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## **Canada's Innovative 2005 Building, Fire, and Plumbing Codes**

**Madeline McBride and John Haysom**

How can Canadian construction codes better accommodate innovation? That is one question members of the Canadian Commission on Building and Fire Codes asked themselves when they prepared a strategic plan in 1995. New technologies, materials, and construction methods appear in the market faster than the National Building Code (first published in 1941), National Plumbing Code, and National Fire Code can absorb in their five-year publication cycle. The Commission members concluded that a clearer description of the objective and intent of each code requirement — what it is intended to achieve — would facilitate the evaluation of technologies, materials and methods that differ from those specifically described in the codes. Thus, accommodation of innovative solutions was one of several reasons that the Commission decided to convert the national codes to a new format called “objective-based.”

In this new format, each provision in the 2005 codes will have auxiliary information attached to it: the code objective it is intended to help achieve, the function it is intended to serve, the specific intent of the provision, and in what circumstances it applies.

In arriving at this new format, the Commission took into account the experience in other countries with so-called performance-based codes. In a true performance code, one would find a quantitative, or measurable, performance target for every aspect of building performance along with a specified method of measuring that performance. But neither we in Canada nor code writers in those other countries have enough information to write true performance codes.

The alternative used in some countries is to write qualitative performance codes – codes that, in effect, say “Build a good building,” with no quantifiable methods for determining if the qualitative performance goals have been achieved. Assessment of code compliance is typically difficult and subjective.

The Commission did not want to create similar uncertainty in Canada. It therefore decided to retain the mixture of prescriptive and performance requirements in the current codes. These “acceptable solutions” establish the benchmarks of performance that must be achieved by equivalents or “alternative solutions.”

To satisfy the provisions of the 2005 codes, the proponent of an alternative solution must demonstrate that it will perform as well as the acceptable solution it is intended to replace. This is where the additional information attached to each code requirement comes into play. The objectives, functional statements, intent statement and application statements attributed to each acceptable solution define very precisely in which areas equivalence of performance must be demonstrated for the proposed alternative solution.

But what about designers and builders who aren't particularly interested in innovative solutions? Will the new format mean they have to learn to use the codes all over again? The answer is "No." Because the familiar prescriptive and performance provisions of the existing codes will still be present in the new format, in the form of acceptable solutions, these code users can continue to use them, secure in the knowledge that following the acceptable solutions assures compliance with the objectives and functional statements of the new codes. This has provided a great deal of relief to those who were initially very apprehensive about the proposal to develop a new format for the codes.

In a parallel activity, the Commission, the National Research Council (NRC) and the provinces and territories have worked together to introduce an integrated code development and maintenance system in Canada. This system provides the provinces and territories with the opportunity for greater involvement at all stages of the process of developing and maintaining the national model codes. Thus, when the provinces and territories introduce the national model codes into regulation, it will be much more likely that the codes will meet their needs with fewer of the kinds of extensive changes and additions that have occurred in the past.

The participation of the provinces and territories in the process is coordinated by a newly established Provincial/Territorial Policy Advisory Committee on Codes (PTPACC), which provides policy direction to the Commission.

NRC will publish the objective-based editions of the National Building Code, National Fire Code and National Plumbing Code in mid-2005. While the improvements are designed to minimize disruption to industry, NRC, Canada Mortgage and Housing Corporation, and all the provinces and territories have jointly funded the development of training to ensure code users can find and make effective use of the auxiliary information in the new, objective-based format.

The work of the Canadian Commission on Building and Fire Codes and its technical committees is supported by the Canadian Codes Centre at NRC's Institute for Research in Construction. More information is available at [www.nationalcodes.ca](http://www.nationalcodes.ca) by clicking on the "In The News" link to objective-based codes, or by contacting John Archer, Secretary to the Commission, at (613) 993-5569 or [John.Archer@nrc-cnrc.gc.ca](mailto:John.Archer@nrc-cnrc.gc.ca).

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