

New Zealand Green Building Council submission on Measures For Transition To An Expanded And Highly Renewable Electricity System consultation paper

Thank you for the opportunity to make a submission on the *Measures For Transition To An Expanded And Highly Renewable Electricity System* consultation paper.

About the New Zealand Green Building Council

The NZGBC is a 700-member organisation comprising construction firms, suppliers, major property owners, banks, Government departments, local authorities, engineers, architects and research institutions focused on a lower carbon healthier Aotearoa New Zealand.

We represent the construction and property industry's expertise on sustainability and, with thorough input from industry experts, design and operate the Green Star and Homestar certification programmes that are the benchmarks for the environmental sustainability healthy buildings in New Zealand.

We also administer NABERSNZ on behalf of central Government.

Summary

We are disappointed in the near total lack of consideration of energy efficiency in this paper. The most sustainable and the cheapest megawatt of electricity will almost invariably be the one that we don't have to use.

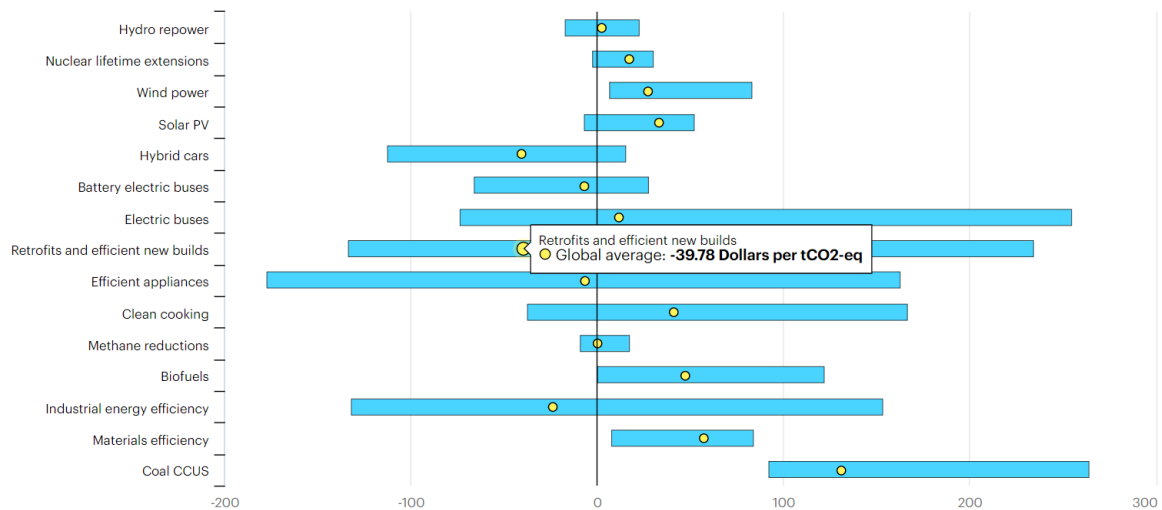
Electrification of industry and transport is not only going to create more demand for renewable electricity generation, it's also going to put more demand on the grid. Every demand reduction we can create through more energy efficient buildings will help offset the requirement for additional infrastructure and reduce the costs of transition.

More efficient use of energy by buildings would reduce total electricity demand as well electricity demand daily peaks. [New research by Professor Michael Jack et al](#) shows "rapid uptake of currently achievable best-practice standards could reduce the winter electricity peak by 75 per cent from business as usual by 2050."

This would help enable the transition to 100% renewable generation. Large energy demand reductions would also free up electricity supply to meet increased electricity demand from transport and industrial processes as those sectors electrify. Therefore, reduced building emissions are a key to enabling the decarbonisation of electricity generation, transport, and industrial processes.

Because the emissions reductions available involve reducing energy waste, they also lead to lower running costs for buildings, which means they create net savings over time, while also reducing emissions. The International Energy Agency's [Sustainable Recovery report](#) found retrofitting existing buildings and building more energy efficient new builds is one of the best negative net cost options for reducing emissions.

Dollars per tCO₂-eq

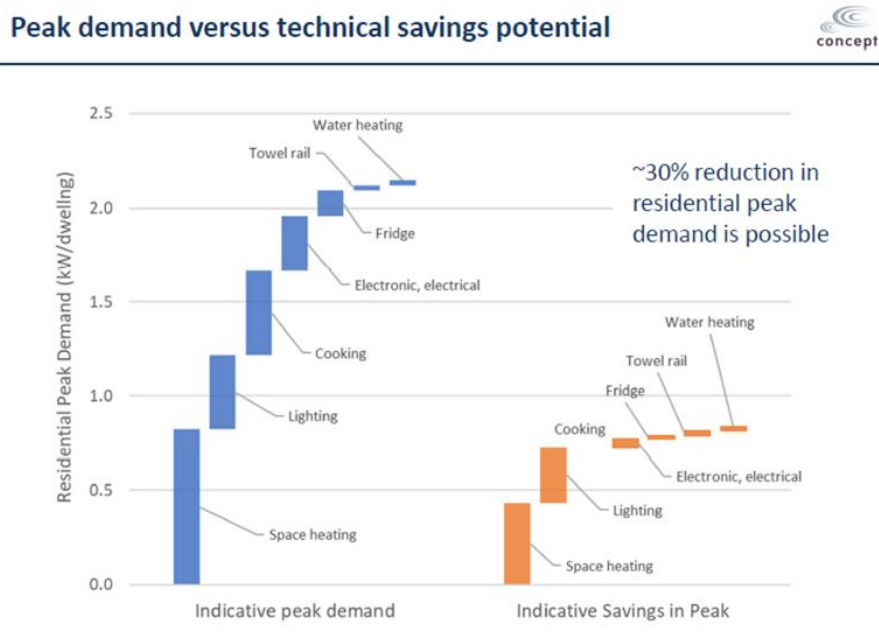


The Government should view buildings as major energy consumers and an opportunity to make negative cost energy savings that will enable the decarbonisation of other sectors

If New Zealand can manage the peak loads effectively we can reduce the need for fossil fuel generation and assist with the renewable energy targets.

Residential buildings represent 80% of the peak demand loading on electrical energy demand. Energy efficiency initiatives can affect over 60% of the residential demand with insulation having a significant impact on space heating, the single largest contributor to household energy use.

A Concept Consulting report finds that a 30% reduction can be easily achieved.¹ A 30% (1200 MW) reduction in the peak load could remove fossil fuel production without the need for new electricity generation, as illustrated in the graphics below:²



¹ Concept Consulting <https://www.concept.co.nz/>

² The case for energy efficiency action - Concept Consulting report for EECA 2018 <http://www.concept.co.nz/uploads/2/5/5/4/25542442/concept-electricity-efficiency-report.pdf>

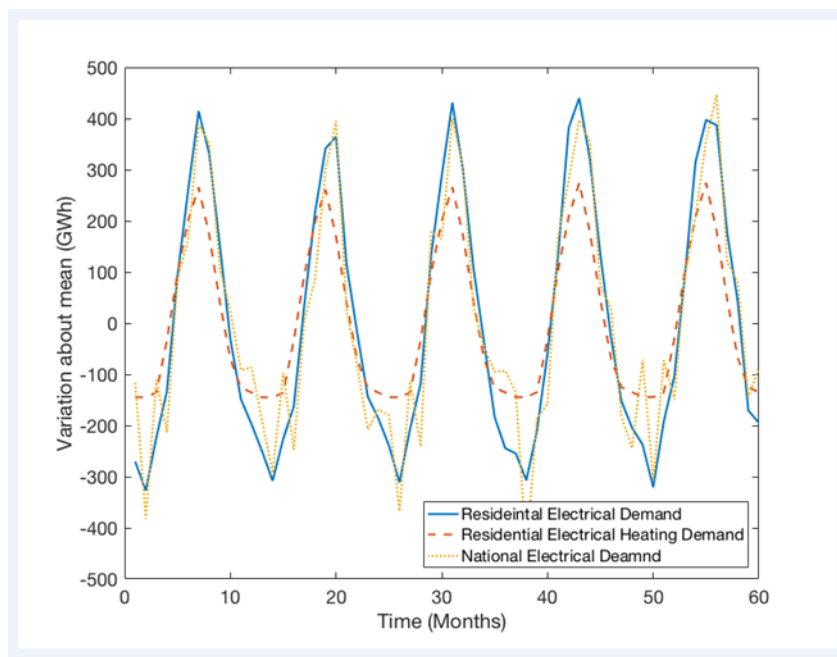
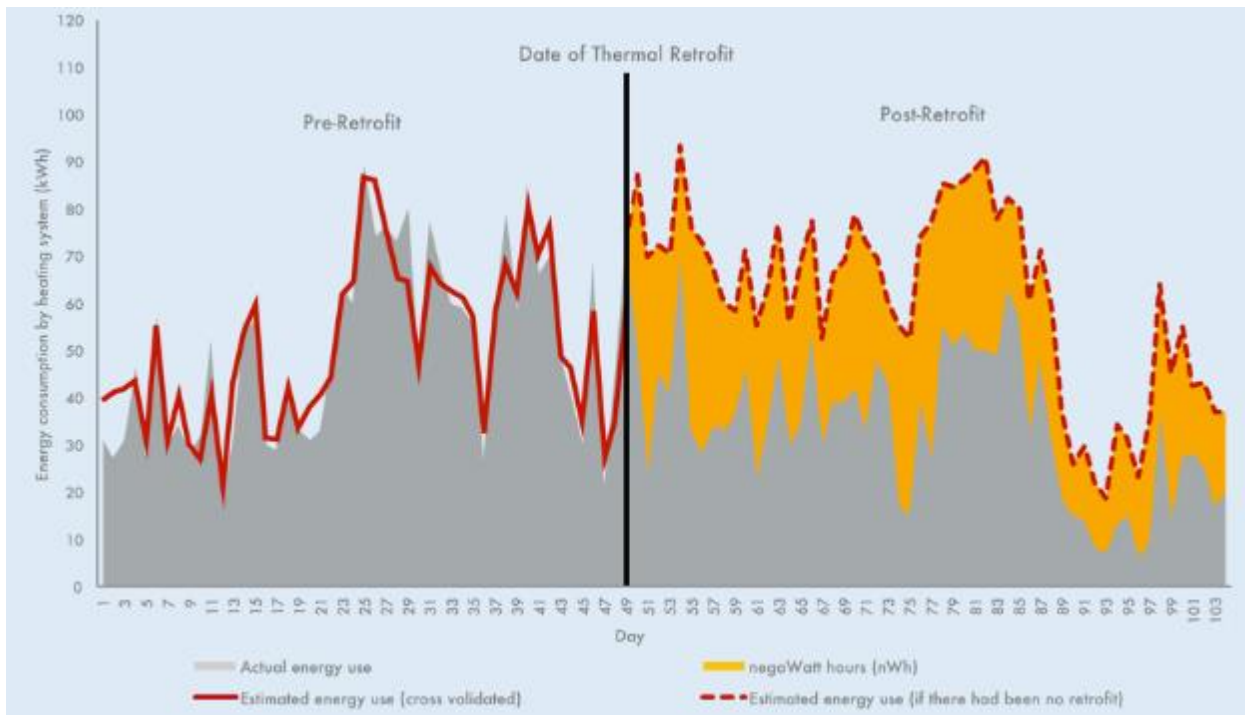


Figure 2. Peak load demand. Courtesy of Dr. Michael Jack, Associate Professor, Otago University

Building electricity demand and emissions budgets

Residential buildings are projected to account for 32% of electricity consumption in the second budget period, and still account for 26% in 2050. Another way of looking at this is the 17,000GWh of annual residential electricity consumption in 2050 is equal to two thirds of the

additional electricity generation needed under the demonstration path between now and 2050.

A greater emphasis on improving the energy efficiency of residential buildings would not only reduce emissions directly, it would also reduce the cost of building new electricity generation capacity/make it easier to achieve the target of 100% renewable electricity, and ease the labour and consenting constraints for new electricity generation, which the Climate Change Commission is concerned about.

In fact, the largest contribution building energy efficiency can make is likely to be freeing up renewable electricity for other uses, reducing the cost of decarbonising those sectors by reducing the investment needed in renewable electricity.

Additionally, there is potential to reduce the embedded carbon emissions in residential building through reducing use of energy intensive materials and reducing waste.

Not only is there potential to do better than the demonstration path, aiming for greater reductions is also an insurance policy. The Commission notes that the Government has chosen not to enact several of the recommendations in *Ināia tonu nei* and emissions reductions in some sectors are less than the demonstration path. It would be wise, therefore, to make recommendations that are more than sufficient to attain the demonstration path.

The NZGBC has several practical policy recommendations to improve buildings' energy efficiency

Give buyers power to choose an energy efficient home

Energy Performance Certificates are a market-based solution to improving home energy efficiency. Similar to energy efficiency labels for vehicles and appliances, they provide prospective homebuyers and renters with information on how well insulated and expensive to heat a home is.

Used in other countries, including the Australia, the UK and EU, EPCs tend to drive the market towards favouring more energy efficient housing. They encourage homeowners to make upgrades and developers to build to a higher standard so the property is more marketable.

EPCs are set out in the first Emissions Reduction Plan. However, this has not yet been implemented. We understand that the Government will soon be introducing legislation to enable energy performance measurement, but not the comprehensive plan needed - only applying to new builds.

The Healthy Home Standard (HHS) can be a starting point with EPCs. It is already mandatory to record the level of compliance with the HHS on rental agreements. We recommend taking this a stage further by:

- recording the level of compliance on a national register, preferably with a formal inspection regime with trained and licensed inspectors
- expanding the requirement to report on homes for sale. There would be no requirement to reach a minimum level of energy efficiency, merely the requirement to report when marketing a home for sale
- expanding the items required to be reported on to include the presence of wall insulation, glazing type, hot water type and level of insulation (if a cylinder).

EU legislation requires the above information to be fed into an algorithm that gives the home an energy efficiency score (A-G). To keep the scheme simple, this need not be introduced at first. Government could leave it to the market to come up with a rating scheme based on the information provided on the national register.

In New Zealand, for example, C could be compliance with the current Healthy Homes Standard, while A would be aligned with the near zero energy standard to be set for new builds from 2030 or 2035 under the Building for Climate Change programme.

Bring the Building Code to the near zero energy standard as quickly as possible

The Building for Climate Change programme is progressing very slowly. Aotearoa is falling behind as other countries adopt near zero energy standards for new buildings.

MBIE should set out the detail and timeframe to amend the Building Code to the near zero energy standard and 40% less embodied carbon by 2030.

Every house built below the near zero energy standard is going to make attaining the zero carbon target harder and costlier, as those homes will still be part of Aotearoa's housing stock for decades to come.

Expand Warmer Kiwi Homes

The Government has continued to fund Warmer Kiwi Homes at a low level, but there are many homes that could benefit from the programme and expanding the programme to a wider variety of measures would have additional benefits.

Warmer Kiwi Homes is currently only open to community service card holders and homes in deprivation zones 8, 9 and 10. We recommend expanding the scheme to other deprivation zones. In addition, the scheme should expand what it offers to include measures with known short payback times or that can be shown to offer quick wins from a carbon reduction point of view:

- Hot water cylinder retrofit insulation and controls. According to the BRANZ House Condition Survey nearly 500,000 homes have older cylinders that would benefit from a 'wrap'. Insulating these cylinders would save in the region of \$40M in electricity costs and reduce carbon emissions by around 20,000 tonnes per year.
- Gas system replacement – subsidise the replacement of gas fires with heat pumps and gas hot water systems with electric cylinders. This would insulate lower economic consumers from escalating gas prices. Around 20% of homes have gas space heating and nearly 20% have gas water heating. Better still would be the replacement of gas systems with heat pump hot water cylinders. These are expensive currently, but costs would likely fall if a scheme scaled this up. Heat pump hot water systems offer efficiencies up to 3 times higher than conventional electric cylinders. It is great to see that EECA has started supporting hot water heat pumps in small numbers. It is now time to scale up this support as in other countries such as Australia.

Cut red tape for retrofit improvements to home insulation and energy efficiency

Currently existing items of building envelope (walls, roof, windows) can be replaced without building consent provided they are replaced like-for-like, while improvements do need consents.

We recommend removing the requirement for consents for upgrades.

Risk could be managed through a national accredited installer scheme for retrofit wall insulation, and requiring replacement items in homes that meet the current standards for insulation and energy efficiency – as other countries already do.

This policy would reduce the cost of living and the Cost Benefit Ratio would be high since expenditure on replacements is already taking place and consenting costs would be reduced.

Deep-retrofit programme

The construction sector is calling for a major programme of retrofitting New Zealand's 200,000 coldest homes up to near zero energy level through the [Homes We Deserve](#) campaign. This would to lower the cost of living, improve health, and reduce emissions.

This would be a major undertaking and require the development of training programmes for installers, finance and delivery mechanisms and take a number of years to implement.

Initially, we recommend Government funds a pilot deep retrofit programme for 300 – 1000 homes (cost circa \$18M - \$60M). This would allow Government to collect evidence on:

- actual costs and lessons learnt on ways to reduce costs
- training needs
- benefits, through monitoring of the homes. BRANZ is undertaking a major monitoring programme currently (HEEP 2.0) and is intending to keep the monitoring equipment for future projects.
- how best to structure the scheme.

Deep retrofit programmes are being undertaken across Europe, with the aim of lifting the housing stock to the near zero energy standard, which is already the standard for new builds. The assessment of the Irish Deep Retrofit pilot showed an 85% reduction in energy need on average for the renovated buildings, with an average cost for the retrofits of €60,000. This is much less costly than demolishing and rebuilding to new standards, and reduces the need for new renewable electricity generation investment.

The scheme would be administered by the Warmer Kiwi Homes team at EECA. We understand they are already carrying out smaller scale deep retrofit trials in the South Island.

Allow homeowners to pay for home insulation and energy efficiency through voluntary targeted rates

There was good demand for VTR schemes before they were shut down under the Credit Contracts and Consumer Finance Act. As a result of the advocacy of the NZGBC and

others, local authority Voluntary Targeted Rates schemes have been provided an exemption from the Credit Contracts and Consumer Finance Act.

It is now time to get retrofit moving. The International Energy Agency set a target of each country retrofitting 20% of their housing stock by 2030. New Zealand needs to progress quickly with a range of policies to incentivise deep retrofit in Aotearoa New Zealand.

Central government could underwrite local authorities (particularly smaller ones) to offer VTR schemes by providing nationally consistent collateral and loan guarantees. Alternatively, the scheme could be managed by the central government to reduce the likelihood of a postcode lottery.

Capital costs are taken on by individual homeowners with only a small administration cost for local authorities.

Thank you for the opportunity to submit. We look forward to seeing the next steps and provide more input.