Submission by

to the

Ministry of Business, Innovation & Employment (MBIE)

on the

Discussion paper: Accelerating renewable energy and energy efficiency

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DISCUSSION PAPER: ACCELERATING RENEWABLE ENERGY AND ENERGY EFFICIENCY – SUBMISSION BY BUSINESSNZ ENERGY COUNCIL[1]

1.0 INTRODUCTION

1.1 The BusinessNZ Energy Council (the 'BEC') is pleased to have the opportunity to provide a submission to the Ministry of Business, Innovation & Employment (MBIE) on its discussion paper: *accelerating renewable energy and energy efficiency*, published on 19 December 2019 (referred to as 'the paper').

1.2 The BEC is a group of New Zealand's energy sector organisations taking a leading role in creating a sustainable energy future. As a division of BusinessNZ, New Zealand's largest business advocacy body and member of the World Energy Council (WEC), BEC members are a cross-section of leading energy-sector businesses, government and research organisations. Together with its members, the BEC seeks to influence the energy agenda for New Zealand.

1.3 With more than 40% of greenhouse gas emissions (GHG) coming from the energy sector[2], BEC welcomes the Government's assessment of policy options that can help in accelerating the reduction of energy sector- related GHG emissions.

1.4 BEC supports the acceleration of renewable energy (alongside other carbon reduction measures), particularly given the need to increase electricity capacity to support natural load growth and the decarbonisation of transport and heat.

1.5 BEC supports the assessment of policy options using the energy trilemma framework. The energy trilemma enables us to take a holistic approach when improving energy sector-related policy. Considering energy sustainability alongside energy affordability and energy security, the energy trilemma helps to navigate the energy transition more effectively, building prosperity for all New Zealanders.

1.6 BEC agrees 'there is no one-size-fits-all policy solution suitable for the energy sector as it cuts across the entire economy' and 'effective change may require unique transition pathways and different timing and sequencing of changes across different sectors.[3]

1.7 This submission provides some general comments on the proposed policy options and introduces some alternatives in the general comments' section. The submission also discusses some of the options outlined in the paper under the detailed comments section.

2.0 SUMMARY OF RECOMMENDATIONS

2.1 BEC:

a) supports an effective and efficient decarbonisation of New Zealand's economy and suggests an economy-wide carbon price as a first-best solution. There is certainty given as to what entities would be included within the system (p.5);

b) supports the principle of supplier and technology neutrality when considering regulatory changes. Taking a technology, feedstock, and process agnostic approach is key to making the most of scarce resources, sending equitable pricing signals, and avoiding unnecessary controversy and excessive complexity. BEC suggest that international best-practice emissions reduction efforts are reflective of this approach (p.7);

c) suggests that Government leverages financial incentives of firms to improve energy-related performance and works to build capacity for performance improvement rather than moving forward with potentially duplicative regulation (p.8);

[1] Background information on BusinessNZ Energy Council (BEC) is attached as Appendix One.

[2] Ministry for the Environment. (2019, April). *New Zealand's Greenhouse Gas Inventory 1990–2017: Snapshot*. At page 1.

[3] Ministry of Business, Innovation, and Employment. (2019, December*). Discussion paper: Accelerating renewable energy and energy efficiency.* At page 10.

d) suggests that thought be given finding a way to bring together the various disparate parties involved in the forestry industry with a view to encouraging them to cooperate in the development of efficient biomass production (p.9);

e) supports working closely with business to address the barriers preventing the removal of fossil fuels and investment in best practice energy efficient technology (p.9);

f) suggests that banning a specific energy source for a specific use as a substitute for sending cost signals to carbon emitters risks creating unnecessarily high abatement costs and regulatory complexity (p.11);

g) suggests that while coal consumption has unique negative externalities that may justify a levy to fund harm mitigation, a levy on coal consumers designed to fund emission reduction efforts in process heat is not warranted. Taking a sector or feedstock specific, siloed approach to funding for emissions reduction efforts should be avoided (p.12);

h) supports a non-hierarchical approach to RMA reform. Adding concrete objectives to the NPSREG, reflective of the benefits associated with renewable electricity generation, provides a strong option for making planning provisions more uniform (p.13);

i) agrees that 'the EA has a key role to play in the ongoing design and implementation of the demand response market for New Zealand' and suggests that the EA accelerates its existing work programme. The transition to a low emissions economy will require a substantive amount of investment and regulatory certainty will be key. BEC suggests removing further underlying regulation barriers to deploy innovation in all its forms as well as investigating medium term demand response solutions (p.14); and

j) suggests further investigating market-based options that deliver security of supply from low carbon sources such as hydro and bioenergy (p. 15).

3.0 GENERAL COMMENTS

DECARBONISING NEW ZEALAND'S ECONOMY

3.1 Accelerating the renewable energy development in New Zealand is important. Recent events have shown how a shortfall in supply is causing electricity prices to rise[4] which affects all sectors of the economy. The effect of dry years/low rainfall could be exacerbated by climate change. As such, diversification of the electricity sector, which is heavily dependent on hydro, is needed for both economic and environmental reasons. We note that:

a) solar, offshore wind and onshore wind are at a high state of technology readiness – although we caution that a mix of technologies is needed for effective, lowest cost supply diversification;

b) New Zealand's experience in renewable energy deployment is strong – particularly in the Pacific and amongst our members; and

c) there is an opportunity, with renewable/distributed technologies, to utilise energy revenues to support communities i.e. enable the democratisation of energy.

3.2 The decarbonisation of New Zealand's economy should not be looked at in isolation from other issues or challenges. It is important to consider the entire economy. The prospect of increasing complexity in energy markets suggests caution in designing policy frameworks.

3.3 The BEC2060 TIMES-NZ model[5] is well-placed to assess the complex interactions in the New Zealand energy system. The project, jointly developed by businesses, academia, government and non-government organisations, has generated a set of modelling results for two quite different stories about the future that are based around combinations of factors about which we are highly uncertain (for example, the price of carbon, and the extent to which government wishes to intervene in pursuit of emission reductions). How New Zealand responds to climate change relative to the rest of the world is one of these combinations. The purpose of our modelling and storytelling is to encourage the asking of

[4] Electricity Authority. (2020). *Wholesale Market Reports.*

[5] More information about the BEC2060 energy scenarios can be found here: https://www.bec2060.org.nz/.

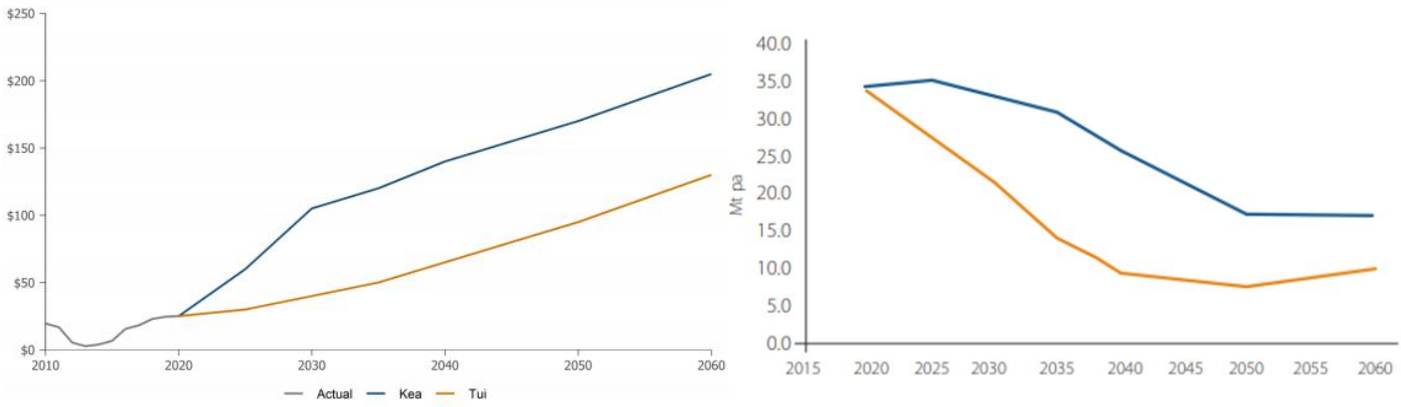
the 'what-if' questions and to be open to alternative futures that might come to pass. This capability is critical to the development of resilient, durable, long-term policy and investment decisions. The two stories are:

a) **KEA** – a future where climate change is recognised by society as the most important priority. New Zealand is moving faster than the rest of the world when acting on climate change. The country aggressively transforms into a low-emissions economy, faster than its global trading partners, competitors and peers. The domestic carbon price is higher than the global carbon price. Governments act to encourage a faster transition to non-fossil fuelled energy sources.

b) **TUI** – a future where climate change is recognised as one of many competing priorities. New Zealand is moving more slowly than the rest of the world in acting on climate change. The country leverages off its traditional comparative advantage to generate wealth. A 'follower' approach is taken to climate policies and solutions made possible by the actions of trading partners and competitors. The domestic carbon price is lower than the global carbon price. The government remains concerned about picking technology 'winners', preferring instead to allow individual preferences to dictate the pace of change so that a diversity of options comes to the fore.

3.4 As mentioned above, the scenario narratives are driven by society's response to the climate change challenge. A key way the two responses are reflected in the modelling is through the carbon price. The emission reduction outcomes shown in Chart 1 reflect both the carbon price model inputs and all the behaviours referred to in the narratives.

Chart 1: BEC2060 – Carbon Prices (model input left) vs Energy Carbon Emissions (model output right)



3.5 By 2030 the difference between the carbon price in Kea and Tūī is \$65/tCO_2-e with Kea at \$105/tCO_2-e and Tūī at \$40/tCO_2-e. That spread widens to \$100/tCO_2-e by 2060. Chart 2 shows emission reductions by sectors.

Chart 2: BEC2060 – Emissions by Sector

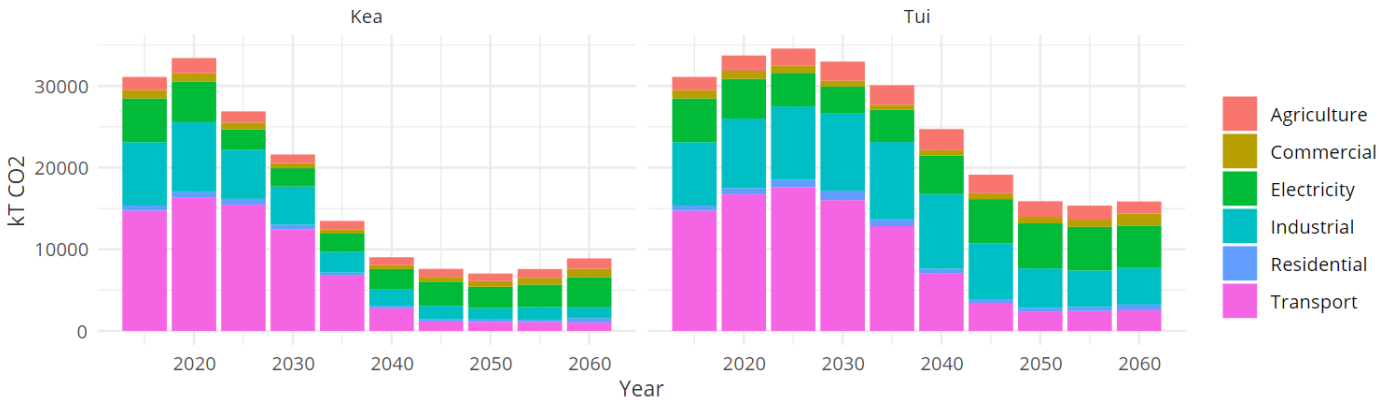
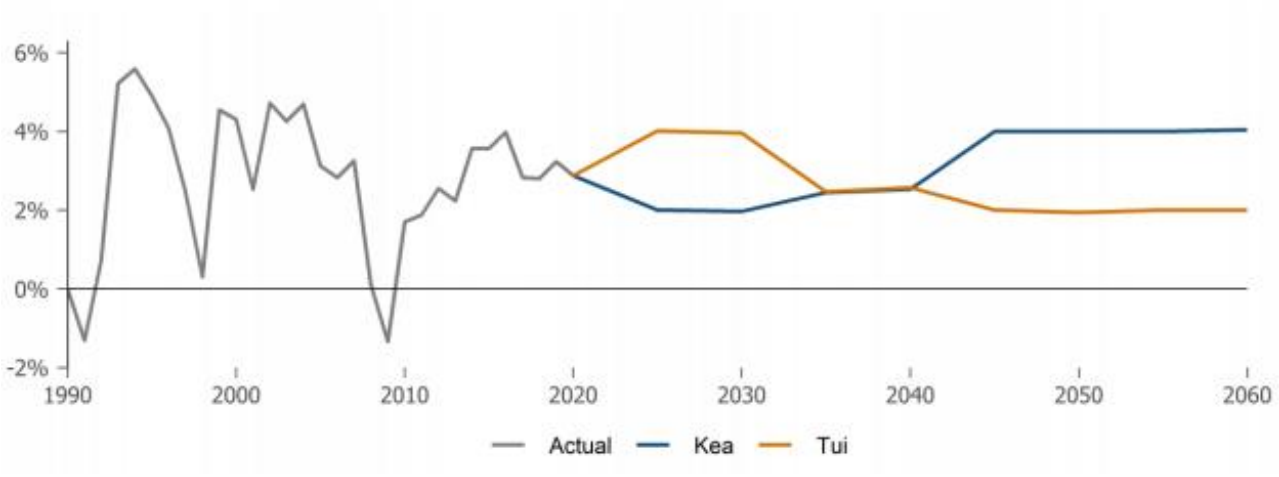
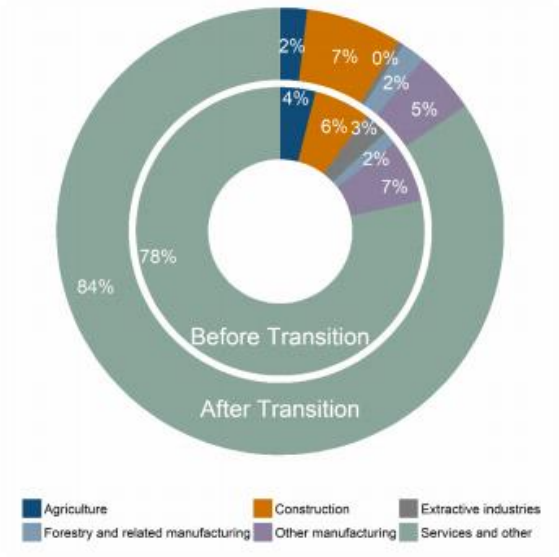


Chart 3: BEC2060 – GDP development and Sectoral Growth Trend Break-down



3.6 Chart 3 shows the GDP development over time and the pie chart breaks down GDP into sectoral trends. Given the nuanced GDP trends for Tūī and Kea, the outcomes are essentially timing related. In Kea the economy transformation happens earlier. For Tūī, the shift happens later as it tries to adapt. Aside from the timing issue, chart 3 illustrates the changing growth rates and the way the sectoral splits might change through the forecast period in an economy that is decarbonising. Agriculture and extractive industries suffer compared with construction and services, which thrive. Forestry and timber processing are the only traditional sectors which maintain presence in the new economy, as those have been most able to transition their fuel sources to renewables. Forestry also benefits from the speed at which decarbonisation proceeds. Where decarbonisation becomes too hard or too expensive (e.g. aviation jet fuel, very high temperature process heat or some marine bunker fuel requirements), offsetting becomes a necessity thus benefiting the forestry sector.



3.7 As can be seen in a sample of the BEC2060 energy scenarios, whether New Zealand leads or lags the rest of the world in climate change ambition has implications for the modelled economic and emissions outcomes. Insights can be gained from the distinctions between the two stories and their results. This allows us to think critically about the differences, drivers, and the policy and investment levers required to achieve these outcomes and the trade-offs, explicit or implied between them and their acceptability. It is important that we do not overlook the micro-economic impacts.

3.8 Reliance should primarily be placed on policy instruments that act at the system level (e.g. the carbon price), which then allow various markets within that system to collectively adapt to find the most efficient response. While governments can express aspirations for various parts of the system, any actions likely to change incentives in one part, in isolation, should be approached with caution, and – at the very least – be subject to rigorous cost-benefit tests which consider in detail the consequential effects on other sectors.

BEC supports an effective and efficient decarbonisation of New Zealand's economy and suggests an economy-wide carbon price as a first-best solution.

TECHNOLOGY NEUTRALITY

3.9 Policies that are neutral between technologies and sectors and fully account for costs are likely to prove the most efficient, avoiding unintended negative consequences. Future-proofing our energy system means considering alternative solutions, diversification of supply and ensuring technologies have equal market opportunities.

3.10 Targeting funding for emission reduction activities on those technologies and processes with the lowest marginal abatement costs will be necessary if the limited financial resources available are to make the most difference in meeting New Zealand's carbon budget. Additionally, targeting expenditure on the most efficient emissions reduction activities would likely reduce the degree of contention associated with both revenue collection and funding.

3.11 However, good risk management shows that this should not be to the exclusion of investing in low cost actions to increase the options New Zealand has when it comes to addressing higher marginal cost reduction activities. Typically, this would involve investment into applied directed research activity to lower cost or find lower cost options. Again, provided this is undertaken credibly it should not be particularly controversial.

3.12 The BEC notes that international examples of emission reduction efforts by governments appear to place emphasis on the marginal costs of abatement in making funding decisions for these reasons:

a) <u>European Commission:</u>

- Innovation Fund[6]

The European Commission is currently tendering for projects with an implementation lifecycle from 2020-2030. Funding is provided by the auction of 450 million EU ETS allowances from 2020-2030 with total funding reliant on carbon prices in the next decade. Total funding is expected to reach about 10 billion euros over the 10-year life, supplemented by unspent NER300 (a predecessor fund/initiative) funds. Assessment criteria for funding include:

- Effectiveness of GHG avoidance;
- Degree of innovation;
- Project viability and maturity;
- Scalability; and
- Cost efficiency (cost per unit of performance).

b) <u>Australia</u>

- Climate Solutions Fund[7]

A further $2 billion AUD of funding to continue funding the low-cost abatement first demonstrated by the Australian Government's Emission Reduction Fund. Assessment criteria for applications to the fund are detailed below:

- the potential uptake of the method and the likely volume of emissions reductions;
- whether emissions reductions can be estimated with a reasonable degree of certainty and at an acceptable cost;
- whether the activity could have adverse social, environmental or economic impacts; and
- whether the activity could be promoted more efficiently through other government measures.

c) <u>Canada</u>

- The Low Carbon Economy Fund[8]

The fund plans to provide $1.4 billion CA to provinces and territories that have adopted the Pan-Canadian Framework on Clean Growth and Climate Change. $500 million will be directed towards the 'Low Carbon Economy Challenge', with $50 million of this value ringfenced for smaller organisations and indigenous/minority groups. Assessment criteria for applications to the fund are detailed below:

- annual tonnes of GHG reductions achieved in the year 2030 per federal dollar invested;

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[6] The European Commission. (2019). *"Innovation Fund." Climate Action.* Retrieved from: https://ec.europa.eu/clima/policies/innovation-fund_en.

[7] The Australian Department of Agriculture, Water, and the Environment. (2020). *"Climate Solutions Fund – Emissions Reductions Fund."* Retrieved from: https://www.environment.gov.au/climate-change/government/emissions-reduction-fund.

[8] The Canadian Government. (2020, February). *"The Low Carbon Economy Fund."* Retrieved from: https://www.canada.ca/en/environment-climate-change/services/climate-change/low-carbon-economy-fund.html.

- cumulative GHG emissions reductions over the lifetime of the impact per federal dollar invested;
- project feasibility and risk; and
- other benefits that contribute to clean growth and a clean environment.

3.13 These flagship funding mechanisms all place heavy emphasis on funding projects with the lowest marginal abatement costs. The BEC suggests that this approach reduces the likelihood of controversy and excessive complexity in targeting the expenditure of resources for emission reduction efforts. A contestable funding system based on highest carbon reduction per capital dollar could be considered. Particularly, we note the equitable funding model of the European Commission's Innovation and NER300, where those purchasing the right to emit through the New Entrants Reserve contribute directly to emission reductions efforts through the funding of lowest-cost abatement.

BEC supports the principle of supplier and technology neutrality when considering regulatory changes. Taking a technology, feedstock, and process agnostic approach is key to making the most of scarce resources, sending equitable pricing signals, and avoiding unnecessary controversy and excessive complexity. BEC suggest that international best-practice emissions reduction efforts are reflective of this approach.

4.0 DETAILED COMMENTS

OPTION 1.1: CORPORATE ENERGY TRANSITION PLANS

4.1 As previously outlined in our December 2019 submission on a joint MFE/MBIE proposal to require firms to report their climate risks and strategy in the format suggested by the Task Force on Climate Related Financial Disclosures[9], government assistance should be targeted towards capacity building and support, rather than moving forward with further regulatory requirements.

4.2 The private sector has a direct financial interest in reducing energy costs, its energy intensity of production, and broadcasting good governance around these issues, without the use of forced reporting. While energy use and emissions (NZ ETS) come with direct costs, firms are increasingly facing pressure from shareholders and consumers to reduce the energy intensity of production and manage climate risks. We suggest that this is reflected in a greater risk-premium assigned to the issues of debt and equity by firms with low Environmental, Social, and Governance (ESG) scores.[10]

4.3 Although it may be possible to determine production volumes and energy operating costs from the annual reports of some businesses, these estimations would inevitably be within a margin of error. New Zealand's energy market is fundamentally different from other international markets as a result of its isolation and size. Combining these estimates with emissions information may increase the risk that greater information transparency materially affects a business's competitive position.

4.4 BEC agrees that for some organisations, greater detail in assessment of their own energy use would be wise, and by virtue of their scale, the proportional cost of the proposed audits would not be significant. BEC is, however, concerned that without any costing, the discussion document suggests that compliance costs for measurement, audit and reporting 'are not expected to be significant for large energy users'.[11] With a potential bar set at $2 million in annual energy spend, the largely fixed costs of internal and external audits and preparing public reports that can be shouldered by larger players could potentially be a significant burden for smaller operators.

4.5 BEC is also concerned that there could be significant regulatory overlap between option 1.1 and potential TCFD disclosures. While the discussion document claims that 'the requirements of each proposal are largely targeted at different types of business organisations',[12] the current TCFD proposal includes banks,

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[9] BusinessNZ and BusinessNZ Energy Council (BEC). (2019, December). *Submission on the 'climate-related financial disclosures discussion document.'* Retrieved from: https://www.bec.org.nz/__data/assets/pdf_file/0005/185630/BusinessNZ-Submission-on-Climate-Related-Financial-Disclosures-Discussion-Document_13-December-2019.pdf

[10] Barclays. (2016, October). *"The positive impact of ESG investing on bond performance."*

[11] Ministry of Business, Innovation, and Employment (MBIE). (2019, December). *Discussion paper: Accelerating renewable energy and energy efficiency.* At page 22.

[12] MBIE. (2019, December). *Discussion paper: Accelerating renewable energy and energy efficiency.* At page 24.

general insurers, asset owners, asset managers, and all entities with public debt or equity.[13] Many of these organisations will have an annual energy spend of more than $2 million.

4.6 Further, while the discussion document suggests that disclosure and governance related to scope 1, 2, and 3 emissions as well as targets related to climate-related risks and opportunities and performance against these targets[14] is the only overlap between TCFD and proposal 1.1, in a practical sense this is a significant duplication of responsibilities. Governance, strategy, risk management, and metrics/targets are the four core components of TCFD[15] disclosure and directly relate to the potential obligations that option 1.1 stands to impose – effectively doubling up mandatory disclosure in these areas.

BEC suggests that Government leverages financial incentives of firms to improve energy-related performance and works to build capacity for performance improvement rather than moving forward with potentially duplicative regulation.

OPTION 2.1: DEVELOPING MARKETS FOR BIO ENERGY

4.7 For the last couple of decades, the term bioenergy has been used to describe the utilisation of woody biomass for higher value purposes. However, upgrading woody biomass for these higher value purposes is complex as wood has difficult chemistry to engineer around for scale solutions.

4.8 Still barely investigated in New Zealand are areas of bioplastics. Some work in this area is underway in conjunction with Taiwan. NZ Bio Forestry and its Taiwan-based research and technology partners plan to build a pilot plant developing a biodegradable alternative to single-use plastics, with the aim of developing a high-tech bioplastics pilot plant alongside new timber processing facilities in Marton, in the Manawatu-Wanganui region. The technology is already in use in Taiwan to produce biofuels and bioplastics for commercial use.[16]

4.9 Globally viable technologies do exist that could assist New Zealand to upgrade its bioenergy value proposition and in the case of fuels provide a very valuable migration pathway for the liquid fuels sector over a 20+ year period. This would enable the sector to migrate through to a more robust mix of renewable fuel, electrification and potentially, hydrogen.

4.10 Domestically, biodiesel is available now in some regions and can be used as an immediate GHG reduction opportunity in current vehicle fleets. For example, a blend of 5% biodiesel with mineral diesel could reduce GHG emissions by around 4% per tank. However, the cost of producing biofuel domestically is not competitive with prevailing fuel prices, impacting consumer demand and the ability of potential suppliers to continue to invest.

4.11 For woody biomass, the biggest challenge is not so much on the technology side but on the supply side. Today, woody biomass is available from the following sources: green waste, forestry waste, forestry slash and pruning, agricultural waste and forestry production. There is a large, unused resource available from harvested forest. Off-cuts are sitting at the edge of skid sites – simply because there is no market for them (also transports costs are critical). This biomass is produced in every harvested forest: sufficient volumes are available, predictable and continuous. Options going forward:

a) In the near term, waste streams require new logistical thinking and the development of a much more granular regional focus i.e. reviewing these waste streams on a region by region basis to work out the biomass mix potential. Also, better regional supply data is required to give investors' confidence. From this, baseline scale can be achieved by adding in production forestry (for example purchasing from the pulp market to fill the gap).

b) To increase the scale of bioenergy medium term/long term, New Zealand could investigate energy cropping (growing biomass for bioenergy purposes). This would allow for more efficient and low-cost operations suitable for unused marginal land (i.e. no pruning etc. would be required – straight trees are not necessary for energy cropping. However, the key barriers preventing this switch seem to be

[13] MBIE. (2019). *Climate related financial disclosures discussion document.* Retrieved from: https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/Climate-related-financial-disclosures-discussion-document.pdf. At page 38.

[14] MBIE. (2019, December). *Discussion paper: Accelerating renewable energy and energy efficiency.* At page 24.

[15] Financial Stability Board. (2019). *"Core Elements of Recommended Climate-Related Financial Disclosures."* Retrieved from: https://www.fsb-tcfd.org/publications/final-recommendations-report/core-elements-of-recommended-climate-related-financial-disclosures/

[16] NZ Bio Forestry Ltd. (2019, November). *NZ's first commercial bio plastics facility in Central North Island a step closer.* Retrieved from: https://db456ae4-33ad-423b-8849-3eab34568c9b.filesusr.com/ugd/5a6bb5_dc2fb6839eb34daa9976bb0cfcffd105.pdf

the existing forestry sector and the approach taken by the capital supporting this sector's current structure and the dominance of BAU forestry businesses. BAU forestry is generally characterised by a complex and dis-intermediated layered matrix of ownership and control (someone owns the land, someone owns the forest, someone owns the cutting rights, someone has a forward contract to purchase the timber), often different parties. Current business models are a 'market play' over up to the 30-year life of the forest.

4.12 New Zealand might want to explore the development of an energy cropping leadership model focused on unproductive marginal land, that seeks to play to the climate's strengths and nuances on a regional basis where the best biomass is grown for maximum yield per hectare.

BEC suggests that thought be given finding a way to bring together the various disparate parties involved in the forestry industry with a view to encouraging them to cooperate in the development of efficient biomass production.

OPTION 3.2: COLLABORATE WITH EIHI INDUSTRY

4.13 As found in the technical paper entitled *Process Heat in New Zealand: Opportunities and barriers to lowering emissions'*, most process heat emissions are produced by a relatively small number of super-large heat plants fuelled by coal and gas, with over 90% of the emissions coming from less than 5% of the heat plant'(s).[17] However, while falling technology costs, greater technology choices and energy pricing, including a price on carbon, play an important role in signalling efficient responses by business and consumers, a range of factors affects choices and decision-making, such as capital and infrastructure constraints, business capability issues and the availability of timely and cost-effective technology.

4.14 Large, high-heat plants have only limited commercial economic options for improving their process heat efficiency. Most are using in-built technology, which is expensive to replace, for the duration of the plant's life. Besides business economic barriers, a switch to other fuels (electrification and biomass) wouldn't provide a more efficient and sustainable alternative. Switching fuels is therefore for most high-heat users not an option. Electrification and biomass seem to be a better choice for low to medium heat temperature users.[18]

4.15 A stronger collaboration between government and EIHI industries could help to further address barriers preventing the removal of fossil fuels. BEC could help facilitate this by providing an independent 'platform for collaboration on emissions reduction and knowledge sharing of existing and emerging technical opportunities'.[19]

BEC supports working closely with business to address the barriers preventing the removal of fossil fuels and investment in best practice energy efficient technology.

OPTION 4 – BAN ON COAL IN PROCESS HEAT

4.16 BEC agrees that the externalities resulting from the consumption of fossil fuel feedstocks for the purpose of energy generation in process heat are a concern. While coal makes up 11% of aggregate process heat fuel consumption, it produces a disproportionate 26% of CO_2-e emissions.[20]

4.17 BEC supports the New Zealand Emissions Trading Scheme (NZ ETS) as a pricing mechanism to incentivise a reduction in these disproportionate emissions. A universal, market-based mechanism to place a price on emissions, irrespective of their industry or the original process, is the best mechanism available for connecting marginal abatement costs to the price emitters pay. This in turn incentivises emission reduction efforts and pushes previously uneconomic technologies and processes into viability.

4.18 Despite the claim in the discussion document that 'carbon price expectations are often not factored into decision-making because of this [future carbon price] uncertainty,'[21] emitters are increasingly doing

[17] MBIE and the Energy Efficiency and Conservation Authority (EECA). (2019, January). *Technical paper: Process Heat in New Zealand: Opportunities and barriers to lowering emissions.* Paragraph 18 at page 9.

[18] BEC. (2019, February). *Submission on MBIE's and EECA's technical paper entitled 'Process Heat in New Zealand: Opportunities and barriers to lowering emissions.* At page 2.

[19] MBIE. (2019, December*). Discussion paper: Accelerating renewable energy and energy efficiency.* At page 38.

[20] MBIE. (2019). *Process heat – current state factsheet.* At page 2. Retrieved from: https://www.mbie.govt.nz/assets/8c89799b73/process-heat-current-state-fact-sheet.pdf

[21] MBIE. (2019, December). *Accelerating renewable energy and energy efficiency.* At page 40.

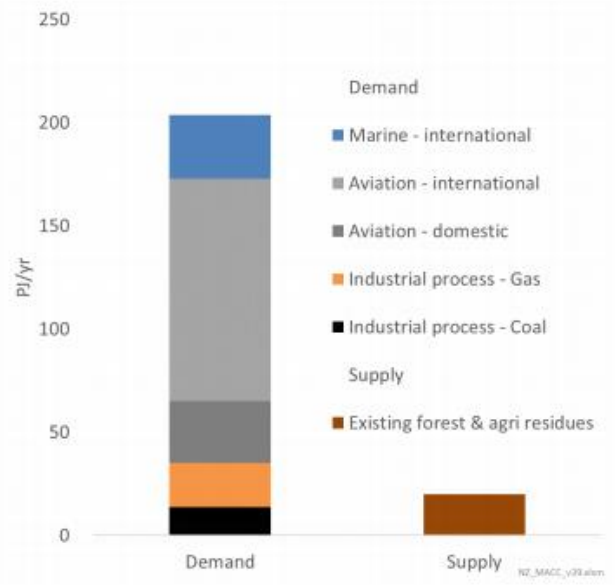
independent modelling on future carbon prices and changing investment decisions. Synlait's recent decision to invest in New Zealand's first large scale electrode boiler is based on a forecast carbon price of $40 in 2023 and reflects a genuine connection between carbon pricing and investment decisions.[22] Fonterra is known to be considering similar changes to its heating technology.

4.19 As noted in the discussion document, banning a specific energy source 'has the potential to substitute for a carbon price, and this could suppress the price elsewhere, likely reducing abatement in other areas'.[23] BEC suggests that as sector or energy feedstock-specific regulatory tools for emissions reduction become more widespread, they will become increasingly necessary across all sectors of the economy, adding significant complexity. This has the potential to dilute the ability of governments to take an objective, targeted approach to those initiatives with the lowest cost of marginal abatement.

4.20 The discussion document also notes that a ban on natural gas in process heat is not considered viable as it would 'entail very high cost on industry'.[24] BEC notes that organisations in the South Island lack widespread access to natural gas. A mooted ban/phase-out of coal in process heat would force them to shoulder abatement costs similar to putting in place a ban on gas (as gas is not a viable alternative), costs deemed excessive by the discussion document.

4.21 BEC is particularly concerned about an alternative energy supply for some organisations, particularly those unable to access gas or sufficient/economical biomass fuel supplies. Evidence suggests that process heat users converting to biomass as a feedstock will face competition from other hard-to-electrify sectors for a limited biomass supply as biorefinery technology becomes financially viable.[25] In regards to options 4.1 and 4.2, BEC is concerned that a ban on coal as an alternative to adequately pricing emissions will force process heat users for low to medium temperature environments to compete for a limited quantity of biomass, as seen in chart 4.

Chart 4: Potential demand for biomass for industry process heat and biofuels for hard-to-electrify transport, compared with the current potential supply from forestry and agri/hort residues[26]



BEC suggests that banning a specific energy source for a specific use as a substitute for sending cost signals to carbon emitters risks creating unnecessarily high abatement costs and regulatory complexity.

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[22] Coughlan, T. (2019, June 6). Dairy companies pricing massive ETS changes. *Newsroom.* Retrieved from: https://www.newsroom.co.nz/2019/06/06/622485/dairy-companies-pricing-massive-ets-changes

[23] MBIE. (2019, December). *Accelerating renewable energy and energy efficiency.* At page 41.

[24] MBIE. (2019, December). *Accelerating renewable energy and energy efficiency.* At page 42.

[25] Hall, P. (2017). *Residual biomass fuel projections for New Zealand.* Rotorua: Scion

[26] Ministry for the Environment (MfE). (2020). *Marginal abatement cost curves analysis for New Zealand: Potential greenhouse gas mitigation options and their costs. Wellington: Ministry for the Environment.* At page 39

OPTION 6.1 INTRODUCE A LEVY ON COAL CONSUMERS

4.22 Aligned with our stance of objectivity and technology agnosticism, the BEC is supportive of a representative collection of revenue for emissions reduction efforts where the cost to firms is reflective of real emissions, rather than focusing on specific processes or feedstocks.

4.23 We agree that the unique nature and distribution methods of natural gas and electricity justify the gas safety, monitoring and energy efficiency levy, and the electricity industry levy respectively. The use of coal as a feedstock comes with some unique concerns comparable to gas and electricity, the byproduct of particulates being probably the most notable.[27] This may merit a small levy on coal production to fund monitoring and efforts to capture these unique externalities.

4.24 Any levy on coal consumption may need to be circulated back to communities which produce the coal and to assist with diversification of their local economies. Reducing coal use also reduces the production of coal particularly in remote parts of New Zealand.

4.25 BEC is concerned that option 6.1 (targeting all coal consumers to fund carbon reduction activities in process heat) is not reflective of an objective, feedstock agnostic approach, attributes costs to those who will not stand to benefit from suggested programmes, and risks undermining cross-industry incentives to reduce emissions.

a) Feedstock agnosticism

In the context of process heat, natural gas and diesel also have emissions disproportionate to their use as feedstocks.[28] It appears that users of these resources for process heat would not face additional levies. Rather, users of these hydrocarbons would potentially benefit from an expanded technology demonstration fund or tax credit targeting process heat funded by coal consumers.[29]

The universal emitter-pays model supported by BEC (see general comments) generates funding for low marginal cost emissions abatement interventions by imposing a cost proportionate to real emissions across all sectors of the New Zealand economy. A complex method of indirectly self-funding emission reduction efforts in each industry through sector or feedstock-specific levies has the potential to create significant complexity and may limit funding options.

b) Equity of this cost-claw back

Possible developments in carbon capture and storage/utilisation (CCS/CCU) may significantly improve the CO_2-e lifecycle analysis of coal-based energy generation.

The BEC2060 scenarios suggest that CCS may make coal and lignite viable sources of electricity generation through reduced carbon emissions (see chart 5). As a dispatchable source of energy, the use of coal to meet some energy capacity needs would increase the diversity of supply and likely reduce peak price spikes. This potential development in CCS viability would probably bring a more secure, sustainable, and equitable energy mix.

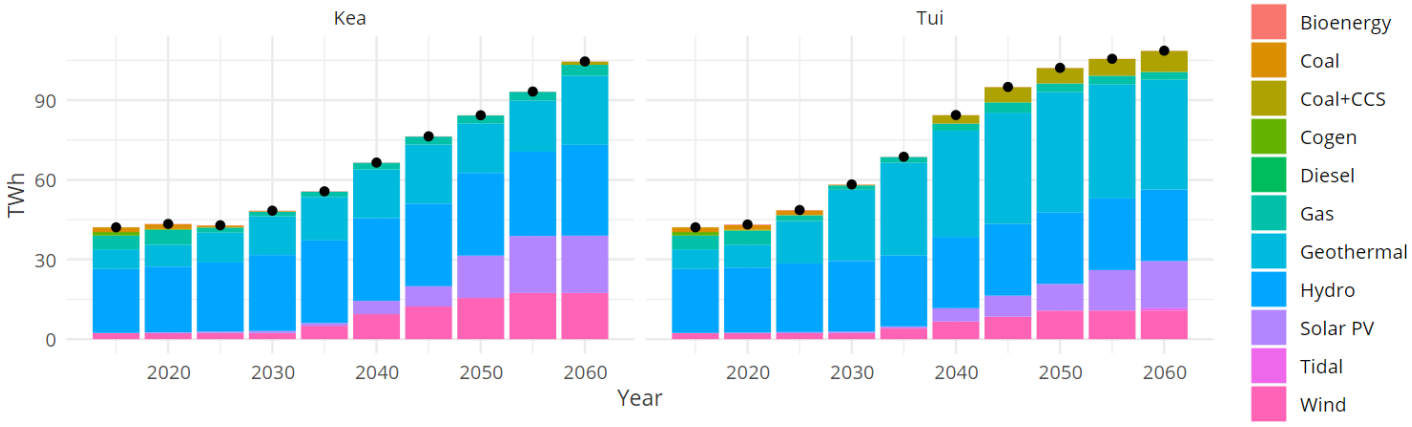
Establishing a levy on all consumers of coal to fund process heat specifically would result in reduced financial viability for coal carbon capture technologies, regardless of emissions, simply because coal would be used as an energy source. The BEC suggests that this does not reflect an equitable method of funding emissions reduction efforts.

[27] MfE. (2019). *Identifying the social good co-benefits of electrifying process heat.* Retrieved from: https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/identifying-social-good-co-benefits-of-electrifying-process-heat.pdf

[28] MBIE. (2019). *Process heat – current state factsheet.* At page 2. Retrieved from: https://www.mbie.govt.nz/assets/8c89799b73/process-heat-current-state-fact-sheet.pdf

[29] MBIE. (2019, December). *Accelerating renewable energy and energy efficiency.* At page 40.

Chart 5: BEC2060 – Electricity Generation in TWh



4.26 In both BEC2060 scenarios, the shutdown of Huntly drives renewables to 95% by 2030. Only Kea increases further to 97% in 2050, relying on over-building of geothermal to provide for seasonal flexibility. However, chart 5 shows that after the peak in 2050, the renewable proportion in Kea declines back to 95% as small coal plants combined with CCS are used to meet growth. In Tūī, the renewable portion of electricity drops from a high of 96% in 2035 back to 88% in 2040 as a combination of gas, and coal with CCS is used to meet the increase in security of supply requirements. This balance between renewables and non-renewables is maintained through to 2060.[30]

BEC suggests that while coal consumption has unique negative externalities that may justify a levy to fund harm mitigation, a levy on coal consumers designed to fund emission reduction efforts in process heat is not warranted. Taking a sector or feedstock specific, siloed approach to funding for emissions reduction efforts should be avoided.

OPTION 7.1: NATIONAL ENVIRONMENT STANDARDS FOR RENEWABLE ENERGY FACILITIES

4.27 BEC agrees that the failure of the NPSREG to improve the consistency of planning provision among councils and reduce the time, complexity and cost of consenting for REG projects[31] is concerning.

4.28 BEC suggests the poor consistency of councils' planning provisions for renewable electricity generation is a product of inadequate direction as to the value of renewable energy infrastructure and its associated climate/carbon emission benefits relative to other competing concerns and policy statements. Councils are expected to define their objectives and policies regarding the facilitation of construction and maintenance of renewables infrastructure without explicit direction as to their value.

4.29 Ideally, the NPSREG would have the clarity and contextual framing allowing for a perfectly prescribed and objective assessment of concerns such as amenity values and biodiversity in the consent process, but this is not realistically possible, not least because of the wide range of values in contention in consent processes and the lack of agreement as to their relative importance.

4.30 Attempting to create a defined hierarchy of priorities in the infrastructure project consent process risks adding significant complexity (time and cost), counterintuitively working against the goal of creating a consent process that streamlines the construction and maintenance of projects that meet our energy and carbon needs.

4.31 BEC suggests making explicit reference to New Zealand's emissions reduction goals and climate change commitments in the NPSREG as an alternative to direct prescription of 'how to consider the national benefits of renewable energy generation when making decisions on renewable energy consent applications'.[32] This would encourage more uniform assessment as to the climate/carbon emission benefits of potential renewable generation infrastructure across councils.

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[30] More information about the BEC2060 energy scenarios can be found here: https://www.bec2060.org.nz/.

[31] MfE and MBIE (2016). *Report of the Outcome Evaluation of the National Policy Statement for Renewable Electricity Generation.* Retrieved from https://www.mfe.govt.nz/publications/rma/report-of-outcomeevaluation-of-national-policy-statement-renewable-electricity

[32] MBIE. (2019, December). *Accelerating renewable energy and energy efficiency.* At page 59

4.32 BEC is generally supportive of the proposal to include other emerging forms of renewable electricity generation in the NPSREG as not doing so would give an arbitrary 'first mover' advantage to existing technologies.

BEC supports a non-hierarchical approach to RMA reform. Adding concrete objectives to the NPSREG, reflective of the benefits associated with renewable electricity generation, provides a strong option for making planning provisions more uniform.

OPTION 8.2: ENCOURAGE GREATER DEMAND-SIDE PARTICIPATION

4.33 The involvement of demand response management has moved at a slow pace in New Zealand and BEC agrees that more effort needs to be put behind developing a competitive market-based arrangement, especially as we see higher integration of intermittent renewables with short-term intermittency characteristics – volatility over minutes and hours.

4.34 The *GREEN Grid Project Technical Report,*[33] completed by the University of Otago, demonstrated the potential in existing demand response that could still be better utilised through some of the green grid and energy cultures work.[34] The study focuses on load reduction and load shifting of household appliances that possess storage ability such as heat pumps, hot water heaters, and refrigerators.

4.35 Transpower's demand response pilot programme has now finished, a good time to review project outcomes and change the scheme's design as required. Nevertheless, the programme runs outside current wholesale market arrangements and does not guarantee that the system is achieving overall maximum net benefit.

4.36 We also note that the Electricity Authority (EA) has two major workstreams in train facilitating the uptake of demand response. These are:

a) the implementation of real-time spot pricing: this will provide certainty of pricing in real-time, and will include products for demand-management participants and embedded generators; and

b) the open networks programme: in combination with the reform of distribution pricing, this will reduce barriers and increase opportunities for demand response and other non-network alternatives to provide services to distribution networks and monetise their flexibility.

4.37 Further, there is already a significant level of instantaneous reserve provided to the wholesale market through interruptible load, including from distributors' ripple control and industrial consumers.

4.38 However, the current regulatory structure seems to still provide a barrier to the market finding value in demand response. For example, the involvement of distributors has been somewhat limited. This partly reflects a coordination failure which emerges from the wider regulatory approach of market segmentation. This approach seeks to optimise the performance of each market segment, rather than understanding the whole supply chain.

4.39 BEC believes that a whole-of-systems approach is required to transition to a low emissions future. Whilst it is in distributors' clear interests to support the uptake of demand response, given this has the potential to flatten peak demand, the impact of coordination failure is most pronounced in relation to the uptake of new technology which cuts across market segments – such as demand response.

4.40 Even though the integration of new energy solutions – including demand response, DER, and energy efficiency investments – would deliver greater network optimisation and customer efficiency in the long-term, regulatory settings are biased towards traditional poles and wires solutions. This is partly because the impact of these solutions is more certain, than, for instance, a potentially uncertain demand response mechanism – which would require adequate incentives, cashflow, and regulatory certainty for EDBs to overcome the immediate short-term risk associated with backing this solution.

4.41 Given the business model for lines companies in New Zealand, it is important that they are regulated with respect to their fair assessment of alternatives to network solutions. As such, we suggest greater

[33] University of Otago and University of Southampton. (2018). *Estimating the Technical Potential for Residential Demand Response in New Zealand.* Retrieved from: https://ourarchive.otago.ac.nz/bitstream/handle/10523/8579/Dortans_2018_TechnicalPotentialDemandResponseHouseholdsNZ.pdf?sequence=1&isAllowed=y

[34] EPECentre. GREEN Grid. Retrieved from: https://energycultures.org/green-grid-project/green-grid-project-overview/

disclosure of line/pole alternatives. Given the declining costs of battery energy storage and a greater interest in hydrogen generators, it is important for network operators to be looking at such technologies.

4.42 The freedom of entities to deploy innovation in all its forms, and/or find cheaper solutions for consumers is vital. The transition to a low emissions economy will require a substantive amount of investment and regulatory certainty will be key. Decisions should be made with access to all necessary information and with no barriers to innovation. The Commerce Commission's innovation allowance in DPP3 was only 0.1% of allowable revenue for EDBs.

4.43 Flattening peak demand is very important, however, as New Zealand's fundamental security of supply issue is not at half hours or hours, it is seasonal. Short-term demand response management is important, but the medium term is where New Zealand's hydro uncertainty manifests itself.

4.44 There has been little research into whether the demand side can help. Two questions remain:

a) is there a liquid market in medium-term demand response; and

b) depending on the answer to the question above, what is the most appropriate market design for the demand response market.

BEC agrees that 'the EA has a key role to play in the ongoing design and implementation of the demand response market for New Zealand[35] and suggests that the EA accelerates its existing work programme. The transition to a low emissions economy will require a substantive amount of investment and regulatory certainty will be key. BEC suggests removing further underlying regulation barriers to deploy innovation in all its forms as well as investigating medium term demand response solutions.

OPTION 8.6: PHASE DOWN BASELOAD THERMAL GENERATION AND PLACE IN STRATEGIC RESERVE

4.45 The discussion document proposes a 'temporary strategic reserve mechanism that seeks to manage the phase out of existing, legacy thermal assets, rather than providing payments to avoid their closure'. However, decommissioning thermal plant will not make New Zealand's reliance on hydro disappear, and therefore will not make the dry year problem disappear.

4.46 International experience (e.g. Ontario) strongly suggests that eventually any 'temporary' market alteration will become permanent if the market incentives are strong enough. Any uncertainty about the length of the scheme might deter the new entry of plants that can provide the service. As a result, the strategic reserve could prevent adequate capacity investment in the market outside the reserve (the prisoner's dilemma). Fundamentally, whether it is a 'strategic reserve' or 'other capacity market mechanisms', the regulator must decide:

a) What is the 'product' being procured – is it half-hour reliability, generation over a month, quarter etc, and what is the trigger?

b) How much generation is required by the scheme to provide the necessary security of supply?

c) What types of plant can enter the scheme - just coal, coal and gas, CCGT or OCGT…?

d) What is the penalty for non-performance?

e) How to calculate the 'remuneration' - bilateral negotiations or market procurement (via a demand curve, which the regulator must specify)?

f) How long will the 'contracts' apply for?

4.47 Capacity market design globally is fraught with regulatory risk, because it is a 'contrived' market and most of the parameters are in the hands of the regulator. Before introducing a new market design, why not evolve the existing design?

4.48 There is sufficient expertise nationally and globally to embark on a market design exercise considering options for how market-based incentives can be strengthened to deliver hydro security of supply. For example, David Reeve (Sapere) and Stephen Batstone (Sapere) have investigated alternatives such as a customer compensation scheme, and bilateral contracting. Efforts could be made to carbon-weight

[35] MBIE. (2019, December). *Discussion paper: Accelerating renewable energy and energy efficiency.* At page 75.

payments under the scheme, so that renewable options (e.g. dispatchable geothermal) can achieve an advantage in any auction.

BEC suggests further investigating market-based options that deliver security of supply from low carbon sources such as hydro and bioenergy.

Appendix One - Background information on BusinessNZ Energy Council (BEC)

The BusinessNZ Energy Council (BEC) is a group of New Zealand's peak energy sector organisations taking a leading role in creating a sustainable energy future. BEC is a division of BusinessNZ, New Zealand's largest business advocacy group. BEC is a member of the World Energy Council (WEC). BEC members are a cross-section of leading energy sector businesses, government and research organisations. Together with its members BEC is shaping the energy agenda for New Zealand.

Our vision is to support New Zealand's economic wellbeing through the active promotion of the sustainable development and use of energy, domestically and globally. With that goal in mind, BEC is shaping the debate through leadership, influence and advocacy.

BusinessNZ is New Zealand's largest business advocacy body, representing:

- Regional business groups EMA, Business Central, Canterbury Employers' Chamber of Commerce, and Employers Otago Southland
- Major Companies Group of New Zealand's largest businesses
- Gold Group of medium sized businesses
- Affiliated Industries Group of national industry associations
- ExportNZ representing New Zealand exporting enterprises
- ManufacturingNZ representing New Zealand manufacturing enterprises
- Sustainable Business Council of enterprises leading sustainable business practice
- BusinessNZ Energy Council of enterprises leading sustainable energy production and use
- Buy NZ Made representing producers, retailers and consumers of New Zealand-made goods

BusinessNZ is able to tap into the views of over 76,000 employers and businesses, ranging from the smallest to the largest and reflecting the make-up of the New Zealand economy.

In addition to advocacy and services for enterprise, BusinessNZ contributes to Government, tripartite working parties and international bodies including the International Labour Organisation (ILO), the International Organisation of Employers (IOE) and the Business and Industry Advisory Council (BIAC) to the Organisation for Economic Cooperation and Development (OECD).

www.businessnz.org.nz