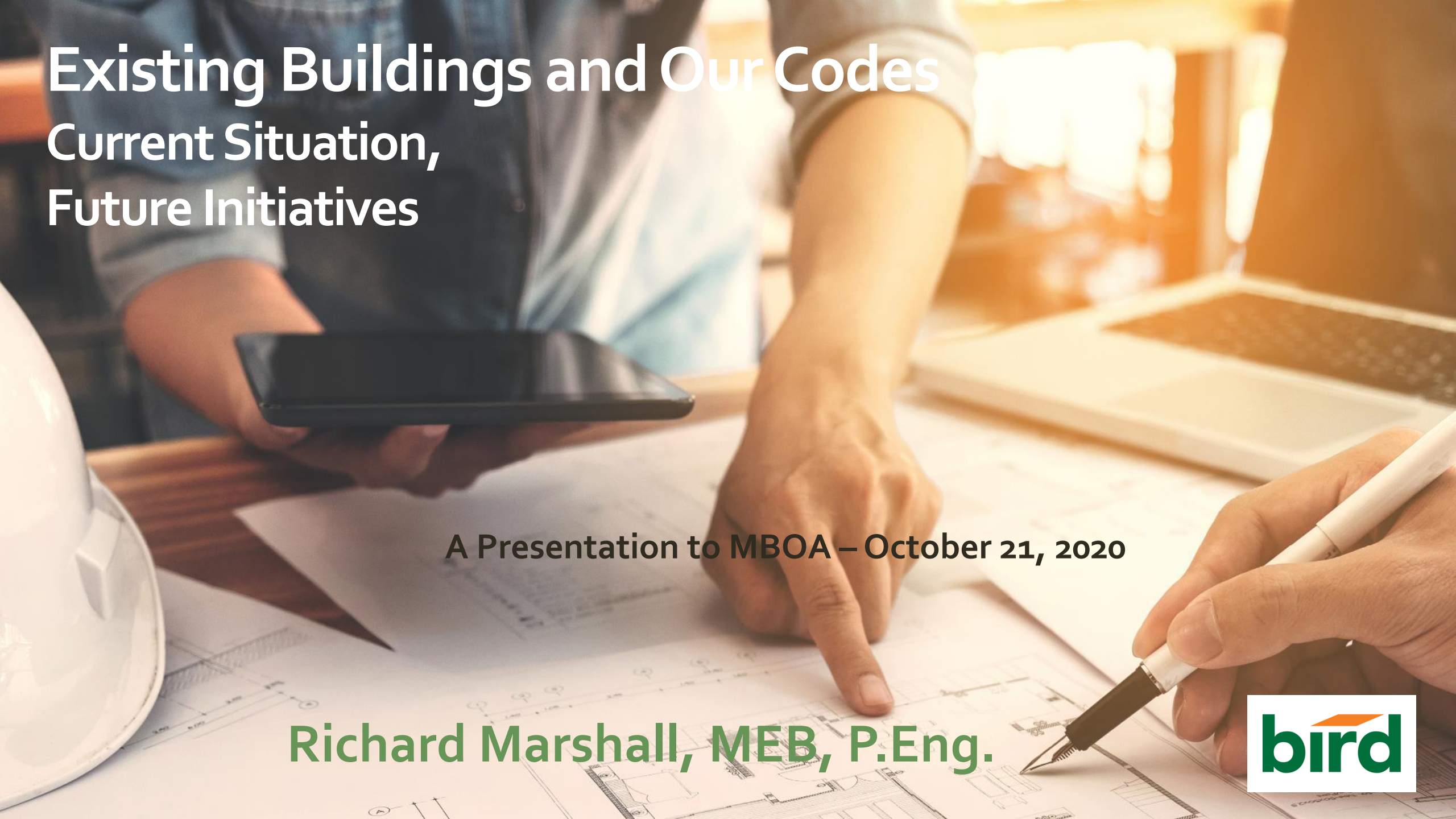

Existing Buildings and Our Codes

Current Situation, Future Initiatives

A Presentation to MBOA – October 21, 2020

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What we will cover today

- Background
- The current situation in Manitoba
- Review other jurisdictions
- Forthcoming changes
- Resources for guidance

Background

Era	Percentage
Before 1920	9.7%
1920 - 1959	17.3%
1960 - 1969	14.1%
1970 - 1979	15.6%
1980 - 1989	19.0%
1990 - 1999	12.0%
2000 and later	12.3%

Source: Survey of Commercial and Institutional Energy Use: Buildings 2009 - NRCan

Background

15 – 20% of building stock	Pre-dates first code (NBC - 1941)
Major revisions to codes over the years	• Area Limits • Allowable Heights • Sprinkler Requirements
~ 80% of building stock	Pre-dates Objective-based Codes (NBC – 2005)

City of Winnipeg Permit Statistics

Non-Residential Projects	YTD - 2020	2019
Alterations / Additions / Demolition	1252	1518
Commercial	14	18
Industrial	14	20
Office	7	2
Hotel / Motel	0	0
Public Buildings / Theatres	4	10
Institutional	11	8
Total non-residential	1302	1576

Residential Projects	YTD - 2020	2019
Alterations / Additions / Demolition	1106	1445
Apartment Buildings	25	44

CSA S478-19

Recommendations for Design Service Life

Table 1
Categories of design service life for buildings
(See Clauses 6.1.2, 11.2, A.1, and A.2.2.)

Design service life category	Building type	Minimum design service life for building, years	Range of design service life, years
Short life	• Bunkhouses, sales offices • Minor storage buildings	—	Up to 10
Medium life	• Low-hazard industrial • Temporary buildings	10	10 to 25
	• Mercantile • Medium-hazard industrial • Business and personal services occupancies • School portables	25	25 to 50
	• Low-rise commercial and office buildings • Stand-alone parking structures* • High-hazard industrial	25	25 to 99
Long life	• Single-unit residential • Multi-unit residential • Mid- and high-rise commercial and office buildings • Post-disaster buildings (e.g., hospitals, power generating stations, public water treatment facilities, and emergency response facilities) • Performing arts buildings, arenas, schools and colleges, and other assembly occupancies • Detention, care, and treatment occupancy	50	50 to 99
Permanent	• Monumental and heritage buildings	100	100 to 300

Current Situation - NBC

Application of this Code

" This Code applies to the design, construction and occupancy of all new buildings, **and the alteration, reconstruction, demolition, removal, relocation and occupancy of all existing buildings. (See Appendix A.)"**

NBC 2010 – Appendix note

"It is not intended that the NBC be used to enforce the retrospective application of new requirements to existing buildings or existing portions of relocated buildings, unless specifically required by local regulations or bylaws."

"Code application to existing or relocated buildings requires careful consideration of the level of safety needed for that building. **This consideration involves an analytical process similar to that required to assess alternative design proposals for new construction."**

Current Situation - MBC

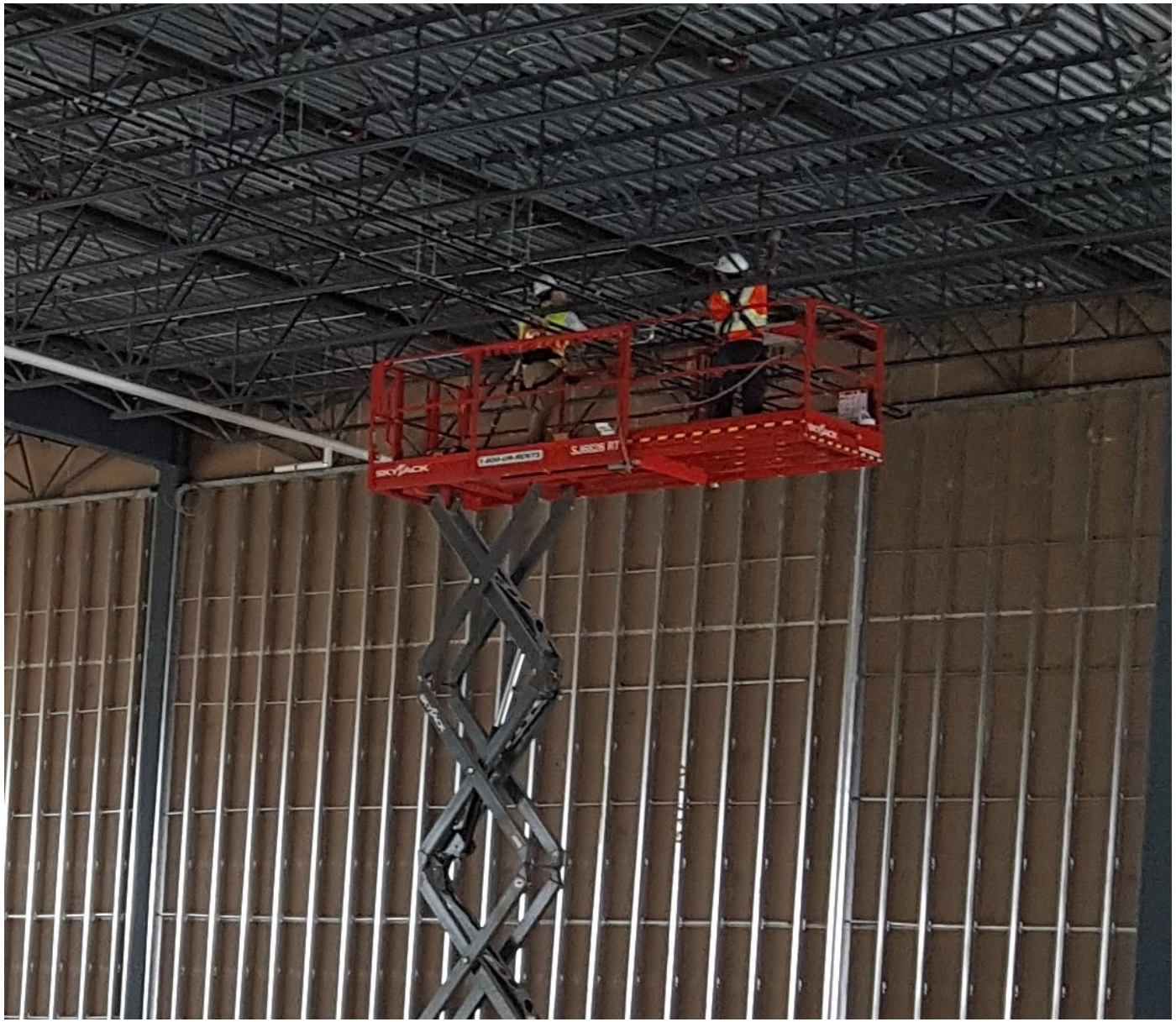
Limited Application to Existing Buildings

1.3.5.1. Alterations and Repairs

"This Code applies to the part of an existing building that is altered and repaired. If, in the opinion of the authority having jurisdiction, the alteration will affect the degree of safety of a part of the existing building not altered or repaired, those parts of the existing building shall be improved as required by the authority having jurisdiction.

If a building is altered or repaired, the level of life safety and building performance shall not be decreased".

Reinforcing existing open web steel joists as part of a tenant fit-up in an existing building



Current Situation - MBC

MBC 1.3.5.2 – Horizontal Additions

" Horizontal additions may be made to an existing building or structure if the building and the addition conform to this Code, or a firewall of the required fire-resistance rating separates the building from the addition, and acceptable access for a fire department is provided to the addition".

MBC 1.3.5.3 Increase in Number of Storeys

" The number of storeys of an existing building shall not be increased unless the entire building conforms to this Code".

MBC 1.3.5.4 Moving a Building

This Code applies to the whole or any part of an existing building that is moved to a new location.

Current Situation - MECB

MECB 1.1.1.1 – Application of this Code

" this Code applies to the design and construction of all new buildings described in Sentence 1.3.3.2.(1) of Division A of the NBC and to additions".

Appendix Note A-1.1.1.1

"This Code applies to buildings and their systems, components and assemblies at the time of their construction.

For the purpose of understanding the scope of this Code, an addition can be thought of as a new building that happens to be built contiguous to an existing building or as a new portion of an existing building".

Other Jurisdictions

Ontario Building Code

Part 10 **Change of Use**

Part 11 **Renovations**

- Basic Renovation
- Extensive Renovation

http://www.buildingcode.online/

Nova Scotia Building Code

Article 3.2.2.91

Alternate Compliance Methods for Existing Buildings

" The Alternate Compliance Methods for Existing Buildings contained in Schedule "D" of these regulations are hereby adopted and may be used in accordance with Sentences 1.2.1.1.(8), (9), and (10) of these regulations".

Schedule "D"
Alternate Compliance Methods for Existing *Buildings*

No.	Code Requirement	Alternate Compliance Method
1	Fire Separations Article 3.1.3.1. (Part 3, Division B) and Table 3.1.3.1. (Part 3, Division B); Subsection 9.10.9. (Part 9, Division B) 2 h *fire separation* required between some *major occupancies*.	Except for F1 *occupancies*, 1 h *fire separation* is acceptable, if the *building* is fully sprinklered.
2	Fire Separations Article 3.1.3.1 (Part 3, Division B) and Table 3.1.3.1. (Part 3, Division B); Subsection 9.10.9. (Part 9, Division B) 1 h *fire separation* required between some *major occupancies*.	30 min. *fire separation* is acceptable if the *building* is fully sprinklered.
3	Noncombustible Construction Subsection 3.1.5. (Part 3, Division B) and Article 9.10.6.1. (Part 9, Division B) All materials used in *noncombustible construction* must be *noncombustible* unless otherwise permitted.	1. Roofs may be of *combustible construction* provided the *building* is fully sprinklered. 2. Up to 10% gross *floor area* to a maximum of 10% of any one *floor area* may be of *combustible construction* provided the *building* is fully sprinklered.
4	Fire-resistance Rating	A *fire-resistance* rating may also be used

https://beta.novascotia.ca/documents/nova-scotia-building-code-regulation-user-guide

City of Vancouver Building Bylaw

Part 11 added for existing buildings

11.2.1.2 - …" where an alteration is made to an existing building, the alteration shall comply with this By-law and the existing building shall be upgraded to an acceptable level as defined in the existing building Upgrade Mechanism Model in Division B Appendix A…"

When an alteration is made, an existing building must be upgraded, with some exceptions

http://free.bcpublications.ca/civix/content/public/vbbl2019ta/?xsl=/templates/browse.xsl

City of Vancouver Building Bylaw

Table A-11.2.1.2-B

Table A-11.2.1.2.-B
DESIGN UPGRADE LEVELS FOR FIRE, LIFE AND HEALTH SAFETY (F), STRUCTURAL SAFETY(S), NON-STRUCTURAL SAFETY (N), and ACCESSIBILITY (A)

DESIGN LEVEL(1)	OBJECTIVE STATEMENT	ALTERNATIVE ACCEPTABLE SOLUTIONS
F1	Exiting to be reviewed to ensure that the exits do not present an unsafe condition.	**Project Area** - Exits to be upgraded with respect to number, capacity, and fire separations only.
S1	Proposed work must not have an adverse effect on the structural capacity of the existing structure.	**Entire Building** - Proposed work must not reduce the structural integrity of the existing building.
N1	Project area to be reviewed to ensure safety from overhead falling hazards.	**Project Area -** Restrain all ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, all overhead mechanical ducts, sprinklers, and equipment, overhead electrical conduits and lights
A1	The proposed work must not adversely affect the existing accessibility level of the building.	**Project Area** - Existing level of accessibility must be maintained throughout the project area. No additional accessibility enhancements are required.
F2	Existing building to meet the fire & life safety requirements of the Building By-law within the project area and have conforming exits leading from the project area to an acceptable open space.	**Project Area** - Alarms and detectors (only where existing devices are provided), emergency lights, access to exit, exits, exit signs, and exit lights. **Public Area** (leading from project area to an acceptable open space) - emergency lights, exit signs, access to exit, exits, and flame spread ratings.
S2	Limited structural upgrade required in order to provide minimum protection to building occupants during a seismic event within the project area.	**Project Area** - Non-structural elements and falling hazards must be restrained to resist lateral loads due to earthquakes within the project area.

City of Vancouver Building Bylaw

Other Part 11

- "Triggers" listed that require energy-efficiency upgrades
- Table 11.4.3.1 – Alternative Compliance measures for Ancillary Residential Suite Conversions
- Table 11.5.5.1 – Alternative Compliance Measures for Heritage Buildings

City of Vancouver Building Bylaw

Table 11.5.1.1.
Alternate Compliance Measures for Heritage Buildings
Forming part of Sentence 11.5.1.1.(2)

No.	By-law Requirement	Alternate Compliance Method
1	***Fire Separations*** Sentence 3.1.3.1.(1) and Table 3.1.3.1.; Subsection 9.10.9. 2 h *fire separation* required between some *major occupancies*.	Except for F1 *occupancies*, 1 h *fire separation* is *acceptable*, if the *building* is *sprinklered*.
2	**Fire Separations** Sentence 3.1.3.1.(1) and 3.1.3.1.; Subsection 9.10.9. 1 h *fire separation* required between some *major occupancies*.	1/2 h *fire separation* is *acceptable* if the *building* is *sprinklered*.
3	***Noncombustible Construction*** Subsection 3.1.5. and Article 9.10.6.1. All materials used in *noncombustible construction* must be *noncombustible* unless otherwise permitted.	1. Roofs may be of *combustible construction* provided the *building* is *sprinklered*. 2. Up to 10% gross *floor area* to a maximum of 10% of any one *floor area* may be of *combustible construction* provided the *building* is *sprinklered*.
4	***Fire-resistance Rating*** Sentence 3.1.7.1.(1); Article 9.10.3.1. Where a material, assembly of materials or structural member is required to have a *fire-resistance rating* it shall be tested in accordance with CAN/ULC-S101.	A *fire-resistance rating* may also be used based on: 1. HUD No. 8 Guideline on Fire Ratings of Archaic Materials and Assemblies. 2. Fire Endurance of Protected Steel Columns and Beams, DBR Technical Paper No. 194. 3. Fire Endurance of Unit Masonry Walls, DBR Technical Paper No. 207. 4. Fire Endurance of Light-Framed and Miscellaneous Assemblies, DBR Technical Paper No. 222.

CCBFC Activities

https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/codes-canada-publications/final-report-alterations-existing-buildings

Mandate

Intent - provide an application of the current code objectives to alterations to existing buildings

The various Standing Committees will develop provisions describing the application of the requirements rather than defining “existing buildings”

Harmonization

Consider approach and terminology in use in leading provinces as the technical requirements are developed

Location of new requirements

Alterations to existing buildings to be addressed in a new Part in the NBC, NPC and NECB

Balance of user friendliness, ease of maintenance and ease of adoption

The parts could all have the same number (i.e. - Part 10)

Eight Overarching Principles

Purpose - provide guidance to the Standing Committees

The principles will work in tandem with the related Objectives, Functional Statements, and Intent Statements

The principles apply to every alteration that is not exempt from AEB requirements – and will apply every time a building is altered

Principle 1

Closing the performance gap between the current code and the existing building stock

Principle 2

Maintaining or increasing the life safety and overall building performance level

An alteration cannot make the building worse

Principle 3

Avoiding negative unintended consequences or unrealistic expectations

Principle 4

Ensuring that when a repair, maintenance or alteration is in progress, the building cannot be left in an unsafe state

Principle 5

All regulatory measures should be reasonable, pragmatic and effective - applying Smart Regulation principles

Smart Regulation Principles

http://publications.gc.ca/collections/Collection/CP22-78-2004E.pdf

Principle 6

Requiring flexibility so as to encourage alterations to existing buildings rather than placing an undue burden on owners, which could inspire them to avoid alterations altogether or turn to the "underground economy"

Principle 7

Requiring flexibility so as to preserve officially recognized (designated/registered) heritage elements

Principle 8

Regulatory measures and voluntary programs should complement each other

Triggers

- Maintenance or repair or replacement with similar
  - single component of a system (without further modifications)
  - similar in function
- Change of occupancy type
- Addition
- Space reconfiguration
- System(s) upgrade
- Other

Conceptual Diagram for Existing Buildings Intervention

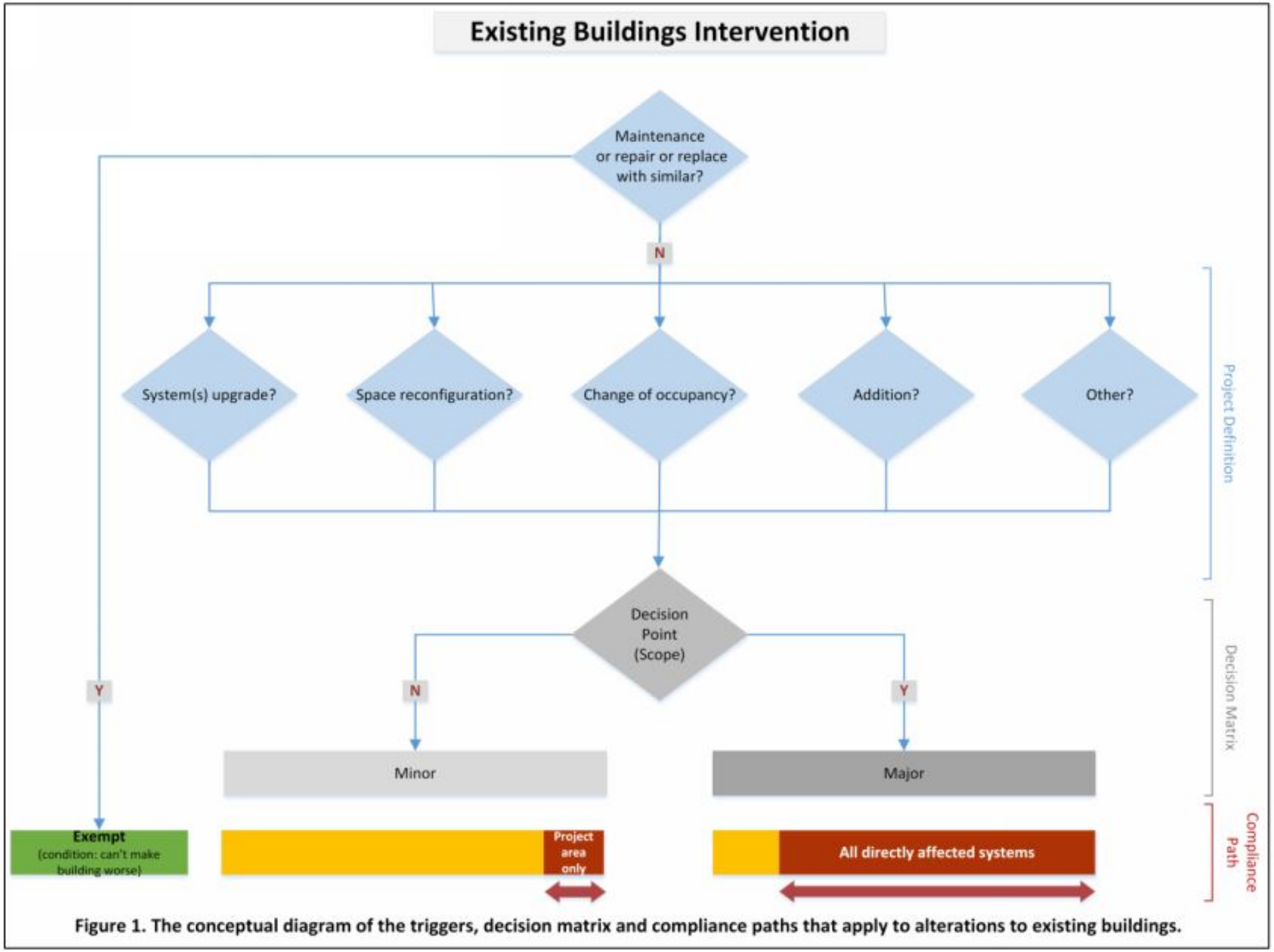
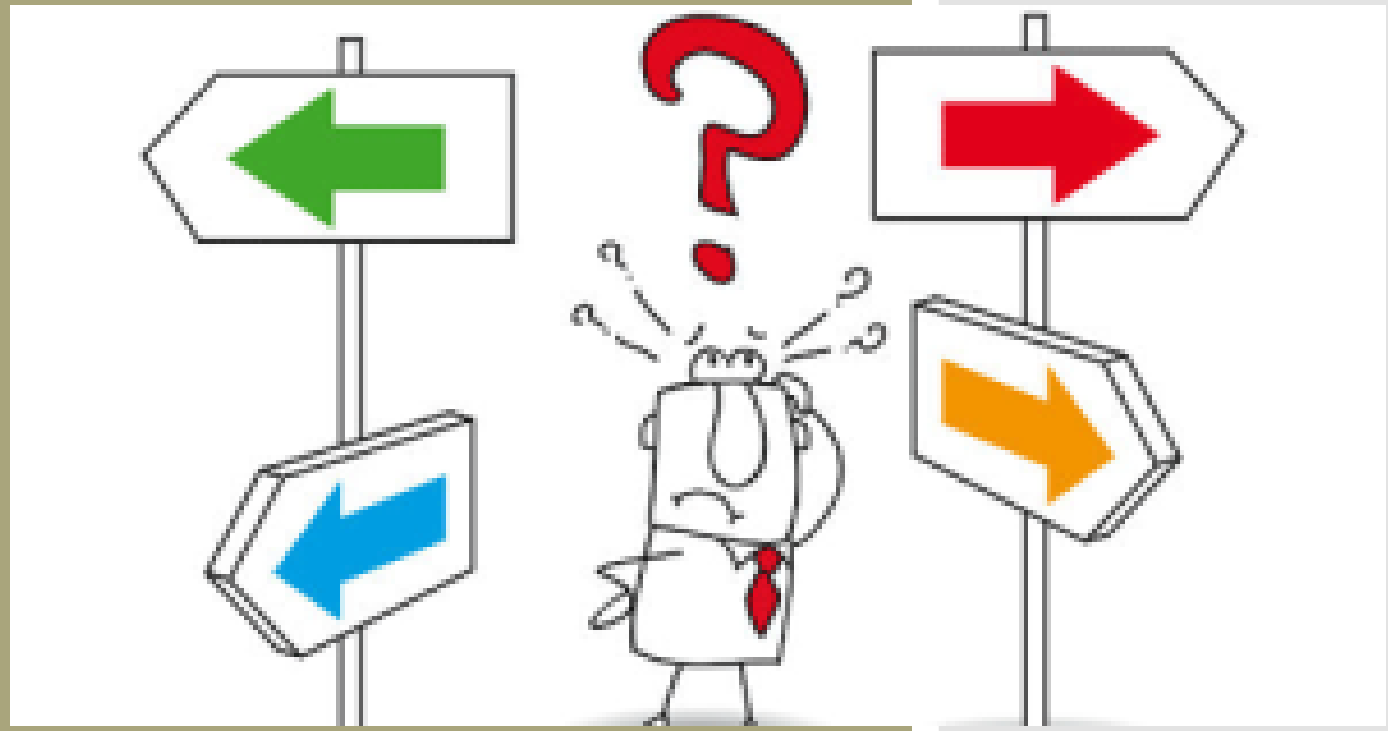


Figure 1. The conceptual diagram of the triggers, decision matrix and compliance paths that apply to alterations to existing buildings.

Where do we go from here?



Resources


Ontario Building Code
Nova Scotia Building Code
Vancouver Building Bylaw

Resources

User's Guide – 1995 Building Code Commentary B - Application of Part 3 of the NBC 1995 to Existing Buildings

https://nrc-publications.canada.ca/eng/view/object/?id=b8d9bf89-326c-4022-aee7-1fbc65b1e8ed

Resources

CBD-230

Applying Building Codes to Existing Buildings

A.T. Hansen (1984)

https://nrc-publications.canada.ca/eng/view/accepted/?id=7b47e684-fcd1-48c2-8371-ca2604817c79

QUESTIONS

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