efficiency)	
City of Whitehorse	64% @ -25 ° C
Yukon – if required	55% @ -25 ° C
there are other means to deliver heated air to habitable rooms that may be used, but a ventilation system must be installed	

Good Building Practise Advisory

Closed Cell Foam Products – Vapor & Trapped Moisture Issue

YTG Building Safety as well as Yukon Housing Corporation does not recommend the use of closed cell foam products applied to the exterior of wall assemblies unless:

- The inboard vapor barrier is carefully sealed – and it is best to verify this through a depressurization test prior to installation of drywall; -- OR --
- The vapor barrier is at the warm surface of the closed cell foam application – for instance with a vapor barrier applied over exterior sheathing, with closed cell foam applied directly over the vapor barrier; -- OR --
- An untested inboard vapor barrier is used, and the closed cell foam makes up at least 2/3 of the insulation value of the wall assembly – making, in effect, the warm side of the closed cell foam

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the actual vapor barrier. On high levels of insulation (total assembly levels in excess of R-30) this ratio can be reduced to ½ of the insulation value of the wall assembly

The use of closed cell foam products in an assembly which does not have a vapor barrier which will control vapor transmission into the assembly, can result in trapped moisture, and structural damage to framing from moisture induced rotting.

Open cell foam products have not been seen to have the same problems as closed cell foam products, although similar care and attention at installation, to ensure continuity of the warm side vapor barriers and adherence to the 1/3:2/3 rule, should be observed.

NOTES REFERRED TO ON DRAWINGS

Note 1

Window and Door Requirements

To comply with the National Building Code minimum requirements, all windows and doors used in Yukon, in every location including Whitehorse, must be:

- Triple glazed low E, argon filled; with a transmittance value of U-1.4 or better

Door-Window Configuration Chart

Doors with door-windows must conform to the following table:

Assembly U-values for Insulated Doors with Lights				
Wood Edge Steel Insulated Door				
Doorlight	U-factor	U-factor	U-factor	U-factor
1/2" Clear Glass	1.00			
1/2" Clear Glass Low E	1.00			
1" Double glazed Clear Glass Low E	1.00	1.40		
Low E -Triple Pane		1.30	1.40	1.40
<i>note 1: Large oval = 3/4 glass, Slim/Medium Oval = 1/2 glass.</i>				
<i>note 2: main entrance doors require a lite, viewer or side light</i>				
<i>note 3: one door may have a U value of up to 2.6</i>				
			(NBC 2010 9.7.2.1.2)	
			(NBC 2012 9.36.2.7.5)	

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In addition:

- In Whitehorse only, the door slab (door construction) for each door must be R-12 (RSI-1.96) or better.
- Side lights at doors are treated as windows, not as a door window.

Note 2

Increased insulation levels for Zone 8 for foundation systems.

Explanation – Teslin and Whitehorse are in heating zone 7B. Locations within 100 km of Teslin or Whitehorse, or along the Teslin Whitehorse corridor require below grade foundation wall insulation and insulation under a monolithic concrete slab as follows:

Foundation below grade	R-20 (RSI-3.46) minimum effective thermal resistance of the assembly
Monolithic slab	R-21 (RSI-3.72) minimum effective thermal resistance of the assembly

All other Yukon areas are in Zone 8 and require the following:

Foundation below grade	R-22.5 (RSI-3.97) minimum effective thermal resistance of the assembly
Monolithic slab	R-26 (RSI-4.59) minimum effective thermal resistance of the assembly

Note 3

City of Whitehorse, 2010 Building Bylaw LOWER than new National Building Code Requirements

For some building envelope assemblies the National Building Code is now requiring R values above the City's requirements and **MUST BE FOLLOWED**, these include:

	<u>City of Whitehorse Requirement Now superseded by NECB (R-value of the Insulation used)</u>	<u>National Build Code Requirement Required in all Yukon (Computed R-value of the Assembly)</u>
Ceilings below attics	R-50 (RSI-8.8)	R-59.22 (RSI-10.43)
Floors over unheated spaces	R-28 (RSI-4.9)	R-28.5 (RSI-5.02)
Unheated floors below grade	R-10 (RSI-1.8)	R-11.13 (RSI-1.96)
Heated floors below grade	R-20 (RSI-3.5)	R-25.31 (RSI-4.44)
Unheated floors below grade on permafrost	R-20 (RSI-3.5)	R-25.31 (RSI-4.44)
Monolithic slabs on grade	R-10 (RSI-1.8)	R-21.12 (RSI-3.72) Zone 7 R-26.06 (RSI-4.59) Zone 8 Refer to – Note 2

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City of Whitehorse, 2010 Building Bylaw HIGHER than National Building Code Requirements

For some building envelope assemblies the National Building Code assembly requirements are lower than the R-value requirements under the City of Whitehorse Bylaw. The City can make bylaws in excess of the NBC in areas under its jurisdiction. In those cases the higher **CITY R-VALUES MUST BE FOLLOWED**, these include:

	<u>City of Whitehorse Requirement Exceeding NECB Requirements</u>	<u>National Build Code Requirement Applicable outside of Whitehorse</u>
	(R-value of the Insulation Used)	(Computed R-value of the Assembly)
Cathedral Ceilings and Flat Roofs	R-50 (RSI-8.8)	R-31 (RSI-5.02)
Walls Above Ground	R-28 (RSI-4.9)	R-22 (RSI-3.85)
Foundation Walls Below Grade	R-28 (RSI-4.9)	R-20 (RSI-3.46)
Heated Floors Below Ground	R-20 (RSI-3.5)	R-16 (RSI-2.84)
Ventilation	Balanced and Verified Heat Recovery Ventilator Required	Code compliant exhaust-only ventilation allowed by NECB*

*Use of heat recovery ventilation devices encouraged by National Energy Code for Buildings through reduction of R-value requirements of assemblies