CHBA Briefing Note on the Costs of the Model National Energy Code for Houses

October 2002

Background

The Model National Energy Code for Houses (MNECH) was developed for the Canadian Commission on Building and Fire Codes (CCBFC), the senior committee in a national structure responsible for writing model codes under the auspices of the National Research Council. Published in 1997, it incorporates four main types of variables: 1) energy use, 2) energy sources and costs, 3) construction costs: and 4) economic factors, including macroeconomic variables such as interest and inflation rates and the economic life of building components. No province or territory has adopted the MNECH. However, the federal government has indicated that it will be part of Canada's action plan to deal with climate change.

The CHBA has issued reports previously on the shortcomings of the MNECH as a regulatory document. A CHBA report of April 2001 concluded that there is a need for an objective review of the underlying assumptions of the MNECH and the expected outcomes. The report goes on to say that:

- The MNECH is based on a complex model that is untested and unproven in the field.
- There are some serious questions about the soundness of the technical, scientific and economic assumptions used in the MNECH and the conclusions made about optimal assemblies.
- Important questions about the practicality of implementing the MNECH remain unanswered.

Cost Analysis

The CHBA commissioned a study of the impact of the MNECH on the cost of housing. Two examples were selected for analysis: Southern Ontario and Southern Manitoba. The studies compare the major material, labour and cost implications of the MNECH 1997 to the respective building code requirements for typical residential applications.

The Ontario study focuses on Region A which is that part of Ontario where the heating demand is less than 5000 degree-days and includes Ottawa, Toronto, Hamilton and Windsor. The comparison is based on natural gas as the principal heating source, a method of heating typical for the area.

The Manitoba study focuses on the zone with less than 6500 degree-days and includes Winnipeg and Brandon. The comparison is based on both natural gas and electricity/oil/propane as the principal heating sources.
In both cases, local builders and the provincial HBA's were consulted in determining typical construction to serve as the basis of comparison.

Findings
The cost of building a typical new house with gas heating in southern Ontario to meet the MNECH ranges from $2,900 to $5,600 depending on builder practices and preferences.

In southern Manitoba, the additional cost of building a typical new house with gas heating to meet the MNECH ranges from $1,500 to $2,400. For a house heated with natural gas, the additional cost ranges from $2,700 to $3,600, depending on builder practices and preferences.

Reaction and Review
The draft reports were sent for review to the Institute for Research in Construction, the Manitoba Energy Ministry and Natural Resources Canada. Their comments follow along with CHBA's response:

1. Energy Savings: The study deals only with initial costs and ignores the savings in operating costs from the higher level of energy efficiency required by the MNECH.

   CHBA response: Correct. The case studies only deal with construction costs.

2. Cost Avoidance: Changes at the design stage could circumvent cost increases.

   CHBA response: Perhaps some increases could be avoided by making the unit smaller, etc. However, none of the additional requirements identified were estimated on a retrofit basis. The fact remains that thicker insulation increases labour and materials.

3. Reporting Costs: The report over-estimates the cost of the reporting requirements.

   CHBA response: The comparison estimated that additional reporting requirements would add $200 to $560 to each house depending on the builder's volume. It is evident that the MNECH is more stringent than the NBC with respect to information reporting. In the end, the cost impact will depend on how the building permit jurisdictions enforce the requirements. One comment said the hourly rates for drawing and design used for Manitoba were too high and this may well be the case. While the amount of increase can be debated, it is evident that increased reporting requirements will result in increased cost.

4. Over-estimation and under-estimation: The commentators disagree with the selection of some components and assemblies chosen for the case studies.

   CHBA response: An estimate is a judgment based on knowledge and experience and the case studies represent a good effort to estimate the additional requirements and the ensuing materials and labour required to meet the MNECH. As befits the process of estimating, it is quite likely that there has been over and

under-estimation but these would tend to balance each other to some extent. The costs were reviewed and modified in light of specific comments from the reviewers and the revised (lower) amounts are reflected in the findings and conclusions sections of this note.

5. Builder standards: Many builders already build well above the minimums.

   CHBA response: The comparisons were based on the minimum requirements in Ontario and Manitoba. While some builders already meet or exceed the MNECH requirements, many build to the minimum and these starter houses most affect less affluent buyers.

Conclusion

While the fine points of the estimates can be debated, the MNECH requires more materials and labour than houses built to the minimum standards in at least two Canadian provinces. There are many variables that affect house cost such as location, type of heating, builder volume, builder standards, enforcement of reporting requirements, house size, and labour and material costs and these all affect the degree to which the MNECH increases the cost of a house. For houses built in Ontario and Manitoba to the minimum requirements of the provincial building codes, it is fair to say that meeting MNECH requirements will result in an increase of $1,500 to $4,000 for a 2,000 ft^2 house.