

New Zealand Green Building Council submission on Unlocking the potential of demand flexibility – a residential product perspective

The New Zealand Green Building Council appreciates the opportunity to make a submission on the important issue of demand flexibility and welcomes EECA's focus on this topic.

About the New Zealand Green Building Council

The New Zealand Green Building Council is the construction and building industries' peak body for advocating for and delivering measures that support improved energy efficiency and sustainability in buildings.

Established in 2005 by 31 companies, we're grown to now have the backing of over 700 of the country's leading engineers, architects, builders, developers, regulators, finance experts, and educators. Our members cover the supply chain, and deliver thousands of homes and buildings throughout the country.

Working with industry experts, NZGBC develops and administers New Zealand's leading energy and environmental impact rating systems for buildings - Homestar, Green Star, and NABERSNZ. These systems help developers, builders, investors, owners, renters, and lessees better understand the environmental sustainability of the buildings they deal with and how they can be improved.

NZGBC would be delighted to work with EECA on how voluntary rating tools such as Green Star and Homestar could better incorporate and reward Demand Flexibility. Green Star already has a credit specifically concerned with this topic (Grid Resilience) and the Homestar team would be interested in developing further resources for homes.

Energy crisis context

It is important that the question of demand flexibility products is viewed as part of a rapid policy-led effort to reduce energy waste in New Zealand.

New Zealand is facing an energy crisis driven by the rapid exhaustion of natural gas reserves. The collapse in natural gas production means that the country must significantly reduce natural gas demand from electricity generation and direct space and water heating in buildings.

If this is not achieved, New Zealand will face energy shortages and price rises, adding to the cost of living for families and causing further closures of large manufacturers, costing the country economic output and jobs, and making us dependent on imports for goods we currently produce domestically. Therefore, New Zealand needs to rapidly reduce its energy waste to free up energy for industry and reduce pressure on prices.

Demand flexibility is an important part of the solution. Increasing use of this technology should be part of a broader push for residential space and water heating - particularly peak demand, which is a key driver of electricity emissions, electricity price spikes, and transmission infrastructure costs.

The urgency of this crisis does not permit for slow government decision-making. Policies are needed immediately to reduce energy waste and demand flexibility is only part of the solution. Policies to set demand flexibility standards and require the use of demand flexibility in new appliances should be developed and implemented as quickly as possible, alongside a suite of policies to move space and energy heating away from old, inefficient electrical resistance and gas power to efficient heat pumps and hot water heat pumps. (refer to NZGBC's submission on [Heat Pump Water Heaters](#) and our [recent paper](#) on the energy savings available from accelerating the conversion of heating to heat pumps)

Q1. The main use cases for demand flexibility presented in this paper are: managing peak demand (generation and line capacity) constraints, optimising renewable energy use, and optimising home energy use.

- **Do you think these are the main use cases?**
- **What other use cases are there?**

We agree that these are the main use cases and that the importance and ramifications of these use cases at the national level should not be underestimated.

- Smoothing demand peaks reduces the peak load capacity requirements of the entire electricity system, reducing the need for very expensive investments in generation and lines capacity, and reduces the risk that those capacities will be exceeded, resulting in supply disruptions.
- Demand peaks are also a prime driver of fossil fuel use for electricity generation, which needs to be reduced to lower electricity prices and emissions, and save natural gas for industrial uses.
- If the prevalence of rooftop solar follows the example set by Australia, demand flexibility will be vital in ensuring that energy is used optimally and displaces as much fossil fuel generation as possible.

Q2. In the residential sector, the following products have been identified as key end use products for demand flexibility: EV chargers, heat pumps, electric hot water systems which use a storage tank, fridges/freezer, clothes washers, dishwashers, clothes dryers, inverters for solar and battery systems, and HEMS.

- **Do you think these are the key demand flexible end-use products in the residential sector?**
- **If not, what are the key products and why?**

We agree these are the key products.

Q3. Do you think a standardised end-use product/application-based approach is relevant for the commercial sector, or is a bespoke/customised approach needed?

Standardised.

Q4. What do you think the key end-use products/applications are in the commercial sector?

Same as for residential – space heating, hot water heating, EV charging and Solar

Q5. Do you think a standardised end-use product/application-based approach is relevant for the industrial sector, or is a bespoke/customised approach needed?

N/A

Q6. What do you think the key end-use products/applications are in the industrial sector?

N/A

Q7. What are the barriers to the uptake of demand flexible technology?

Lack of regulation

Regulation and mandates are key tools for driving faster adoption of new energy efficiency technologies. Experience has shown that inertia tends to dominate and market participants are slow to move to better technology without any driver from the government.

New Zealand should follow the South Australian lead and introduce demand response requirements for EV chargers, heat pumps for space heating, and solar inverters, and also add requirements for hot water systems.

Split incentives

Split incentives are a barrier to the uptake of many energy efficiency technologies.

Developers are incentivised to minimise upfront costs to maximise the return on their projects and won't be the ones paying the energy costs. Likewise, landlords are incentivised to minimise their expenditure on their properties, and don't realise the gains from any energy savings from installing energy efficiency devices.

It is likely that uptake of demand flexible technology will also be subject to these issues.

When split incentives are leading to sub-optimal outcomes and the market dynamics cannot be changed to fix the incentives problem, government has a role to play in addressing this market failure through regulation.

Low information

Many end consumers, and many other market participants, will not be aware of the individual energy cost savings (through timing for off-peak power or solar generation) and system-scale benefits associated with demand flexible technology.

Labelling and information campaigns are powerful tools to fix this information gap and help people to make informed decisions.

Q8. The paper describes the three main end-use product components for demand flexible capability as: communication protocol, product response, and operational information.

- **Do you agree that these are the main components for demand flexible end-use products?**
- **What other components or considerations are important for end-use products?**

Yes, we agree these are the main components for demand flexible end-use products

Q9. Do you think to support the development and uptake of demand flexibility there is a need to create a minimum level of standardisation at an end-use product level (covering communication protocol, product response, and operational information)?

Yes. We strongly support standardisation to prevent a proliferation of incompatible/partially compatible products in New Zealand buildings, which would impede New Zealand's ability to fully realise the benefits that demand flexibility offers.

Q10. Would you support EECA creating a voluntary approved list of residential demand flexible end-use products, similar to EV Smart Charger Approved List

Yes. It is vital that installers and end customers can have confidence that are purchasing effective demand flexible end-use products. An approved list is a good first step in this direction and should be implemented as soon as possible.

Q11. Would you participate in working groups on the key end-use products to develop voluntary demand flexibility requirements (covering communication protocol, product response, and operational information)?

- **If so, what product based working groups would you like to be part of?**

N/A – not NZGBC expertise.

Q12. If you are an end-use product supplier, would you manufacture/import/supply end-use products that meet the voluntary specification?

N/A – not NZGBC expertise, but we'd be happy to reach out to our members, some of whom may have this expertise.