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**Canadian
Home Builders'
Association**



**Association canadienne
des constructeurs
d'habitations**

May 7, 2010

Bruce Clemmensen, Chair
Canadian Commission on Building and Fire Codes
c/o Anne Gribbon, Secretary
Canadian Codes Centre / National Research Council
Building M-23A
1200 Montreal Road
Ottawa, Ontario K1A 0R6

**Re: Energy Efficiency Requirements for Houses and Small Buildings
– Data Required to Support Cost and Benefit Analysis**

Dear Mr. Clemmensen:

I am writing with regard to the proposed energy efficiency requirements for houses and small buildings. CHBA would like to be assured that we have the same understanding as the Commission with regard to the approach and the data needed to assess the costs and benefits of the proposed new requirements.

I am attaching a briefing note that outlines what CHBA believes are these requirements. It is our hope that this paper can serve as the basis of discussion during the open portion of the CCBFC Executive Committee meeting on Monday, May 10. The outcome of this discussion could be helpful to the Executive Committee in directing the work of the consultant soon to be hired to conduct the baseline study.

Yours truly,

John Kenward
Chief Operating Officer

cc: CHBA Executive Board

CHBA Views on Data Requirements to Support Cost and Benefit Analysis of Energy Efficiency Requirements in Part 9 of the model National Building Code of Canada (NBC)

It is understood that the Canadian Commission on Building and Fire Codes (CCBFC) will consider a number of factors when determining what energy efficiency requirements should apply to Part 9 buildings. Three of these factors are cost impacts, energy efficiency impacts and energy cost savings. The following discussion focused on how the CCBFC might consider addressing these three factors.

General concept and key assumptions:

- New energy efficiency requirements will be proposed for Part 9.
- In considering these proposed new requirements, the CCBFC will need to answer three questions:
 - What construction costs will these requirements mean for the typical new home built in jurisdictions?
 - What level of energy efficiency improvement will this provide?
 - What is the current value of this energy efficiency improvement, per year, (i.e., what are the “first year” savings), in jurisdictions?

Geographically-based Data Variables

- 1) Construction practice varies across Canada, as a consequence, so will the incremental costs for new requirements.
 - 2) Current or assumed “baseline” energy efficiency performance varies across Canada, so the magnitude of energy efficiency benefits will also vary.
 - 3) Energy sources and costs vary across Canada, so the value of resulting benefits will vary.
- Of these three geographically-based variables, the first one – construction cost impacts – will need to be quantified if the CCBFC is to have a realistic understanding of the impact of specific requirements.
 - The second issue – assumed baseline energy efficiency performance – is also important to understanding the impact of requirements in relation to the energy efficiency objective.
 - The third issue – energy “mix” and cost is somewhat more problematic and the CCBFC may conclude that the use of average national values is reasonable for its purposes.

Measurement Requirements

- To carry out accurate cost analysis in any jurisdiction, there are three possible data sets that are required:
 - a) “Baseline” construction practice as established in provincial code, where relevant requirements are in place.
 - b) “Current construction practice” representing typical new home construction, where this is a) different than that prescribed in provincial code, or b) where no relevant requirements in provincial code exist.
 - c) “Proposed construction practice” based on proposed new energy efficiency requirements under consideration by the CCBFC.
- When cost data are combined with data on energy efficiency impacts and the resulting energy savings, the CCBFC will have conducted a “simple payback” analysis – it will understand the cost, the energy efficiency impacts and the operational cost savings resulting from proposed energy efficiency code changes. The “simple payback” calculation is simply the increased cost divided by value of the first-year energy savings. This will assist the CCBFC in making a judgment about what new energy efficiency requirements in the Code should be.

What the NRC’s “Current Practices EEH Part 9” RFP asks for

The RFP indicates that:

“the project will report on the current construction practices (i.e., constructed within the last year”) in Canada related to materials and methodology to address energy efficiency in housing in the scope of Part 9 of the National Building Code of Canada, that is the design and construction of new buildings and additions to existing buildings of 3 storeys or less in building height, having a building area not exceeding 600 m² and containing only dwelling units, related ancillary service rooms, shared means of egress or garages serving the units”.

The RFP requirement specifies that this data must be developed for 22 localities across Canada, representing a range of climate zones and also a number of housing types. The RFP also requires details on key systems in the homes including building envelope, HVAC, lighting, power distribution system and service water heating.

In essence, the work described in the RFP aligns with that described in point b, above.

Data Issues

In approaching the question of how best to analyze cost impacts, the central question concerns “what is being compared to what”. As noted previously, simply comparing existing code requirements with proposed code requirements may, or may not, provide meaningful insight into the cost impacts of the proposed requirements, either because homes within a jurisdiction are constructed typically with energy

efficiency measures beyond those specified in current provincial code, or because the provincial Code may not include any such measures, making comparison impossible.

In practical terms, it is suggested that the purpose of conducting a cost impact analysis is to gain a realistic understanding of **what the typical and actual cost impacts of proposed requirements will be on typical new homes**. Of necessity, this requires that current construction practice be included in the analysis, and the NRC has initiated an RFP that will, hopefully, address this need.

Some Commonsense Considerations

The issue of energy efficiency requirements in codes are not limited to the NBC. A number of provinces have recently enacted such changes, or will in the near future. As well, there has been a significant recent change in the mandated energy efficiency of gas furnaces through the federal Energy Efficiency Act. The question arises as to how best to take these matters into account.

Here, commonsense is required. The purpose of the cost impact analysis is to understand how higher mandated energy efficiency will affect construction costs. To achieve this, actions taken by other jurisdictions that have a similar or parallel intent to those under consideration by the CCBFC should also be considered.

This is made all the more relevant due to the general lack of such analysis by provinces that have already “moved” on energy efficiency requirements.

Reflecting these commonsense considerations, it seems advisable to ensure that the “current construction practices” to be determined through the pending NRC research observe the following criteria:

- 1) That new homes built under any of the regional or national voluntary energy efficiency labeling initiatives be excluded from the analysis. This represents about 10% -13% of recently constructed homes where the level of energy efficiency is likely well beyond typical current practice, and has little relationship to code requirements. The CCBFC has reasonably good data about this sub-set of homes, and so can consider the relevance this sub-set, if any, in their decision-making.
- 2) In both Nova Scotia and B.C. energy efficiency code requirements have recently been increased. This current level of requirement, which may preview those to be proposed in the NBC, should be disregarded. As no comprehensive cost impact analysis was carried out prior to these changes in either of the provinces, the “baseline” for current construction practice should be homes built prior to the new provincial requirements coming into force.
- 3) The federal Energy Efficiency Act mandated higher gas furnace efficiency as of January 1, 2010. This change will have significant impact of the energy efficiency of gas heated homes, and this impact should be considered in terms of proposed requirements for the NBC. Reflecting this, the “baseline” for current construction practice should represent the gas furnace efficiency typically in place prior to the new furnace requirements coming into force.