

Implementation and Enforcement:
The Canadian Perspective



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1. Canada – Quick facts
2. Canada's Regulatory Framework
3. The regulatory paradigm shift: Safety **AND** Sustainability
4. Enforcement, Inspection, Verification
5. Re-inventing an 'old' friend: Expanded role for building commissioning

- Confederated: 1867
- Population: 32.06 million +
- Land area: 9.9 M sq. kilometres
- Orders of Government: Federal; P/T; Municipal
- 10 Provinces, 3 Territories (P/T)
- 2,900 municipalities
- 28 major urban areas with > 100k population
- Motto: “From sea to sea”
- Tree: Sugar Maple
- National sports: Hockey & Lacrosse
- National icon: Beaver

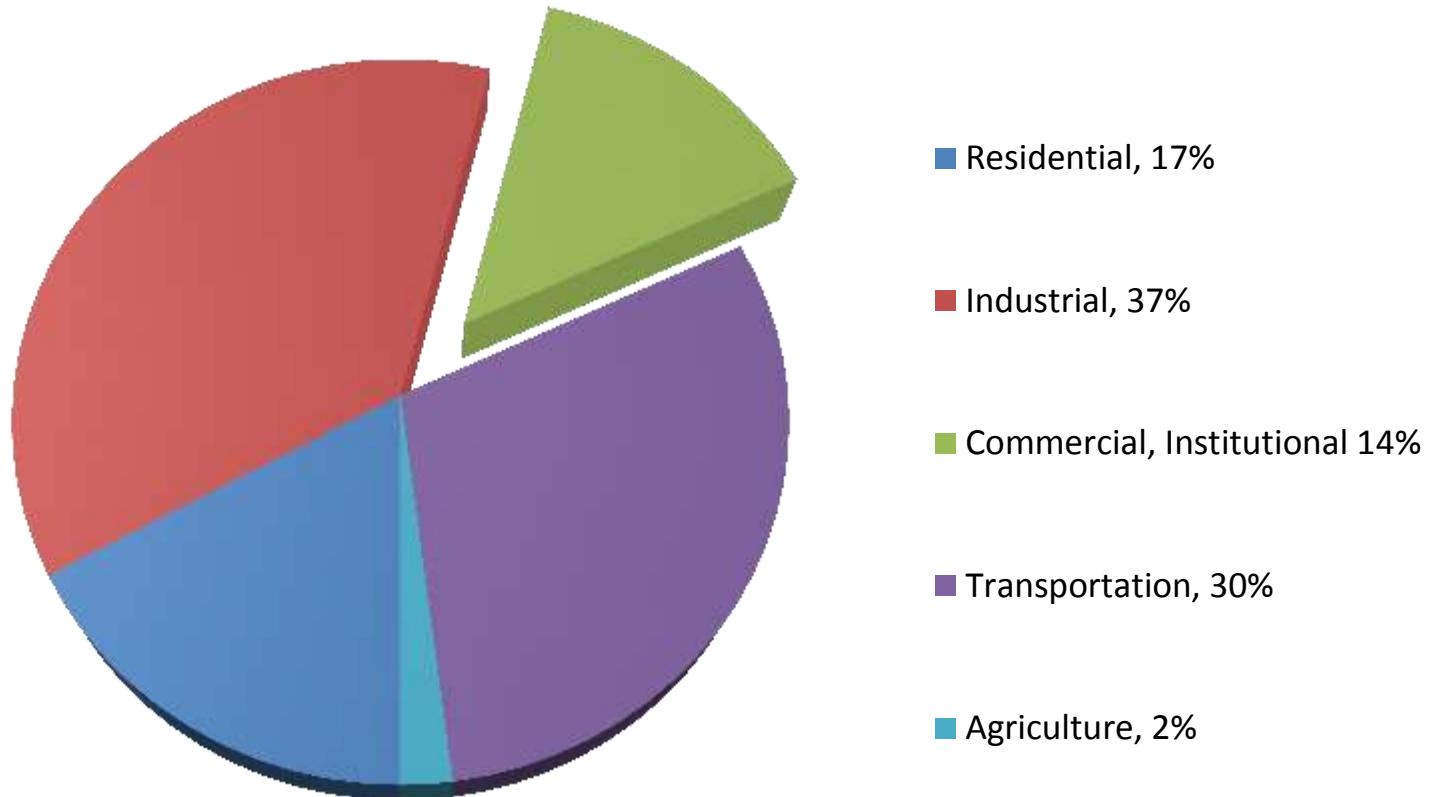


Outdoor Temperature



Energy Consumption by Sector

Institutional/Commercial Buildings account for 14% of secondary energy use & 13% of Canada's GHG emissions (2006)



Source: Natural Resources Canada 2008



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Who has the authority?

Canadian Constitution gives responsibility to enact codes to the **provinces and territories**



Provinces/ Territories:

Adopt Codes into law (Building/Fire/Plumbing/Energy)

And are responsible for:

Interpretation and ***enforcement (via municipalities)***

Training & education

Licensing

Codes & Regulations:

- ensure minimum requirements on occupant health, safety, accessibility and environment



National model code:

- Canadian Commission on Building and Fire Codes (**CCBFC**)
 - Volunteer Members
 - Balanced matrix
 - Develop, approve, set policies
- Role of National Research Council Canada (**NRC**)
 - Promote technical consistency of Provincial/Territorial regulations and market uniformity



Government
of Canada

Gouvernement
du Canada

Canada

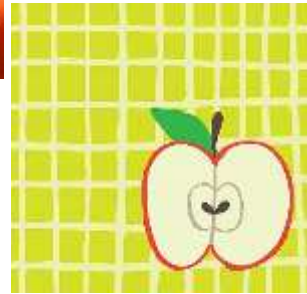


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- Safety



- Health



- Accessibility for persons with disabilities



- Fire and structural protection of buildings



- Environment



Part 1 Scope and Definitions

Part 2 General Requirements

Part 3 Fire Protection, Occupant Safety and Accessibility

Part 4 Structural Design

Part 5 Environmental Separation *

Part 6 Heating, Ventilating and Air-conditioning *

Part 7 Plumbing Services *

Part 8 Safety Measures at Construction and Demolition Sites

Part 9 Housing and Small Buildings

* Environmental objective facilitates a line of sight beyond safety to include environmental performance (Part 5 – Energy Efficiency (now_ ; HVAC (via NECB) & Part 7 – Water efficiency (2015)

National Energy Code for Buildings

Part 3: Building Envelope

Part 4: Lighting

Part 5: Heating, Ventilating and Air-conditioning Systems

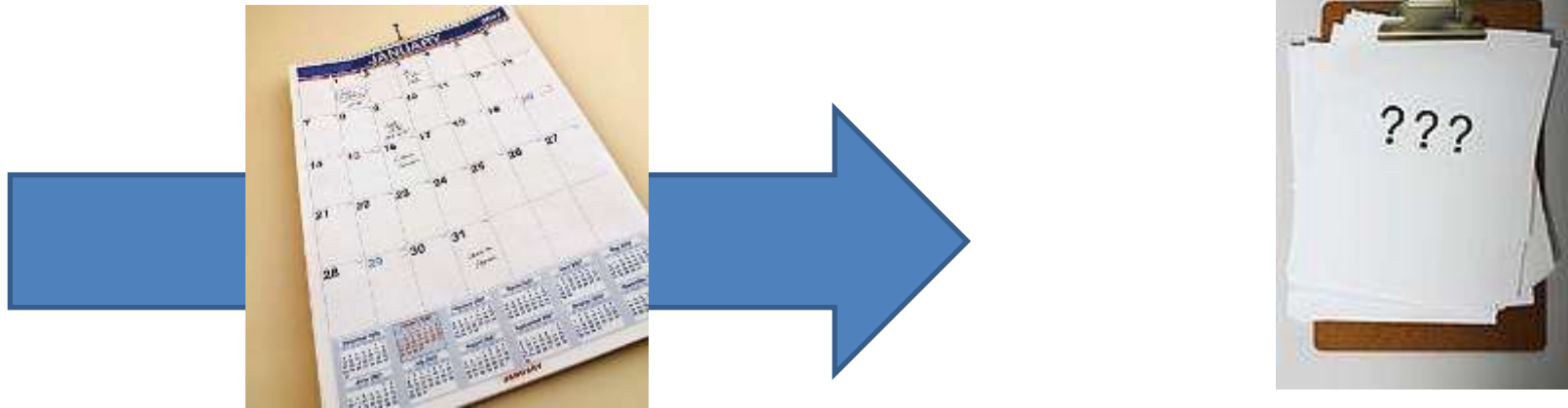
Part 6: Service Water Heating Systems

Part 7: Electrical Power Systems and Motors

Part 8: Performance Path

National Energy Code for Buildings cont'd

Status of Provincial/Territorial Adoptions of NECB 2011



Fall 2013 :
British Columbia & Nova Scotia

2014:
Other provinces

Territories:
Tbd or won't adopt



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Roles and Responsibilities

Municipal Building Officials and Inspectors

- Plan review and sign-off
- Multiple inspections at various stages of construction



Licensed, Professional Consulting Engineers

- Contractual agreement
- Provide progress/status reports to building owner & inspection authority
- Key role in working in all phases (design/build/commission lifecycle) to ensure safety & sustainability requirements



Opportunities

- Many market transformation schemes
- Private & Government
- Federal better than minimum goals
- Many municipalities referencing various sustainable building schemes or developing 'better than minimum' requirements

Challenges

- Fragmentation & market confusion
- Schemes not always backed by sound technical R&D
- Municipalities implement their own 'green' requirements without sufficient technical knowledge, capacity or due diligence
- Educating elected officials on how to differentiate environmental stewardship and 'greenwash'



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What is it?

From Bill Carson, Chair CSA Technical Committee on Building Commissioning:

“... Building commissioning is the process of ensuring that all systems, including the mechanical, electrical, control and integration, architectural, vertical and horizontal transportation are operating as intended...”

Major building systems:

- architectural systems
- vertical and horizontal transportation systems;
- electrical systems
- mechanical systems
- control systems and integration



Example:

Excerpt from CSA Z320, 2011, Building Commissioning

5.1.1.3 Application

Clause 5.1 outlines a general commissioning approach **that addresses the objectives of Part 5 of the National Building Code of Canada (NBCC) and the owner's performance objectives**. These objectives include the control of condensation in and on the building, and the transfer of heat, air, moisture, and sound through building elements and interfaces between building envelope systems that separate

- (a) the interior space from exterior space;
- (b) the interior space from the ground; and
- (c) environmentally dissimilar interior spaces.

Clause 5.1 does not address commissioning of fire and life safety systems.

Note: *Architectural components such as fire stopping or smoke control fall within the responsibility of the commissioning authorities having jurisdiction for fire and life safety systems.*



How it can help effective implementation?

- Holistic approach
- Ensure safety & performance requirements are met
- Involvement & verification at all lifecycle stages
 - design/build/commission/hand-over/operate
- Facilitate quality assurance at each phase of construction
- Gap between ‘as designed’ and ‘as built performance’ significantly narrower
- Facilitate verification of ‘green’ code, standard, scheme or contract requirements

¡gracias
Thank you!

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