

Acknowledgement

Thank you for the opportunity to submit on *Te hau mārohi ki anamata* | *Transitioning to a low-emissions and climate-resilient future: Have your say and shape the emissions reduction plan.*

New Zealand Green Business Council

The New Zealand Green Business Council (NZGBC) is a not-for-profit group. We're a team of people who are passionate advocates for better buildings, because we know that better buildings mean healthier, happier Kiwis.

We do this by working alongside politicians, industry and other businesses to bring change. And we also run trusted, robust authentication schemes, such as Homestar and Green Star, that highlight the many buildings that have proven their healthy, safe credentials. We provide education too for hundreds of New Zealanders every year keen to learn about the technical aspects behind better buildings.

Above everything else, we're collaborators. We believe that lasting change for the better, for a sustainable Aotearoa, can only happen working together alongside others.

The NZGBC is a 600-member organisation comprised of construction firms, suppliers, major property owners, banks, and research institutions focused on improving the environmental sustainability of buildings and building methods. We operate the Green Star, NABERSNZ, and Homestar certification programmes that are the benchmarks for the environmental sustainability of buildings in New Zealand.

Our submission will focus on the Building and Construction section of the consultation document, with a particular focus on energy efficiency, which we think has been underserved in the draft emissions reduction plan.

The built environment is culpable for 20% of New Zealand's carbon footprint.

The fastest, most cost effective, and most equitable way to reduce carbon pollution is a far-reaching energy efficiency programme across all New Zealand homes and buildings. This energy equity programme would cut household bills, most notably amongst those struggling to adequately heat their homes in winter, business operating costs, and provide thousands of local jobs in every area of the country with homes and buildings. An inclusive and well-planned climate transition must have this energy equity plan at its heart.

As an immediate priority, we strongly suggest the government prioritises a mandate to make the energy use of all commercial and public buildings transparent as recommended by the Climate Change Commission. The NABERSNZ energy efficiency tool, already used on government leases, is the best way to do this.

And we also strongly suggest a far-ranging energy equity programme for New Zealand homes, including a much needed expansion of Warmer Kiwi Homes and a nationwide deep retrofit programme.

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Recommendations

- Update the Emissions Budgets in the ERP to align with the new NDC commitment and the 1.5 degree pathway recommended under the Paris Framework
- The Government explicitly state its first preference is to meet emissions reductions targets through domestic reductions, followed by domestic offsets, and lastly international reduction or offsets – and commit to spending domestically to reduce or offset emissions at the same level as international offsets would cost.
- Align the Warmer Kiwi Homes programme with the healthy homes standard and provide those homes that have met the standard with a certificate to help market the home as healthy and warm.
- Begin a pilot deep retrofit programme to share with the sector how to reduce the energy use in homes by over 50%
- Implement the Building for Climate Change energy efficiency standards in three, three-year steps, to achieve a near zero energy standard by 2030.
- The Government should view buildings as major energy consumers and an opportunity to make large energy savings freeing up electricity for the transport sectors move to EVs hugely helping to decarbonise Aotearoa. Many projects to decarbonise New Zealand cost vast amounts of money. Improving the energy efficiency of buildings delivers something very rare – carbon reductions and substantial financial returns (reduced energy bills). It is a double win.
- Set out a framework to drive all existing buildings towards the Building for Climate Change near zero energy standard over time.
- As an immediate priority, mandate use of NABERSNZ for all office buildings, hospitals, hotels, and retail buildings by June 2023.
- Create a measurement of the health and energy efficiency of homes and ensure these are listed on LIMs when homes are sold and on tenancy agreements when leased.
- Government agencies should benchmark the performance of the buildings they lease and own. This is happening with office buildings; it should be extended to non-office buildings. Those receiving GIDI funding should be asked to provide energy use data to EECA for benchmarking purposes before and after receiving the funding.
- Introduce subsidies for the use of certified low embodied carbon building materials, to make up for the lack of a price signal through the ETS.
- Incentivise lower carbon buildings and homes with marketing material, enabling listings of better performing homes on LIMs, reduced development contributions or faster building consent
- Amend section 18 of the Building Act, to enable local authorities to set higher than code energy efficiency standards

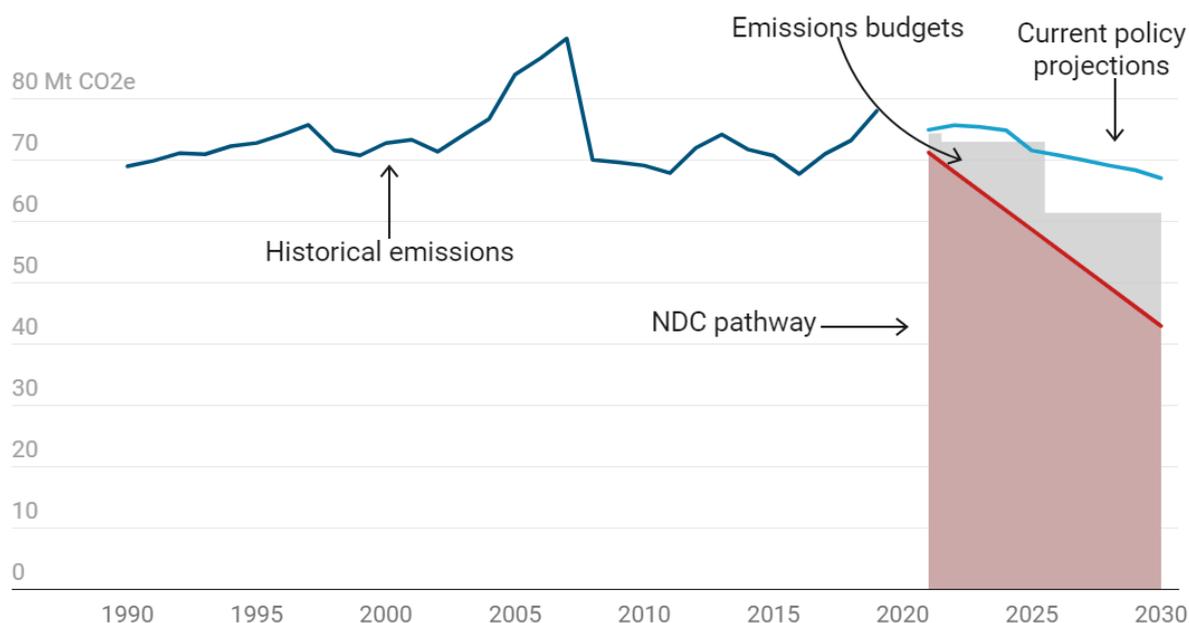
Emissions Budgets

Since the Climate Change Commission presented its advice and this consultation was launched, the Government has announced an updated NDC expressed as a target to reduce net emissions by 50 per cent below gross 2005 levels by 2030. This will require emissions to be reduced significantly further than the Carbon Budgets recommended by the CCC and those outlined in this consultation.

To meet the new NDC/emissions budgets, New Zealand will need to reduce net emissions by 102MT CO₂-e compared to the current policy projections. This is a significant reduction, and the implication has been that much of it will be achieved through purchasing international credits or investing in offsets offshore. This would cost \$6.5 billion dollars at current ETS prices and could be significantly more.

The Government should commit to spending the same money in New Zealand to avoid needing to buy those offsets. There are significant domestic reductions available that could be achieved through this kind of investment; in fact, there are large *negative cost* emissions savings, particularly in buildings, that can be achieved domestically with government leadership.

New Zealand's NDC, emissions budgets and current pathway



Emissions are AR5, net, NDC accounting emissions. Current policy projections from CCC CPR scenario.

Chart: Marc Daalder • Source: Climate Change Commission, Ministry for the Environment • Created with [Datawrapper](#)

Recommendation: Update the Emissions Budgets in the ERP to align with the new NDC commitment and ensure that New Zealand can support the 1.5 degree pathway recommended under the Paris Framework^{1 2}

Recommendation: The Government explicitly state its first preference is to meet emissions reductions targets through domestic reductions, followed by domestic offsets, and lastly international reduction or offsets - and commit to spending domestically to reduce or offset emissions at the same level as international offsets would cost.

Concept of Building Emissions

The consultation document acknowledges that there are two ways to view emissions from buildings.

- Production: embodied emissions from construction (from the production of steel and cement, etc) and direct use of fossil fuels in buildings (coal burners, etc)
- Consumption: all the emissions resulting from the use of buildings in the way that they are designed (emissions from electricity generation, etc).

However, all the analysis is limited to the production approach, thereby overlooking the potential of buildings with lower embodied carbon to contribute to wider emissions reductions. Government should consider education and incentives to increase the delivery of lower embodied carbon buildings over the whole of life of buildings.

Commercial and residential buildings are a major consumer of electricity, with residential demand creating the daily demand peaks, which are major drivers of the use of fossil fuel electricity generation.

[Analysis by Professor Sarah McLaren et al from Massey University](#) shows that: on current policies, the building stock's climate impact (170 MtCO₂eq) will exceed its climate target (47 MtCO₂eq) by a factor of 3.6. Crucially, it should be noted that the biggest source of emissions is operational energy use from existing buildings.

¹ We note that New Zealand's updated NDC is in theory stronger by stating it will reduce emissions by a further 24%, however, it remains inconsistent with the 1.5 degree pathway. In order to implement a robust system we would encourage a move away from the preferred, "gross net accounting system to calculate the 2030 target" (as referenced from Climate Action Tracker)

² [New Zealand | Climate Action Tracker](#)

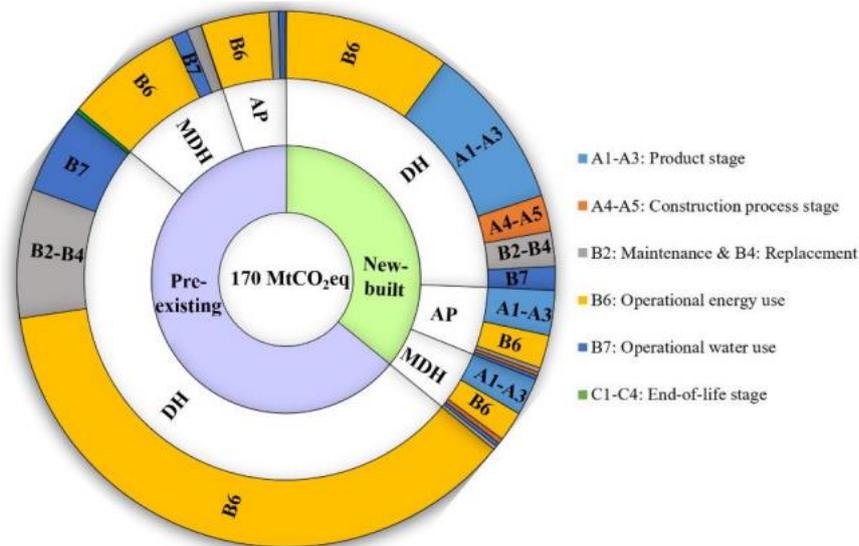


Figure 2. Carbon footprint of total building stock of New Zealand residential buildings up to the year 2050.

Source: *Application of Absolute Sustainability Assessment to New Zealand Residential Dwellings*, S J McLaren et al

More efficient use of energy by buildings would reduce the 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 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. This policy would reduce the need to fire up Huntly power station, reduce the likelihood of blackouts and deliver billions of dollars worth of savings in health costs.

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.

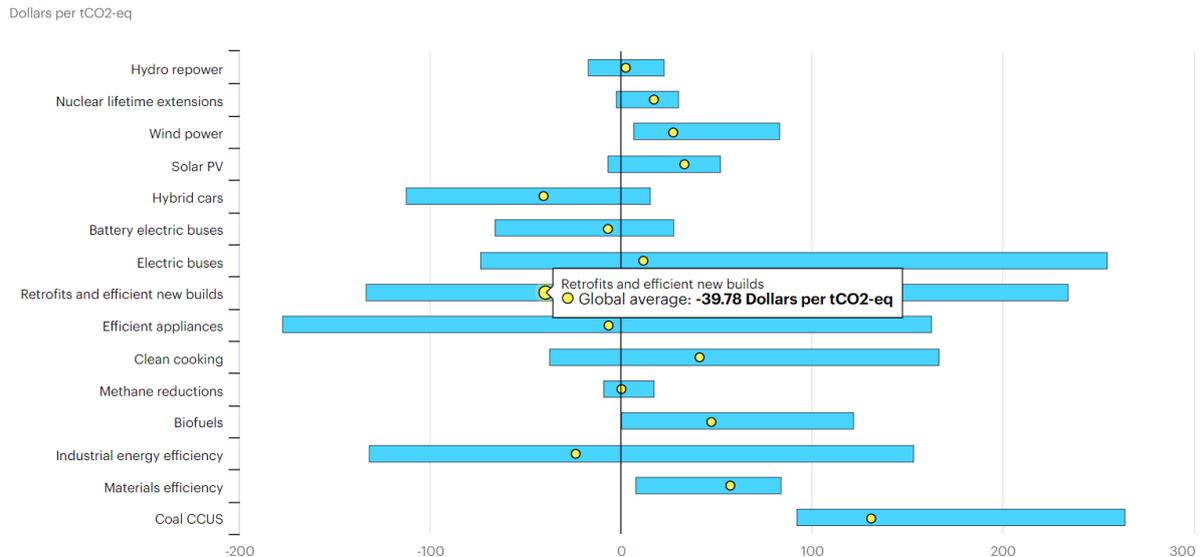
The International Energy Agency’s [Sustainable Recovery report, published in June 2020](#) found that retrofitting existing buildings and building more energy efficient new builds is one of the best negative net cost options for reducing emissions. The agency’s report confirms government investment in deep retrofit programmes accelerates energy efficiency.

Long benefits include: “reduced energy bills, reduced energy poverty, improved health and comfort, as well as, improved resilience in the face of climate events and price shocks”.

The graph below shows the costs of abating green house gas emissions (in dollars) from different initiatives.

Abatement costs show for each measure the cost or savings associated with reducing greenhouse gas (GHG) emissions by 1 tonne of carbon dioxide (CO₂) equivalent. This is based on the lifetime cost of deploying the measure and the savings that would accrue to the consumer (both discounted to the present based on sector and region-specific discount rates) divided by the cumulative CO₂ emissions savings over the measure lifetime.

The table shows that that measures such as retrofitting buildings and homes have, on average, negative abatement costs (-\$39.78). This is great. It shows, what we already know, that that retrofitting buildings and homes reduces emissions while also saving money for consumers and industry.



Recommendation: 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

Specific policy recommendations

The technology to improve the energy efficiency of buildings is well-established (insulation, thermal management, optimal design for solar gain etc) and frequently offers negative life-time costs through those energy savings.

The key to realising this potential is a set of policies that incentivise or require adoption of these technologies. There are four main approaches:

- Mandating energy efficiency through government rules, regulations, and statute.
- Incentivise energy efficiency through government programmes, such as subsidies
- Direct investment in the government-owned building stock and other buildings
- Market influence through increasing the information available to purchasers of buildings and accommodation

The Government has a good suite of policy tools in place or under-development but they are currently unaligned with each other or a common future target. All tools should be

aligned so that they gradually ramp up the standards of different buildings and housing sectors over time until they all reach the near zero energy standard proposed in the Building for Climate Change (BfCC) programme.

Recommendation: Align policy tools to drive existing buildings the Building for Climate Change near zero energy standard over time

Existing buildings

Mandate use of NABERSNZ for commercial and public buildings

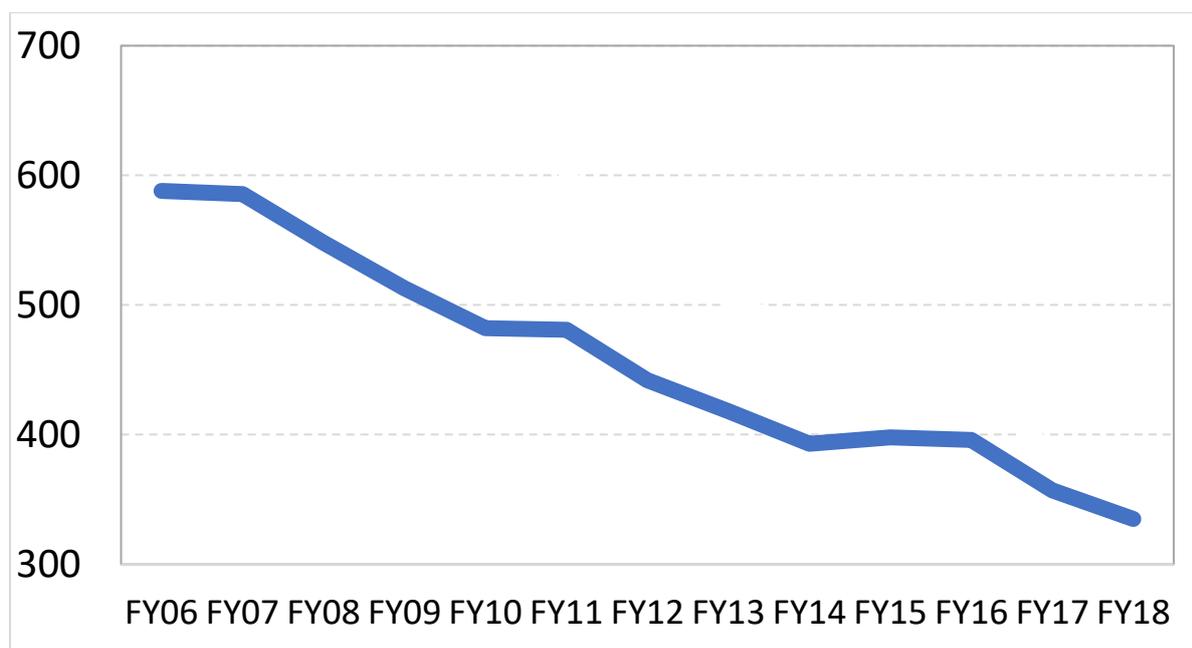
The Climate Change Commission recommended that “Government to have, by 31 December 2022, implemented measures to improve the energy performance of existing buildings, such as mandating participation in energy performance programmes.”

The NZ Green Building Council and Sustainable Business Council and Climate Leaders Coalition call on Government to “mandate NABERSNZ ratings for all office buildings, hospitals, hotels, and retail buildings by June 2023.” The legislation could come into effect 18 months after bill is enacted, providing time for the sector to prepare.

The NABERSNZ tool, licenced in New Zealand by EECA, is adapted from the Australian NABERS (National Australian Built Environment Rating System) tool, which was developed by the Australian Government and has been compulsory there since 2010.

NABERSNZ reduces energy used by an average of 30-40% over time, with nationwide savings exceeding AUD\$1billion and a 7 million tonne reduction in CO2 emissions. In Australia, NABERS is required on the sale or rent of any commercial office building of more than 1,000m2.

NABERS helps reduce energy use significant. It also verifies this reduction in a robust way. The following graph shows energy use in office buildings (MJ/m2) reducing almost 50% between 2006 and 2018.



*Source for the graph is the Department of Planning, Industry and Environment, New South Wales, Australia

We have welcomed the Government's move from 1 January 2021 to make use of NABERSNZ compulsory for all mandated agencies on the buildings they lease.

There are undoubtedly significant emission reductions and energy savings to be achieved by improving the energy efficiency of more commercial buildings, which will make it more practical to achieve the Government's renewable energy and emissions reduction targets, even as demand for renewable electricity soars from the electrification of transport and industrial processes.

We are asking the Government to include making NABERSNZ compulsory in the emissions reduction plan.

We recommend beginning by applying the mandatory requirement to buildings over 2000m². Larger buildings are more energy intensive, are better able to achieve economies of scale, and their owners are generally better capitalised. Over time, the policy should be extended to buildings above 1000m² and should be extended to other building typologies, such as hospitals, hotels, and retail buildings. This legislation should be passed by June 2023.

Sense Partners, commissioned by NZGBC, has [recently published a paper offering deeper analysis of the benefits of mandating NABERSNZ](#). They found that each tonne of carbon saved delivered a saving of \$600 and that savings from mandating office buildings to take up NABERSNZ would deliver between \$47m and \$120m.

As the administrators of NABERSNZ on behalf of EECA, NZGBC is keen to assist the Government in any way we can to see this tool made mandatory and used throughout the commercial and public building stock.

- Recommendation: The NZ Green Building Council and Sustainable Business Council and Climate Leaders Coalition call on Government to "pass legislation to mandate NABERSNZ ratings for all office buildings, hospitals, hotels, and retail buildings by June 2023.

Improving residential buildings

Mandating that home sellers have an energy performance certificate available to inform home buyers was an election policy of the Labour Government at the last election. We support this policy and would like to see it extended to cover tenanted homes as well.

Equivalents of Energy Performance Certificates are already in use in a variety of other parts of the economy - such as appliances and vehicles. As a tool, they provide transparency and are useful for purchasers to understand the ongoing costs of purchasing or renting a home.

Importantly, once in place, Energy Performance Certificates can also be used as a tool for other policy measures. For example, in the UK, rental standards are being improved over time by making it illegal to rent homes with low Energy Performance Certificate ratings and solar energy subsidies are only available to homes that meet a certain EPC rating. In New Zealand, the Healthy Homes Standards could be aligned with the Energy Performance Certificates - with minimum acceptable rating being equivalent to the current Healthy

Homes Minimum. Over time, the minimum acceptable rating for a rental could be ratcheted up until, eventually, all rentals need to meet the near zero energy standard.

As the administrators of the Homestar and HomeFit systems, we have a wealth of experience in assessing the energy performance of dwellings, which we believe will be of use in the design of this policy.

Recommendation: Mandate Energy Performance Certificates for residential buildings: on LIMs when they are sold and on tenancy agreements when leased

Align Healthy Homes Standards with Energy Performance Certificates and increase over time

The current Healthy Homes Standards are a good initial step but will need to be ramped up over time to bring the rental stock's energy efficiency to the levels required to help meet New Zealand's emissions targets.

It would be sensible to align future progress of the Healthy Homes Standards with the Energy Performance Certificates levels and ratchet up the required level over time to the Building for Climate Change near zero energy standard.

Recommendation: Align Healthy Homes Standards with Energy Performance Certificates and ratchet them up to the near zero energy standard over time

Expand Warmer Kiwi Homes/ Create Deep Retrofit Programme

Lower income owner-occupied homes will not be able to afford deep retrofit upgrades needed to lift their homes to the near zero energy standard and will not be subject to the Healthy Homes Standards. To bring this market segment up to standard, an expanded retrofit programme will be needed.

Warmer Kiwi Homes is a good programme but limited in the homes that are eligible and the improvements that can be made. Firstly the programme should be expanded to cover the healthy homes standard.

Within three years a much more comprehensive programme is going to be needed, with a larger budget - although it should be noted that the Government will recover costs through lower health expenditure alone, while the emissions savings will lead to reduced purchases of international credits by the New Zealand Government.

As part of the build up to a deep retrofit programme, some pilot work is necessary to work on the best building products and methodologies to be used across a range of building types. We recommend investment of several million dollars to carry out a deep retrofit pilot programme of 10 homes to achieve +60% reduction in energy use.

Recommendation: expand Warmer Kiwi Homes and begin a pilot deep retrofit programme

New builds

Mandating higher standards for new builds towards a nearly zero energy standard
The Building for Climate Change consultation proposed moving to an energy efficiency standard for new builds and ratcheting that standard down to 15 kWh/(m² .a) – a nearly zero energy level similar to what the EU has already mandated. We support this plan, but it needs to be tackled with a lot more urgency. Rather than moving in five-year periods to get to the final level by 2035, it should be three-year steps: 2024, 2027, and 2030.

Recommendation: implement the Building for Climate Change energy efficiency standards in three, three-year steps, to achieve a near zero energy standard by 2030.

Incentivising building above Code

The Building for Climate Change programme says it wants to encourage projects to build above the Building Code, in anticipation of the Code changes. This is a good idea, but it won't happen on a significant scale without government incentives and good information to the market (see energy performance certificates, below)

Recommendation: reduce development contributions and fast-tracked consents for developments that are built to above the Building Code.

- Amend section 18 of the Building Act, to enable local authorities to set higher than code energy efficiency standards

Ensure buildings that gain GIDI funding record their energy use before and after improvements

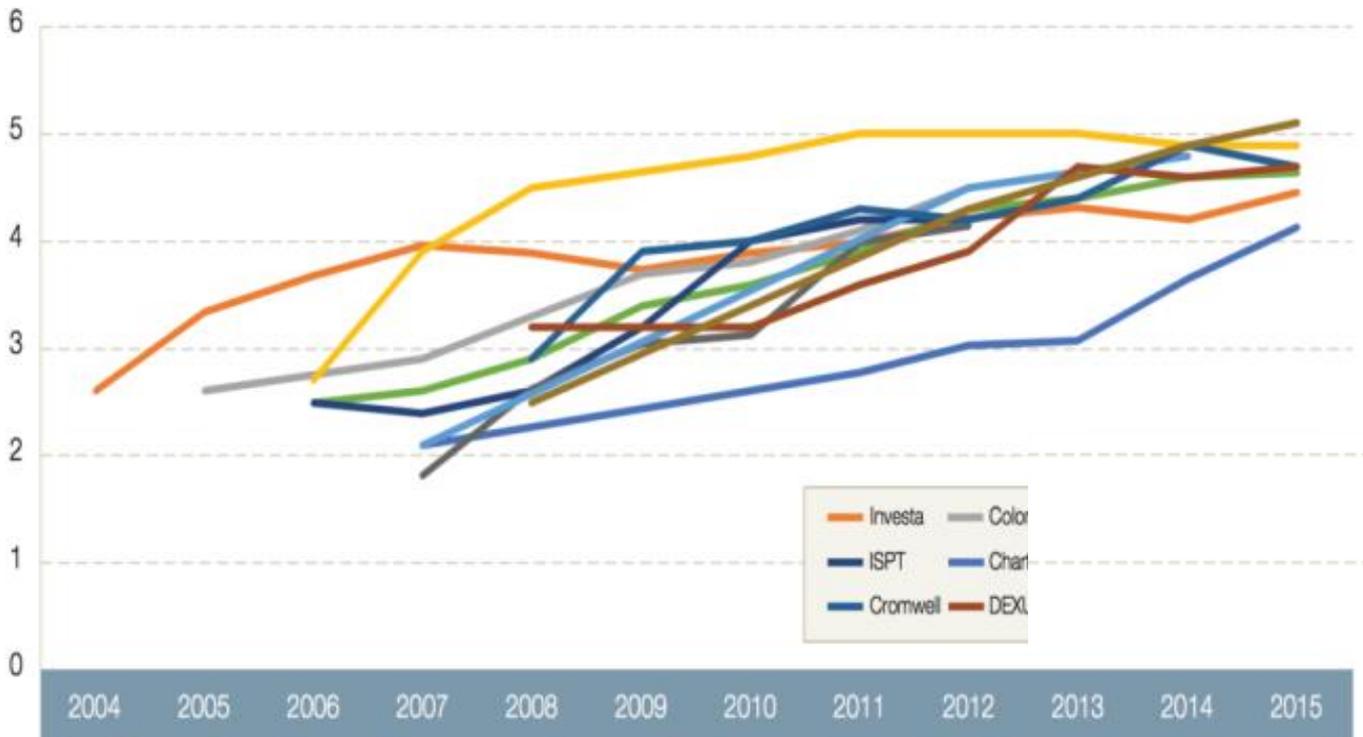
New Zealand has a lack of information on the energy performance of many existing building types. This benchmark information can be powerful. Where enough information is collected it enables building owners to benchmark their performance against other building types. This can drive a whole sector to improve

The following table sets out the year on year improvement that buildings make on average when they compare their building data against others. Over time, this enables decisions that reduce energy use and investment in lower carbon products and systems.

Fast pace change is possible across building sectors



This has resulted in major Australian building portfolios investing time and resources to improve their buildings. Many large portfolios moved from 2.5 stars NABERSNZ to 4.5 star NABERS over time (as shown below). This and other NABERS programmes have delivered \$1bn in savings.



At present the Government is providing millions of dollars of support for the Government Investment in Decarbonising Industry fund (GIDI). These buildings should be asked to

provide energy use data through such benchmarking tools such as the Building Performance website. This will help ensure there is enough data to create benchmark information about average energy use in schools, hospitals and other building types.

Government should ask industry to submit energy use data for industrial, hospitals, education, retail and public building types.

Once benchmarks are created the owners of buildings are better able to compare themselves with others, kickstarting a programme of facilities managers rapidly decarbonising their buildings with clear accurate information which is confirmed with each new assessment.

Incentivise the use of low-carbon materials

Low-carbon steel and cement are under development, and wood products can be used for many structural elements. The ETS carbon price signal to use lower carbon building materials is muted because industrial allocation means the producers of carbon-intense building materials get most of their NZUs for free. The price signal to developers needs to be created another way, through subsidies for the use of those products that can be certified as having low embodied carbon.

There will need to be a certification system showing the embedded carbon in different building products. Putting this information on products would also create a market incentive to use low-carbon materials. This information needs to set out the whole of life performance on carbon.

Recommendation: Introduce subsidies for the use of certified low embodied carbon building materials, to make up for the lack of a price signal through the ETS

Help the sector understand how to deliver lower embodied carbon buildings

As above, low embodied carbon building materials are available and becoming more available over time. The government should be a leader in its uptake, both to directly reduce the emissions from its buildings but also to help develop the market for these products and encourage manufacturers to increase supply.

It would be useful to share best practise and new tools such as the newly created [Homestar Embodied Carbon Calculator \(HECC\)](#) designed by NZGBC and BRANZ.

Recommendation: Use low-carbon materials in the Government Build Programme and government-funded buildings

Consultation Questions

70. The Commission recommended the Government improve the energy efficiency of buildings by introducing mandatory participation in energy performance programmes for existing commercial and public buildings. What are your views on this?

We strongly support this recommendation from the Climate Change Commission. The tool, NABERSNZ, is already licenced by EECA and is mandatory for buildings Government lease or own.

NZGBC administers the tool on behalf of EECA, and we would welcome the opportunity to work with the Government on implementing the tool more widely. (see further detail above). Also, Sense Partners, commissioned by NZGBC, has recently published a paper offering deeper analysis of the benefits of mandating NABERSNZ. [Making the performance of buildings transparent: A low-hanging policy option to save energy and carbon.](#)

The NZ Green Building Council and Sustainable Business Council and Climate Leaders Coalition call on Government to “pass legislation to mandate NABERSNZ ratings for all office buildings, hospitals, hotels, and retail buildings by June 2023.”

71. What could the Government do to help the building and construction sector reduce emissions from other sectors, such as energy, industry, transport and waste?

There are three key areas where the sector is going to need assistance

- 1) The coming change to building code in 2023/24 as the 1st cap of the building for climate change programme comes into force
- 2) Understanding how to undertake deep retrofits
- 3) Measuring and reducing embodied carbon

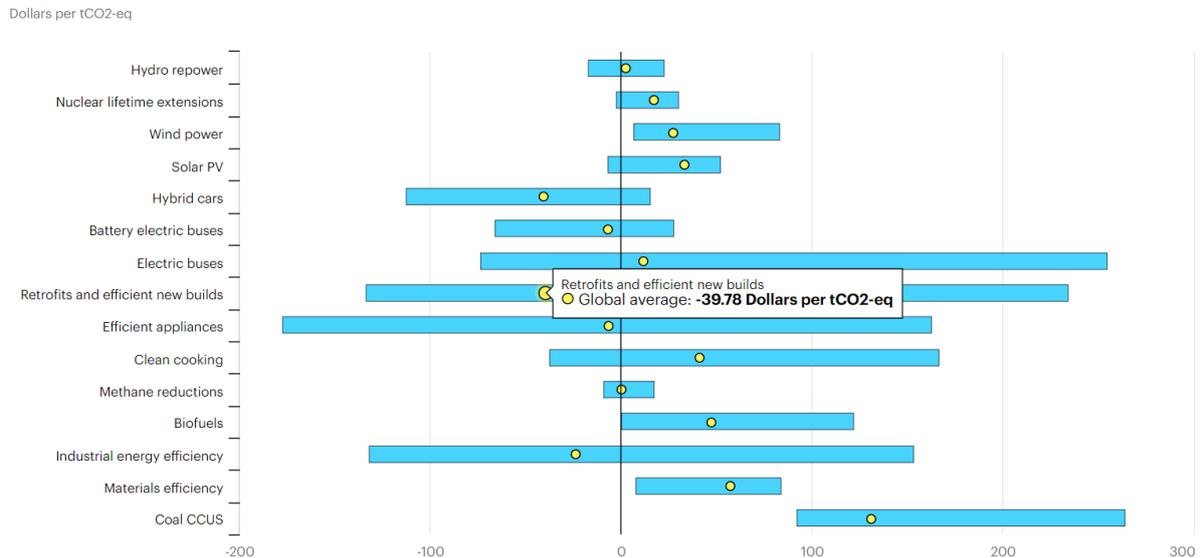
The sector is going to need help to understand how to undertake whole of house modelling, how to deal with thermal bridging, air pressure tests and other steps associated with a lower carbon homes. The development of a design guide such as that proposed by the NZIA, NZGBC to MBIE would really assist.

There are also implications for existing homes - Where we can take up these approaches in a large retrofit programme for existing homes [2021 research from Otago University](#) shows this will vastly improve health, substantially reduce the risks for the grid and reduce the need to turn on Huntly power station (reducing coal use and lowering carbon emissions). It would be great to take 10 homes and retrofit these to high Homestar levels. The learning could be shared with the sector.

Measuring and reducing embodied carbon - The sector is going to need to gear up to measure the embodied carbon associated with building materials.

Education and support should be provided. Incentives should be put in place for high achieves. Where NZ learns to build with low embodied carbon materials this will reduce the carbon associated with the energy and industrial sectors.

[A report prepared for the Energy Efficiency and Conservation Authority \(EECA\)](#) identifies energy efficiency as the most cost-effective way to decarbonise New Zealand’s energy grid. [A report by the International Energy Agency](#) similarly identifies energy efficient new builds and renovations as the least-cost ways to reduce emissions, with negative lifetime costs thanks to the savings on energy.



Energy efficiency can displace fossil fuels used in buildings and, by reducing electricity demand, can allow the retirement of fossil fuel generation and/or free up electricity generation to power the electrification of the transport fleet at less cost than new renewable generation, thereby helping reduce transport emissions.

72. The Building for Climate Change programme proposes capping the total emissions from buildings. The caps are anticipated to reduce demand for fossil fuels over time, while allowing flexibility and time for the possibility of low-emissions alternatives. Subsequently, the Commission recommended the Government set a date to end the expansion of fossil gas pipeline infrastructure (recommendation 20.8a). What are your views on setting a date to end new fossil gas connections in all buildings (for example, by 2025) and for eliminating fossil gas in all buildings (for example, by 2050)? How could Government best support people, communities and businesses to reduce demand for fossil fuels in buildings?

We support the reduction in direct use of fossil fuels in buildings through electrification of heating, the use of biomass, and the use of hydrogen in place of fossil gas. We support an end date to new fossil gas connections. We also support the assistance through Warmer Kiwi Homes to install electric heating in low-income homes.

Energy efficiency investment and mandates solve the problem of both direct fossil fuel use and electricity use by reducing the amount of heating needed in the first place. Reducing energy waste has negative lifetime cost and, as per the EECA study, it should be the first priority.

74. Do you believe that the Government's policies and proposed actions to reduce building related emissions will adversely affect any particular people or groups? If so, what actions or policies could help reduce any adverse impacts?

The advantage of focusing on energy efficiency is that, because it has negative cost, it does not impose extra costs on low-income households. In fact, it reduces their cost barrier over time. The up-front costs of energy efficiency investments can be significant, however, and there is an important place for subsidies to help low-income families install insulation and other energy saving measures. (see above for comments on Warmer Kiwi Homes).

75. How could the Government ensure the needs and aspirations of Māori and iwi are effectively recognised, understood and considered within the Building for Climate Change programme?

Māori have some of the worst housing in the country, resulting in poor health and increased household costs. Building for Climate Change, Energy Performance Certificates, Healthy Homes, and Warmer Kiwi Homes should all be directed to lifting all housing, including Māori housing to a near zero energy standard, which will make those homes healthier and cheaper to live in. It is vital to work in collaboration with the Housing and Urban Development Ministry and incorporate Te Maihi o te Whare Māori – Māori and Iwi Housing Innovation (MAIHI) to address Maori and Iwi needs under their published [Framework for Action](#).

76. Do you support the proposed behaviour change activity focusing on two key groups: consumers and industry (including building product producers and building sector tradespeople)? What should the Government take into account when seeking to raise awareness of low-emissions buildings in these groups?

Yes. Information availability is key to this. Mandating NABERSNZ for commercial and public buildings as well as Energy Performance Certificates for residential buildings would be an important way to achieve this.

Public advertising campaigns could be used to educate the public on the information available in EPCs, and increase the influence they have on purchase/rental decisions.

In 2022 Homestar and Green Star move to require embodied carbon calculations in order to gain certification. There will be good learning from these findings that can be shared with the others.

77. Are there any key areas in the building and construction sector where you think that a contestable fund could help drive low-emissions innovation and encourage, or amplify emissions reduction opportunities? Examples could include building design, product innovation, building methodologies or other?

More work is needed on how existing homes can be retrofitted to a near zero energy standard. Buildings already built today will still form the bulk of the building stock in 2050, and it is crucial that they are at the near zero energy standard by then to enable the

transition to 100% renewable energy consumption by buildings and free up energy for other sectors to decarbonise.

A fund could usefully pay for a pilot programme to retrofit 10 NZ homes to 'deep retrofits' levels to flesh out the products and methodologies needed to bring a range of existing building types up to this standard.

78. The Ministry of Business, Innovation and Employment (MBIE) is considering a range of initiatives and incentives to reduce construction waste and increase reuse, repurposing and recycling of materials. Are there any options not specified in this document that you believe should be considered?

NZGBC has provided [feedback to the construction and demolition waste discussion](#) via our submission to the Environment Committee in August 2021. In that document, we urged, "government to explore opportunities for developing and investing in waste recovery, recycling and processing in regional areas.

Facilities could be made viable at a regional level for some material types, particularly if a plant for recovery and processing can be located near industry that can use/reuse the end product".

It is also important to reward and incentivise higher performing buildings. Homestar routinely delivers 60-90% less construction waste to landfill. Green Star does the same in buildings. Making Homestar and Green Star sought after, will drive up the rate of diverting waste to landfill. Recognising these standards on the LIM would be a way forward.

79. What should the Government take into account in exploring how to encourage low emissions buildings and retrofits (including reducing embodied emissions), such as through financial and other incentives?

As discussed above in greater detail, the Government needs to focus on buildings' *consumption* of energy - which makes the transition to 100% renewable electricity more difficult and uses electricity that will be needed for the electrification of transport and industrial processes. Through this lens, the clear priority is energy efficiency, particularly in existing homes and buildings, which will still constitute the bulk of the built environment in 2050.

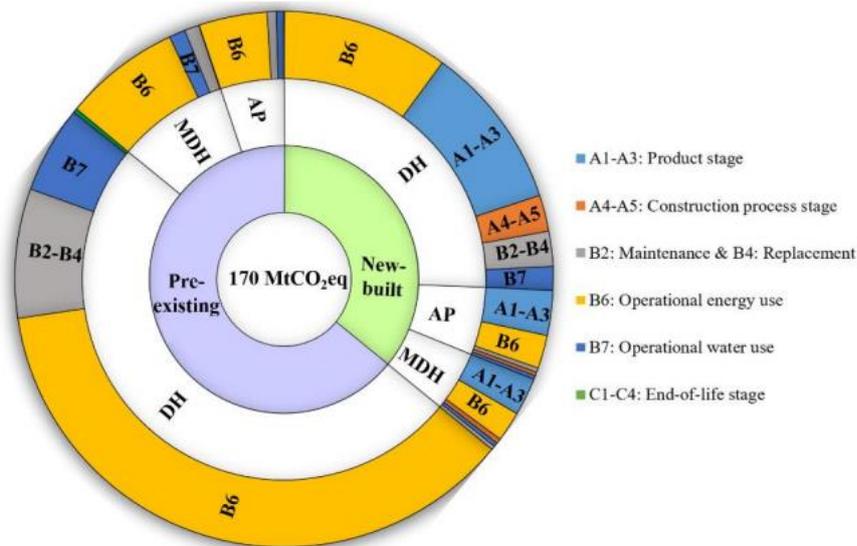


Figure 2. Carbon footprint of total building stock of New Zealand residential buildings up to the year 2050.

Source: *Application of Absolute Sustainability Assessment to New Zealand Residential Dwellings*, S J McLaren et al

Stimulate private investment to improve our homes

Recently twelve local authorities in New Zealand enable people to install energy efficiency improvements to their homes through a voluntary targeted rates (VTR) scheme. These schemes are long running, established in 2009, and have successfully improved over 30,000 homes.

The improvements include insulation, ventilation, heating, and other measures. Auckland Council, for instance, currently improves 2,700 properties a year through its VTR scheme. For a full list of councils involved and homes improved, please see Appendix 4. The councils have an accredited list of installers.

The loans, and interest, are paid off by homeowners over time through the rates paid to the council. These schemes have had to shut down due to the Credit Contracts and Consumer Finance Act 2003. This is a real shame. These schemes were successful at improving homes and lowering carbon. They had very low default rates.

We urge government to consider the creation of a national Voluntary Targeted Rates scheme.

81. Our future vision for Aotearoa includes a place where all New Zealanders have a warm, dry, safe and durable home to live in. How can we ensure that all New Zealanders benefit from improved thermal performance standards for our buildings?

1) NZGBC supports this vision. To achieve it, we need to not only build new homes at a near zero energy standard from 2030 but to lift existing homes to same standard over time, which will make them healthier and cheaper to live in. A large-scale deep retrofit programme is going to be needed, with the commitment of large sums of long-term

government investment, targeted at lower income households to get those homes to the near zero energy standard.

At the same time, rentals will need to be required to meet the near zero energy standard through a gradual ratcheting up of the Healthy Homes Standards/Energy Performance Certificates. For higher income owner-occupied existing homes, the standards for the other classes will help to drive standards over time, as will the requirement to supply Energy Performance Certificates when a home is sold.

2) The Warmer Kiwi Homes programme does not consider the full measures it takes to improve the health of a home. It currently focuses on insulation and heating. The Healthy Homes Standard, which was created more recently, includes draught stopping, ventilation and drainage measures.

Although not covered by the Healthy Home Standard, we suggest energy efficient lighting and hot water (lagging + controls) also be included. These items not covered by the Warmer Kiwi Homes programme are widely regarded as essential.

The Energy Efficiency and Conservation Authority (EECA) website, for instance, states "Good ventilation is essential for maintaining air quality and removing excess moisture from your home." The tenancy.govt.nz website states "Mould and dampness caused by poor ventilation is harmful for tenants' health as well as landlords' property. The ventilation standard targets dampness and mould in rental homes." It is the same with other measures.

While it is useful to install insulation if draughts are not stopped in a property this can still leave the occupant with health impacts. It takes a great deal of time and resources to arrange an appointment and send people to improve a home. It is inefficient if the Warmer Kiwi Homes programme does not cover the full measures homes need.

Numerous reports from EECA point to energy efficiency as the most cost-effective way to decarbonise our energy grid. The research (outlined in [A green recovery - kickstarting a just transition with healthy homes - providing a multi million dollar economic boost](#)) point to lighting and space heating as the key measures that can drive change. It is highly likely a second visit will be needed in the near future to homes already treated under the programme to improve these remaining items.

It is recommended that the Warmer Kiwi Homes programme is expanded to cover the full extent of the Healthy Homes Standard and includes energy efficient lighting and hot water.

Those homes improved to the healthy homes standard should receive a certificate so they can market their homes as healthy and warm therefore driving others to improve their homes.

Funding programmes to learn from to enable deep retrofits of NZ homes include the

- [Energy Company Obligation](#)- UK provided billions of dollars each year including a focus on deep retrofits
- [Energie sprong](#) - drives low carbon retrofits with a brilliant energy plan ensuring home owners are guaranteed vastly lower bills & better homes
- The [Italian 'Super Ecobonus' scheme](#) - this scheme pays homeowners to make their house or apartment more energy efficient by funding 110% of renovation costs
 - Taxes credits over 5 years,

- Up to €100,000 per home
- In eight months of 2021, this has lowered emissions of CO2 from home heating by as much as the last 20 years.

NZGBC calls on Government to create a comprehensive plan to decarbonize & improve the health of NZ homes at scale

- 3) Energy ratings are a powerful way to inform owners of the energy efficiency and warmth of homes. Evidence shows that an energy rating kick-starts people to improve their homes.

The following countries require energy performance certificates on the sale of homes; Australia, Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Research shows that energy ratings help transform markets, support other energy efficiency programs and improve residential housing stock performance. They do this by: a) rewarding energy efficient homes with 3-9% higher sale prices, therefore encouraging owners to invest in energy efficient measures, stimulating local contractors and employment . b) helping influence people when they make renovations.

2016 research on homes in Texas, Australia, France, Portugal and the Netherlands found home energy ratings and display programmes (HER&D in the table below) helped influence 12-37% of renovators to take action to improve the energy efficiency of their home.

HER&D Jurisdiction	Portion of buyers influenced by HER&D report recommendations when making renovations
Austin, TX	12% (first year of program) (ACEEE 20011)
ACT, Australia	15% (Energy Consult 2006)
France	37% (ADEME 2012)
Portugal	17.5% (ADENE 2015)
The Netherlands	22% (Murphy 2014)

HomeFit, a tool that provides an assessment of the health and energy efficiency of kiwi homes has found similar results. Of those responding to the survey over 50% said that after undertaking a HomeFit assessment they went on to make one of the energy efficiency improvements to their homes.

82. Are there any other views you wish to share on the role of the building and construction sector in the first emissions reduction plan?

When considered from a consumption lens buildings make up 20% of New Zealand's emissions. Half of that is from operational carbon (the carbon created to run buildings) . Half is from embodied carbon. The technologies and skills are available now to move to lower carbon buildings (operational and embodied) have huge potential to help the energy and industrial sectors decarbonise.

The key takeaway is that the building sector is a huge source of negative cost emissions reductions through energy efficiency. This will not only enable the end of the direct use of

fossil fuels in buildings, but free up renewable electricity supply to power the electrification of transport and industry, as well as enable the achievement of the 100% renewable electricity goal.

We hope this submission has been useful. Thank you for the opportunity to contribute.

We very much look forward to discussing and assisting further to deliver on a lower carbon healthier Aotearoa.

Nga mihi nui

The NZ Green Building Council Team

