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Subject: Adopting a bio-based economy will markedly improve the fair pricing of electricity to consumers!

Submission on: Electricity Price Review – Options Paper

1. Thank you for the opportunity to comment on the Options paper related to the Electricity Review. Electricity is now a critical commodity in our modern economy providing a broad range of services that underpin all aspects of our lives.
2. This submission primarily focuses on the section related to "Preparing for a low carbon future" and the report's proposed options under this section.
3. Gifford Consulting is an applied research company with over 30 years experience in the renewable energy, land use, environmental and community change areas.
4. In preparing for a "low carbon future" the electricity market cannot be viewed in isolation of the whole energy supply system especially if efficient, competitive, fair and affordable issues are to be addressed.
5. To broaden the perspective of the future role of the electricity sector and the pricing of electricity into the New Zealand economy it will be increasingly important to consider the interrelationships between producing "renewable electrons" (i.e. renewable electricity) and using alternative strategies for replacing fossil fuel derived carbon for biogenic[1] derived carbon. There is a considerable body of international literature that is highlighting that electricity production and supply to customers' needs to be linked to the emerging circular bio-based economies. Much of this research and commercial development has significant relevance to New Zealand – though to date it appears to have been largely ignored in such review processes like the current review on electricity pricing and it fairness to consumers (Figure 1)

[1] Biogenic carbon refers to carbon that is directly derived from the growing of biomass (i.e. the capture of atmospheric carbon by the biosphere). Such carbon is renewable and effectively carbon neutral in terms of the amount of carbon released into the atmosphere.

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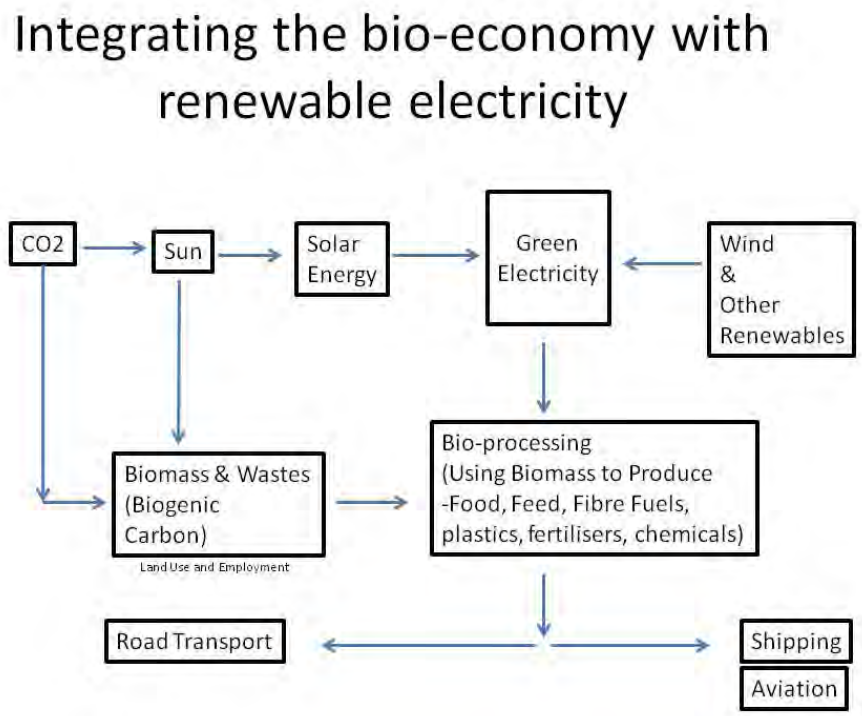

Figure 1. Bio-economy integrated with renewable electricity

6. Bio-based economies are increasingly using biogenic carbon in many ways to substitute for fossil fuels including, processing heat, transport fuels, distributed generation of electricity and for the development of new industrial sectors using renewable resources for their production such as bio-based plastics and building materials. The bio-based economy provides a range of alternative strategies to directly substitute the use of fossil fuels with sustainable fuels and therefore avoid the need for more costly electricity especially if new infrastructure is required is required for its distribution.
7. Bio-based economies
    a. Replace fossil fuel use for electricity, heat and transport.
    b. Encourage the uptake of distributed electricity generation.
    c. Utilise municipal and biomass waste to produce electricity and to offset municiple treatment, landfill costs and minimise contaminant discharges to land and water.Such an approach will minimise long term infrastructure costs for local authorities and the effect of rates increases.
    d. Generate revenue from waste treatment processes to offset operating costs and enhance commercial returns on investment for a diversified range of financial partners into the energy and electricity sectors.
    e. Generate heat for industry, processing / manufacture and provide energy for buildings.

f. Generate new bio-based products from the extraction of renewable chemicals as a co-product of energy production and electricity generation.

g. Underpin the sustainable transition of our land use for forestry, farming and agriculture and encourages integrated systems for the production of food, feed, fibre and fuels.

h. Underpins the economic resilence of communities and regions.

i. Capture and reduce GHG emmissions.

j. Help meet the increasing global market demand for sustainably sourced product.

k. Improve the overall economic sustainability of the economy.

Specific options

8. **Option G2 recommends "examining security and resilience of electricity supply".**

The proposed option indicates that the Electricity Authority conducts a thorough review of security, reliability and resilience of the electricity supply and suggests that this should be undertaken by the Security and Reliability Council. Although this may appear an appropriate approach, based on the existing composition of this Council it appears that such a council does not have the full capacity and capability to look beyond the existing electricity supply and retail systems.

To have a more effective evaluation of the security, reliability and resilience of electricity supply in New Zealand would require significant broadening of the scope and composition of any review group beyond the current Security and Reliability Council of the Electricity Authority. If this were not to occur then options outside the existing electricity sector would not be considered appropriately. By not broadening this review then there are risks that this would lead to reduce the overall competiveness of the New Zealand economy as our trading partners move to bio-based economies using biogenic carbon compared to an 'electricity centric' based-economy which is the current focus of Government.

9. **Option G9 : "Encourage more co-ordination among agencies"**

This option indicates that the Government should encourage officials and regulators to be more aware of and responsive to wider government policy and regulatory changes aimed at implementing New Zealand's move towards a low emission economy. The proposed suggestion is that this is facilitated through forums like the Council of Energy Regulators. The options report indicates that this needs to be broadened and that to address challenges will involve links well beyond the electricity sector. This we agree with, but would like to reinforce the need to more seriously assess the benefits of the bio-economy in this context. Furthermore, it is necessary to examine how energy based on biomass can impact on the

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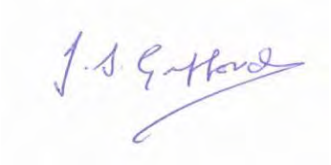
future supply and pricing of electricity for a broad range of services in New Zealand. Such an analysis needs to take into account the role of bio-based fuels as drop-in fuels for the entire transport fleet and therefore influence the current Government's fixation on the adoption of electric vehicles which is only one of many practical options to address greenhouse gas emissions in the transport sectors. Drop in fuels can be used now and use existing infrastructure for distribution and supply of fuel to consumers.

10. **Option G4 : Improve the energy efficiency of new and existing buildings.**

    The options report emphasises the importance of energy efficiency in the building sector, but in the context of a "low emissions economy" there are a range of other aspects that also need to be taken into account. A report provided by 'Thinkstep'[2] indicates that if a life cycle approach is taken to examine the role of the building sector on greenhouse gas emissions – then this sector contributes 20% of the total emissions based on consumption. This analysis takes into account the energy used to make building materials and for the international trade of the building materials. This indicates that any focus on the use of electricity in the building sector therefore needs to consider the energy use in buildings, energy used in the supply and manufacture of building materials and the use of buildings for storing biogenic carbon (i.e. using timber buildings to store carbon).

11. We trust that you will take on board our comments. The Bioenergy Association provides a source of information on the use of bioenergy and the development of bio-based economies. This information can be viewed at www.bioenergy.org.
12. If you would like any further information related to this submission, we would welcome the opportunity to discuss the issues raised with your review panel.

Yours faithfully



John Gifford
For Gifford Consulting

[2] Thinkstep, 2018: The carbon footprint of New Zealand's built environment: Hotspot or not? https://www.thinkstep.com/content/carbon-footprint-new-zealands-built-environment-hotspot-or-not