Building Codes Challenge

Built World Tech — Venture Pilots 2026

1. Challenge Overview

Problem Statement	Building codes are mostly prescriptive and quite static. Innovators are creative. When builders and innovators seek to introduce alternatives to what is prescribed in the building codes, they must prepare an 'alternative solution application' that objectively demonstrates it provides approximately equivalent or greater performance to the existing code. This application is reviewed by a Safety Codes Officer responsible for the jurisdiction of the building. There are over 430 jurisdictions in Alberta. Preparing a compliant alternative solution application asks innovators and builders to identify the right code articles, functional objective statements, and supporting analysis largely on their own — and many submissions arrive incomplete or administratively non-compliant. That preparation gap drives weeks-to-months of back-and-forth between innovators and approvers before a decision is ever reached.
Solution	Create an AI-powered tool that ensures innovators and builders prepare a complete, code-referenced alternative solution application before it ever reaches a Safety Codes Officer. The tool must be able to receive key information about the alternative solution, identify the relevant building codes, and review the full application for completeness – not technical correctness. The tool also needs a reviewer-facing interface that assists Safety Codes Officers in rapidly reviewing and evaluating applications for administrative compliance with the building codes.
Background	Alberta's Safety Codes Act lets applicants, like owners, builders, and manufacturers, demonstrate that an innovative product, assembly, or design performs as well as or better than an existing acceptable solution in building codes, without waiting for the prescriptive portions of the code itself to be modified through code change. Anecdotally, many solutions fail to receive approval on the first submission. Much of that failure traces back to the preparation stage, anecdotally: applicants often don't know which code articles and functional objective statements apply, whether professional (engineering) involvement is required, or what a complete, defensible submission looks like. The solution is being scoped to work across any innovation that requires approval in Alberta.
Target Customers	Production homebuilders, manufacturers, and the engineers, architects, and the other professionals supporting them as they bring new products, assemblies, or designs to market and need an alternative solution approved. Their design and code-compliance leads carry this pain directly. Safety Codes Officers (SCOs) and their employers reviewing these applications share the burden through incomplete submissions and repeated "more information" requests.
Why Now	• Identified as a high priority pain point at the Edmonton Metro Region Building Codes Innovation Meeting hosted by BILD Edmonton Metro Region and the Safety Codes Council in March 2026. • Growth in innovation categories that inherently require an alternative solution — single-exit buildings, exterior insulation/cladding assemblies, engineered

	wall systems — is increasing the volume of applications needing this kind of support. • Modern AI tools can plausibly parse code articles, functional objective statements, and administrative requirements directly from the building codes, like the National Building Code – Alberta Edition.. • Desire from the building industry for innovation in this arena

Current Workflow to Obtain Approval of Alternate Solution					
Stage	**Trigger**	**Prepare**	**Submit**	**Evaluate**	**Decide**
Innovator Action	Identify a new way of doing things	Build a case of equal or greater performance to existing solutions	Submit a form & support materials, potentially unique to every employer of Safety Codes Officers	Answer questions and provide additional info	Receive approval or refusal from the Safety Codes Officer for their specific jurisdiction
Safety Codes Officer Action	Provide an application form & provincial code requirements	Receive form/materials & assign to a safety codes officer through software	Evaluate submission through research, as needed		Make a decision, share it & register approvals with the Safety Codes Council

Pain severity	• Anecdotally, many alternative solutions fail to receive approval on their first submission, across all innovators and approvers in the system. • The back-and-forth to reach approval can take weeks to months; mistakes, believed to be driven in large part by incomplete or under-supported submissions at the preparation stage — creating labour costs for approvers and labour and delay costs for innovators. • Financial cost in labour, errors, and delay ranges from a few hundred dollars to tens of thousands of dollars, depending on complexity and how much rework is required. • Left unresolved, innovation is discouraged or diverted to other jurisdictions — delaying safer, more affordable, or more resilient building solutions from reaching Albertans.

2. Detailed Technical Scope

Near-Term Build (4–8 Week Prototype)

The realistic prototype target is an AI agent that can receive the description of a building project or product and guide the user through completion of the Safety Codes Variance Template Part 1, sections A-D (Variance Template included in Appendix 1). The tool should also be able to review a completed application for completeness and accuracy. It follows the same three-stage pipeline an applicant moves through when preparing a submission — intake, code identification, and supplemental case-building. The solution will use the attached Safety Codes Variance Template as the application template (see Appendix 1). Start with the National Building Codes before trying to incorporate all codes into the solution.

1. Intake a project or product description from a user and return a completed Safety Codes Variance Template, Sections A-C
    a. Solution requires ability to prompt user for requisite information on the project, including details on the applicant, building characteristics and location (All details required in Sections A and B for the Safety Codes Variance Template)
    b. Solution requires ability to map the project or product to relevant safety codes based on information provided by the user
        i. Solution selects relevant safety codes and ranks them by importance to the project
        ii. Solution recommends most likely benchmark or accepted solution for the situation described by the user with an explanation
    c. Solution completes Section C of the Variance Template
        i. Note, once a specific Code is identified, this becomes a deterministic look-up exercise to determine the relevant objective statements, function, and Intent Statements for each article of the code.
        ii. This is completed in the Section C table: “Attributions of Acceptable Solutions”
        iii. Solution provides an explainer paragraph for each article included and why
2. Identify if and when a 3rd party professional or expert should be involved in the development of the alternative solution
    a. Explicitly identify when development of the alternative solution or evaluation of the proposal constitutes the practice of Engineering.
3. Recommend technical issues or specific code sections to address in the preparation of supporting documentation for the alternative solution (Section D)
    a. Note, completion of the supporting documentation requires professional expertise in most cases. We do not expect the tool to complete this section on its own.
4. Review an Alternative solutions application for completion
    a. Use the Safety Codes Variance Template as the application
    b. Identify deficiencies in a completed application
        i. Designed to be used by an applicant or a reviewer
5. Design
    a. Export the Application as a .pdf to match the format of the Safety Codes Variance Template Part 1, Sections A-D in Appendix 1
    b. Design and organize the data for portability. Individual jurisdictions have local modifications to the application form and process. The tool should be designed such that it is easily adaptable in the future.

Primary Reference Data

Full source documents are provided in the accompanying data package; core references include:

- Safety Codes Act, Building Code Regulation (AR 5/2024), Exemption Regulation (AR 351/2003), Permit Regulation (AR 204/2007)
- National Building Code: 2023 Alberta Edition, plus NBC/NECB 2020 Supplements: Intent Statements, Structural Commentaries, and the Illustrated User's Guide (Part 9, Housing and Small Buildings)
- National Energy Code of Canada for Buildings (NECB) 2020 and its User's Guide
- National Fire Code: 2023 Alberta Edition and its Supplement: Intent Statements
- National Plumbing Code of Canada (NPC) 2020 and its Supplement: Intent Statements
- Safety Codes Council variance form

3. Judging Criteria and Weighting

Rubric for evaluating innovator team submissions at Semi-Finals and Demo Day. These judging criteria follow the criteria provided in Section 2 to the applicants.

#	Criterion	What judges are scoring (1–5)	Weight
1	**Intake**	Does the tool capture the information it needs across varied application types, prompt for what's missing or incomplete, and signal its own confidence rather than filling boxes regardless. Evidence of internal testing/evals.	20%
2	**Code Identification**	Does it map the project to the right articles and rank them sensibly; does it name a plausible benchmark acceptable solution; is Section C's attribution table complete and accurate; do all citations resolve to real articles in the correct edition; is the rationale for each article's inclusion consistent with the code's structure.	20%
3	**Recommendations**	Does it identify the specific technical issues or code sections the supplemental documentation must address, and does it correctly flag where engineering or another licensed professional is required — including knowing where to stop rather than generating professional judgment itself.	10%
4	**Review**	Can it review a completed application, summarize it usefully for an SCO or applicant including supplemental material, and flag gaps or missing components. Does the reviewer-facing view actually save an SCO time.	10%
5	**General Applicability**	Could an inexperienced applicant of any type — manufacturer, general contractor, homebuilder — use this without prior variance experience or code fluency.	5%
6	**Implementation Plan**	Is there a realistic path to beta. How will the product testing with users inform final design? How does the product integrate with current user workflows?	10%
7	**Business Plan**	Is there a credible company here — buyer, willingness to pay, cost per application, and a defensible position as the underlying models improve.	10%
8	**Usability and Portability**	Overall user experience for both sides. Would a design lead choose this over their current process; would an SCO open it twice. Is it designed for adaptability to individual jurisdictions.	10%
9	**The X Factor**	Hard-to-quantify edge — team, insight, unfair advantage.	5%

Variance Form for Proposed Alternative Solution

This form, in its entirety including all supporting documentation, must be forwarded to:

Safety Codes Council
Administrator of Accreditation
500, 1405 Jasper Avenue NW
Edmonton, AB T5J 3N4

Email: accreditation@safetycodes.ab.ca

PART 1 – Applicant

All sections of Part 1 must be filled out in full by the **applicant** (owner and/or owner's representative) to request an alternative solution/variance to build, install, process or otherwise act in a manner that is not consistent with the provision of an applicable Code/Standard/Regulation.

Section A: Applicant Information

Owner's Name
Owner's Representative
Mailing Address
Date of Request

Section B: Details of Proposed Alternative Solution

☐ Check this box if the Proposed Alternative Solution is for a Jurisdiction and is not site-specific.

Permit Number (if applicable)		
Legal description of property that this variance will apply to:		
Municipal Address		
Alberta Township Survey (ATS)	Lot	Block
	Plan	QTR
	SEC	TWP
	RGE	MER

Section C: Justification That Proposed Alternative Solution Will Meet or Exceed Prescriptive Code/Standard Article

Applicable Code or Standard

Attributions to Acceptable Solutions

Article(s)	Objective	Function	Intent statements

Section D: Supporting Documentation i

Name of Supporting Documentation and Name of the Individual/Professional and/or Professional Organization Responsible

Signatures and Disclosures

The collection of personal information is authorized under section 4(c) of the Protection of Privacy Act. This personal information will be used to review and assess the variance application, including verifying information provided.

I understand that the information provided will be shared with the Safety Codes Council in accordance with the municipality's Quality Management System agreement. The following information may also be published on the Safety Codes Council website under section of the Protection of Privacy Act: permit number, municipality, issue date and completion date, permit type, project type, work class, address, description of the project, total square footage, and project value range. By checking this box, I acknowledge and agree to the described use of the information provided.

By signing below, the owner and/or owner's agent expressly acknowledges and agrees that the proposed alternative design, installation or process will provide an alternative that provides equal or better performance to the provisions of the Code, Standard, and/or regulation stated above.

☐ Yes

Owner's Signature	Date
OWNER'S NAME (PLEASE PRINT)	
Owner's Representative's Signature	Date
OWNER'S REPRESENTATIVE'S NAME (PLEASE PRINT)	

PART 2(a) – Acceptance of Proposed Alternative Solution

This portion to be completed by **Safety Codes Officer (SCO)** responsible for reviewing the variance form for proposed alternative solution and issuing/refusing the specific variance.

Section A: Reviewer Information

Date of Review	
Authority Having Jurisdiction	
Agency Reviewing the Proposed Variance (if applicable)	
Name of Safety Codes Officer Responsible for Reviewing the Variance	Discipline
	Certification Number
	Designation Number

Section B: Acceptance Of Proposed Alternative Solution

I have reviewed the terms of the proposed variance/alternative solution as provided in Part 1. Based on the submitted information, the proposed alternative solution will provide equal or better performance to the provisions of the Code, Standard, and/or regulation. A Variance is **issued.**

In issuing a Variance, the following conditions must also be met:

Safety Codes Officer Signature	Date

PART 2(b) – Refusal of Proposed Alternative Solution

This portion to be completed by **Safety Codes Officer (SCO)** responsible for reviewing the variance form for proposed alternative solution and refusing the specific variance.

Section A: Reviewer Information

Date of Review	
Authority Having Jurisdiction	
Agency Reviewing the Proposed Variance (if applicable)	
Name of Safety Codes Officer Responsible for Reviewing the Variance	Discipline
	Certification Number
	Designation Number

Section B: Acceptance Of Proposed Alternative Solution

I have reviewed the terms of the proposed variance/alternative solution as provided in Part 1. This Variance is refused for the following reasons (check all that apply):

☐ Information provided in Part 1 is **incorrect.**

☐ Information provided in Part 1 does **NOT** provide sufficient or complete information for SCO to determine if proposed alternative solutions will provide equal or better performance to the provisions of the Code, Standard, and/or regulation.

☐ Based on information provided in Part 1, the proposed alternative solution(s) will **NOT** provide equal or better performance to the provisions of the Code, Standard, and/or regulation.

Additional rationale and reasons for refusal:

Safety Codes Officer Signature	Date

PART 3 – Option to Appeal Written Refusals

Appeals Info

The applicant (owner and/or owner's representative) to whom this written Notice of Refusal for Specific Variance may appeal it to the Safety Codes Council in conformance with the Bylaws of the Council, **within 30 days** of the date the Written Notice was served in person.

Section A: Reviewer Information

A request for an Appeal shall:

- be in writing, in the form of the Council's Notice of Appeal and signed by the appellant,
- contain a copy of the Written Notice being appealed,
- contain a concise statement concerning the matter being appealed setting out the grounds for appeal,
- contain the name, address, telephone number, and email of the person appealing; and
- be accompanied by the appropriate fee set out in the Council fee schedule.

Note: If you have reached out to an Administrator and received a written decision, you are not able to pursue the Council appeal process with respect to this notice of refusal.

Section B: Contact

Request for an Appeal shall be made to:

Safety Codes Council
Coordinator of Appeals
500, 1405 Jasper Avenue NW
Edmonton, AB T5J 3N4

Telephone: 780-413-0099 toll free 1-888-413-0099
Email: appeals@safetycodes.ab.ca
Website: safetycodes.ab.ca/council-information/appeals

Part 4 – Appendix		
Category	**Code Reference**	**Article Text**
Division A — Definitions	**1.4.1.2. Defined Terms**	“Alternative solution” means a building design or construction method that differs from the acceptable solutions in Division B but achieves at least the same level of performance.
Division A — Compliance Framework	**1.2.1.1.(1)**	“Compliance with this Code shall be achieved by (a) complying with the acceptable solutions in Division B, or (b) using alternative solutions that will achieve at least the minimum level of performance required by Division B…”
	1.2.1.1.(3)	“Alternative solutions shall (a) achieve at least the same level of performance as the acceptable solutions, and (b) be assessed against the objectives and functional statements.”
	1.2.1.2.(1)	“Division B contains acceptable solutions that are deemed to satisfy the requirements of this Code when used in compliance with this Code.”
	1.2.1.3.(1)	“Where an alternative solution is used, the level of performance shall be determined in relation to the objectives and functional statements attributed to the acceptable solutions.”
Division C — Administrative Requirements	**2.2.1.2.(1) Variances**	“A variance may be issued where the authority having jurisdiction is satisfied that the proposed alternative provides approximately equivalent or greater safety performance.”
	2.2.2.1.(1) Information Required	“Information required to establish compliance with this Code shall be submitted in a form acceptable to the authority having jurisdiction.”
	2.2.3.1.(1) Documents and Drawings	“Drawings and specifications shall be submitted where required to show that the proposed work will conform to this Code.”
	2.2.2.5.(1) Review and Acceptance	“Where required, the authority having jurisdiction shall review and accept documents submitted to demonstrate compliance with this Code.”
	Section 2.3.1.1. Alternative Solutions	1) Documentation conforming to this Subsection shall be provided by the person requesting the use of an alternative solution to demonstrate that the proposed alternative solution complies with this Code. 2) The documentation referred to in Sentence (1) shall include a) a Code analysis outlining the analytical methods and rationales used to determine that a proposed alternative solution will achieve at least the level of performance required by Clause 1.2.1.1.(1)(b) of Division A, and b) information concerning any special maintenance or operational requirements, including any building component commissioning requirements, that are necessary for the alternative solution to achieve compliance with the Code after the building is constructed. 3) The Code analysis referred to in Clause (2)(a) shall identify the applicable objectives, functional statements and acceptable solutions, and any assumptions, limiting or restricting factors, testing procedures, engineering studies or building performance parameters that will support a Code compliance assessment. 4) The Code analysis referred to in Clause (2)(a) shall include information about the qualifications, experience and background of the person or persons taking responsibility for the design.

		5) The information provided under Sentence (3) shall be in sufficient detail to convey the design intent and to support the validity, accuracy, relevance and precision of the Code analysis. 6) Where the design of a building includes proposed alternative solutions that involve more than one person taking responsibility for different aspects of the design, the applicant for the permit shall identify a single person to co-ordinate the preparation of the design, Code analysis and documentation referred to in this Subsection.
	2.4.2.1.(1) Professional Design	"Where required, the design and field review shall be carried out by a registered professional skilled in the appropriate discipline."
Safety Codes Act (Alberta)	**Variance Authority**	The authority having jurisdiction may issue a variance where a proposed alternative provides for equivalent or greater safety performance. (Legislative basis for alternative solutions in Alberta)
	Compliance Requirement	No person shall commence work unless it complies with the Act, the regulations, and the adopted codes.
Permit Regulation (Alberta)	**Permit Application Requirements**	An application for a permit shall include sufficient information to enable the authority having jurisdiction to determine whether the proposed work complies with the Act and the codes.
	Conditions of Permit	A permit may include conditions necessary to ensure compliance with the Act and the codes.