

Windows - improvements in building performance from upgrading window components above H1 requirements

It may seem intuitive to keep adding more insulation, but this is not the only way we can improve the performance of our homes.

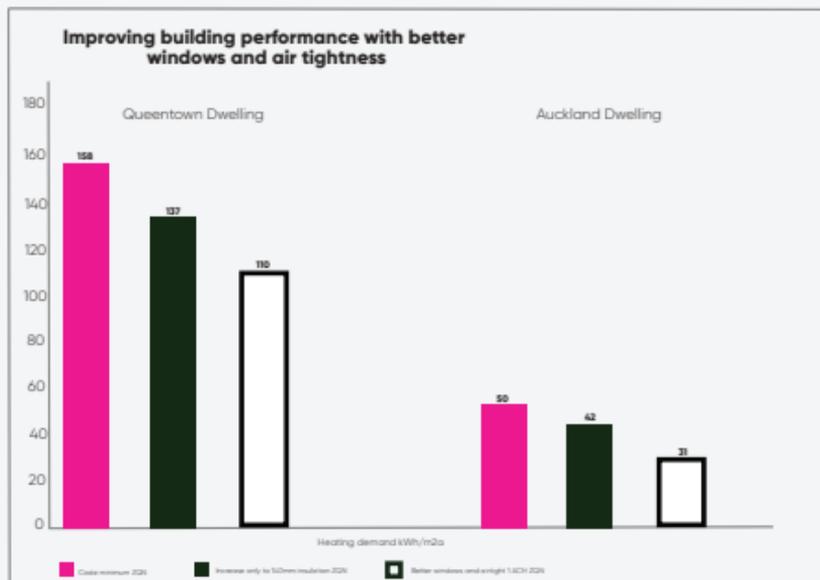
This graph compares the impact of two alternative improvements:

1. increasing insulation levels
2. installing better performing windows and improving airtightness

It illustrates that improving windows and airtightness has a much greater impact on energy efficiency in winter. For a home in Auckland, better windows and a more airtight construction would result in a 38% improvement. Comparatively, simply increasing insulation levels would only result in a 16% improvement.

For the same home in a colder climate like Queenstown, improving windows and airtightness would result in a 30% reduction, whereas more insulation would only result in a 13% reduction.

To effectively improve the performance of our buildings, we need to look at all options, including the 'low-hanging fruit' of airtightness and better windows.



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NZ windows and doors account for up to 50% of the heat losses of our homes. If we want to improve the performance of our homes, a good place to start would be improving our windows.

To improve something properly, you need to understand it and measure it accurately. We currently don't measure window performance accurately. The NZ standard dramatically over-simplifies the way we calculate window performance. It ignores two significant elements when considering heat loss through windows and doors (more on this below).

This means we are over-estimating the performance of our homes. This graph shows the percentage difference between the NZ method and the internationally-recognised ISO 10077-1 Standard across various different window types. Notably, if you pay for high-performance windows and don't understand the importance of proper installation, you could be over-estimating their performance by up to 67%!

The two elements that the NZ calculation method ignores are: glass-edge thermal bridging and installation thermal bridging. Heat loss through these elements is well understood by building scientists and relatively easy to model. We recommend the NZ standard for calculating window performance is updated to bring it into line with internationally recognised standards such as ISO 10077-1.

