TABLE 1.3: Increase in minimum R-values for residential and small buildings

Building element	Climate zone					
	1	2	3	4	5	6
Roof	R6.6↑					
Windows	R0.37↑		R0.46↑		R0.50↑	
Wall	R2.0↑			R2.0		
Slab-on-ground floors	R1.5↑			R1.5↑	R1.6↑	R1.7↑
Other floors	R2.5↑			R2.8↑	R3.0↑	

This new R-values will result in a reduction of the energy needed for heating residential homes of approximately 40% compared to previous minimum status quo requirements (Table 1.4).

TABLE 1.4: Increases in energy efficiency for heating and cooling over status quo for different climate zones

Building type	Climate zone					
	1	2	3	4	5	6
Single storey four bedroom home	39%	38%	42%	40%	42%	41%

Note:
The reductions in energy use are based on computer modelling of energy use for heating and cooling and a comparison to the status quo. The analysis was conducted on a single-storey four bedroom house with timber framing. Energy use for this typical building was previously analysed in the consultation document to show a comparison in energy savings across the country. The heating energy reductions resulting from the new required insulation levels vary between 30% and 50% depending on the type of housing and its climate zone

A breakdown of the new R-values for each building element is discussed in the following sections. The new minimum R-values for the new H1/AS1 and H1/VM1 documents have been developed with the following intentions:

› The baseline performance of buildings is raised as a stepping stone to meet future carbon emission caps.

› Current design and construction practices in New Zealand are still able to be used with the new R-values. This addresses concerns in the submissions about the implementation of larger shifts and enables faster transition times with less adverse effects on existing supply chains. The new requirements are also able to be implemented in one year which shortens the timeframe for emission reductions.

› To reduce the disparity and excessive additional costs imposed on the cooler climate zones, the new minimum R-values are slightly higher in the new climate zones 1 and 2 and lower in climate zones 5 and 6 than proposed in the consultation options. Approximately 60% of New Zealanders currently live in climate zones 1 and 2.

When using the H1/AS1 schedule method for demonstrating compliance, the roof, windows, external walls and floor of a new home or small building need to meet or exceed each of the minimum R-values for the relevant climate zone. Alternatively, the H1/AS1 calculation method and the H1/VM1 modelling method allow lower R-values for some elements provided that the overall thermal performance of the proposed new home or small building is equal or better.

1.3.2.1. Roofs

One of the simplest and most cost effective ways to boost thermal performance is to increase roof insulation. That is why we have decided to double the minimum amount of roof insulation required across the country. The proposed options for roof insulation are provided in Table 1.5. The new R-value of R6.6 reflects option 3 for climate zone 1 and falls between options 1 and 2 and 3 for the remaining climate zones.

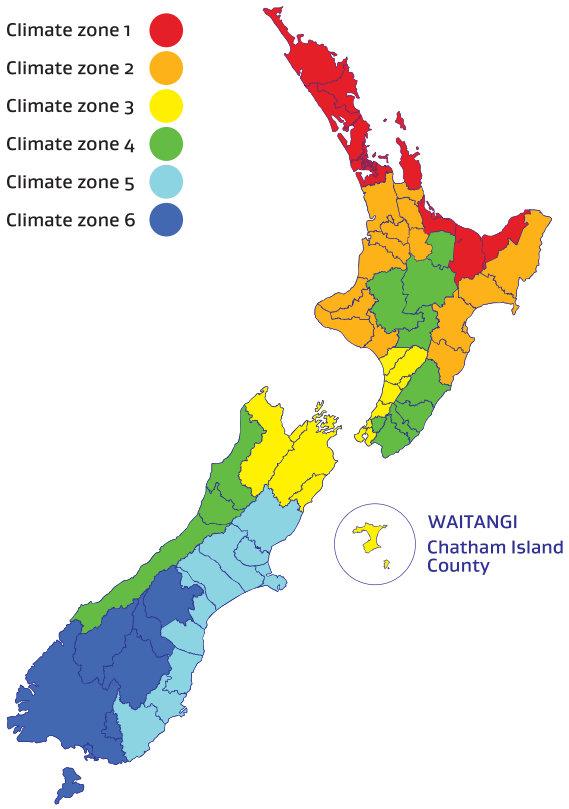
1.3. What we are doing

1.3.1. New climate zones

MBIE is expanding the number of climate zones used in the insulation requirements from 3 to 6. This will allow the insulation requirements to better reflect the different temperatures experienced in each zone.

The new climate zones follow territorial authority (local government) boundaries. In the consultation submissions, two district councils (Waitaki and Rangitīkei) requested their region be split into two climate zones to reflect the differences between alpine and coastal areas. We have listened to this feedback and have updated this into the climate zone map (Figure 1.1).

FIGURE 1.1: New climate zones for New Zealand



1.3.2. New R-values

We obtained a clear mandate for ambitious, achievable change while ensuring the stability of the building and construction sector. MBIE is proceeding with changes to roof, window, wall and underfloor insulation with the new minimum values summarised in Table 1.3 and will continue to work towards implementing carbon emissions caps through a holistic operational efficiency framework. Based on the feedback we received, some insulation requirements for residential buildings for specific building elements are the same between climate zones as higher R-values for colder zones are not achievable at this time and to also support efficiencies in the supply of products.

The new requirements will be implemented with a 1 year transition period with special provisions for windows (discussed in Section 1.3.2.2). To achieve significantly higher R-values, the sector would need to significantly change the way building elements are designed and constructed which would result in a much longer transition period at this time.