To Cover

- Problem Statement
- Policy Drivers
- Approach & Timelines
- Code Development Process
- Evaluating Policy
Problem Statement

Existing buildings account for significant risk in a seismic event, as well as energy usage and GHG emissions,

BUT

BCBC is designed for new construction, lacks clarity for existing buildings, and is inconsistently enforced upon retrofit.
Enforcement does not solve the problem.

BCBC does not trigger retrofits.

Retrofit costs can be prohibitive.

Existing buildings, built under previous codes, pose more risk in a seismic event.

Existing buildings become less efficient as they age.
A regulatory strategy is needed to address legislative triggers, enforcement, & cost impacts.
Policy Drivers
Meeting CleanBC Commitments

Energy Retrofit Strategy 2020
Early Adoption 2022
Retrofit Code - Energy 2024
Retrofit Code - Seismic 2025
<table>
<thead>
<tr>
<th>Date</th>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2019</td>
<td>Policy Research</td>
<td>Review policy drivers, economic context, environmental scan, regulatory authorities and jurisdictional scan, validated by targeted stakeholder input.</td>
</tr>
<tr>
<td>Summer 2019</td>
<td>Policy Objectives</td>
<td>Summarize research and technical findings to articulate policy objectives for triggers, application, enforcement and targets.</td>
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<tr>
<td>Winter 2020</td>
<td>Policy Options</td>
<td>Develop policy options and evaluate cost impacts to building owners, market impacts to industry and enforcement impacts to LGs.</td>
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<tr>
<td>Fall 2020</td>
<td>Final Strategy</td>
<td>Prepare a roadmap to regulation and seek direction to develop codes and standards.</td>
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<tr>
<td>Fall 2019</td>
<td>Consultation</td>
<td>Seek input on policy options from building owners, local governments, industry and utilities.</td>
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Market Transformation

- Market Evolution
  - BC Building Code
  - Local Authority Regulations
  - Equipment standards
  - Financing
  - Market stimulus (revitalization incentives, EfficiencyBC, utilities)
  - Training and Capacity Building
  - Government Leadership

Proportion of Buildings

- Mass Uptake
- R&D, Demonstration, Commercialization, Deployment
- Coordination
- Strategic Planning
- Benchmarking, Education
- Data Analysis
- Demonstration
- Deployment
- Government Leadership
- Standard Practice

Early Adoption
Code Development

**Regulatory Buy-In**
Work with stakeholders on policy research and analysis to identify the tools, regulatory authority and targets that will improve building performance.

**Workable Standards**
Seek expert advice to develop technical language and adopt / update standards that can be applied by industry and enforced by local government.

**Capacity to Implement**
Build capacity through early adoption by local governments, supported through training, education, and technical refinement of standards.
Code Development

Energy & Seismic Retrofit Strategy

Determine policy options and set technical targets
2019-2020

Draft technical standards
2020-2021

Test technical standards
2022-2023

Province-wide adoption
2024
Evaluating Policy Options

- Is the intervention supported by evidence?
- Will the intervention address the problem effectively?
- Does the intervention seek to address stakeholder concerns?
- Will the intervention create unintended consequences? Or adversely affect certain groups?
- Is the intervention flexible enough to allow for variation, while achieving regulatory consistency?
- Can the intervention be enforced?
Questions?
• Earthquakes in the Last 30 Days.
• Source: www.earthquakescanada.nrcan.gc.ca
Highest BC Seismic Acceleration Values

\[ \text{Sa}(0.2s) \text{ [short period]} \ g \]
BC Schools, Seismic Mitigation Program

As of February 2019:
- 182 Schools Completed
- 12 Under Construction
- 17 Proceeding to Construction
- 32 Business Case Development
- 105 Future Priorities
- 348 TOTAL PROJECTS IN
- SEISMIC MITIGATION PROGRAM

Lord Strathcona Community Elementary

Estimated Project Value: $25.6M
Seismic Retrofit Guidelines (SRG)

Seismic Retrofit Guidelines were developed to meet the goals of the BC Provincial Ministry of Education

• A unique collaboration between Government, EGBC, UBC, Local Structural Engineering Community and International Experts. To implement seismic retrofits that achieve a life safety objective in a cost effective manner and to adopt a common engineering approach to the seismic retrofit of school buildings

Awards & Recognition Received by the SRG

• 2010 Award from the Canadian Society for Civil Engineering for Excellence in Innovation in Civil Engineering

• 2013 ACEC-BC Lieutenant Governor’s Award for Engineering Excellence and the Award of Excellence in Soft Engineering Category

• 2013 ACEC-Canada Canadian Consulting Engineering Awards
  • (a) The Award of Excellence recognizing the SRG “has received the highest national mark of recognition in engineering”
  • (b) The inaugural award “Engineering a Better Canada” for the project that “best show cases how engineering enhances the social, economic or cultural life of Canadians”

• 2015 Champions of Earthquake Resilience Award – Extraordinary Innovation in Seismic Protection of Buildings’ (2015) from the Applied Technology Council and Structural Engineering Institute of the American Society of Civil Engineers

• The US Government’s ATC-99 Project is recommending the approach used in the SRG for all low rise buildings in the US

• Other Canadian jurisdictions and both the Israeli and New Zealand governments have requested access to the SRG