TE TARI TIAKI PŪNGAO
ENERGY EFFICIENCY & CONSERVATION AUTHORITY

David Prentice
Chair
Interim Climate Change Committee

15 November 2019

Dear David,

ICCC call for evidence

The Energy Efficiency and Conservation Authority (EECA) welcomes the opportunity to provide the ICCC with information that might inform your work to develop high-quality, credible emissions budgets.

This letter serves as EECA's formal response to your recent call for evidence. EECA has a range of research, analysis and insights on the opportunities for energy efficiency, renewable energy and fuel-switching to reduce New Zealand's energy-related emissions. In some cases this includes sector-specific analysis of emissions abatement opportunities. We have aggregated as much of this as possible for your easy access.

Much of the information is already published on our website and we have provided links to this work. Relevant information that is not readily available on our website, is attached to this submission.

The timeframes used in EECA's research do not necessarily correspond directly with the Zero Carbon Act's carbon budget periods. However, EECA's research contains underlying analysis that may be helpful and we can provide any further information, as required.

1. Energy Efficiency First: The Electricity Story

EECA's modelling on how energy efficiency can support ambitions towards achieving 100% renewable electricity by 2035. This study used the EMarket modelling tool for long-range simulations of the electricity sector.

a. Energy Efficiency First - Electricity - Overview Report [PDF 878KB]

b. Energy Efficiency First - Electricity - Technical Report [PDF 132KB]

2. EV home charging options

EECA commissioned KPMG to research electric vehicle smart charging technology, which has the ability to reduce the impact of EV home charging on peak electricity demand. EECA is now investigating how smart charging can be integrated into our energy system.

https://www.eeca.govt.nz/assets/Resources-EECA/EV-Charging-NZ.pdf

3. Cross sector analysis on options to reduce process heat emissions

EECA engaged Waikato University to identify options for process heat mitigation across different sectors in the New Zealand economy. The study identifies options, quantifies the potential mitigation and the capital and operating costs of those options. This analysis allows estimated marginal abatement costs (MAC) to be calculated for emission reduction options.

Options to Reduce New Zealand's Process Heat Emissions [PDF 1.1MB]

4. International tech scan

Process heat offers one of New Zealand's largest opportunities to improve energy efficiency and reduce energy-related greenhouse gas emissions. This report provides an inventory of a wide range of internationally available technologies that could be applied to New Zealand industry for energy efficiency and/or reducing emissions.

International technology scan [PDF 7.9MB]

5. Electrical heating technologies

This technical information series presents ten electric heating technology options to replace, supplement or optimise process heat currently being supplied by fossil fuels.

Electrical heating technical document series

6. PwC report finds process heat energy efficiency gap

EECA commissioned PwC to interview processors of dairy, meat, wood and other products, to find out more about their investment decisions on process heat, and carried out a literature review on how companies overcome barriers on investment in energy efficiency and carbon reduction.

Large process heat users and energy efficiency in New Zealand - PwC report [PDF 666KB]

7. Process heat factsheets

EECA has produced a series of fact sheets on the current state of process heat use in New Zealand as part of the joint Process Heat in New Zealand (PHiNZ) initiative with MBIE:

a. Process heat – Current state factsheet [PDF, 1.7 MB]: Overview of how process heat is being used in New Zealand, including energy demands and related greenhouse gas emissions

b. Wood processing factsheet [PDF, 1.1 MB]: Overview of how process heat is used in wood processing, including energy demands and related greenhouse gas emissions

c. Dairy manufacturing factsheet [PDF, 701 KB]: Overview of how process heat is used in dairy manufacturing, including energy demands and related greenhouse gas emissions

d. Meat and meat product manufacturing factsheet [PDF, 156 KB]: Overview of how process heat is used in meat and meat product manufacturing, including energy demands and related greenhouse gas emissions

e. Other food and beverages manufacturing factsheet [PDF, 452 KB]: Overview of how process heat is used in food and beverage manufacturing, including energy demands and related greenhouse gas emissions

f. Petrochemical industry factsheet [PDF, 248 KB]: Overview of how process heat is used in the Petroleum, Chemical & Rubber Manufacturing sectors, including energy demands and related greenhouse gas emissions

g. Primary metal and metal product manufacturing factsheet [PDF, 233 KB]: Overview of how process heat is used in primary metal and metal product manufacturing sectors, including energy demands and related greenhouse gas emissions

h. Non-metallic mineral products factsheet [PDF, 536 KB]: Overview of how process heat is used in the non-metallic mineral product manufacturing sectors, including energy demands and related greenhouse gas emissions

i. Indoor cropping factsheet [PDF, 1.6 MB]: Overview of how process heat is used in the indoor cropping sectors, including energy demands and related greenhouse gas emissions

8. EECA submission on the Productivity Commission's draft report on a Low-emissions economy.

EECA's submission on the Productivity Commission's draft report outlined our insights into the demand side of the energy and transport systems. It included recommendations to focus on energy efficiency, in particular aligning lighting standards with Australia and the continuation of investment to build the national electric vehicle charging network.

https://www.productivity.govt.nz/assets/Submission-Documents/dbdecd217d/DR-326-Energy-Efficiency-and-Conservation-Authority-EECA.pdf

9. TIMES-NZ model

EECA and the Business Energy Council are collaborating to invest in the development of the next phase of the TIMES-NZ modelling in New Zealand in the next 12-18 months. TIMES is

a well-known, widely used model in several countries. It is an integrated energy system model that minimises the total cost of meeting the demand for energy services, through technology and fuel choices, over the modelling timeframe. Scenario analysis from the modelling can be used to assess the least cost policy options, e.g. through technology and fuel choices, to achieve carbon emissions reduction targets. EECA and BEC intend to use the TIMES-NZ scenario modelling to support their strategy and planning, and to have informed conversations with Government and their stakeholders about pathways for mitigating GHG emissions.

You can find the BEC2060 modelling which used the TIMES-NZ modelling here.

10. Energy End Use Database (EEUD)

EECA's Energy End Use Database (EEUD) is a national database that provides estimates of energy use in New Zealand by sector, fuel, end use and technology. The EEUD draws information from a number of sources including the Ministry of Business, Innovation and Employment, KiwiRail, Ministry of Transport, Statistics New Zealand's Energy Use Survey (now on hold) and others.

The 2016 EEUD was the last release of this database on EECA's website. Since then, EECA commissioned Sapere Research Group to review this database. Since March 2019, EECA has started rebuilding this database in line with the review recommendations. One of the key improvements EECA is making is to align this database with MBIE and to improve the quality of data on energy use at the sub-sectoral level. EECA plans to publish the next release of the EEUD by October 2020 following active engagement with MBIE, ICCC, MfE planned for early 2020.

11. EECA's carbon mitigation achievements in last financial year

EECA's Annual Report 2018-19 (see pages 29-42) provides a clear outline of how EECA contributed to mitigating carbon emissions in 18-19 through its programmes in the five strategic focus areas.

12. Estimate of emissions reductions through EECA's programmes in 2020 (attached)

EECA's estimate of carbon emissions reductions through EECA's programmes in 2020 (provided to MfE for the fourth biennial report).

13. EECA's projections for emissions reductions till 2050 (attached)

These projections have been shared with MfE and MBIE.

14. Public attitudes to electric vehicles (attached)

EECA has been researching attitudes to EVs since 2016 and has been tracking sentiments of Favourability, Confidence to meet needs, Consideration and Familiarity.

I hope this information proves useful and supports the ICCC's work. Beyond our response set out here, I note that EECA has close and ongoing engagement with the ICCC in a number of areas – including through some of the ICCC's Technical Reference Groups – and you can expect this to continue.

I wish you all the best for the important work you have ahead of you.

Regards

Andrew Caseley
CHIEF EXECUTIVE
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