



Outcome of consultation Building Code update 2022 **Transition period for the energy efficiency of housing**

Decisions for amending acceptable solutions and
verification methods for H1

15 July 2022



Ministry of Business, Innovation and Employment (MBIE)

Hikina Whakatutuki – Lifting to make successful

MBIE develops and delivers policy, services, advice and regulation to support economic growth and the prosperity and wellbeing of New Zealanders.

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Preface

MBIE would like to thank the individuals and organisations who took the time to prepare a submission for this consultation.

Consultation is an important part of the development of updates to our Building Code documents - Acceptable Solutions and Verification Methods. MBIE consults on proposed updates to these Building Code documents to provide an opportunity for the public and sector to make submissions on the proposed changes. This Outcome of Consultation document provides a summary of decisions made by MBIE in consideration of the feedback we received.

In 2021, we received an overwhelming response to our proposals on energy efficiency in housing. The feedback we received provided us a better understanding of how the changes can be readily implemented across Aotearoa New Zealand and where we need to target our efforts to inform and educate on the changes. When fully implemented, these changes will contribute to meaningful change for all New Zealanders and help Aotearoa New Zealand reach its goal of net zero carbon emissions by 2050.

Although the 2021 consultation supported a twelve-month transition period, since then MBIE received feedback that an extension to this transition time was required due to the challenges the industry is facing. As a result, MBIE held a consultation in May 2022 on extending the transition period for energy efficiency for housing.

This is just one of several proposals being consulted on for changes to the Building Code documents in 2022.

Work is still underway analysing submissions on the proposals for plumbing and drainage, structural stability of hollow-core floors, and protection for fire. Final decisions on the changes will be made and communicated later this year.

Summary of the decision

MBIE has made the decision to extend the transition period to increase wall, floor and roof insulation in new homes to 1 May 2023 but will still be proceeding with increases to window thermal performance in November 2022.

MBIE has made the decision to extend the time to comply with new wall, floor, and roof insulation requirements in new homes by a further six months to 1 May 2023. However, window and door insulation requirements will continue to see a staged implementation process where:

- Construction in the upper North Island (climate zones 1-2) will keep to the previous timeline, with windows and doors requiring an interim minimum R value of 0.37 by 3 November 2022, and further requiring a minimum R value of 0.46 by 2 November 2023.
- Construction in the rest of the country (climate zones 3-6) will now also have an interim increase. These zones will be required to reach a minimum R value of 0.37 for all windows and doors by 3 November 2022, and increase this to R0.46 (zones 3-4) and R0.50 (zones 5-6) six months later, on 1 May 2023
- By 2 November 2023, windows in new housing will be required to meet the increase performance levels for all parts of the country.

The requirements for minimum insulation settings are found in Acceptable Solution H1/AS1 and Verification Method H1/VM1. These documents are the most common ways that designers and builders demonstrate compliance with the Building Code Energy Efficiency requirements for new housing.

The extension has been made following a consultation which received the highest level of submissions than any Building Code consultation to date. Overall, the responses show a 50/50 split between those wanting to keep the transition period as it was, and those who wanted an extension. All parts of the sector indicated there are existing stresses caused by COVID-19 and the current economic climate. Builders indicated this would be further amplified by introducing the new insulation requirements from November 2022.

This decision will allow the building and construction sector time to be able to deliver on the biggest energy efficiency changes to the Building Code in over a decade, which aim to support the sector to help Aotearoa New Zealand reach its goal of net zero carbon emissions by 2050, while supporting those parts of the sector that are committed and ready to take action now.

The additional interim step for window requirements reflects the submissions from window manufacturers and suppliers who were confident in their ability to meet demand for a transition period of November 2022. These suppliers and manufacturers raised significant concerns with changing the transition period as many have begun making changes to their operations to deliver the supply ready for these dates.

MBIE is fully committed to working alongside the building and construction sector to ensure successful implementation of these important changes. We have provided additional lists of resources and summary infographics at the end of this document.

In the meantime, MBIE strongly encourages anyone able to build houses to the newer insulation standards to do so, as they will be warmer, drier, healthier, and cheaper to heat.

1. Transition period for the energy efficiency of housing

1.1. What we proposed

Between 30 May 2022 and 13 June 2022, MBIE sought feedback on extending the transition period for adopting new insulation requirements for housing in Acceptable Solution H1/AS1 and Verification Method H1/VM1. The new insulation requirements were published in 2021 and the transition period for using the previous editions of the documents was set to end on 2 November 2022. The changes published in 2021 were for two types of buildings: housing and small buildings, and other larger buildings¹. For housing, these changes included:

- Doubling the amount of roof insulation required across the country.
- Increasing the minimum insulation requirements for windows across the country, with a focus on higher upgrades in colder climate zones and an additional performance improvement for warmer parts of the country in 2023.
- Improving underfloor insulation requirements and separating the insulation values for concrete floor slabs from other types of floors to allow further time for slab-on-ground construction practices to adapt.

This proposal for consultation in 2022 was focused on the time required for the sector to implement the changes to insulation requirements. It considered three options for the transition period:

- Option 1. Retain the status quo with a transition period to end on 2 November 2022.
- Option 2. Extend the transition period for six months to 1 May 2023 (recommended).
- Option 3. Extend the transition period for twelve months to 1 November 2023.

The recommended option was to extend the transition period by six months. This recommended option considered feedback received in the 2021 consultation, changing circumstances in Aotearoa New Zealand's building and construction sector, and the importance of Aotearoa New Zealand's obligations under the [Climate Change Response Act 2002](#).

In the consultation, MBIE sought feedback on three questions:

- Do you agree with the proposed extension of six months to the transition time so that the previous lower insulation and glazing settings can be used until 1 May 2023?
- What impacts would you expect for you or your business from the proposed change to the transition period? These impacts may be economic/financial, environmental, health and wellbeing, or other areas.
- What support would you or your business need to implement the changes by 1 May 2023 if introduced?

Respondents were given tick box options for the first and third questions with space available for free text responses across all questions. Responses to the consultation were received through an online survey portal as well as through emails to MBIE directly.

¹ These terms are defined within the acceptable solutions and verification methods for H1 Energy efficiency. Housing of any size (including multi-unit apartment buildings) has the same requirements.

Transition period for the energy efficiency of housing

1.2. What we heard

1.2.1. Who submitted on the proposal

There were 840 submissions on this consultation. This exceeds the number of submissions received on the proposals for energy efficiency received in 2021. Feedback was received from across the building and construction sector. A breakdown of the submissions received in 2021 and 2022 based on occupation is provided in Table 1.1 and illustrated in Figure 1.1.

The 2022 consultation received significantly higher volumes of submissions from architects, designers, engineers and builders than the 2021 consultation. This was expected as this consultation focused on the transition period to implement the changes, and these submitters represent the people responsible for designing and constructing homes to meet the new requirements. At the same time, we received significantly less responses in the 2022 consultation than the 2021 consultation from residential building owners and other submitters who primarily responded in 2021 and expressed their opinion on the need for more insulation in homes. MBIE identified only 93 submissions from the same organisation or person who submitted on both consultations (2021 and 2022).

Additionally, the preferences expressed by these submitters were generally consistent with other submissions in the same category (i.e. the opinions of multiple designers from one company generally agreed with the other submissions from designers). In some cases, individuals from the same organisation individually expressed differing preferences for the transition period and were considered separately. Consequently, the statistics reported in the rest of this document are reported for the occupation categories overall without further groupings for individual companies or organisations.

From the responses received in 2022, it was clear that many of the submissions were unaware of the changes made in 2021 and this consultation was their first time engaging with the topic or learning about the changes to insulation settings. The primary feedback received was focused solely on the ability of the sector to implement these changes in the next six months.

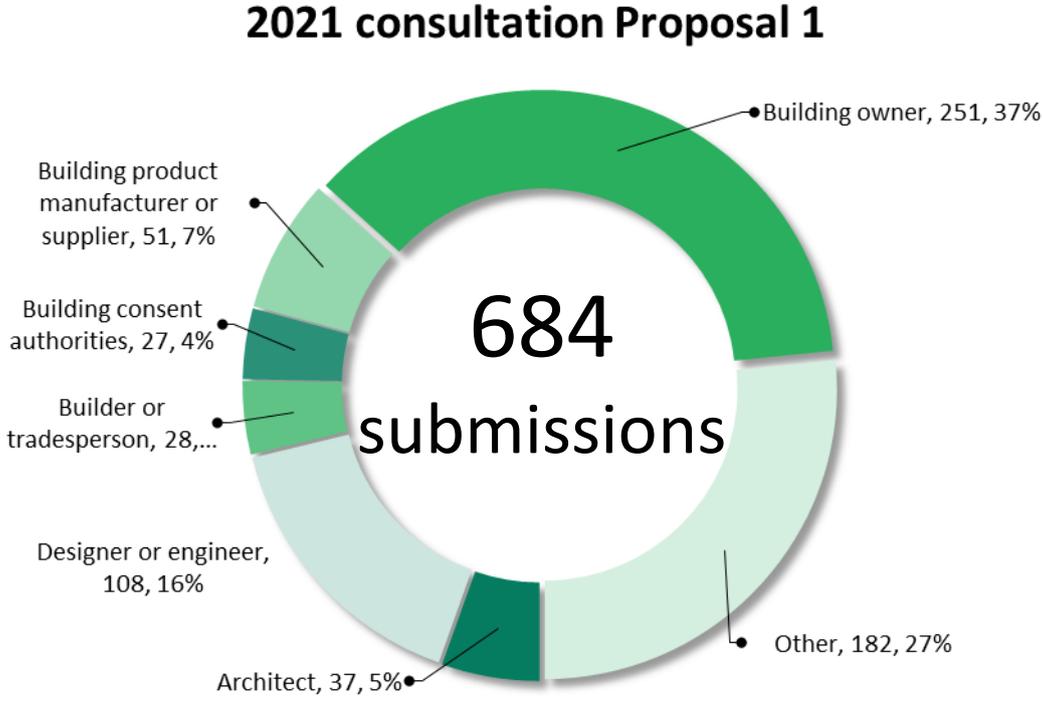
However, we received a number of comments discussing the changes themselves rather than the transition period. These submissions still expressed a high level of support for the changes and the need for Aotearoa New Zealand to provide higher performing houses and respond to the urgency of climate change. Those in support recognised the benefits of insulation and reduced energy use in buildings to meet our climate change goals.

TABLE 1.1: Number of submissions received on insulation requirements for new housing

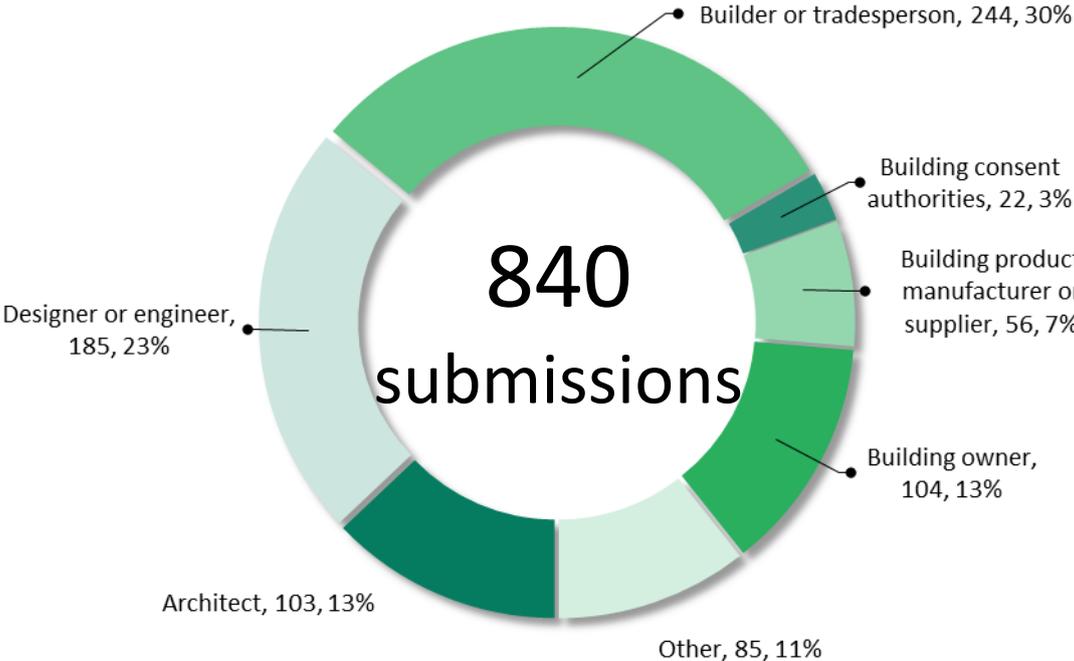
Occupation	Number of submissions and percentage of total	
	2021 proposal 1	2022 transition period
Architects	37 (5%)	102 (12%) ↑up
Designers or engineers	108 (16%)	185 (22%) ↑up
Builders or tradespersons	28 (4%)	244 (29%) ↑↑up
Building Consent Authorities	27 (4%)	22 (3%) – similar
Building product manufacturers	51 (7%)	56 (7%) – similar
Building owners, occupants or renters	251 (37%)	104 (12%) ↓ down
Other submitters including those who did not specify their occupation	182 (27%)	85 (10%) ↓ down
Total	684	840

Transition period for the energy efficiency of housing

FIGURE 1.1: Number of submissions received in the 2021 and 2022 consultations on energy efficiency requirements in housing



2022 consultation transition period



Transition period for the energy efficiency of housing

1.2.2. Submitter preferences on the transition period

There was no clear agreement on what the transition period should be. The responses were split between those wanting to keep the transition as it was and those who wanted an extension. These numbers are provided in Table 1.2 and illustrated in Figure 1.2.

Approximately 50% of the submissions preferred the status quo option and 50% desired an extension (either six months, twelve months, or longer). This is consistent with the 2021 consultation. In the 2021 consultation, 53% of responses preferred a transition period corresponding to November 2022. The following sections discussed the responses for each occupation separately.

TABLE 1.2: Preferred transition period for new insulation requirements in homes from the 2021 and 2022 consultations

Occupation	Preferred end of the transition period (%) ^{(1), (2)}		
	November 2022	May 2023	November 2023 or longer
Architects (2021 consultation)	63%		37%
Designers or engineers (2021 consultation)	60%		30%
Builders or tradespersons (2021 consultation)	48%		52%
Building Consent Authorities (2021 consultation)	33%		67%
Building product manufacturers (2021 consultation)	39%		61%
Building owners, occupants or renters (2021 consultation)	50%		50%
Other submitters (2021 consultation)	62%		38%
Total (2021 consultation)	53%		46%
Architects (2022 consultation)	65%	17%	18%
Designers or engineers (2022 consultation)	61%	20%	19%
Builders or tradespersons (2022 consultation)	10%	34%	55%
Building Consent Authorities (2022 consultation)	27%	41%	27%
Building product manufacturers (2022 consultation)	63%	18%	20%
Building owners, occupants or renters (2022 consultation)	80%	10%	8%
Other submitters (2022 consultation)	72%	12%	14%
Total (2022 consultation)	50%	22%	27%

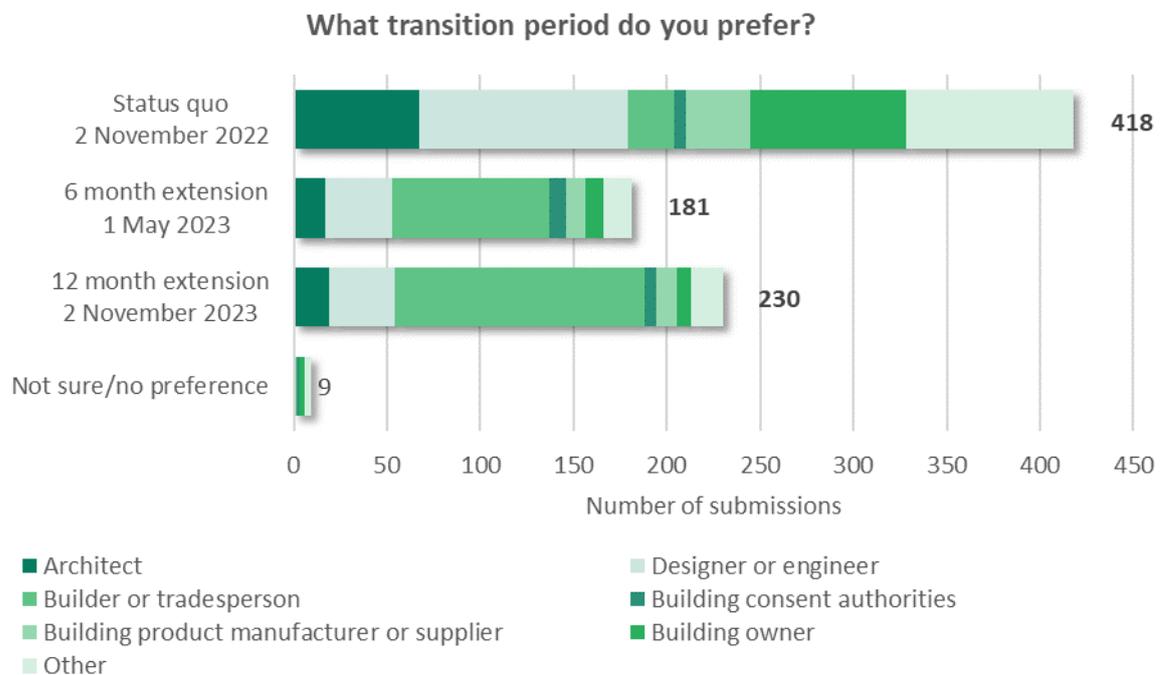
Notes:

(1) Some categories do not add up to 100% as some submissions selected “Not sure/no preference”

(2) A transition period of May 2023 was not provided as an option in the 2021 consultation.

Transition period for the energy efficiency of housing

FIGURE 1.2: Preferred transition period from the 2022 consultation



1.2.3. Submissions from architects, designers, and engineers

Approximately two-thirds of architects, designers, and engineers who responded to the consultation supported maintaining the status quo with a transition period of November 2022. These submissions generally commented on:

- Climate change and the reduced energy required to heat a home through increased insulation. Any extension being incompatible with the urgency for action on climate change
- An extension allowing more homes to be built to the previous insulation requirements, which would be detrimental to the health and well-being of the occupants and would lock in higher energy bills and higher carbon emissions for the life of the building
- The cost and difficulty of having to retrofit houses in the future due to houses being built to the lower insulation levels as a result of an extension in the transition period
- The new requirements being easy to implement as they do not require significant changes to the design and construction of buildings
- The required design solutions and products being readily available
- The time lag between consent application and construction already providing extra time for product suppliers and builders to prepare for the changes
- The transition to the new requirements not being any easier by waiting an additional six or twelve months.

For those who supported an extension to the timeframe, these responses commented on:

- The need for more time and education material to understand how they can meet the new requirements
- Concerns around supply chains and the recovery of the industry due to COVID-19
- Uncertainty around whether manufacturers would be ready with new products in time to implement the changes
- Cost increases to construction from the increased insulation required and the possibility of driving clients away due to increased costs
- Adding further stress to the already strained construction industry struggling with product supply problems, cost increases, staff shortages and absences, and long consent processing times.

The submissions that supported the extension to the transition period also replied with common 'myths' about the changes demonstrating a lack of understanding of what the changes actually are or how residential construction would be impacted.

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1.2.4. Submissions from building consent authorities

There was a limited number of submissions from building consent authorities. Submissions in this category included some individual building consent officers and regulatory consultants/experts. Approximately two-thirds of these submissions in this category preferred an extension of six or twelve months. These submissions were concerned with:

- The ability of product manufacturers and suppliers to be ready with the required insulation and window products
- The lack of knowledge about the changes within the industry. Where designers or builders are not informed about the changes, a building consent authority becomes the primary educator through consent and inspection services. Providing an extension would give the sector more time to educate itself on the changes.

1.2.5. Submissions from builders

89% of the submissions from builders preferred an extension to the transition period (either six or twelve months) with a majority (55%) preferring a twelve month extension. The submissions from builders generally reflected the issues reported by MBIE in the consultation document for the extensions². This included concerns regarding supply chains, sector readiness, and the economic impact of the changes. Some of the common items stated explicitly in these submissions:

- The industry is under pressure with fuel price increases, inflation, labour shortages, cash flow issues, and mental health issues
- Housing is quickly becoming unaffordable, and these energy efficiency of housing changes will further contribute to this issue
- Clients may walk away from contracts due to the additional costs, or building companies will have to absorb some of the additional costs from the changes
- There are supply chain issues across the industry, and requiring additional insulation or higher performing glazing will contribute to further delays
- Details of solutions to meet the requirements need to be developed
- The industry needs time for education on how to meet these requirements, and companies will need to absorb these costs.

Several submissions from builders also commented that they thought new homes in Aotearoa New Zealand already had enough insulation and increasing this was unnecessary. This feedback was out-of-step of the opinions expressed in the 2021 consultation where 98% of the responses supported increases in insulation over the status quo including support from several key building industry associations.

1.2.6. Submissions from building product manufacturers and suppliers

Approximately two-thirds of product manufacturers and suppliers supported the status quo with a transition period of November 2022. Contrary to opinions raised by other submitters (such as those in the designers, builders, and building consent authority categories), insulation product manufacturers and suppliers were generally confident that the suppliers of new products would be available to meet the demands in Aotearoa New Zealand. This part of the sector also states that they have already invested in manufacturing and supply chains of new products to meet the new insulation settings.

Those who supported an extension to the transition period commented on the stress and pressure due to the COVID-19 pandemic and current volatility of the global markets. These issues are present in the building and construction sector and exist outside of the changes to insulation settings.

An issue identified by glass suppliers was that there are long lead times for glass supplies that require suppliers to commit to a timeline with overseas producers. These commitments include shipping containers, cargo placement, and contractual bonds to buy minimum quantities of glass to meet the demands. Glass suppliers had already made these commitments and ordered higher performing glass (such as low-E glazing) in anticipation of the transition period ending in November 2022.

In addition, low-E glass has a six month shelf-life from the time of manufacture to the time when it is fabricated into a double-glazed window unit. The low-E coating is stable once in the window unit, but if the glass is not used within this time period, the low-E coating can oxidise and the glass would have to be discarded. If the transition period was to be extended, it would be likely that these suppliers would experience significant economic impacts. An extension would therefore penalise an industry that has acted promptly and invested significantly to support the changes.

² Refer to the discussion in the consultation document available on mbie.govt.nz.

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1.2.7. Submissions from building owners and others

These submissions had the highest levels of support for maintaining the status quo transition period. The most common statement from these submissions were that increases to minimum insulation requirements were urgent due to climate change and the desire for warmer, drier and healthier homes. They also expressed an opinion that the changes were feasible to implement in the existing time frame. Other comments made by the submissions in this category that did not support the extension:

- An extension would have long term negative impact for short-term benefits
- Sufficient time had already been given to implement the changes, and the sector has the capability to adapt
- Material or supply shortage reported by other parts of the sector were not realistic
- An extension will not resolve the other issues currently in the sector and may create larger impacts to the sector at a later date
- Any extension is unfair for those who have already made investments to prepare for the changes.

For those who preferred the extension, the most common statement was that more time was necessary to develop new construction details to meet the new insulation requirements. Other comments included concerns about:

- The increase in costs of construction and housing affordability
- Lack of products available in the market
- Lack of understanding of the requirements
- The knowledge of building consent authorities about the changes
- Feelings that the changes were being rushed.

Less than 5% of these submissions expressed opinions that insulation requirements were not necessary due to the climate in specific parts of Aotearoa New Zealand.

1.2.8. Requests for support

As part of the consultation, we also asked submitters what types of support would be required to implement the changes. The types of support included the following options:

- Information about what the insulation changes are or what buildings they apply to
- Education material on how the new documents can be used to comply with the Building Code
- Webinars from MBIE technical experts
- Other types of support.

Overall, the requests for support were split equally across the four options with approximately 30-40% of submitters endorsing each option. In total, approximately two-thirds of all submitters expressed some desire for support. Only one-third stated they were prepared for the change or did not express a need for support. This contradicts some of the preferences for the transition period for groups such as architects, designers, and engineers. A large number who wanted to maintain the current transition period also identified that they would still need support to get there.

The most frequent requests for support are provided in Table 1.3.

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TABLE 1.3: Number of submissions received for common types of support

Type of support requested	Number of submissions
Information about the changes	327
Benefits of the change	17
Costs of the new requirements for construction	12
Why the changes were made in 2021	8
Information for commercial buildings	3
Education material on how the new documents can be used to comply with the Building Code	355
Practical examples including: <ul style="list-style-type: none"> • Revisions to the BRANZ House insulation guide • Insulation materials that can be used to comply • Details for skylights, skillion roofs, and floor slabs 	43
Application of the requirements to existing buildings	5
How to calculate the R-values for floors and windows in the appendices to the acceptable solution and verification method	5
How to use the calculation and modelling methods to demonstrate compliance	3
Webinars and talks	272
Instructional videos	2
Workshops to discuss individual designs	1
Engagement at local events	1
Helpline and email for project specific queries	2
Other types of support	281
Certainty/evidence that manufacturers can meet the supply demands in the timeframes	15
Thermal modelling tools developed by MBIE	8
Education to building consent authorities (expressed by other occupations)	8
Other issues related to building performance including ventilation, airtightness, and thermal bridging	4
Road map of future changes	3

A number of comments in this category were out of scope for this consultation. This included requests for financial support from the Government to implement the changes, changes to the Healthy Home Standards and education to renters, pricing controls on building products, and changes to information recorded in land titles.

1.2.9. Summary of what we heard in the submissions

To summarise the feedback we received regarding the impact of the transition period:

- There is a high level of support for the changes and the need for Aotearoa New Zealand to provide higher performing houses and respond to the urgency of climate change. Submissions in favour of the November 2022 transition period recognised the benefits of insulation and reduced energy use in buildings to meeting our climate change goals
- An extension to the transition period would penalise those who are already prepared and reward those who did not prepare
- There is a lot of stress across the building sector because of COVID-19 and the economic climate. This is not just limited to builders

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- There is a low level of understanding about H1 Energy efficiency, the benefits of insulation in houses, and why the changes were being made in the first place
- The Aotearoa New Zealand market for the insulation and glazing products required to implement the change is competitive. There are multiple companies who supply insulation products through various channels (including local manufacturing and importing)
- The manufacturers and suppliers have confidence they can meet the demands in Aotearoa New Zealand within the existing transition period. However, this will still come with stress to some suppliers
- These changes required manufacturers and suppliers to adapt their processes, but these changes are already underway or completed
- If the transition period is extended, there is a specific concern around higher performing glazing which has already been ordered. An extension could therefore cause significant financial losses to the companies who are already prepared for supplying higher performing windows in anticipation of the change
- One third of responses did not require any support and were ready to design and build to the new requirements. Two-thirds of responses requested further support including general knowledge of the changes, education materials, and training for staff before they are ready to implement the new requirements
- A large portion of the sector have not been educated on the insulation changes to date. There is uncertainty about what the changes are and the impacts to the costs of construction
- Many designers and builders are waiting for practical details to be developed or for updated pricing from suppliers. It is difficult for suppliers to currently quote prices more than 30 days in advance due to global volatility in the markets.

In 2021, MBIE reported the feedback from the consultation as a mandate to “go as far and fast as possible – without breaking anything in the system”. Based on the feedback we received in the 2022 consultation, if we retain the original transition period, there is specific concern that the following items might break the system:

- Builders and construction companies will experience higher levels of stress
- Consents may be delayed due to lack of knowledge of the changes or what is required to achieve compliance for new insulation requirements. This could lead to a decrease in new house construction.

1.3. What we are doing

1.3.1. Transition period

For wall, floor and roof insulation in housing, MBIE is extending the time period during which the previous, lower requirements can be used for building consent applications until 30 April 2023.

Window and door insulation requirements will continue to see a staged implementation process. Construction in the upper North Island (climate zones 1 and 2) will retain the previous timeline, with windows and doors requiring an interim minimum R-value of 0.37 starting on the 3 November 2022, then increasing to a minimum R-value of 0.46 on 2 November 2023.

For housing only, windows and doors in the rest of the country (climate zones 3 to 6) will now also have an interim increase. In these zones a minimum R-value of 0.37 will be required for all windows and doors starting on the 3 November 2022, with an increase to R0.46 (in climate zones 3 and 4), and R0.50 (in climate zones 5 and 6) six months later, on the 1 May 2023.

The staged implementation process for windows reflects that:

- In the most common applications, an increase to R0.37 will have no impact on the window joinery details or installation of the window, but will still present an increase to the thermal performance. For example, this R-value can be achieved by simply replacing clear glass in a double-glazed aluminium window frame unit with low-E glass in the same frame
- Window manufacturers and glass suppliers are prepared for the change and committed to producing higher performing windows to meet the November 2022 timeframe.

There is no change to the requirements and timing for other buildings besides housing (either small or large buildings).

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TABLE 1.4: Minimum R-values for each building element for housing in H1/AS1 and H1/VM1

Options	Climate zone					
	1	2	3	4	5	6
Roofs						
Current minimum requirements	R2.9		R2.9/3.3		R3.3	
1 May 2023	R6.6↑					
Walls						
Current minimum requirements	R1.9		R1.9/2.0		R2.0	
1 May 2023	R2.0↑					
Floors						
Current minimum requirements	R1.3					
Slab-on-ground floors 1 May 2023	R1.5↑	R1.5↑	R1.5↑	R1.5↑	R1.6↑	R1.7↑
Other floors 1 May 2023	R2.5↑			R2.8↑	R3.0↑	
Windows and doors						
Current minimum requirements	R0.26					
3 November 2022	R0.37↑		R0.37↑		R0.37↑	
1 May 2023	R0.37		R0.46↑		R0.50↑	
2 November 2023	R0.46↑		R0.46		R0.50	

1.3.2. Changes to the acceptable solution and verification method documents

The date for transition to the new documents (H1/AS1 Fifth Edition and H1/VM1 Fifth Edition) will remain as 3 November 2022. On 3 November 2022, the previous 4th edition H1 documents can no longer be used for building consent applications.

However, an amendment to the new fifth edition H1/AS1 and H1/VM1 documents will be published in August 2022, which, for housing only, where building consent applications are submitted before 1 May 2023, permits:

- roof, wall and floor insulation levels that are equivalent to the previous requirements
- window and door insulation requirements that are about half-way between the previous and the final new requirements.

This amendment to the new fifth edition H1/AS1 and H1/VM1 documents will achieve the same regulatory outcome as extending the transition period of the previous documents. It will eliminate the need to use two different acceptable solutions/verification methods and the Aotearoa New Zealand Standard NZS 4218 for demonstrating compliance for housing. For building consent applications, there will only be one version of H1/AS1 and H1/VM1 in force after the 2 November 2022. For all acceptable solutions and verification methods for H1, additional errata amendments will be published in August 2022. The amended acceptable solutions and verification methods issued for H1 will include:

- Acceptable Solution H1/AS1 Fifth Edition Amendment 1, Energy efficiency for all housing, and buildings up to 300 m² – Amended to include wall, floor and roof R-values for housing from the NZS 4218 standard which are deemed to comply with the Building Code for building consent applications submitted before 1 May 2022. This document will also be amended to correct editorial errors that will not adversely affect the substantial interests of any person
- Verification Method H1/VM1 Fifth Edition Amendment 1, Energy efficiency for all housing, and buildings up to 300 m² – Amended to include wall, floor and roof R-values for housing from the NZS 4218 standard which are deemed to comply with the Building Code for building consent applications submitted before 1 May 2022. This document will also be amended to correct editorial errors that will not adversely affect the substantial interests of any person
- Acceptable Solution H1/AS2 First Edition Amendment 1 – Energy efficiency for buildings greater than 300 m² – Amended to correct editorial errors that will not adversely affect the substantial interests of any person

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- Verification Method H1/VM2 First Edition Amendment 1 – Energy efficiency for buildings greater than 300 m² – Amended to correct editorial errors that will not adversely affect the substantial interests of any person
- Verification Method H1/VM3 First Edition Amendment 1 – Energy efficiency of HVAC systems in commercial buildings – Amended to correct editorial errors that will not adversely affect the substantial interests of any person.

The transition period for the documents and the separate requirements are illustrated in Figure 1.3.

1.3.3. Information and education content

Our objectives for supporting implementation of the changes to the acceptable solutions and verification methods include sharing information and education content so that people are:

- Knowledgeable about insulation and why it is important in buildings so that buyers of new homes may look for options that exceed the Building Code minimums and designers/builders can provide this information to them. This includes owners completing alterations to existing homes
- Understand how to use the calculation and modelling methods to specify the R-values for residential homes
- Able to access products and resources from manufactures and other training/research organisations to implement the specified R-values on site with ease and confidence
- Informed about the facts of the changes
- More knowledgeable that change is coming in the future as part of the Building for Climate Change programme in order to meet the Government's commitments to emissions reductions.

To assist with this, MBIE is continuing to:

- Develop online education modules to explain the changes
- Assist BRANZ with revisions to the House Insulation Guide
- Promote and educate on the changes through webinars and other events
- Promote information sources on products that can be used to comply. As a performance-based code, the requirements allow any product/method to be used to comply. For additional confidence, products with Codemarks and BRANZ appraisals can be found by searching through [Building Codehub](#).

MBIE is not currently developing construction details or further thermal modelling tools as requested in some submissions. Thermal modelling tools are already available in the industry. However, MBIE may provide these types of tools under the Building for Climate Change programme to assist with demonstrating compliance with future operational efficiency and embodied carbon requirements.

1.4. Next steps for energy efficiency in the Building Code

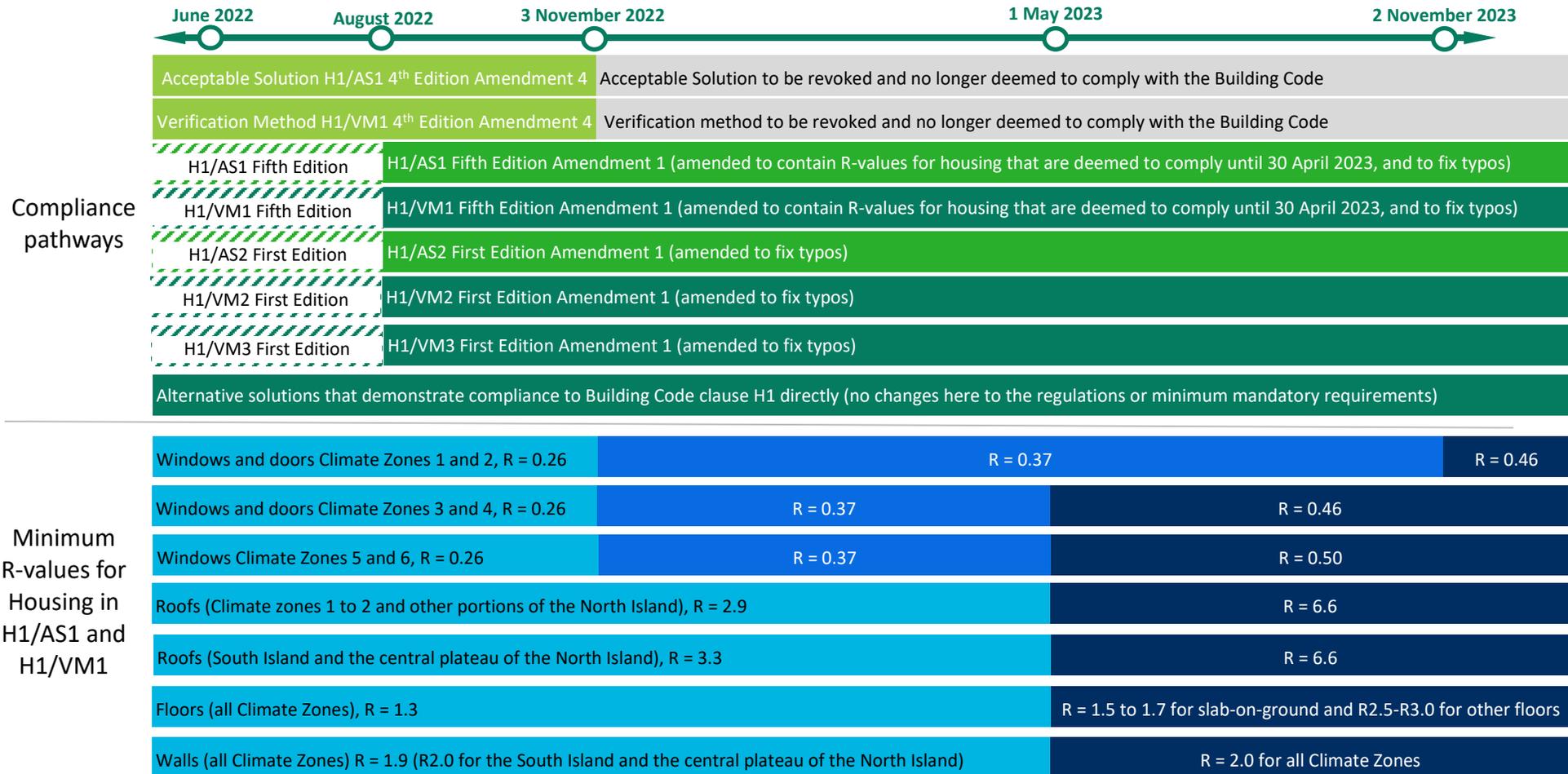
The Building for Climate Change programme will continue to build on the foundations set by these H1 amendments. The programme is currently developing methodologies, data and tools that would enable people to undertake operational efficiency assessments of buildings. These assessments intend to take a more holistic, outcomes-based view of building performance, and will contribute to reducing the sector's carbon emissions in line with the Government's climate change goals. Aotearoa New Zealand's first [Emissions Reduction Plan](#) outlines key elements of the Building for Climate Change programme's work to reduce the sector's emissions.

MBIE intends to consult on proposals to introduce operational efficiency requirements to the Building Code. This could include an approach to cap allowable operational emissions. We expect these requirements could lead to building design elements such as better insulated concrete floor slabs, triple glazing for colder climates, and better insulated external walls becoming more commonplace. They could also mean building designers increasingly consider indoor environmental quality, the shape of the building, size and orientation of windows, airtightness, mechanical ventilation with heat recovery, thermal bridging, and building services (such as heating, cooling, hot water, and lighting), as these elements impact a building's thermal performance and required energy usage.

We recognise that shifting to a focus on operational emissions would be a further significant change for the sector, which is already needing to upskill for H1 changes. Support, education and information will be provided, while transition timeframes will reflect both the scale of the shift and the need for action to reduce emissions. Feedback on the type and level of support that could be required will be sought through consultation.

Transition period for the energy efficiency of housing

Figure 1.3 Transition times for the insulation requirements for H1 Energy Efficiency compliance pathways and insulation R-values



Clarification about the changes to insulation requirements

Some of the feedback received highlighted areas where more information is required to clarify the H1 changes

Area	Clarification
Insulation elements and methods of construction	
Wall thickness	<p>The new R2.0 wall construction R-value of the H1/AS1 Schedule Method is still achievable with common 90 mm wall framing and insulation products. Wall insulation requirements only change slightly, and only for the warmer parts of Aotearoa New Zealand. Refer to Table 2.1.2.2B in H1/AS1 and H1/VM1.</p> <p>Stacking doors may require a deeper wall to accommodate the slightly thicker profiles of thermally-broken joinery. However, this only affects the wall with the stacking door and can be avoided by choosing a different door style.</p>
Roof insulation	All compliance methods in H1/AS1 and H1/VM1 allow roof insulation to be reduced along the perimeter of low-pitched roofs. The schedule method in H1/AS1 includes an explicit allowance to reduce the roof construction R-value to R3.3 for a 500mm strip along the ceiling edges. Refer to H1/AS1 Table 2.1.2.2B Note (2).
Skillion roofs	Skillion roofs have the option to comply with lower roof R-values that are easier to design and build. The R6.6 roof construction R-value is only required by the schedule method of H1/AS1. The calculation method in H1/AS1, and the modelling method in H1/VM1, allow for the use of different construction R-values provided the overall thermal performance of the proposed building is equal or better than the thermal performance of a reference building with schedule method R-values.
Insulation products	Common ceiling insulation materials are available with a product R-value of up to R7.0. There are different ways for achieving a roof construction R-value of R6.6, depending on the amount of thermal bridging from roof framing, the available space, and whether a single- or multi-layer insulation system is used.
Glazing	New schedule method R-values for windows and doors are achievable with double-glazing. Refer to H1/AS1 Table E.1.1.1.
Demonstrating compliance with the new H1 requirements	
When you can use the new H1 documents	The new fifth edition versions of H1/AS1 and H1/VM1 are in effect and can already be used for demonstrating compliance.
How the H1 changes will affect building designs	<p>The changes to the insulation requirements in the edition of H1/AS1 and H1/VM1 were deliberately designed to minimise the requirement for design changes or use of innovative or unfamiliar products. In the majority of cases, existing design methods and products can be used to achieve the necessary outcomes. In the case of windows, although the actual windows themselves will be fabricated differently, they are still able to be installed in the same way.</p> <p>The updated H1 acceptable solution and verification method documents retain the familiar compliance methods (the schedule, calculation and modelling methods), but with higher insulation requirements (R-values).</p> <p>Under the 4th edition of H1/AS1 many buildings were designed to comply with the</p>

Clarification about the changes to insulation requirements

Area	Clarification
	<p>schedule method. The increased insulation requirements mean that this may now not be the most cost effective pathway, and more buildings are likely to be designed using the calculation method.</p> <p>The calculation method uses a simple calculation comparing insulation values for a proposed building against a reference building.</p>
Building Performance Index (BPI)	<p>For new housing, building code clause H1 contains two performance requirements relevant to insulation:</p> <ul style="list-style-type: none"> • H1.3.1(a) requiring adequate thermal resistance • H1.3.2E requiring a certain Building Performance Index (BPI) not to be exceeded. <p>Demonstrating compliance with the requirements of the new fifth editions of H1/AS1 and H1/VM1 by using the schedule, calculation or modelling methods also satisfies the BPI requirement.</p> <p>However, compliance with the BPI does not demonstrate compliance with the adequate thermal resistance requirement. This means a BPI calculation using the BRANZ ALF tool is usually unnecessary and not a substitute for complying with the schedule, calculation or modelling method. See paragraph 1.1.3.3 in H1/AS1 and H1/VM1 fifth Edition.</p>
Supply chains and material availability	
Product availability	<p>The new insulation settings will increase demand for better thermally performing insulation and window products.</p> <p>The Window and Glass Association New Zealand and several major suppliers of window glass and joinery have confirmed that they are able to meet this increased demand.</p> <p>Major insulation product suppliers have also confirmed that they will be able to meet demand, especially when they are provided with six months additional time.</p>
How the Building Code works	
Effects on building consents that are already granted	Buildings already consented, or with building consent applications submitted before 3 November 2022 can show compliance with the previous fourth edition of H1/AS1 or H1/VM1.
Building code performance requirements	<p>The building code sets the minimum standard for building compliance. This is effectively the lowest standard that can be legally built.</p> <p>Our homes and buildings will need to perform better to help meet long-term national net-zero carbon targets.</p> <p>There are known benefits for seeking to exceed the minimum standards. Better-performing homes are warmer and drier and have reduced running costs to offset the upfront cost.</p>
Future updates to H1	<p>To continue the shift towards improved energy efficiency and reduced emissions, in the future the Building Code will introduce carbon emissions caps and more holistic building performance measures.</p> <p>The proposed timeline for future changes to the Building Code is set out in the outcomes document for the 2021 code update.</p>

Information about the changes

MBIE is committed to supporting the implementation of the H1 changes. We are working with industry organisations to ensure that the sector has access to the information and education it needs to understand the changes and implement the new requirements.

The following resources are available to help explain the benefits of building and how to implement the changes. These will be made available as an online resource library and will be added to as more content is developed.

Information

MBIE's outcome of consultation document highlighted feedback received during 2021 consultation and changes that were made to the minimum insulation settings. This is available on building.govt.nz.

Window and Glass Association NZ provides information on energy performance for a home along with information about the Window Energy Efficiency Rating System (WEERS). This is available here: [Guide to Energy Efficiency](#)

BRANZ Bulletins regarding specific elements:

- [672 Specifying floors under H1](#)
- [670 Specifying windows and doors under H1](#)
- [668 Complying with H1 – Housing and buildings up to 300 m²](#)
- [661 Residential roofs with high thermal performance](#)
- [660 Residential walls with high thermal performance](#)
- [659 Upgrading the thermal performance of timber windows](#)

Webinars from industry associations

- Webinar recording hosted by MBIE 02 December 2021 discussing [the consultation in 2021 and the changes to insulation requirements](#)
- Webinar recording hosted by BRANZ [Thermal Bridging in timber-framed walls](#)
- Webinar recording hosted by the New Zealand Green Building Council 26 May 2022 [The residential H1 changes: An overview with examples](#)
- Webinar to be hosted by the New Zealand Green Building Council 27 July [Building to higher standards now](#)
- Webinar to be hosted by MBIE 04 August – [Building Code update – H1 Energy efficiency changes](#)

Tools

New Zealand Green Building Council [Building Code H1 Calculation method tool](#)

Articles and updates

- [Insulation Association of NZ - "Significant Building Code update to H1 Energy Efficiency"](#)
- [EBOSS - "Updated Energy Efficiency Requirements for New Builds"](#)
- [New Zealand Master Builders Association - "Changes to E3 and H1 Acceptable Solutions of the New Zealand Building Code"](#)
- [BOINZ Straightup Magazine - "Whats new with H1"](#)
- [BRANZ Build \(buildmagazine.org.nz\)](#)

Information about the changes

Other information and support

[Building CodeHub](#)

An online search tool which can be used to search for CodeMark product certificates, Multiple Use Approvals (MultiProof), and BRANZ appraisals of products

[PHINZ High-Performance Construction Details Handbook](#)

This reference includes suggested details for higher thermally performing buildings

[Eco Design Advisor Service](#)

This service is free to use, and includes personalised, independent advice from professionals to help improve the comfort, health and performance of your home.

Resources currently being developed

MBIE is creating online learning modules for H1 Energy efficiency to be released later this year.

BRANZ publications

- H1 Energy efficiency online portal – searchable repository of industry resources on H1
- House Insulation Guide 6th edition (due for release August 2022)

BRANZ upcoming webinars to be scheduled

- Calculation method found in H1/AS1
- Roof and floor insulation
- Window insulation
- H1 risks

BRANZ online learning modules to be released

- Installing insulation
- H1 Energy efficiency series

BRANZ online tools

- H1 calculation method tool (due for release August 2022)
- H1 schedule method compliance summary
- Standard window 'R-value' calculation procedure (SCP) with WAGNZ
- Annual loss factor tool – ALF 4.0 <https://alf.branz.co.nz/> (under review)
- Building basics – Insulation (under review)
- BRANZ MAPS
- Up-Spec

BENEFITS OF BETTER INSULATION



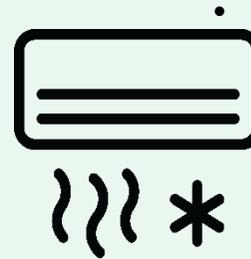
Higher performing insulation means buildings will be warmer, drier and easier to heat and cool



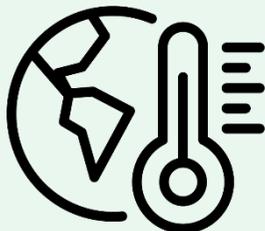
Warmer, drier buildings will provide health benefits to occupants



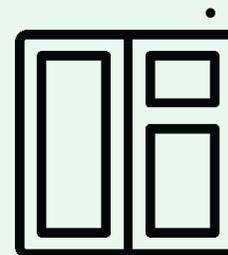
Increasing your house's energy performance will help future proof your home and lead to energy savings over the life of the building



New insulation requirements will reduce the annual heating cost of new homes by up to 40%.



Reducing energy use from buildings will help Aotearoa New Zealand reach its goal of net zero carbon emissions by 2050



Using better performing windows and doors will reduce energy loss, improve comfort and help reduce condensation

