Overview Energy Requirements
When will the requirements need to be considered?

- Design
  - Consult Code
- Apply for permit
  - Comply with Code
- Construct
  - Comply with Code
- Inspect
- Occupy
The basics

• Applies to New construction and additions

• Deals with
  • Building Envelope
  • HVAC
  • Service water
  • Lighting and electrical power

• 3 Compliance paths: prescriptive, trade-off and performance

• Objective-based
Functional statements – To limit…

- air leakage
- uncontrolled thermal transfer
- unnecessary energy demand or consumption for lighting, for heating and cooling, for service water heating, electrical equipment and devices
- inefficiency of equipment and systems
- unnecessary rejection of reusable waste energy

OE Environment
OE1 Resources
OE1.1 Excessive use of energy
Terminology

- **ERS**: Energy Rating System
- **FDWR**: Fenestration and door wall ratio
- **NECB**: National Energy Code for Buildings 2011
- **NRCan**: Natural Resources Canada
- **9.36.**: Section of National or Alberta Code dealing with energy efficiency of housing and small buildings
Decision to update

2005 • Provincial energy and building ministries identify energy efficiency as a priority

2007 • CCBFC agrees to develop new energy requirement
• NRCan and NRC support

2008 • Premiers target: 25% more efficient energy code
• Make viable, enforceable and cost/benefit analysis

2010 • CCBFC agrees to develop Part 9 energy efficiency
Consensus based technical development

CCBFC Standing Committees
- Energy Efficiency in Buildings + TGs
- Housing and Small Buildings + TGs

Membership
- Regulators
- Construction industry +
- Standard development organizations
- General public
- Natural Resources Canada (NRCan) – non-voting
Work continues

- Open, transparent and national public reviews
Consensus decision - NECB

- FDWR based on local climate
- System approaches for HVAC

SC-EEB 1997 photo taken in Toronto
Stakeholder input – Housing and small buildings

- Prescriptive path for site-built windows added
- Performance path allows use blower door test
Benefits of new codes requirements

- No differentiation
  - by fuel source
  - by assembly constructions
  - by occupancy, other than residential and non-residential

- Consistent benchmark though various paths

- Changes subject to impact analysis to ensure viability
  - cost of construction and incremental energy saved
Climatic zones based on heating degree-day

Average annual heating degree-days (°C)
Renewable, waste and site-generated energy

- Wide variety of technology
- Not place barriers for their use
- Reference standards for use, not efficiency
NECB improvement by building type

Energy Performance Improvement over MNECB 1997 [%]

Building Type

Large Office 35%
Secondary School 30%
Mid-Rise Apartment 25%
Warehouse 20%
Big Box Store 15%
Strip Mall 10%

26.2% overall performance improvement
Housing and small buildings performance

- ERS 78 on average
  - ~25% improvement over current practice (ERS 73)

ERS Range Across Climate Zones
(averaged over 11 houses)
Summary

- address energy use of buildings
- incorporates multi-stakeholder feedback from a consensus based process
- provides cost-effective regulation
- provides consistent national requirements
Work continues

- Open, transparent and national public reviews
How to put in a Code Change request?

**Request a code change**

The National Model Construction Codes improve with each edition thanks to the contributions of stakeholders, including contractors, researchers, instructors, and others. Every change request is reviewed by a CCBF.

Typical changes:

- accommodate new construction techniques and systems
- clarify requirements
- update references to standards
- propose expansion of scope or objective.

Do you have a suggestion to improve one of the Codes? If so, please read the detailed guidelines and submit a separate Code Change Request using the on-line form provided.

Your change request will be considered for the post-2015 editions of the Codes and should include:

- the existing Code requirement, if applicable
- the reasons for the change or addition
- your proposed revision or new requirement
- supporting documentation, including cost/benefit data.
How to put in a Code Change request?

Subject
What is the subject of the code change or the existing code provision title? *(required)*

Problem
Why should the existing provision be revised, or if requesting an addition to the Code, what is missing? *(required)*

Requested change/Addition
What wording do you propose for the change? *(required)*

Justification/Explanation *(required)*
NECB Performance Improvement over MNECB by City
• Benchmarking energy savings
  – 7800 non-program housing built after 2005
  – Tested prior to energy retrofit (simulated with HOT2000 V.10)

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<th>Sample Size</th>
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Overall Average: 72.7

Potential incremental energy savings

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<th>% reduction (energy)</th>
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How can Frankenstein, Einstein and Holmes inform about codes?
Trend for fire protection and fire safety
Add building codes
Connect & Follow
www.nationalcodes.nrc.gc.ca
Thank you
Thank you

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