



Tiered Energy Code Roadmap

Summary

Overview

The 2020 National Building and Energy Codes have introduced Tiered Energy Codes as a pathway to eventually requiring all new homes to be built to a Net Zero standard. The Government of Alberta continues to assess the implementation of these changes in collaboration with industry and the Safety Codes Council. BILD Alberta has undertaken a detailed analysis to help form a set of recommendations for the consideration of the Government of Alberta.

BILD Alberta's goal is to work with the province to establish a pragmatic framework that enables the construction of safe and affordable Net Zero homes in the future. We are committed to the significant work and partnerships between industry and the provincial government that are required to make this a reality.

Review BILD Alberta's Detailed Tiered Energy Code Roadmap [HERE](#).

Tiered Energy Code – Summary and Key Findings

Summary Table

The following table provides a high-level summary of the cost impacts, potential barriers and recommended timing at each of the Tiers. **It is important to note that the cost impact of each Tier represents the hard costs at the future date of implementation. This assume barriers related to education, technological advancements and industry capacity have been addressed at each Tier. If these are not addressed in advance of moving up to certain Tiers, costs would increase considerably.**

SUMMARY TABLE				
Tier	Increase to Construction Costs	Cost Impact Per Home	Barriers Prior to Implementation	Timing
1	0% to 0.34%	\$0 - \$1,072	<ul style="list-style-type: none"> None 	Mid-2023
2	0.35% to 1.05%	\$1,100 - \$3,300	<ul style="list-style-type: none"> Energy Advisor/airtightness testing capacity. Multi-family airtightness testing requirements. Managing peak cooling loads. Education of builders, building officials and homeowners. 	Mid-2025
3	1.05% to 1.40%	\$3,300 - \$4,400	<ul style="list-style-type: none"> Clarify the prescriptive pathway. Energy Advisor/airtightness testing capacity. Building envelope training with trades. 	TBD
4	7.0%	\$20,000 - \$22,000	<ul style="list-style-type: none"> Housing affordability. Air source heat pump technology. Electric infrastructure to support electrified home heating. Envelope improvements. Clarify the prescriptive pathway. 	TBD
5	25%	\$70,000 - \$77,000	<ul style="list-style-type: none"> Revisions to Tier 5 requirements to reflect actual Net Zero construction. Impact on housing affordability. Diminishing returns on insulation. Designing for solar panels. Electric infrastructure to support electrified home heating. Clarify the prescriptive pathway. 	TBD

Key Findings

- The peak cooling load requirement will mean the solar heat gain in the summer cannot be larger than the reference house, which could reduce the heat gain or passive heating in the winter. This will be a challenge at all Tiers.
- Starting at Tier 2, builders will be penalized for not undertaking airtightness testing. 3.2 ACH (air changes per hour) for modelling is required unless airtightness testing is completed.
- The capacity of Energy Advisors will need to increase in Alberta to keep up with the demand associated with the airtightness requirements of the Tiers.
- Multi-family airtightness testing will require a guarded test to be completed, and not all Energy Advisors have been educated on how to perform these new tests.
- The prescriptive compliance path is currently not an option for Tiers 3 - 5, and it is unclear if requirements for this pathway will be created. At this point in time, the performance compliance pathway would be mandatory, starting at Tier 3.
- With the envelope improvement requirements, more insulation and energy-efficient windows will be required, increasing costs.
- At Tier 4, electrified home heating will be a requirement for homes. It is unclear if Alberta's electricity infrastructure can support a broad shift to electrified home heating at this time.
- Air source heat pumps are the most cost-efficient technology to provide electrified home heating but presently do not operate reliably in temperatures -25°C and below. This results in a requirement for a secondary heat source.
- Some homes can be built to a Net Zero Ready standard at Tier 4, and the current Tier 5 goes beyond what is required to build a Net Zero home.

BILD Alberta's Recommendations

BILD Alberta has provided preliminary recommendations to Municipal Affairs and the Safety Codes Council related to the Tiered Energy Codes. These recommendations focused on addressing the challenges of the Tiers while preserving Alberta's housing affordability and competitiveness.

Tiered Energy Code Roadmap – Preliminary Recommendations

The following provides a high-level summary of BILD Alberta's preliminary recommendation for Tiered Code adoption in Alberta:

1. Ensure a uniform and consistent application of energy Tiers province-wide.
2. Tier 1 becomes the minimum standard province-wide in mid-2023.
3. Tier 2 becomes the minimum standard province-wide in mid-2025.
4. Tier 3 implementation depends on industry capacity and clarity surrounding the prescriptive compliance pathway.
5. Until questions surrounding electric home heat technologies and utility infrastructure have been addressed a timeline for implementation of Tier 4 cannot be provided.
6. Tier 5 does not presently work in Alberta and will require modifications prior to identifying a feasible timeline.

Preliminary Action Plan

There are numerous challenges to implementing Tiered Energy Codes while preserving housing affordability, maintaining competitiveness, and ensuring the construction of safe homes. Many of these challenges can be addressed through a thoughtful Tier progression and partnerships between industry and government.

BILD Alberta recommends the creation of a working group with representation from industry, the Safety Codes Council, Municipal Affairs and other key stakeholders to proactively develop and implement strategies aimed at a smooth and affordable implementation of the Tiered Energy Codes.

The focus of this Working Group would be to provide high-level advice and resources to the barriers and challenges that have been identified. This would include but is not limited to:

- Coordinate preliminary discussions with the Canadian Association of Consulting Energy Advisors (CACEA) to better understand barriers and challenges to expanding capacity.
- Engage with existing energy efficiency experts to identify technical issues when building increasingly airtight homes.
- Identify knowledge or skills gaps that must be addressed at each Tier.
- Collaborate with relevant stakeholder groups to design and plan the necessary education for trades, builders and safety code officers.
- Collaborate with the Residential Protection Program and other stakeholders to design and establish a plan for consumer education.
- Engage experts in British Columbia to better understand the current state of air source heat pump technologies and potential solutions for colder climates.
- Engage the Alberta Electrical System Operator, Alberta Utilities Commission and electrical utility providers to identify barriers and any solutions associated with a shift to electric home heating on a broad scale.