

What will Objective-Based Building Codes mean for me?

Information about Canada's proposed
Objective-Based Building Codes
for new home builders, renovators and other professionals
in the residential construction industry

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Introduction

Some important changes to Canada's building code system are underway. For new home builders, renovators and other housing professionals, this will result in codes that are easier to understand, easier to apply and more flexible when you want to try something new.

This process begins with changes to the National Building Code (NBC). The territories and some provinces adopt the NBC directly; other provinces adopt codes that are based largely on the NBC. In either case, the changes being made to the NBC will affect the provincial building regulations you will deal with in the future.

Over the last five years, the Canadian Commission on Building and Fire Codes (CCBFC), which directs the development of the NBC, has been working with the provinces and territories to make building codes more responsive to the needs of code users and consumers. Representatives of the home building industry have taken an active role in this process.

In 1995, code users were asked what changes they would like to see. Their answers were clear. Building codes should:

- be clear in their scope.
- be very clear about what is required and why.
- make it easier to use new products and building techniques.
- be easier to apply to renovations.

As a result, the CCBFC proposed the adoption of an Objective-Based National Building Code and a more integrated process for code development. With the support and involvement of the provinces and territories, and in consultation with industry, these changes are now taking place.

The objective-based approach means building codes that should help everyone involved in the design, construction and regulation of residential building to work together. By providing more information, the new codes will be clearer, making them easier to apply in a consistent way. This should also let housing innovations move into the marketplace easier and faster.

This publication explains what objective-based building codes involve, why these changes have been proposed, and how they will affect you and your business.

Background on Canada's Building Code System

Canada's building code system involves all three levels of government—federal, provincial/territorial and municipal. Provinces and territories have the responsibility for establishing building regulations, while municipalities typically manage enforcement.

The CCFBC develops and publishes the National Building Code that forms the basis for provincial and territorial regulations. The National Research Council (NRC) provides research and support to the CCFBC.

The CCBFC is made up of volunteers from across Canada representing all those concerned with the regulation of buildings—construction and fire safety authorities, building and fire officials, builders, engineers, architects, material and product suppliers, and consumers.

The Canadian Home Builders' Association and Canada Mortgage and Housing Corporation are active participants in the code development process.

When Canada's National Building Code (NBC) is either adopted or adapted by provinces and territories, this sets minimum requirements for buildings. Since the first edition in 1941, the NBC has been revised many times, usually at five-year intervals.

As our understanding of building science, fire safety, structural design and building performance has increased, subsequent versions of the NBC and provincial codes have reflected this increased knowledge.

Likewise, the development of new products, materials, design approaches and building practices has led to code changes.

In 1995, the CCBFC, provinces and territories began a major overhaul of the NBC and provincial codes. This involves changing the code development process, reorganizing and rewriting the codes, and

The Objectives of the National Building Code

The National Building Code review carried out by the CCBFC found that the vast majority of code requirements are linked to one or more of the following objectives:

Safety:

- Fire safety
- Structural safety
- Safety in use
- Resistance to unwanted entry

Health:

- Indoor conditions
- Sanitation
- Noise protection
- Protection from unacceptable vibration or deflection
- Containment of hazardous substances

Accessibility:

- Barrier-free path of travel
- Barrier-free facilities

Protection of Buildings:

- Protection of the building from fire
- Protection of the building from structural insufficiency
- Protection of adjacent buildings from fire
- Protection of adjacent buildings from structural damage

Note: Some provincial codes may have additional objectives.

removing parts of the codes that are no longer relevant given today's building practices. This process has two goals:

- First, to streamline the code development process by involving the provinces and territories at all stages so revisions can be adopted more easily and quickly across the country. This integrated process will also mean better codes and less duplication of effort.
- Second, to make the codes easier for everyone to use, and to reduce the potential for disagreements between builders, designers, renovators and building officials.

What is an Objective-Based Building Code?

Canada's current building codes already address certain well-recognized objectives, for instance, safety, health and accessibility. But while the requirements in the existing codes grew out of specific objectives, these connections have not been stated and are not always obvious.

The new objective-based building codes will be organized quite differently. Every requirement will be tied to a specific objective. As a result, it will be much easier to understand why a specific requirement exists. As well, the new codes will give you additional information not currently provided. The specific intention of each code requirement will be available.

These changes offer significant benefits:

- They will make understanding and using building codes easier, saving you time and money.
- They will allow more consistent interpretation by local building officials, reducing the frustration and expense that result when you can't get consistent directions.
- They will make it much easier to determine whether a new product or building technique will satisfy the codes, allowing you to innovate more easily and with greater certainty.

The change to an objective-based code format will not affect how you build or renovate homes. The present requirements of the codes will remain essentially the same. What the new codes will do is reduce the complexity involved when applying them.

Why Are These Changes Needed?

Today's building codes include a mixture of prescriptive and performance requirements. For most building projects, determining what is required and acceptable under the codes is fairly straightforward.

However, the present codes don't explain why specific requirements exist, and what they are intended to achieve.

This lack of background information can complicate approval of new or innovative designs, products or building techniques.

Lack of clarity can lead to inconsistent application of codes, causing frustration for both industry members and building officials. New home builders and renovators have long complained that this can discourage them from trying new ideas.

While the current building codes allow building officials to assess the equivalence of new or innovative approaches, this isn't always easy to do. The connections between individual requirements and the underlying objectives and intents of the codes are not provided.

When building officials have difficulty determining if a new product or design approach meets the intent of the codes, they have little choice other than to ask for an engineer's or architect's stamp or to withhold approval.

Today's building codes are the product of 60 years of evolution, so it is not surprising that the reasoning behind each requirement is not always clear or obvious.

Since the introduction of Canada's first National Building Code in the 1940s, the pace of technological change in the building industry has accelerated enormously. New home builders, renovators and building officials are constantly encountering new products, designs and situations.

Reflecting this, the new building codes are being developed to deal more easily with innovation and new technology. Simply put, they will make it easier to understand what is required, and why.

This will assist new home builders wanting to innovate. And it will benefit renovators, who are often faced with the need to take alternative approaches in older buildings.

Key Terms

Prescriptive requirements state what must be done in order to meet the codes. Examples would be the minimum width of an exterior doorway or the minimum size and spacing of wall studs.

Performance requirements focus on the result that must be achieved to satisfy the codes. Examples would be ventilation requirements for houses and fire resistance rating requirements.

In the new codes, each requirement will be linked to one or more specific objectives. As well, intent statements and other important information will be available. This will make it much easier to apply the codes in all situations, but especially when dealing with new products and innovative practices.

Also, future changes to the codes will need to be related clearly to the underlying objectives.

How Will the Objective-Based Building Codes Work?

When applying the new codes to a conventional building project, nothing will have to change. The minimum code requirements in place today will continue to exist in the new codes.

What will be different is the way the new codes are presented and some of the terminology used. The sidebar explains these new terms.

The new codes will incorporate two parts:

- **Division A** will contain the framework for the building codes, including objectives and functional requirements. This is the information that does not change frequently.
- **Division B** will be the “working” part of the building codes and include acceptable solutions. This is the part of the codes that new home builders, renovators and building officials will use on a day-to-day basis. This part of the codes will be updated on a regular cycle.

Applying the new codes to a project will involve the same process as today.

The current version of the codes establishes minimum requirements. These requirements will continue to be applicable, but will be called **acceptable solutions** in the new codes.

Key Terms Relating to Objective-Based Building Codes

Objectives: the core elements that underlie the codes—safety, health, accessibility and protection of buildings.

Functional Requirements: the results to be achieved in applying the codes.

Acceptable Solutions: the new term for the minimum prescriptive and performance requirements that exist in the current codes or are added in the future.

Performance Criteria and Values: specific data that will be provided for acceptable solutions where the necessary information is available.

Intent Statements: plain language descriptions of the reasons underlying acceptable solutions that will help in evaluating alternative approaches.

Alternative Solutions: alternatives that have been accepted by authorities as meeting the intent of the codes.

In addition, **intent statements** will be available separately. These will explain, in plain language, the reasoning behind each acceptable solution in the codes.

Intent statements will make the building codes a lot clearer for everyone. They will make it easier to understand why code requirements exist and how these can be met.

The example intent statement shows how this information will be presented.

Due to the sheer volume of information involved in intent statements, they will be published as a separate document.

Example Intent Statement

NBC

Acceptable Solution

9.20.2.2.(1) Used bricks shall be free of old mortar, soot or other surface coating and shall conform to Article 9.20.2.1.

Intent:

To reduce the probability of old, incompatible mortar or other surface coatings remaining on the brick at the time of installation, which could lead to inadequate brick-to-brick bond strength.

This is to reduce the probability of:

- 1) compromised structural integrity of elements constructed of used brick or elements supported by such brick; or
- 2) compromised structural integrity of elements constructed of used brick or elements protected by such brick due to deterioration caused by rainwater ingress into or through assemblies.

This is to reduce the probability of harm to persons.

Alternative Solutions

Objective-based codes are designed to reduce barriers to innovation. By making the intent of each specific code requirement clear, it is expected that new home builders, renovators and building officials will find it easier to assess innovative and alternative approaches.

As is the case today, the approval of an alternative solution will rest on demonstrating that the new approach achieves the same result as the current acceptable solution set out in the codes.

The differences between how the current codes and the new codes can be used for this purpose are illustrated in the following example: the use of glass block to construct a shower enclosure.

Sentence 9.6.6.5.(1) of the National Building Code states that *glass other than safety glass shall not be used for a shower or bathtub enclosure*. Therefore, use of glass blocks in this application appears to be unacceptable under the provincial building codes which all reflect this requirement.

What is not explained is why the use of glass is restricted this way.

As a result, it would be difficult for a designer, builder or building official to determine if the intent of the requirement was specifically related to glass blocks or not.

With so little information, establishing that a glass block enclosure should be accepted as equivalent to one constructed from safety glass is not easy.

With the new codes, there would be a clear process by which to evaluate and approve this alternative. This would be made possible because of the additional information provided by the objective-based format and intent statements. The illustration below shows how the process would work.

Evaluating Alternatives

Evaluation Step	Information Provided
<p><i>In the objective-based building codes, the provision regarding the use of safety glass for shower and bathtub enclosures would be linked to Objective S3.1.</i></p> <ul style="list-style-type: none"> Review the specific objective cited in the acceptable solution: S3.1 	<p>S3 Safety in Use An objective of this code is to reduce the probability that a person in or adjacent to the building will be exposed to an unacceptable injury hazard in the normal use of the building and its facilities as a result of the design and construction of the building due to – S3.1 tripping, falling, collision or physical contact.</p>
<p><i>In the objective-based building codes, the provision regarding the use of safety glass for shower and bathtub enclosures would be linked to Functional Requirement R10.</i></p> <ul style="list-style-type: none"> Look up the referenced functional requirement in Division A: R10 	<p>R10 Conditions of use shall not present an unacceptable risk of injury to persons.</p>
<ul style="list-style-type: none"> Look up the Intent Statement in the Intents database: Intent for 9.6.6.5.(1) 	<p>Intent for 9.6.6.5.(1) To reduce the probability of injuries resulting from breaking of the glass in use either within or outside of a shower or bath enclosure.</p>
<ul style="list-style-type: none"> Check Alternative Solutions database for acceptance in other jurisdictions. 	<p>If this specific use of glass blocks has been accepted in other jurisdictions, a record of this decision would be available via the internet.</p>

The additional information in the new codes will indicate quite clearly that the restriction on the use of glass in shower or bathtub enclosures relates to the risk of a person hitting or falling against a sheet of glass, breaking the glass and suffering injury as a result.

Glass block is obviously more resistant to breakage of this type than is sheet glass, so the designer or builder would have a firm basis upon which to request acceptance of the material.

The final decision on whether to accept a glass block enclosure as an alternative solution would remain with the local building official. As in the past, building officials will have to exercise their judgement in the matter.

However, when compared with the present situation, the new codes will provide everyone involved with clearer and more comprehensive information upon which to base decisions.

Over time, alternative solutions may be included in the codes as acceptable solutions if they become widely used.

When Will These Changes Take Place?

Since 1995 when the proposal to develop a new Objective-Based National Building Code was first made, a great deal of research and development work has been completed, and an extensive review and consultation process is underway.

- Public consultation on the objectives and format of the National Building Code and provincial codes will be completed by early 2001.
- Following this, the CCBFC, with the support and involvement of the provinces and territories, will develop a full objective-based version based on the 1995 National Building Code. This will then be put out for public review by mid-2002.
- A parallel, but separate, process will involve consultations on proposed technical changes to the NBC beyond the 1995 version.

Providing Industry With Information

Information about alternative solutions that have been accepted by local authorities will facilitate their evaluation by authorities in other communities.

The CCBFC and provincial and territorial authorities recognize the need for such information and are currently considering how best to provide it.

One option would be to create an on-line database of accepted alternative solutions. Code users could then search for cases that were relevant to their own situation.

As the new codes move towards adoption, decisions on how to provide this type of code-related information will also be made.

All of these public reviews will be coordinated by the provinces, territories and the CCBFC and will take place simultaneously. Final publication of the new NBC is expected in late 2003. Provinces and territories will then act to adopt it.

Summary

The new building codes will ensure that every code requirement is linked clearly to specific objectives, functional requirements and acceptable solutions. In addition, separate documents will provide a clear explanation of the specific intent of each code requirement.

The benefits of the new codes are numerous:

- It means less “red tape” and less cost for both industry and government.
- It will make understanding and using the codes easier, saving you time and money.
- It will allow easier interpretation of the codes by local building officials, reducing the frustration and expense that result when you can’t get consistent directions.
- It will make it much easier to determine whether a new product or building technique will satisfy the codes, allowing you to innovate more easily and with greater certainty.
- When future changes to the codes are made, it will be very clear why and what they are intended to achieve.

Where Can I Get more Information?

An extensive list of technical reports and documents dealing with the proposed objective-based National Building Code is available online through the Canadian Commission on Building and Fire Codes at:

www.ccbfc.org (follow the links)