



105 Pavilion Drive, Airport Oaks
Māngere, Auckland

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Response to Green Paper

Unlocking the potential of demand flexibility in homes

Key end-use products and approach to commercial and industrial

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?*

Response to Q1

We agree that the scope as laid out in the Green Paper for Demand flexibility covers all practical applications.

As importantly, with interconnectivity and AI optimisation improving, we believe that Demand flexibility can create value and utility for residential customers in particular.

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?*

Response Q2

Fridges/freezer

The relative load compared to the risks involved with controlling these fridges and freezers without significant change to the hardware is not compelling.

Risks to be considered include food safety and damage to compressors.

Clothes washers, dishwashers, clothes dryers

These appliances have direct impact on user experience – the more Demand flexibility, as a concept, negatively impacts customers, the less likely we will be as a society to embrace it.

For these appliances, consumers should be encouraged to shift their usage through other means and be rewarded via other mechanics such as time of use energy plans.

Other key appliances/products to be considered

Storage via thermal mass, verified by sensors:

- Hydronic based heating systems – radiators, underfloor, fan coils
- Electric underfloor heating systems

Electrical usage not bound by customer usage:

- Pool pumps, pool heaters, chlorinators
- Spa heaters

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?

Response to Q3

Signals should be standardised, optimisation strategies and applications should be contextualised/customised.

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

Response to Q4

Climate control, hot water for various uses, electric vehicles and specialist refrigeration.

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?

Response to Q5

This is not our area of expertise

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

Response to Q6

This is not our area of expertise

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

Response to Q7

Clear rewards

- Other than via time of use plans, there are no clear rewards for demand flexibility. Even with time of use pricing, most residential users tend to revert to standard practices over time, nullifying the impact of pricing signals.
- Beyond finances, depending on the appliances, customers also aren't exposed to additional rewards such as convenience, automated optimisation and altruistic benefits.

Understanding and awareness

- Residential customers do not understand the concept and therefore do not engage with educational exercises, regardless of source.
- Consequently, product offerings from suppliers or Energy Retailers have less cut-through

Assurance of use

- For those that do understand the use of demand response through earlier technologies such as Ripple Control, view demand response as an inconvenience to their lives.
- Differentiating the outcomes of Demand flexibility and Demand response is key through the education process.

End-use product level components for demand flexible capability

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?*

Response to Q8

These three components cover the area well.

Acknowledging that this may be out of scope, we would suggest gaining an industry wide understanding of priorities between: customer utility/enjoyment; customer control; grid stability; and cost optimisation.

In addition, we would like to highlight the need to differentiate between signals and responses: signals can be binary, with a detail of operating envelopes by load, while the response based on the signal on how this is done may vary based on device.

- Hot water cylinders: modulate temperature based on consumer forecast needs
- A2A heat pumps: change of modes between cool and dehumidify based on room telemetric data
- Underfloor heating: pre-heat floors ahead of peak periods

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)?

Response to Q9

We strongly support the standardisation of signals and operational metrics, however, responses and operational information should not be standardised to encourage innovation and a ‘better product’ for the customer.

Development of demand flexible end-use products

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

Response to Q10

Yes we would support this.

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?*

Response to Q11

We would like to be a part of all three groups.

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

Response to Q11

Yes: we believe that Demand flexibility can create value for our customers without impacting the enjoyment.

Charles Chu

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