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Canadian Commission
on Building and Fire
Codes

Commission canadienne des
codes du bâtiment et de
prévention des incendies

Ottawa Canada
K1A 0R6

NRC - CNRC

BFC-13,259 & BFC-13,293

August 31, 2010

Mr. John Kenward
Chief Operating Officer
Canadian Home Builders' Association
150 Laurier Avenue West, Suite 500
Ottawa, Ontario
K1P 5J4

**Re: Impact on Building Costs and Policy Direction on Energy
Efficiency Requirements**

Dear Mr. Kenward:

This is in reply to your letters of 7 May 2010 and 29 June 2010 regarding Impact on Building Costs and Policy Direction on Energy Efficiency Requirements.

Thank you for providing the written copy of the CHBA presentation that Don Johnston made to the CCBFC on June 10, 2010.

National Energy Code for Buildings Baseline

The CCBFC recognizes that the 1997 MNECB was never adopted by the provinces and territories and only referred to by Ontario as an acceptable solution. Therefore, the lack of adoption resulted in no "code" baseline related to the 1997 MNECB. The CCBFC decided that in the absence of this, that current construction practice was the most meaningful baseline to work from. The current construction practice was determined by the best judgment and the work of the Standing Committee, recognizing that this is not an exact science. The baseline adopted is similar in many respects to the 1997 MNECB. A copy of the baseline is attached for your convenience.

Impact on Building Costs

At its June 10, 2010 meeting, the CCBFC decided to provide for each technical requirement, the incremental cost from the baseline (as defined above) and the related energy savings.

The CCBFC's typical approach is to not provide aggregate costs for building types and locations for each technical requirement to the model. The approach taken by the

... /2

Standing Committee on Energy Efficiency in Buildings is consistent with this. The incremental cost for the technical requirements was developed by looking at the incremental cost for typical assembly types and then determining a weighted average.

I hope this response provides clarity on the CCBFC policy decisions related to these matters.

Yours sincerely,

A handwritten signature in cursive script, appearing to read "Bruce Clemmensen".

Bruce Clemmensen
Chair, CCBFC

BEC/gsl



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MEMORANDUM

DATE January 12, 2010

TO Canadian Commission on Building and Fire Codes
via Anne Gribbon

FROM Team Coordinator , Building Services Division
Cathy Taraschuk

RE: **Baseline for NECB 2011**

Background

All technical changes to the National Model Codes must contain supporting information that includes the cost implications of the proposed change. The cost is typically referred to as the incremental capital cost of construction and is the differential between the cost of construction based on the revised requirements versus the cost of construction based on the current requirements. With respect to the work on the National Energy Code for Buildings (NECB), the Standing Committee on Energy Efficiency in Buildings (SC-EEB) has decided to use current construction in lieu of current requirements for the determination of the cost implications, and has given the term “baseline” to this current construction.

At its 22nd meeting held in September 2009, the Canadian Commission on Building and Fire Codes requested a summary report on how the baselines were established along with the resulting baselines.

Response

Each task group of SC-EEB has set their baselines and these have been reviewed by SC-EEB. The baselines are presented below for each Part of the NECB.

Part 4 Lighting

Result: The lighting baseline has been set at the lighting provisions in ASHRAE 90.1 / 2004.

Rationale: In response to the request from the CCBFC to provide the baseline and rationale behind its choice, the TG-L&EP summarized what is happening in various Canadian jurisdictions:

- New energy requirements in Manitoba might be based on ASHRAE 90.1 / 2007
- BC has adopted 90.1 / 2004
- City of Vancouver has adopted 90.1 / 2007
- Ontario references 90.1 / 2004 with modifications
- Hydro Quebec utility incentives reference 90.1 / 2004

ASHRAE 90.1 / 2004 LPDs are identical to 90.1 / 2007; the major differences in the lighting part are some controls changes and it is easier to apply.

Based on this, the majority of Canada's population centres use 90.1 / 2004 and therefore this should be considered current practice. The TG-L&EP AGREED to use ASHRAE 90.1 / 2004 as the lighting baseline.

Part 5 Heating, Ventilating and Air-conditioning Systems and Part 6 Service Water Heating Systems

Result: The HVAC and service water heating baseline has been set at the MNECB 1997 level.

Rationale: The TG-HVAC+H2O reviewed and compared the following energy codes and standards:

- MNECB 1997
- ASHRAE 90.1 / 2007
- Ontario Building Code's (OBC) SB 10 (based on ASHRAE 90.1 / 2004 and MNECB 1997)
- Energy Efficiency Act (EEA)

In addition, the industry current practice was analyzed based on data from construction practice (Manitoba Hydro, City of Toronto and Northwest Territories projects), the Energy Efficiency Act and CBIP experience. Weight to population was given in the analysis.

The general findings on the comparison of energy codes are:

- ASHRAE 90.1 / 2007 tends to have lower requirements for heating equipment than the EEA
- OBC's SB 10 is generally more stringent with 25% higher than MNECB 1997 however this improvement is not directly applicable to HVAC equipment.
- Energy efficiency improvement for boiler improved significantly since 1997

The TG- HVAC+H2O established the baseline based on MNECB 1997 prescriptive requirements. This HVAC performance baseline was chosen based on the members' knowledge of current building practice.

Part 7 Electrical Power

Result: The electrical power baseline has been set at the MNECB 1997 level.

Rationale: The TG-L&EP has AGREED to use MNECB 1997 as the baseline, which is current practice. There are few technical revisions proposed to Part 7 except for updating and adding new referenced standards.

Part 3 Building Envelope

Result: The baseline for opaque building envelope elements has been set at the MNECB 1997 level for buildings with electricity as the principal heating source. For fenestration, the baseline has been established as the MNECB 1997 natural gas levels for areas with less than 7000 heating-degree days and MNECB 1997 oil levels for areas with greater than 7000 heating-degree days.

Rationale: The TG on Building Envelope (TG-BldgEnv) agreed to establish the baseline building based on the analysis of existing energy codes and current practice. The energy codes that were reviewed and compared are:

- MNECB 1997
- ASHRAE 90.1 / 2007
- OBC's SB 10 (based on ASHRAE 90.1 / 2004 and MNECB 1997)
- Québec's RRECNEB

The industry current practice analysis was based on data from:

- Construction firm from Manitoba (providing data on Manitoba and Saskatchewan projects)
- National construction firm (providing data on Ontario and Nova Scotia projects)

- AEÉ (Québec)
- CBIP (Cross-Canada)

The general findings on the comparison of energy codes are:

- ASHRAE 90.1 / 2007 and MNECB 1997 roofs are similar whereas ASHRAE 90.1 / 2007 walls tend to have greater R-values than MNECB 1997
- OBC's SB 10 is generally more stringent than MNECB 1997
- Québec's RRECNB is less stringent than MNECB 1997

The overall finding from the analysis of current practice is that buildings meet or slightly exceed MNECB 1997 requirements.

The TG-BldgEnv disseminated the information from the above studies and established a draft baseline for building assemblies in contact with the ground and above-ground building assemblies. Refer to Table 1. The baseline is largely based on MNECB 1997 prescriptive requirements for buildings with electricity as the principal heating source and the members' knowledge of current industry practice.

A single baseline value was set for the various building envelope assemblies as recommended by the TG and endorsed by SCEEB. Refer to the SC-EEB paper "Policy Related Principles of the NECB".

The TG-BldgEnv established the baseline for fenestration based on MNECB 1997 natural gas prescriptive requirements for areas with less than 7000 heating-degree days and MNECB 1997 oil requirements for areas with greater than 7000 heating-degree days. Refer to Table 1. This fenestration baseline was chosen based on the members' knowledge of current building practice.

Request

For information

Proposed Draft Baseline

Heating-degree days Representative City Units	less than 3000			3000 - 3999			4000 - 4999			5000 - 5999			6000 - 6999			greater than 7000		
	Victoria			Windsor			Montreal			Edmonton			Fort McMurray			Yellowknife		
	R	RSI	USI	R	RSI	USI	R	RSI	USI	R	RSI	USI	R	RSI	USI	R	RSI	USI
Building Assemblies in Contact with Ground																		
Walls & Roofs:																		
All Types	9.6	1.69	0.59	9.6	1.69	0.59	17.6	3.10	0.32	17.6	3.10	0.32	17.6	3.10	0.32	21.6	3.80	0.26
Floors-On-Ground:																		
All Types (insulation at 2 ft. perimeter, except for HDD > 7000 where insulation full slab)	7.5	1.32	0.76	7.5	1.32	0.76	7.5	1.32	0.76	7.5	1.32	0.76	7.5	1.32	0.76	15	2.64	0.38
Above-Ground Building Assemblies																		
Roofs:																		
All Types	20	3.52	0.28	20	3.52	0.28	22.7	4.00	0.25	22.7	4.00	0.25	22.7	4.00	0.25	31.5	5.55	0.18
Walls:																		
All Types	16	2.82	0.35	16	2.82	0.35	16	2.82	0.35	21	3.70	0.27	21	3.70	0.27	23.6	4.16	0.24
Floors:																		
All Types	20	3.52	0.28	20	3.52	0.28	22.7	4.00	0.25	22.7	4.00	0.25	22.7	4.00	0.25	31.5	5.55	0.18
Fenestration:																		
fixed	1.76	0.31	3.2	1.76	0.31	3.2	1.76	0.31	3.2	1.76	0.31	3.2	1.76	0.31	3.2	2.73	0.48	2.1
operable	1.65	0.29	3.4	1.65	0.29	3.4	1.65	0.29	3.4	1.65	0.29	3.4	1.65	0.29	3.4	2.05	0.36	2.8

Table 1: Proposed Draft Baseline for Building Envelope Thermal Requirements