

Productivity Commission
Low Emissions Economy Final Report
August 2018
Suggested Action Points for Waipa District Council

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A. Introduction

In August 2018, the Productivity Commission issued their final report on recommendations for New Zealand transitioning to a low emissions economy in a manner that allowed incomes and well-beings to continue to grow.

Extracts from the report are presented below which create opportunities for Waipa District Council to start implementing recommendations because they relate specifically to councils, or because they present opportunities for Council to take local leadership in making a prompt response to the Productivity Commission's recommendations.

B. Action Points

1. Council Internal Processes

1.1. Adopting a price for carbon emissions for use in Council's business cases

p. 5

specialised modelling and other available evidence suggests that New Zealand's emissions price will need to rise to levels of the order of \$75 a tonne of carbon dioxide equivalent (CO₂e) and possibly over \$200 a tonne over the next few decades to achieve the domestic emissions reductions needed to meet New Zealand's international commitments.

p. 500

We support the use of shadow pricing for emissions – this should apply from 2018/19 across all NZ state sector and local government analysis. This should however be at least \$88 per tonne CO₂ equivalent (OraTaiao: New Zealand Climate & Health Council, sub. DR378, p. 10)

1.2. Excellent spatial planning processes

Excellent spatial planning processes are needed to minimise emissions both in construction and over whole of life of infrastructure as well as the functioning of the communities concerned across work, home and recreation.

p. 145

Large, long-lived, city-shaping investments [need to] fully internalise the social costs of emissions

p. 402

The National Policy Statement for Renewable Electricity Generation 2011 (NPS-REG) is not well-reflected in the planning documents of local authorities and has made no difference to the time, complexity and cost of obtaining consents for renewable electricity generation investments (particularly wind- and hydro-generation). The language of the NPS-REG is not sufficiently directive to give weight to the central role of renewable electricity generation in New Zealand's transition to a low-emissions economy over the next several decades.

p. 477

Councils should review, and if justified remove, barriers to higher-density development, particularly in inner suburbs and in areas close to public transport routes. Councils should also ensure that infrastructure charges reflect the full costs of dispersed development.

Government agencies should use a shadow emissions price when assessing options for new infrastructure investment

1.3. Adopting a Life-Cycle Perspective for Assessing Infrastructure and Construction Projects

p. 479

Submitters stressed the importance of assessing emissions from a life-cycle perspective (for example Scion, sub. DR366; Fletcher Building, sub. DR349; and Thinkstep, sub. DR344).

To support more widespread use of Life Cycle Assessment (LCA), BRANZ218 has developed LCAQuick – Office. This tool, which is free to use, provides a resource to help stakeholders involved in the early stages of building design to better understand LCA. In particular, the tool details:

- what building LCA is and how to use it
- how to incorporate LCA into existing workflows
- what outputs of LCA look like and how to use and interpret them
- how decisions taken at early design can contribute to potential environmental impacts during the building life, where these occur and how to reduce them
- how the environmental impacts of early designs compare to environmental impacts calculated for reference New Zealand office buildings. (Berg et al., 2016, p. 17)

BRANZ have recently released a similar package, LCAQuick – Residential, which provides a means for designers to calculate how house design impacts GHG emissions.

1.4. Role of public procurement to lead by example in accounting for emissions

p. 500 - **Adopt sustainable public procurement practices**

Example of the Netherlands

The Department of Public Works of the Dutch Ministry of Infrastructure and the Environment (Rijkswaterstaat, or RWS) has developed an approach to encourage people to minimise environmental impacts related to infrastructure building. RWS tenders combine two sustainability criteria.

- Companies are rated on a scale of one to five on the basis of energy savings, efficient use of materials and use of renewable energy. Contractors that score favourably on this rating benefit from a discount applied to their tendering price (between 1% and 5%).

- The Sustainable Building Calculator (DuboCalc) is provided to tenderers to assess the environmental impacts of the use of materials specified in a contract. The costs are derived from an authoritative life-cycle analysis of materials (from extraction to demolition and recycling), including CO2 emissions and ten other impacts. The aggregate environmental cost is translated into a monetary value that is combined with the tender price to award the contract.

p. 165, 166

Links to promote research-industry collaboration in lowering emissions, innovations and collaborative opportunities

P. 169-170

More use of high-quality virtual meetings in place of face-to-face meetings

1.5. Reporting on Emissions Performance

Numerous voluntary frameworks exist for the disclosure of non-financial (including climate change) risk, building on an ESG approach (section 7.2). Most are principles-based, and include the Integrated Reporting Framework, the Global Reporting Initiative, the Climate Disclosure Standards Board Framework, and the UN Global Compact. Many New Zealand organisations report against these, with Integrated Reporting noted specifically by several submitters.

p. 171

Performance reporting can be expected with mandatory climate-related financial disclosures

p. 192

Disclosure can take many different forms, but a key distinction is between rules-based reporting and principles-based reporting. Rules-based reporting compels reporting entities to report according to specific and prescribed requirements. In contrast, principles-based reporting focuses on providing general guidelines for reporting entities to follow. The latter requires more judgement on behalf of reporting entities, but allows for reporting to provide the best available information that is meaningful for the entity in question, rather than

focusing on compliance. However, the distinction between the two types of regimes can be somewhat artificial (B. Bennett et al., 2006), and best-practice disclosure may be most effectively captured by a blend of the two approaches (Responsible Investment Association Australasia, pers. comm. 20 June 2018).

p. 193

Figure 7-6 sets out recommendations and supporting recommended disclosures from the Task Force on Climate-related Financial Disclosures

p.175

Use of the New Zealand Impact Investment Network which can be described as “the point where capital meets purpose” (p. 178) and the Impact Enterprise fund.

1.6. Exploring opportunities for distributed generation of renewable energy such as solar and wind, including community-scale generation

p. 11

The modelling undertaken for this inquiry finds that electricity generation will likely need to increase by between 45% and 65% by 2050. Modelling undertaken for Transpower predicts electricity demand will more than double by 2050 (Transpower, 2018). This additional demand will likely be met through a portfolio of renewable generation sources, including wind, geothermal and solar.

2. Be ready for land use change in the Waipa

2.1. Reduction in dairying

p. 68

Waikato’s dairy land [is] projected to fall by between 8% and 22%.

2.2. Afforestation opportunities likely to be in permanent forests.

p. 81

Using the CMV modelled pathways as a base, New Zealand Carbon Farming estimated that if 50% of new forestry planting were permanent rather than rotational (ie, for harvest and replanting) it would yield an additional 10.4 Mt CO₂e a year of removals by 2050 and 37 Mt CO₂e a year by 2070 (sub. DR293, p. 2). This additional sequestration is significant.

At the emissions prices indicated by the modelling, significant movement from harvested forestry to permanent carbon forestry is likely. The modelling does not capture this dynamic.

p. 301

Land planted in forests will need to increase by between 1.3 million and 2.8 million hectares, mostly converted from marginally profitable beef and sheep land. Rapid growth in horticulture (from a relatively small base) could also play a significant role in reducing agricultural emissions.

3. Regulatory Changes

3.1. Farm dumps could be regulated

p. 464

If emissions from unmanaged solid waste sites do, indeed, represent anything close to the estimated 64% of all waste emissions (2 561 kt CO₂e), then close attention to this source is warranted. To reduce emissions, organic waste disposed of at these sites must either be reduced in volume or diverted to managed disposal facilities where CH₄ emissions can be more effectively mitigated.

It is important to reiterate that the category of unmanaged solid waste sites covers two very different types of disposal facilities:

- 381 known, consented waste disposal facilities that are not subject to either the NZ ETS or the waste disposal levy; and
- an unknown number of small, unmanaged waste sites, mostly farm dumps.

p. 466 – Regulatory approach to farm dumps signalled

... [A] regulatory avenue, either via the bylaw process under section 56 of the WMA and Part 8 of the LGA, or changes to the resource consenting process via the RMA, is considered to be the most effective option. This could result, for example, in local government bodies no longer allowing farm dumps as permitted activities for sites. Instead, they would need such sites to obtain resource consent (eg, they would become a controlled, discretionary or non-complying activity under the RMA).

The OECD (2017e, p. 73) noted that “New Zealand has no national regulation for disposal of agricultural waste, despite the large size of the sector”. Councils could also enact rules to require waste disposal methods that had lower emissions consequences, which would incentivise better uptake of technologies such as anaerobic digestion.

It will be important for councils to work alongside rural communities to support better waste management practices, with a regulatory approach as an important backstop.

3.2. Measuring Emissions from Wastewater Treatment Plants

p. 451 Improved waste data is urgently needed to transition to a low-emissions waste sector. Much existing data is out of date, inconsistent or incomplete. As a result, the ability to clearly identify or quantify opportunities to reduce emissions is limited. Any projects to improve waste data should include specific information on waste emissions. Work should also begin to improve measurement methodologies for wastewater treatment plants.

p. 456 – Capture of CH₄ from waste facilities

Emissions mitigation in the waste sector does not require the development of new technology. As experts in the field clearly stated a decade ago, “GHG emissions from waste can be effectively mitigated by current technologies” (Bogner et al., 2008, p. 27). Installing a landfill gas recovery or extraction system is “the single most important measure to reduce emissions” (Bogner et al., 2008, p. 19). These systems recover CH₄ via a system of extraction wells and industrial processes, with the recovered gas available as a renewable energy source (eg, to replace fossil fuels in industrial processes such as boilers or steel production) (US EPA, 2018a). Estimated CH₄ recovery rates range considerably from approximately 20% to 90–95% (Waste Not Consulting, 2009; Waste Management New Zealand, sub. DR332).206 These systems can be profitable, particularly if they offset emission charges borne by waste facility operators.

Of the total solid waste deposited to municipal landfills in 2016, only 12% was disposed of at sites without landfill gas recovery (MfE, 2018d). An estimated 23 of New Zealand municipal landfill sites have landfill gas recovery systems, with an average efficiency of 68% (MfE, 2018d).

Other emissions reductions technologies include anaerobic digestion, which is where bacteria break down organic waste (including food waste, manures or crops) inside an anaerobic digester to produce biogas (which can then be converted into electricity) (section 15.10). The remaining solid waste (known as digestate) can also be used as a fertiliser replacement (Anthony, 2015). This is not to say that technological improvements could not reduce emissions more effectively or efficiently (ie, at lower cost). For example, improving landfill gas recovery systems, particularly in terms of achieving greater volumes of recovered gas, could make these systems more profitable at smaller landfill sites.

p. 480 - Encourage the substitution of bio-based materials to reduce emissions embodied in construction

IEA (International Energy Agency) analysis found that the substitution to bio-based materials will reduce emissions, due to low-energy production methods. Studies evaluating strategies to reduce the use of materials – for example through the use of lightweight construction and re-use of old building structures – also generally found that these approaches were effective in reducing emissions. However, studies examining substitution to recycled materials produced mixed results. (IEA, 2016b).

While emissions embodied in materials are the primary source of emissions during the manufacturing and construction phase, different construction methods can affect emissions. For example, Burgess et al. (2013) show that when constructing a 120m² house, pre-fabricated construction approaches can reduce emissions by around 15% during the construction phase. This is primarily due to lower material wastage from errors, greater ability to store and re-use waste materials, and lower transport emissions.

3.3. ‘Wood First’ Policy for Construction

p. 481 – Adoption of a ‘Wood First’ policy

Substitution of steel and concrete for engineered timber (laminated structural lumber or LVL) in mid-rise commercial buildings and road bridges is an opportunity to reduce emissions, and could increase economic activity by producing higher value-added wood products... An example of more active policy in this area is Rotorua District Council's adoption of a 'Wood First Policy' to encourage government agencies to use natural, timber-based construction. (EECA, sub. DR326, p. 14)

Government can add to the confidence in the future of the forestry industry by endorsing the "Wood First" movement... It is not difficult to promote the use of wood for commercial as well as domestic use. This attitudinal change is matched by the developments in wood technology. With the use of glue-laminated and engineered wood products New Zealand should be at the forefront of use of its timber for buildings. (Geoff Thompson, sub. DR304, p. 3).

A policy that is mandated by both central and local government should require buildings up to two storeys high to be designed and costed based on timber construction. (New Zealand Forest Owners Association, sub. DR246, p. 5).

p. 482

Such policies generally require that sustainably sourced wood should be considered as the primary construction material where feasible, for public sector buildings, along with policies to encourage greater uptake of wood in private construction projects (Make it Wood, 2018).

Rotorua Lakes Council's Wood First Policy sets out a set of actions that the council will take to encourage the uptake of wood including:

- Developing an assessment toolkit for all council led building projects to see how wood might be incorporated as a component in the design.
- Encouraging contractors to include wood options in their proposals to council...
- Acting as a facilitator to encourage growth and investment in the local forestry and wood products industry, including the service industries that support it...
- Acting as a leader in encouraging councils to link together to support the forestry industry.
- Taking a lead role in working with central government and its agencies to support and grow the forestry sector. (Rotorua Lakes Council, 2015).

it is important that the emission profiles of different building materials are considered in the context of their full life-cycle use. As discussed earlier, emissions generated through the use of a building across its life are typically much greater than emissions embodied in materials. There may be scenarios where building designs with relatively high upfront embodied emissions perform better over their life-cycle as a result of superior efficiency during their use.

Vale (2017) concludes by cautioning against considering the choice of materials in isolation:

[It] can be demonstrated that very high-mass houses can show substantial savings in lifecycle energy compared with conventional forms of construction. These findings suggest

that the choice of materials may need to be a lot more subtle than simply having a list of materials that are “unsustainable.” Sustainability depends much less on the choice of materials and much more on how they are used. (Vale, 2017, pp. 318-319).

BRANZ has already developed tools to measure the life-cycle emissions associated with buildings.

Some inquiry participants suggested changes to the Building Code provide scope to transition to materials with lower embodied emissions.

... [A]mendments to the resource and building consent frameworks [are] needed to enable and incentivise low emitting building materials and methods. (Greater Christchurch Partnership, sub. 57, p. 7).

4. Local Government investments could be limited to low-emissions activities

p. 200

Christchurch City Council (sub. 13) suggested that both central and local government investments could be required to be limited to low-emissions activities. The Council also proposed that central and local government procurement of financial services could “include a weighting with regards to evaluating the providers’ investments and loans in low emission activities, e.g. based on low emission indices” (p. 7). Te Rūnanga o Ngāi Tahu (sub. 83) identified preferential purchasing policies that could be applied to institutional investors as a mechanism to incentivise low-emissions businesses and business practices.

Local Government has an important role in motivating behaviour change and supporting associated research (p. 284)

- Promoting low-emissions consumption
The Sustainable Living Education Trust, for instance, provides materials (some aimed at local government) to promote waste minimisation, climate awareness and low-carbon living, and other environmentally friendly choices (Sustainable Living Education Trust, 2018) (p. 285)
- Publishing emissions performance
The Energy Management Association of New Zealand (EMANZ) proposed that central government should take a lead in publishing the emissions performance of its departments and facilities, with similar requirements for local authorities and other public bodies (sub. DR242) (p. 285).

5. Incentives to lower emissions

p. 368

EECA ... co-funds projects for low-emissions vehicles¹⁶⁶ through the Low Emission Vehicles Contestable Fund. For instance, Palmerston North City Council received \$350 000 to replace two diesel trucks with electric trucks for managing waste and recycling (EECA, 2018d).

p. 435

EECA administers Crown Loans – interest free loans to fund energy efficiency and renewable energy projects for publicly funded organisations such as schools, local councils, universities and polytechnics, government departments and hospitals. Inquiry participants raised two concerns about Crown Loans. The Bioenergy Association (sub. DR352, p. 23) suggested that the criteria for loans should change as it is currently “based only on energy savings and there is no consideration of the benefits of greenhouse gas emission reduction”. Nature’s Flame suggested that the five-year payback period on energy cost savings should be reviewed, noting that “the benefits for all come on a longer view” (sub. DR245, p. 2).

6. Promote the greater use of wood and biomass for heating

p. 438 – Use of Biomass

Between 2014 and 2017, EECA ran the ‘Wood Energy South’ programme in conjunction with Venture Southland.¹⁹⁶ The programme focused on the transition of boilers to wood energy fuels in Southland. The interventions included subsidising feasibility studies, providing information and case studies on the use of wood energy, and providing capital grants and Crown loans to support the conversion of boilers.

Several inquiry participants suggested that there would be merit in establishing additional programmes to support the use of biomass, modelled on Wood Energy South:

Ahika believes a national operated-regional-led approach will be a more successful long-term strategy for biomass. (Ahika, sub. DR196, p. 2)

Policy support should be offered in the form of staggered roll-outs of regional wood energy incentive schemes, modelled on Wood Energy South. (Azwood, sub. DR168, p. 15)

Support regional development programmes similar to the Wood Energy South in the Waikato and Otago/Canterbury regions. (Bioenergy Association, sub. DR352, p. 33)

Because biomass supply and demand dynamics vary significantly across regions, and because transport distance can be an important determinant of uptake (one inquiry participant told the Commission that biomass was usually only viable if it was sourced within a 100km radius), initiatives might best be applied on a regional basis. Additionally, because fuel switching will usually only be commercially viable when heat plant fails or reaches its end of life, the number of switching opportunities in a given period of time may be relatively small. For example, in Southland, only two to five boilers over 100KW are due for replacement each year (MBIE, 2016d). The small number of opportunities points toward the need for ongoing intervention

7. Building efficiency

p. 490

{Make] NABERSNZ (a system for rating the energy efficiency of office buildings) mandatory for some or all office buildings...with mandatory ratings for government offices.

EECA notes that, based on overseas evidence, greater uptake of building commissioning may provide significant scope for energy efficiency improvements.

Building commissioning (and re-commissioning) is the process of tuning the internal systems (most commonly HVAC systems) in a building for optimal energy performance. Over time, energy using systems deviate from optimal performance as, for example, temperatures are adjusted in response to ad hoc requests from tenants, building controls (e.g. louvres) begin to fail, and building management systems are not upgraded. For new buildings, commissioning should occur as part of the building handover process and, for an existing building, commissioning should be part of any maintenance regime. (EECA, sub. DR326, p. 21)

8. Other actions

8.1. Economic development initiatives

Excerpt from the Tindall Foundation e-newsletter October 2018:

Later this month, [Carbon Neutral Advantage](#), an exciting three year project will launch in Southland. It will bring business and community together to equip our economy for a low emission future. This initiative, to be run by [Venture Southland](#), will help businesses respond to the challenge of climate change and the increasing cost of carbon by accelerating the uptake of emissions reduction technologies and offsetting opportunities. Look out for more on our [website](#) and [Facebook](#) page in the coming months.

C. Recommendations

1. Waipa District Council staff review the Productivity Commission's Low Emissions Economy Report dated August 2018 and consider the action points listed above.
2. A report be presented as an agenda item for a Council meeting before April 2019 recommending the adoption and implementation of those action points which are the most relevant for Waipa District and which have the potential for the greatest positive impact in transitioning to a low emissions economy as set out in the Productivity Commission's Report.