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Submission on Advancing New Zealand's Energy Transition – Energy Strategy Consultation Documents

This is a general submission on the Advancing New Zealand's Energy Transition and the Energy Strategy consultation documents (The Strategy) made on behalf of multi-disciplinary practitioners from across Beca's technical and advisory business lines (Beca practitioners).

Beca is a multidisciplinary professional services firm employing more than 3,500 professionals engaged in planning, design, and the development of infrastructure, industrial plant and built environments across New Zealand, Asia, Australia, and the Pacific. Our engineering, infrastructure, built environment, environmental, planning, design and advisory teams have extensive strategy, policy and project delivery experience across the energy sector and markets where energy transition demand is on the increase.

This submission has been developed alongside more specific comments and feedback we have also provided via specific submissions made on the discussion documents listed below:

- Interim Hydrogen Roadmap
- Offshore renewable energy

In making this submission we have sought to focus our feedback on the following key themes / matters:

- Comments to improve the efficacy of the strategy;
- Need for broader Governance representation from within the sector help oversee Strategy development and successful implementation via increased collaboration (and action) from all parts of the sector;
- Need for a systems approach to be taken to connect strategy aspirations and desired outcomes to collaborative implementation without overly prescribing the 'what' and 'how' to encourage innovation and market participation;
- Need for there to be stronger focus on 'energy efficiency' drivers across the system, particularly in the context of urban and industrial infrastructure;
- Need for urgency to ramp up transition activities, whilst doing so in a way that also recognises the need to improve resource stewardship (Nature Positive outcomes) and maintain system (and transition) affordability.

The general submission points we make are therefore outlined below.

1 Strategy Vision, purpose and objectives

We agree there is an urgent need for some form of clear strategy to help guide decision making on existing and future energy infrastructure development and energy use across all markets.

The transition pathway is complex and the vision, high level purpose and high-level objectives as outlined in the Terms of Reference make good sense. The high-level objectives relating to energy affordability, security of supply, support of economic growth and transition at the pace and scale needed to achieve net zero by 2050 also provide good guidance for assessing strategy directions. The high-level objectives relating to energy affordability, security of supply, support of economic growth and transition at the pace and scale needed to achieve net zero by 2050 also provide good guidance for assessing strategy directions.

In this regard we note that these objectives provide good guidance for elements that relate to new types of generation development, transmission or energy related industries. They do not however mention other key elements we suggest have merit in being included, namely:

- Energy efficiency, particularly as it relates to use reduction targets for major energy users in the transport, water and waste and urban development (vertical infrastructure) context. For example, we suggest the strategy could look to include policies to direct improve building and other infrastructure energy performance targets and standards, recognising that transition is not just about renewal and development of new energy, but also about using energy produced more efficiently. This for example could translate to more prescriptive targets for building performance under the Building Act regulations.
- Nature Positive outcomes, i.e. where the redevelopment of existing or development of new generation, transmission or use is at the expense of natural capital. We suggest there is perhaps an opportunity to create mechanisms which both support the rapid increase in activity to enable transition whilst also recognising that doing so can also have some impacts on natural capital that need to be more than offset to ensure that there is no net decrease in natural capital quality or quantity.

We suggest that it is important that any strategy sets a clear outline of 'what, why, how and when to guide decision making across all facets of the Future Energy sector. There is a risk that being overly prescriptive in the final document will stymie innovation, discourage private investment and create complex (and voluminous) processes that are both difficult to establish and costly to administer.

It will be important that it provides sufficient clarity about the outcomes sought, and specify transition targets that then direct attention, activity and action. Monitoring and reporting of progress against specified targets and adjustment of them where necessary to speed up transition activities will be essential.

We note that the 'Governance' of the strategy development currently resides with various Government Ministry Senior Executives. It is suggested that, for this to be more broadly owned and committed to by the 'whole of sector', that representatives from generation, transmission and consumer groups be included not only in the Governance oversight of Strategy Development but then oversight of implementation.

Given the urgency needed in this space to build energy transition momentum, identification of some quick wins and associated actions to accelerate transition activities are suggested. This could be in standardizing the consenting frameworks for renewable generation and transmission

through to early investment in some parts of the transmission network to invest 'ahead of the demand' or at strategically identified locations to support wider economic growth and development.

It is also suggested that the strategy needs to inform various other national planning frameworks, like the National Infrastructure Plan and new planning legislation (in whatever framework that is applied post establishment of the new Government). We suggest that implementation should look to utilise approaches like National Policy Statements and Spatial Planning to get sufficient recognition of and provision for key transition infrastructure elements into the relevant planning legislation, regulations and policy documents at National and Regional levels to support accelerated development (and transition).

To get this done successfully there needs to be greater collaboration across the sector, across all levels of Government, renewable developers, transmission, energy consumers and sector associations. We suggest that increased collaboration and partnership to set clear regulatory and market frameworks; develop an integrated transition plan that is then collectively implemented apace by all participants in the sector will be critical to the successful achievement (or not) of our transition journey.

The Energy Strategy has the potential to reinforce this and bring the sector participants together to accelerate our much-needed energy transition. Critical will be how the subsequent implementation then activates urgent activity across Government, industry and supply chains to achieve this as quickly and affordably as possible.

2 Gas Transition Plan

Beca has been involved in the gas and related industries for more than 40 years. Within the sector there is acceptance of the need to transition away from fossil fuel energy production. Within New Zealand natural gas and LPG are key components of New Zealand's energy system. They will continue to play a part in the transition towards a low carbon energy sector for some time.

Research we have been involved in as part of the evaluation of options for this transition identifies a couple of key options warranting consideration as part of the gas transition strategy.

Internationally, biogas and biomethane have been identified as key mechanisms for decarbonisation and energy independence for a number of countries. Energy companies are developing biomethane projects to support development of new technologies to support transition to cleaner fuels.

There is the potential to further develop the biogas and biomethane sector in New Zealand that could contribute to a reduction in greenhouse gas emissions, create carbon savings from current organic waste disposal methods and contribute to a more circular approach to waste management. Changes to the existing regulatory frameworks and improved access to feed stock (e.g. increase the cost of disposal of organic waste to landfill) will need to be made to encourage the development of this fuel option as a material part of the energy transition approach.

Reaching scale necessary to support biomethane upgrading and production will be a challenge requiring greater collaboration between communities and partners to establish regulatory, site, technology and fuel supply certainty.

3 Interim Hydrogen Roadmap

The Interim Hydrogen roadmap is a comprehensive document and provides a good summary of the potential opportunities and applications for hydrogen within New Zealand.

We agree that hydrogen has the potential to play a key role in the energy transition space in New Zealand though note that is still seen as an emerging part of the global energy system – with progress in the implementation of significant hydrogen projects globally not being as rapid as originally envisaged.

We suggest that the strategy will need to prioritise certain applications for (and locations of) hydrogen development to gain momentum in the development of a hydrogen sector in New Zealand. Such applications could include heavy transport as many applications mentioned in this Interim Roadmap such as hydrogen's use in aviation will not be readily implemented in the short term.

Aligned to this is the role the government needs to continue to take in co-investing in New Zealand based hydrogen projects to both support Research and Development of the technology for the New Zealand energy supply and economic development potential context.

Similarly regulatory frameworks will also need to be developed to support this. We note that sensitivity to electricity price is critical to the success (or otherwise) of scaled hydrogen production, whether this be for domestic or export purposes. In this respect a 'system' design type of approach may be appropriate in a manner like the Renewable Energy Zones approach being applied in NSW Australia where these zones are being developed to:

- Provide a transmission corridor to connect renewable energy projects and electricity storage to deliver cheap, reliable and clean electricity for consumers (domestic and industry);
- Contribute to emissions reduction; and
- Strengthen community engagement to ensure projects within the zones contribute long term benefits to the communities (and environments) they are located within, which includes job creation and wholesale cost competitiveness to support existing and future industry.

4 Offshore Renewable Energy

To enable expansion of offshore renewable energy in New Zealand to occur, the following points are raised for consideration:

- The need for clear Government signals of intent to provide investor certainty.

These signals may include installed capacity milestones, which are source agnostic. It may be these milestones are reflected within a broader energy strategy or decarbonization roadmap.

- Potential need for a staging Infrastructure Plan (in particular – Grid)

A recent study by Transpower (Enabling offshore renewable generation - September 2023) notes ability to accommodate offshore renewable energy within the grid with targeted improvements. Noting the most advanced technology being offshore wind, several scenarios were developed to assess costs implications of different loads at different north island locations. The cost range is significant, which suggests that there could be merit in the strategy identifying 'outcomes' in terms of amount renewable generation desired/ acceptable where and by when.

We suggest this would help to not only provide market certainty and maximise efficient development of supporting transmission networks but also maintain consistency with the strategy objective of as affordable transition as possible. It could also be tied to development of onshore Renewable Energy Zones that not only enable related onshore infrastructure development but also support the development of industry/ economic development that will utilize the renewable energy generated.

- Need to foster increased collaboration (e.g. managing marginal TOTEX costs and knowledge sharing)

New Zealand's offshore energy (particularly offshore wind) will likely occur and could benefit from being aligned to broader activity in Australia. The benefits of this approach include marginal cost reduction and critically, complementary installation programmes. Further, and as reflected in the consultation documents released by MBIE, is the benefit of knowledge sharing. New Zealand's offshore renewable energy is at a very early stage and steadily maturing, it is doing so under careful stewardship by both the Government and the developers.

- Maximising the benefits of offshore generation (e.g. alignment of Central, Regional and Local Government regulations to achieve strategy outcomes)

It is suggested that there is a need for the strategy to get input, alignment and actions from Council's. Were they to be more involved, there could be work done to identify Renewable Energy Zones of the like being developed in Australia that also look to maximise the economic benefits from new renewable energy at scale to support related industry development (and employment).

5 Implementing a ban on New- Baseload Fossil Fuel Based Generation

Whilst we have not made a detailed submission on this discussion document, we note the need for some forms of non-baseload fossil fuel supply (peakers) to be part of the medium to long term solution for New Zealand's affordable energy transition. In this respect, we are supportive of some sort of approval/exemption process to assess development of new or replacement fossil-fuel generation. We agree that there is a low likelihood of new fossil-fuel baseload generation development due to supply chain security, fuel affordability and sustainability.

In the medium to long term, we suggest that there will be a need for non-baseload fossil fuel generation to be available to contribute a reasonable amount of firming to the electricity grid (and energy costs) in unseasonal weather event periods. This firming could be provided by existing non-baseload generation with new storage infrastructure, such as battery energy storage systems (BESS), providing the required growth to total firming capacity.

To accelerate decarbonisation, existing peakers could be fitted with carbon capture, usage, and storage (CCUS) and new co-generation plants could utilize non-fossil fuel options such as wood or biomass. The non-baseload fossil fuel exemption process should be rigorous, and exemption should only be given where an extreme need is demonstrated and an alternative, non-fossil fuel, solution is not available.

In making decisions about new or replacement non-baseload fossil fuel generation we suggest that decisions to grant such approval / exemptions could factor in criteria which include:

- Benefits to wholesale energy price consistency (and therefore associated consumer and social and economic benefits of enabling).
- Carbon cost, to be no worse than existing generation in the case of replacement of existing generation and a technological improvement (and lower carbon cost) where new generation is proposed.
- A process for assessing the degree of 'nature positive outcomes' that should be contributed to, either by way of approval fee or ongoing levy when the fossil-fuel generation is being relied upon as part of the generation mix. This would acknowledge the need for non-baseload fossil fuel generation to form a part of the affordable transition within New Zealand and, as part of accepting this, direct capital resources derived from a form of 'planetary degradation' towards activities that halt and reverse nature loss (and biodiversity enhancement).

6 Electricity Market Measures

To enable decarbonisation whilst allowing growth, the electricity market should enable enhanced system planning, with clear communication regarding future developments, policy changes and incentives. This progressive shift will pave the way for next-generation electricity system design. Such planning requires a robust strategy and a detailed implementation plan that clearly defines roles, responsibilities, and governance structures. It also needs to outline what is planned, by when and by whom – all these tying back to high-level objectives related to energy affordability, security of supply, sustainability, support for economic growth, and acceleration towards net-zero emissions by 2050.

New Zealand's industrial output has a promising future, particularly if globally competitive business models are adopted. Emerging business models are leaning towards a circular economy and regenerative approaches, focusing on stakeholder value instead of shareholder value. Long-term certainty of highly renewable, low-cost electricity will be key to attract global business to New Zealand. If market confidence can be achieved, business models requiring sustainable access to diverse energy systems will drive growth within New Zealand. These opportunities include increasing the national electricity grid capacity and resilience, maturing generation exports of embedded generation, and creating new demand scenarios for green electrons.

The long-term transition to a greener future involves developing renewable firming solutions to replace existing fossil-fuel assets. As the transition progresses, there is a need to shift the dial with incentives and strategies to maintain progress. This could involve measures such as raising ETS prices to increase the operational cost of fossil-fuel generation or enhancing incentive schemes to accelerate renewable firming solutions.

Market caution is required when creating these long-term strategies and incentives. Backing a specific technology could lead to missed opportunities, as rapid technological advancements create new, improved solutions. Incentives should focus on desired outcomes, such as zero carbon emissions, rather than choosing specific technologies. If incentives are to be applied, they should be provided in the transition period to create favorable conditions towards developments that meet these outlined outcomes. It will also be crucial to periodically reassess and adjust these incentives in line with technological advances to decrease external benefits as renewable technologies become self-sufficient.

Shifting to an interconnected low-carbon energy system not only aligns with New Zealand’s commitment to The Paris Agreement but establishes the idea of treating electrons, joules, and emissions as independent components of the same electricity system. The push towards decarbonisation fundamentally requires an understanding of this interdependency whilst improving the collective energy system. Such an approach supports the development of innovative technological solutions, optimised infrastructure, and robust policies that cater to each aspect of electricity generation, consumption, and distribution.

As we address these interconnected parts collectively, New Zealand can successfully advance towards a sustainable, decarbonised future that benefits our people, our economy and our environment.

Please refer to the body of our submissions on the specific consultation documents for further details. We would welcome the opportunity to elaborate on the matters identified in this and our other submissions should this opportunity be provided.

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