Energy Efficiency and Conservation Authority
Te Tari Tiaki Pūngao

Overview of EECA's dairy sector activities

29 October 2018

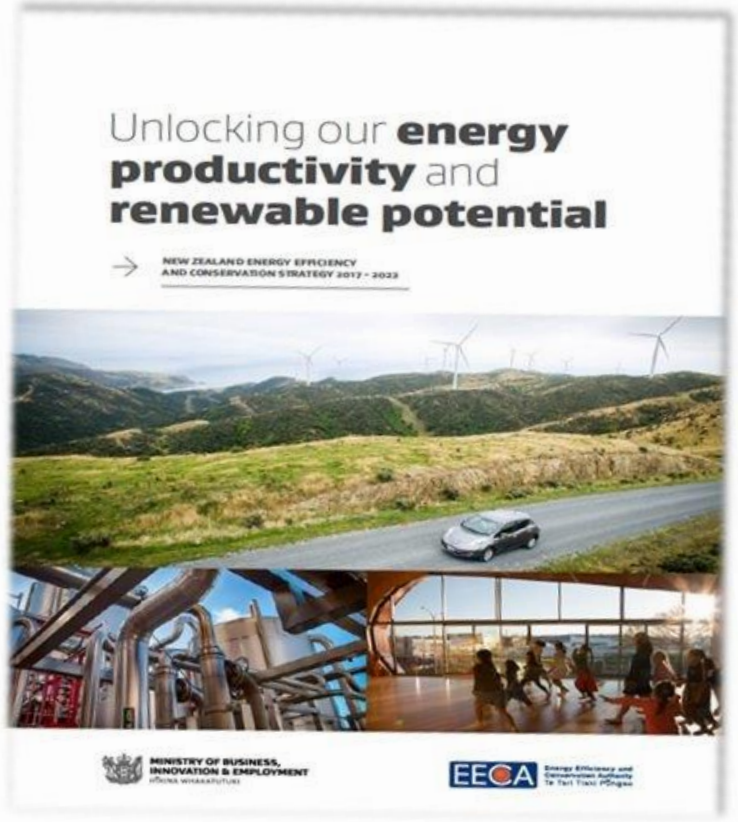
Energy Efficiency & Conservation Authority

- Government Agency with its own Board
- Reports directly to the Minister of Energy & Resources, Dr Megan Woods
- Annual budget of about $42million, including $14m recovered from energy levies on electricity, natural gas and petroleum fuels
- Funding from levies targeted to specific areas (e.g. electricity levy funding targets electricity energy efficiency)
- About 90 staff, mainly in Wellington with Auckland and Christchurch offices

Overarching Strategy - NZEECS

- New Zealand Energy Efficiency and Conservation Strategy 2017-2022

Goal: New Zealand has an energy productive and low emissions economy



EECA's Strategy

Our purpose

Mobilise New Zealanders to be world leaders in clean and clever energy use

Our strategic principles

Focus on impact

Pursue high-impact change with agility and at pace.

Understand the customer

Focus on those it is important to influence and influence them based on what they care about.

Define the problem

Identify what's blocking progress and tackle it head on.

Join the dots

Work with and connect people and organisations who can be part of achieving our purpose.

Display leadership

Be proactive, have a fact-based point of view, own it.

Our strategic focus areas

Productive and low-emissions business

Mobilise decision makers and technical experts to accelerate action.

Efficient and low-emissions transport

Switch the fleet to low-emissions technology while ensuring that any remaining fossil-fuelled vehicles are as efficient as possible.

Energy efficient homes

Optimise New Zealanders' use of renewable energy through energy efficient homes, technologies and behaviours.

Government leadership

Equip the public sector to innovate and lead the transition to clean and clever energy use.

Engage hearts and minds

Foster a society in which sustainable energy is expected and demanded.

Our desired outcome

A sustainable energy system that supports the prosperity and wellbeing of current and future generations

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Productive and low-emissions business

Mobilise decision makers and technical experts to accelerate action.

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Key EECA activities relevant to dairy sector

- Direct engagement through EECA's business team
  - Range of tools and programmes
- Energy Transition Accelerator 2050 (ETA2050)
  - Tailored programme to assist NZ's most GHG intensive businesses to transition to having lower emissions (this is the pilot year of this programme)
- Process heat in New Zealand (PHiNZ)
  - Joint project with MBIE that seeks to reduce GHG emissions from process heat
  - Currently formulating an action plan of policies and programmes to achieve this (by end-2019)

EECA Business

- Direct Engagement (**most milk processors in this category**)
  - Large Energy Users (“Top 200”): Energy Spend > $2M p.a.
  - Account Director & 8 Account Managers
  - Technology Innovation Manager
- Indirect Engagement – “Next 1,000” Large Energy Users
  - Businesses with energy spend > $200k p.a. (“Next 1000”)
  - Channel Management team of two
  - EECA registered Programme Partners
- LEVCF
  - LEV Contestable Fund Manager and Relationship Manager – Transport
- Direct Marketing & Comms support

Funding programmes

- Energy Management Plan
- Energy Audits
- Energy Systems Optimisation
- Feasibility Studies & Business Cases
- Monitoring & Targeting
- One2five Diagnostic & Benchmarking
- Industrial Design Advice
- Commercial Building Performance Advice
- Energy Graduate
- Technology Demonstration
- Crown Loans

Criteria varies but generally EECA will fund up to 40% of the cost up to a capped limit.

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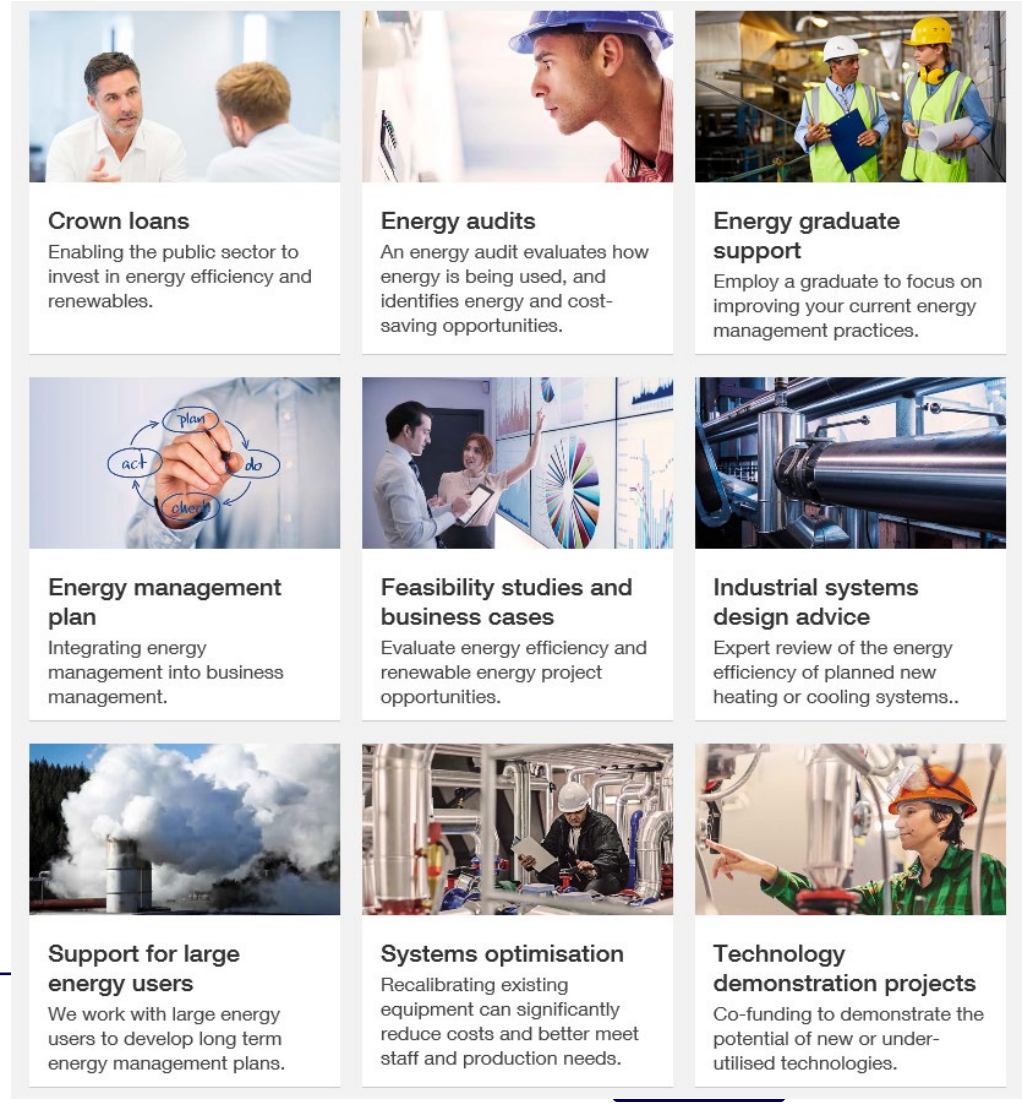


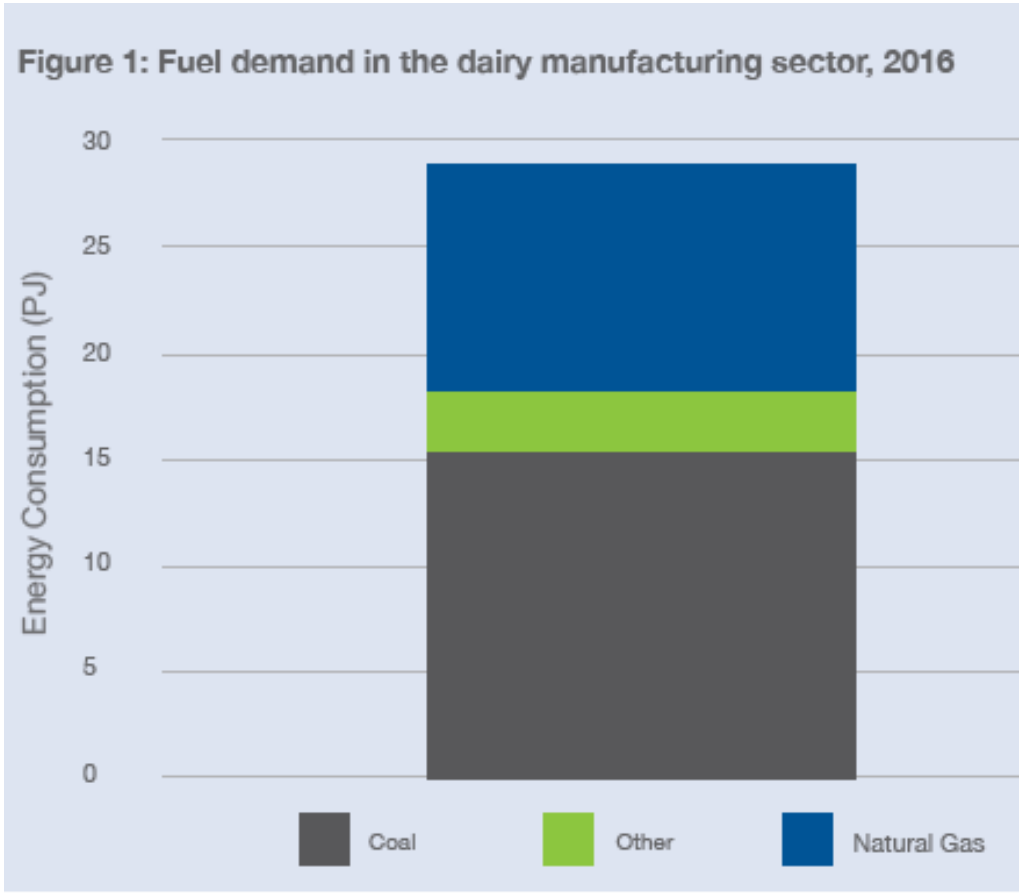
Technology Demonstration

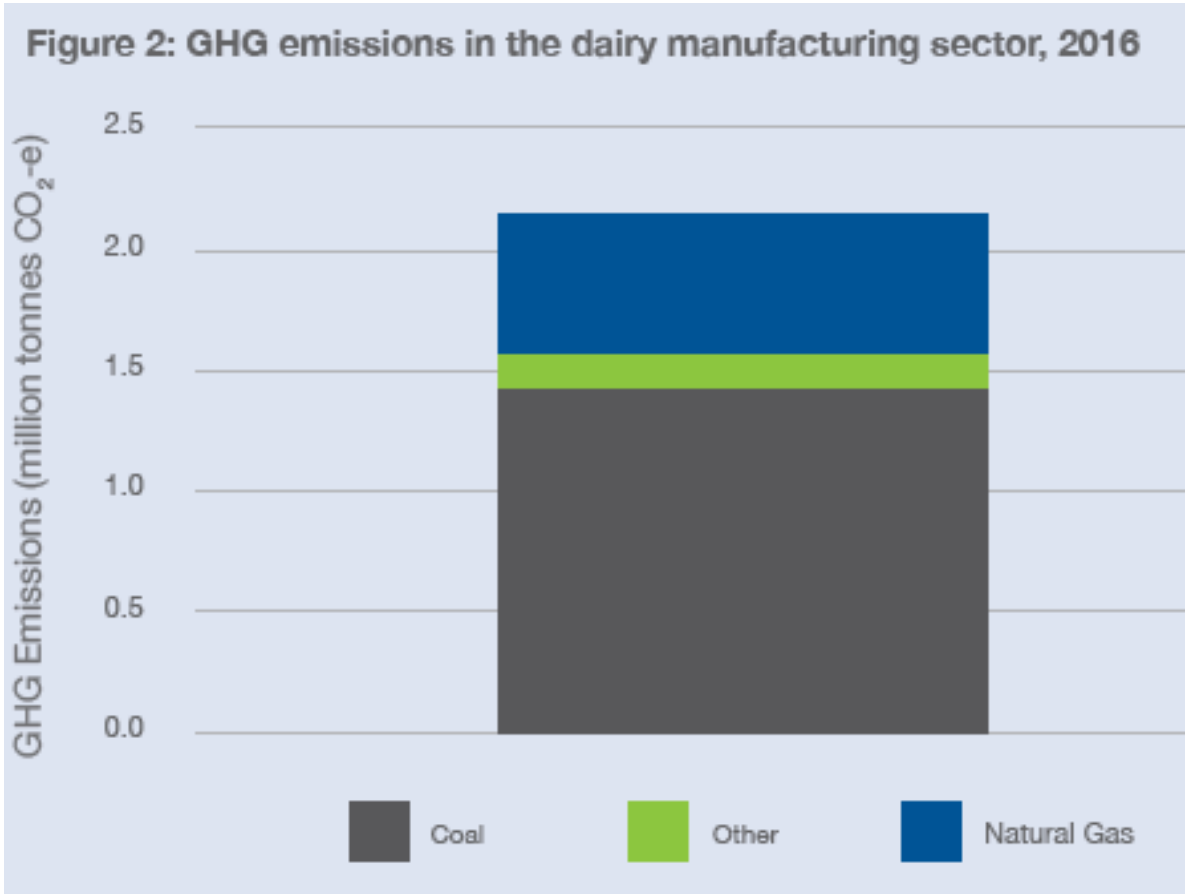
- Projects involving new or underutilised technologies or processes
- Funding is provided to early adopters of the technology or process
- Capital funding up to 40% of project cost – maximum $250k/project
- Agreement to demonstrate/share learnings
- 15 new projects in 2017/18, including:
  - Fonterra Brightwater biomass co-firing project
  - Synlait Milk electrode boiler project

NZ's dairy processing emissions

- In 2016 energy use accounted for 39.8% of NZ's GHG emissions, a total of 31.3 Mt
- Supplying process heat accounted for 28% of energy emissions, about 8.3 Mt
- The dairy sector was responsible for 25% of process heat emissions, about 2.1 Mt.
  - This does not include the ~85% of dairy emissions that are biological in origin (methane and nitrous oxide)
- Of the processing emissions, more than 80% are associated with making milk powder

NZ's dairy processing energy and GHG emission profile





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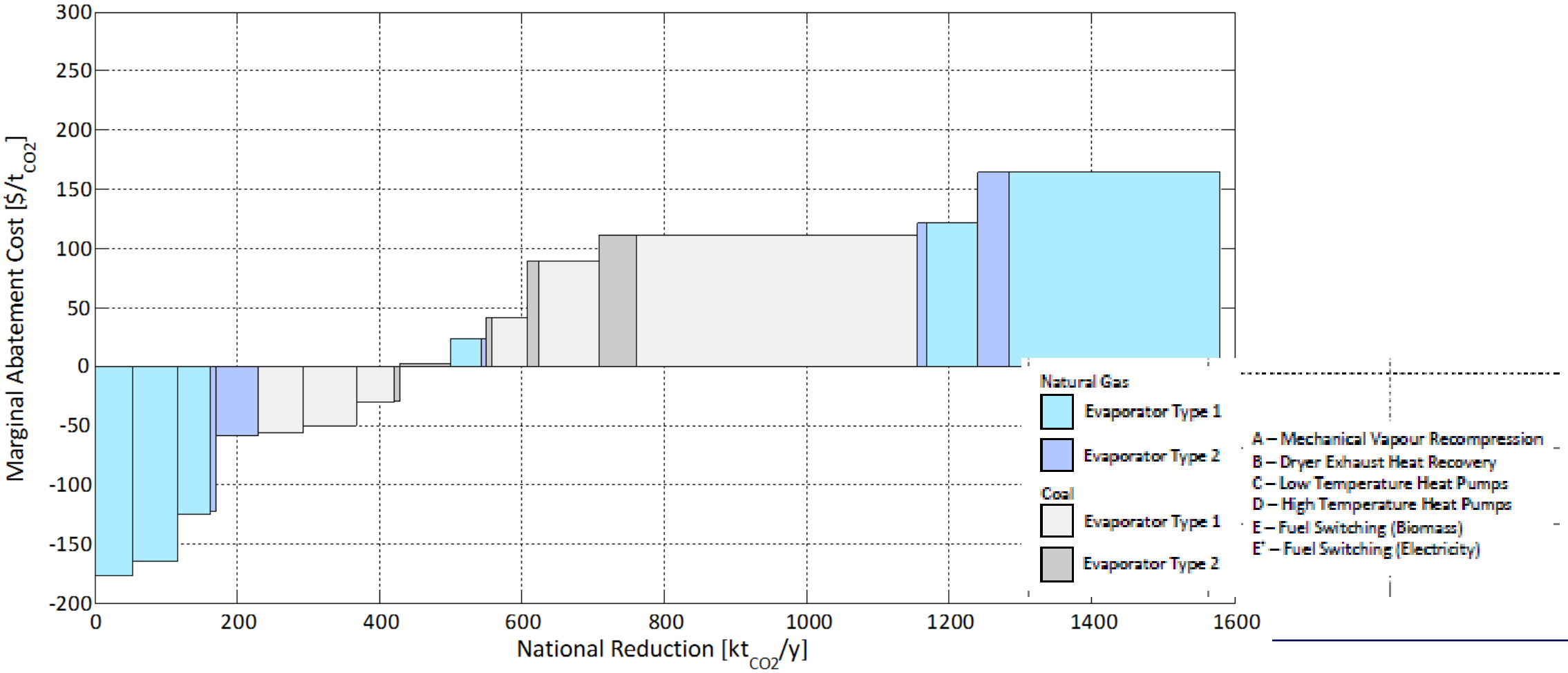
Mitigation options

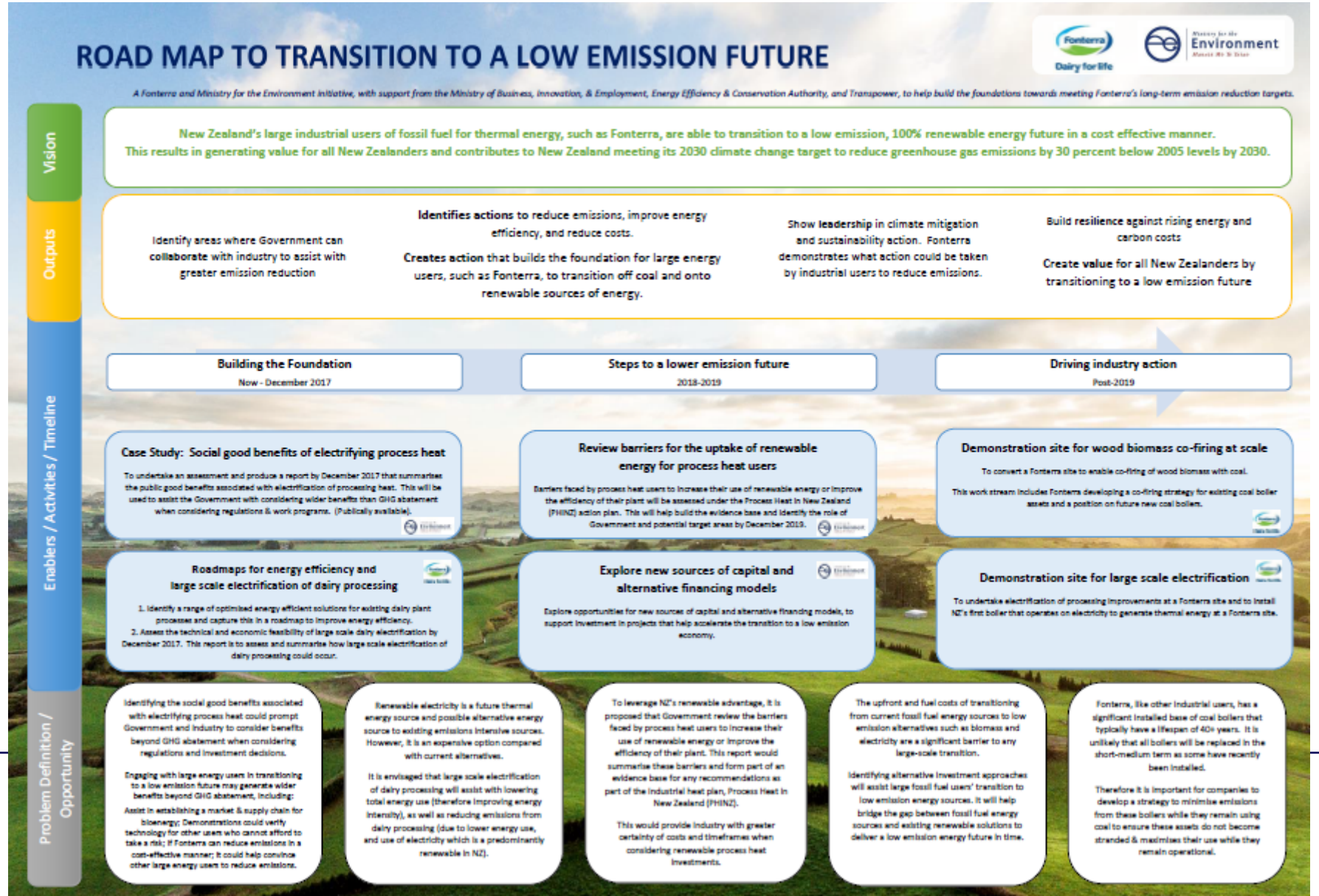
- EECA commissioned the University of Waikato's Energy Group to assess the potential mitigation options for process heat – including the dairy sector
- Main dairy sector opportunities relate to:
  - Heat recovery (from refrigeration systems and spray dryer exhausts)
  - Extending the use of mechanical vapour recompression; including to eliminate using steam in evaporators
  - Switching to lower emission fuels – biomass and electricity
- Work to be published soon

Milk powder MAC curve

(Draft subject to review)



Fonterra roadmap



Synlait targets

SYNLAIT COMMITS TO A SUSTAINABLE FUTURE WITH BOLD TARGETS

Synlait Milk (NZX: SML; ASX: SM1) has committed to reducing its environmental impact significantly over the next decade by targeting key areas of their value chain.

The commitments were revealed at Synlait's annual conference in Christchurch on Wednesday 27 and Thursday 28 June to staff, dairy farmers and partners:

- Reducing greenhouse gas emissions (GHGs) by 35% per kilogram of milk solids on-farm (consisting of -50% nitrous oxide, -30% methane and -30% carbon dioxide) and 50% per kilogram of milk solids off-farm by 2028
- Reducing water consumption by 20% per kgMS both on-farm and off-farm by 2028
- Reducing nitrogen loss on-farm by 45% per kgMS by 2028
- Significantly boosting support for best practice dairy farming through increased Lead With Pride™ premium payments, including a 100% PKE-free incentive
- Never building another coal-fired boiler and working hard to address existing coal infrastructure
- Commissioning New Zealand's first large-scale electrode boiler in January 2019 to provide renewable process heat to the upcoming advanced dairy liquids facility in Dunsandel
- Joining a global movement of organisations focused on serious sustainability progress by becoming a Certified B Corporation and adopting several of the United Nation's Sustainable Development Goals
- Establishing a social investment fund to boost support for communities, organisations and initiatives aligned to Synlait's sustainability goals

Recent significant projects

- Fonterra and Synlait have both received technology demonstration co-funding for projects under construction
- Fonterra: Co-firing biomass at its Brightwater factory
- Synlait: NZ's first installation of a large electrode boiler (nominally 6 MW, upgradeable to 12 MW) at its Dunsandel factory

Questions