

Low Carbon Kapiti Submission on Productivity Commission Report on Low Emissions Economy

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Who We Are

Low Carbon Kāpiti (LCK) is an organisation with over 200 members, all concerned about the urgency of addressing climate change. Our website is <http://lowcarbonkapiti.org.nz/> and we have an active Facebook group. Our committee members include Jake Roos, father of young children and former advisor on energy and climate change mitigation matters at the Kāpiti Coast District Council, Professor James Renwick, professor of climate science at Victoria University, Deirdre Kent, long time environmentalist grandmother, Andrew Rundle-Keswick, IT specialist and founder of Transition Town Kāpiti, Chad Wappes social entrepreneur and IT specialist, Julia Truscott, community activist. During the first year of our existence we have constantly urged our council and community to put climate change front and centre in their decisions. Our very existence and our visibility is evidence of the fact that we see the short time frame of opportunity and the need for action on all fronts. In the preparation of this report we have been assisted by a member of our group Elrond Burrell, an architect and an expert in the 'passive-haus' standard.

Introduction and Summary

Thank you for the opportunity to comment on this report.

First let us say that *we completely endorse the submission made by the Wise Response Society* and are aware that their membership is an impressive array of academics and researchers and environmentalists. The care they have taken and the work they have put in will hopefully ensure they are taken very seriously by your Commission.

LCK 's submission therefore is more focussed on local body issues.

LCK has major reservations about

- a) the absence of recognition that adaptation as well as mitigation is needed and that the burden falls chiefly on councils;
- b) lack of recognition that some of our laws and institutions not fit for purpose;
- c) the absence of recognition of the huge role that local government must play in climate change mitigation including consenting for buildings and industrial plant; choosing rating systems that influence urban form; building energy use and transport

- d) the absence of recognition that local government can be a role model
- e) A risk of over-reliance on the Emissions Trading Scheme as a policy to drive change.

We see this Report, even with its flaws, as a useful step in developing a nationwide discussion about the risks we face as a country.

We answer some of your questions.

a) Recognition that adaptation as well as mitigation is needed

It should be recognised that mitigation alone is inadequate, and that any transitions to a low carbon economy must now take into account that adapting to the turbulent environment that is increasingly becoming hostile to human life as we know it, is also necessary. For example, in many areas we need managed retreat from the coast and we don't yet know how to do this fairly.

Local authorities currently bear an overwhelming and unsustainable proportion of the responsibility and cost of extreme weather events. The burden of coastal erosion and infrastructure damage due to more regular flooding is borne by local authorities. They must constantly be making decisions about how long they will keep spending on roads that are regularly washed out, building more and more sea walls and so on. Unless there is widespread awareness and urgent action we will be "up to our knees in water and up to our necks in debt." So much money will be wasted without wise decisions from local authorities. Given that each council will be regularly faced with decisions about whether to spend money on mitigation or adaptation, your Commission's report could well incorporate wise guidance.

b) Laws and Institutions are not fit for purpose

Councils often complain that central government keeps giving them more work to do but not the money to do it with. They also only exist at the pleasure of central government and have to obey and apply its laws. Hence, for instance, they are a major player in the administration of the Resource Management Act and make major decisions about where and what and how to build. See later discussions of the Resource Management Act, Local Government Act and Building Code.

c) Role of Local Government

1. Urban form and rating systems

The Commission's draft report in Chapter discusses urban form. You say in Chapter 15 that "*Overall, there is not a strong case to use urban planning policies to reduce emissions*", but in fact it is another power of Councils that can do this – their mandate to choose a rating base. And your Commission has already expressed an opinion on this in a housing report.

A compact urban form is a significant contributor to emissions reductions. It is critical that all policies align and are consistent with the overall ambition of transitioning to a low-emissions economy. Urban sprawl is inconsistent with that ambition – it results in costs, increased private car travel, infrastructure duplication and associated GHG emissions.

Low Carbon Kāpiti therefore recommends that the final report emphasise the importance of policies about quality compact cities, including ways in which local government could be incentivised to adopt quality compact urban form as a core tenet of land use planning and urban growth and development. It should also include a recommendation to Government to scrutinise any national legislation relevant to urban sprawl issues e.g. the Local Government (Auckland Council) Act 2009 which mandates rates calculated on capital values. It should recommend Government takes advice from your own Productivity Commission Report *Using Land for Housing*, Chapter 4 which says *"A capital value rating system taxes the improvements on land; so, at the margin, owners are discouraged from developing land or intensifying development on it. By contrast, a land value rating system encourages land to flow to its highest value use and, at the margin, discourages holding undeveloped land."*

It is inadequate to argue that people want to have land around them. Given the right incentives, they will build a compact city. Under a system of only taxing the land under the houses after their devastating 1906 earthquake, San Francisco bounced back within 25 years to be the 10th largest city in America without expanding its land base as rival Los Angeles did, while providing parks and public spaces. It grew 22% from 1900-1910, 22% from 1910-1920 and 25% from 1920-1930.¹

A common objection from environmentalists to land value rating is the argument that those who preserve trees, historic buildings, riverbanks or any other natural or cultural values will be forced to develop. But given the existence of other strong council powers, environmental, historical and cultural values can still be upheld *as well as* the value for a compact urban form.

2. Consents

Councils should have the ability to consider GHG emissions as part of plan making and decision making. Consider decisions regarding thermal power stations and coal mines, urban sprawl, motorways, dairy conversions, etc. Making it harder to get resource consent for emissions-intensive developments and built form would undoubtedly help, as would an even stronger basis in planning law to support developments like renewable energy, public transport, intensification around transport corridors and so on.

There is also something clearly wrong with planning guidance where visual amenity concerns are trumping the National Policy Statements (NPS) presumption in favour of more renewable energy in Environment Court decisions. The Blueskin Resilient Communities Trust's application to build three wind turbines was ultimately declined because of the visual impact on three residential properties. Individual renewable energy developments can be discounted under the NPS as they are viewed in isolation and accorded with no urgency. Recognition of and a requirement to

¹ Mason Gaffney and Fred Harrison, *The Mason Gaffney Reader* 2013, P43

consider the critical importance of reducing greenhouse gas emissions is needed the highest level of planning policy.

The Commission's omission is particularly jarring as it does recommend making emission reduction a central consideration for land transport planning and investment. (R.11.6).

This section is consistent with our section on laws not being fit for purpose where we say it is clear the Resource Management Act needs amending to place climate change as the chief environmental risk we are facing. While a few citizens can successfully object to the sight of a windmill or multi-storey building and thus inhibit the progress of decarbonisation, there is now something wrong with our priorities. Indeed the RMA itself expressly prohibits consideration of climate change! The Resource Management (Energy and Climate Change) Amendment Act 2004 says in clause 3(b)(i) *'The purpose of this Act is... to require local authorities... not to consider the effects on climate change of discharges into air of greenhouse gases'* and does exactly that. We request that the Productivity Commission amend their report to recommend that Government reverse this prohibition so that they may make a more meaningful contribution to reducing greenhouse emissions from their districts, over which they currently have very little control.

We suggest that any change to the RMA of this kind should be accompanied with guidance to assist planning authorities with achieving successful and consistent implementation.

3. Waste

We support your excellent section on waste (Chapter 14) and support your statement, *"An effective levy, particularly one that charged a higher rate for organic materials, would be successful at reducing emissions by incentivising overall waste volume minimisation."* Our organisation is concerned that about a third of all waste to landfill is compostable and welcome urgent measures to encourage composting. We note many US states legislate to mandate composting of organic matter and in California this law is about to include households as well as businesses. We support a graduated increase in the waste levy, extension to apply to all sites.

Q14.1 – *Should the New Zealand Emissions Trading Scheme be extended to cover wastewater treatment plants?*

Yes. This is consistent with the 'polluter pays' principle. Although some consideration should be given to administration costs relative to the scale of emissions, there is no other reason to exclude waste water treatment plants from the Emissions Trading Scheme. However, see section e) regarding our concerns about the effectiveness of the ETS as a driver of change.

R14.5 – We suggest that as the waste levy and the ETS serve two distinct purposes, there is no overlap. If the organic content and therefore GHG emissions of waste is reduced, there is facility within the ETS to reflect that in the emissions factor used and thereby the cost of the associated ETS obligation.

4. The built environment

The built environment section of the Commission's report seems to conclude the sector requires little intervention. We disagree with your finding that "Increasing the

price of emissions in the New Zealand Emissions Trading Scheme is the most effective way to incentivise a transition toward the construction of buildings with lower embodied emissions." The effect of a carbon price is unlikely to create a cost-differential between products to influence what are used, much less cause any transformation in industries that supply them. Building Code or planning requirements would be far more effective, particularly in relation to operational energy. Developers who build homes have no incentive to reduce the cost or environmental impacts of running them. It is only by enforcing higher minimum standards of construction that significant change will occur. More fundamentally, changes to the tax system to discourage property speculation would allow the actual quality of housing (including considerations such as environmental performance and energy efficiency) to be a more significant factor in purchase decisions.

It is correct that emissions are generated through the life-cycle of a building or infrastructure. The vast majority of these emissions are from the use of energy to operate buildings. And the majority of energy consumed for the operation of buildings is used for heating and cooling, followed by ventilation, hot water generation and lighting.

Embodied energy of buildings is important but it is a one-off emissions event. The emissions related to planned maintenance and end of life demolition are similar one-off events. The related emissions can and should be reduced by using low-emissions materials. There is a good argument that pricing emissions should incentivise this.

As the report notes, the majority of residential construction in NZ is already low-embodied carbon due to being timber frame construction and timber cladding. The focus must therefore be on reducing embodied energy of commercial buildings that typically use emission intensive materials such as concrete and steel, and at a greater scale.

Operating buildings causes emissions for the entire lifespan, therefore reducing operational emissions by design is important to get right when buildings are first built. (Or in 'deep retrofits' for existing buildings.) Buildings with high operational emissions will lock-in the high emissions for the lifetime of the building. Significant capital costs are required to later retrofit buildings to reduce operating emissions. Such retrofit activities also have additional embodied carbon emissions that can be avoided by building low-emission buildings in the first place.

Buildings are not currently built to any 'emissions standard' as the Building Act and Building Code don't not consider emissions adequately. Therefore to assume pricing emissions will affect building operational emissions is a flawed assumption when the majority of buildings are built to the legal minima standards of the Building Code.

The solution is therefore to revise the Building Code to require buildings meet a determined emissions standard. The way this is most effectively implemented (as evidenced in other countries) is to set performance standards for allowable energy consumption for heating and cooling tied to a healthy indoor temperature and other health-related measures such as adequate reliable ventilation. To meet such requirements the building must be well insulated to ensure that the heating requirements are very low to deliver the required outcomes. The Building Code must also include ways to check the building design can deliver the required outcomes and a testing regime to check the buildings do perform in accordance with the requirements when constructed.

It should be noted that suggestions that 'passive solar' and 'green roofs' will reduce operational emissions are lacking in evidence. 'passive solar' has been shown to be ineffective for the most part due to inducing extreme indoor conditions that are not comfortable. 'Green roofs' are not typically part of the thermal envelope of a building and have little or no insulating effect to prevent heat loss through a roof. They also required fossil fuel based membranes and drainage materials to provide water-proof substrate. These materials are not as reusable recyclable compared to for example steel roofing materials and therefore will have relatively high associated embodied emissions. ('Green roofs' can have other environmental benefits, though)

Do we need to reduce emissions from buildings?

Noting that commercial and residential buildings account for more than half of NZ's electricity consumption provides a clear opportunity.

Concluding that the low emissions electricity system means building emissions are of low importance misses a key point. Renewable energy is not unlimited and there are significant gaps between the time and magnitude of electricity generation and time and magnitude of electricity demand. Building electricity demand is often highest outside sunlight hours in the morning and evening and in winter. These are all times when renewable electrical generation are lower.

The report acknowledges this and is clear that most emissions from electricity occur to meet periods of peak demand on winter mornings and evenings. These are the times that highly energy efficient buildings (for example, complying with the International Passive House Standard) require significantly less energy than typical buildings and therefore directly reduce operational emissions.

As such, highly energy efficient buildings (low operational emissions) are also effective energy storage systems. A building that is warmed during the day and retains that heat through the night through effective insulation levels, will put very little demand on the electricity grid at a times of high demand. Batteries are also important for storage and may power a house overnight but will not be adequate for the whole of the heating season (autumn/winter/spring).

Additionally, there are times when the rate of demand is increasing rapidly and power generation needs to swiftly ramp up to meet demand. There is most often a steep ramp up in the early evening when people return home from work and turn on the heating, start cooking, take showers etc. At the same time solar renewable generation in particular drops suddenly effectively amplifying the increase in demand by the mismatch with generation. This is referred to as the 'Duck Curve' as the graph somewhat resembles the profile a duck with the steep upwards curve mimicking the duck's neck. Typically this steep ramping up of supply needs to be meet with fossil fuel generation that can be switched on and off when required.

Highly energy efficient buildings (for example, complying with the International Passive House Standard) significantly reduce how much and how fast electricity demand ramps up. Reducing the ramp up and peak will alleviate or reduce the need for fossil fuel generation.

The report includes as an example of increase efficiency that "EECA (2018c) notes that the correct use of thermal mass, such as masonry walls and concrete slab floors, can help to moderate internal temperatures, making houses more comfortable and energy efficient." This is a claim that is sorely lacking in evidence. Thermal mass can help moderate overheating by absorbing excess heat, particularly in commercial

buildings where there is significant internal heat given off by people, equipment etc added to solar heat gains. The heat that is absorbed by the thermal mass then needs to be discharged overnight when the building is not occupied so that it is a comfortable temperature again the next morning. In housing, thermal mass is not very useful effective in increasing energy efficiency. Insulation is effective. There is ample research dating back from the 1970s that demonstrates conclusively that insulation is more effective at increasing energy efficiency and providing good indoor environments than thermal mass or a 'passive solar' approach.

As other sectors such as transport, agriculture and industry decarbonise to reduce emissions, this will increase the total demand for electricity. At the same time it is highly likely that future buildings will be more dependent on electricity than current buildings as the use of natural gas and fire wood are phased out in line with reducing emissions.

Building new electricity generating infrastructure takes significant time and capital investment. In contrast, reducing the electricity demand of commercial and residential buildings by a significant amount is a cost effective and efficient way to make the electricity already being generated go much further. For example, the reduction in electricity required to heat a house can instead be used to run an EV, directly reducing fossil fuel emissions.

The net effect of this being significant emission reductions, with the co-benefits of buildings that are cheaper to operate and warmer and healthier for the occupants.

References

1. Duck curve https://en.wikipedia.org/wiki/Duck_curve
2. Is Efficiency Dead? Passive House and the Clean Energy Revolution <https://www.nkarch.com/blog/is-efficiency-dead-passive-house-and-the-clean-energy-revolution>
3. Batteries Included - The Passive House + Renewable Energy Advantage <http://www.greenbuildingadvisor.com/blogs/dept/guest-blogs/batteries-included>
4. Why the grid is not a bank <https://www.utilitydive.com/news/going-beyond-net-zero-to-passive-house/446594/>
5. The International Passive House standard: https://en.wikipedia.org/wiki/Passive_house represented in NZ by <http://phinz.org.nz>
6. Everything I ever knew or said about green sustainable design was probably wrong <https://www.treehugger.com/green-architecture/everything-i-ever-knew-or-said-about-green-sustainable-design-was-probably-wrong.html>

d) Local Government as a Role Model

Local government and the public sector generally can be a role model in mitigation in many ways – vehicle choice, procurement, investment, heating and use of renewable energy. Some local authorities are taking such actions: there are six that are part of the Certified Emissions Measurement and Reduction Scheme (CEMARS) and Christchurch City Council has gone further to commit to becoming carbon neutral by 2030. However, there are many more councils for whom climate change mitigation is not a priority. Direction, (in the form of legal compulsion, advice and/or assistance) from central government would change this.

Such direction is especially important when local authorities are making decisions to invest in infrastructure and plant – without a sufficient focus on the greenhouse gas emissions resulting from these investments, they can

become 'locked in' to having high emissions for as long as these assets last. For example, New Plymouth City Council's recent decision to use natural gas for thermal drying of their sewage sludge, rather than biomass or an electric heat-pump. They are now locked in to using fossil fuel for this activity for 20-30 years. The cost of more rapid retirement and replacement of these assets, likely to be required to meet national emission reduction goals, will directly impact upon ratepayers. We request that the Commission recommend to government that clearer direction is given to local authorities to use their investment decisions to reduce their dependence on fossil fuels and get the country more quickly on track to a low carbon economy and avoid unnecessary costs. Such direction could be given via an amendment to the Local Government Act.

We support recommendation 11.4 regarding government agencies purchasing low emissions vehicles. However, we note the Commission does not extend this concept of using Government purchasing power to other areas. These areas include but are not limited to:

- Electricity: increased demand for 100% renewable electricity (at present offered by only one supplier in the country) may encourage its development. Presently all central government and many local government bodies use the All-of-Government Electricity Buying Group operated by MBIE. There is presently no consideration of GHG emissions in their assessment criteria.
- Office space: EECA operates the national building energy rating scheme 'NABERSNZ', which gives a star rating to office buildings for their real-world energy performance. By making having a NABERS rating mandatory for all its office leases, the government would influence the wider market leading landlords to improve the energy efficiency of all their buildings. This is exactly what happened in Australia, where NZ imported the NABERS scheme from.

We suggest that the Commission investigate the possibility of public sector bodies (including local authorities, central government departments, DHBs and CRIs) being required to account for their organisational GHG emissions using the ISO-14064 standard, which includes not only their direct emissions, such as from their energy use, but also from their supply chain (so-called 'scope-3' emissions). In this way government purchasing could have a significant effect on the business sector's attitude and activity in relation to GHG emissions.

e) Emissions Trading Scheme

R12.1 and R12.2, state that decarbonisation of the electricity sector should be entrusted solely to a reformed and improved Emissions Trading Scheme (ETS). GWRC believes that supportive policies are also essential, given that history has shown (as the Commission notes) the ETS has been ineffective, in part because its settings were too easily modified.

Supporting measures that enable the uptake of renewable electricity could be implemented that do not have serious unintended consequences. A wider suite of complementary policies and actions will reinforce the direction of travel and make it less likely the transition to a low carbon economy will stall, for example, due to short term political pressures, or increases to the price of technologies.

The failure of the ETS brings into sharp relief the fact that markets are a tool, not a solution in and of themselves. Objectives, such as the essential need to transition to a low carbon economy in the timeframe demanded by staying with the 2°C global warming limit, are achieved through deliberate action, not by taking ‘hands-off’ or ‘wait-and-see’ approaches.

More broadly, the effect of increased prices as a result of a carbon price on purchasing decisions appears to be over-estimated by the Commission. Generally, small differences in operating costs are not a material consideration in a decision to purchase an asset such as a building, vehicle or piece of equipment, assuming that the purchaser even had such information available when they made a decision. The Commission seems to understand this with respect to electric vehicles, as they have recommended a wide suite of complementary measures such as a feebate and minimum standards. We recommend that the Commission extend this logic to other sectors.

There must be some overall constraint on the total amount of carbon emitted from the country. While technologies have become much more efficient over the last few decades (e.g. vehicles, appliances, lighting, etc) this has not translated into any reduction in national emissions. Growth in demand has cancelled out the potential reductions in absolute emissions that would have resulted had all other factors remained equal. By creating genuine scarcity for the rights to dump greenhouse gas pollution into the atmosphere, reductions may finally be achieved, by diverting any growth exclusively into low emissions technologies. The other essential side of the equation is to reduce the supply of fossil fuels, which would have a similar and complementary effect. We ask that the Commission consider whether they have gone far enough in their recommendations – whether that taken together they would get the country on track to becoming net-zero emissions by 2050. New Zealand and world lacks the time now for tentative steps in the right direction: changes must be significant, decisive and taken as soon as possible. The Commission has an opportunity with this report to help ensure this happens. Please don't waste it.