2 November 2023

Ministry of Business, Innovation and Employment

15 Stout Street

PO Box 1473, Wellington 6140

Attention: Offshore Renewable Energy Submissions, Interim Hydrogen Roadmap Submissions and Electricity Market Measures Submissions

By Email: offshorerenewables@mbie.govt.nz, hydrogen@mbie.govt.nz, electricitymarkets@mbie.govt.nz

Tēnā koe

We thank the Ministry for Business, Innovation and Employment for the opportunity to provide this submission on the following discussion papers:

- Developing a regulatory framework for offshore renewable energy
- Interim Hydrogen Roadmap
- Measures for an expanded and highly renewable energy system

We support the Ministry's work to establish an energy strategy for New Zealand. Whilst New Zealand's electricity system has been effective in achieving high degrees of sustainability, reliability and affordability in the past, we are embarking on a period of significant change. Going forward, there is a need to rapidly decarbonise our economy which will require significant infrastructure investment. In many cases, these investments will require costs to be incurred in the near-term, in order to achieve broad societal benefits in the long-term. No longer can these investment decisions be weighed up based on purely economic outcomes, with emissions reduction, energy security, supply chain constraints and workforce shortages all being key challenges to overcome. It is in this context that we see a greater role for government in long-term planning for the energy sector in order to attract and activate private capital for investment.

New Zealand's highly renewable electricity system will play a key role in decarbonising other parts of our economy, resulting in a rapid expansion in generation and transmission/distribution assets. When the increased demand from electrification is added to the anticipated electrical demand to produce green molecules for hard to abate sectors, New Zealand's electricity demand is projected to increase from 42TWh to 111TWh by 2050[1]. To meet this demand, New Zealand will require 800-1,000 MW of new renewable generation capacity to be developed each and every year.

We believe that offshore wind can play a significant role in meeting this need. By developing projects at large scale, with higher capacity factors and further away from local communities, New Zealand will have greater opportunities to ensure that supply keeps up with demand. If we fail to develop enough new renewable generation, prices will rise and reliability will fall resulting in disincentives to move away from carbon intensive fuels, or significant disruption to economic activity and everyday lives.

We largely support the proposed permitting framework for offshore wind, adopting best practice from mature markets which have come before us. Whilst we have raised concerns on specific matters we see as problematic and unnecessary (such as comparison of projects at commercial permit stage and trailing liabilities for decommissioning obligations), the majority of the proposed permitting framework appears fit for purpose.

In addition to the permitting framework, we wish to emphasise the importance of the broader ecosystem of reforms which are necessary to enable a successful offshore wind industry for New Zealand. In our view, the five key priorities are:

[1] Based on the lowest scenario for green hydrogen demand in the Interim Hydrogen Roadmap.

- Set stable and long-term targets for generation capacity to support investment – an incremental approach will not be sufficient to make sufficient progress to net zero in the coming decades. The scale of development requires greater long-term planning. New generation capacity targets will provide greater certainty for investors to incentivize project development, would encourage enabling infrastructure to be built in time and help to secure New Zealand's position in international supply chains for critical equipment.
- Implement the enabling regulatory framework and streamline consenting – we support the progress being made to establish a fit-for-purpose permitting regime for offshore renewables in addition to the efforts being undertaken to help streamline consenting approvals for new renewable generation. We encourage the government to follow through on this good progress and ensure implementation timetables are met.
- Enable timely infrastructure development to de-risk generation investment – large renewable generation projects rely on supporting infrastructure to enable delivery and provide route to market, including ports and transmission assets. These supporting assets can have delivery timetables as long as (if not longer than) the renewable generation assets themselves. Therefore, it's critical that strategic planning and proactive investment in supporting infrastructure is undertaken to ensure that it doesn't become a bottleneck, holding back new generation assets.
- Develop and implement a workforce and supply chain strategy to deliver on the infrastructure requirements of the transition – delivering on the energy transition will require the development and construction of significant new infrastructure, including generation capacity. This will require a material uplift in supply chain and workforce capability compared to what exists in New Zealand today.
- Support route to market for new projects through a CFD auction scheme – long term targets for generation capacity can be systematically supported and delivered through the implementation of revenue stabilisation mechanisms such as a CfD framework. To address the lack of credit-worthy large electricity consumers capable of committing to long-term offtake contracts, we encourage the government to implement a CfD framework as further described below.

To enable the quantities of new generation capacity required to deliver the energy transition, government needs to ensure an attractive investment environment which promotes competition in the generation sector and facilitates the timely development of new projects. A key factor in any new generation project's development is securing the necessary offtake arrangements to make a project bankable. In order to promote competition in generation markets, developers without existing retail portfolios must be enabled. Whilst we acknowledge that corporate PPAs could play a significant role in enabling new generation investment, New Zealand lacks the deep and liquid corporate and industrial market to underwrite the volume of new generation required.

In this context, we see a clear opportunity for government to play a role in providing revenue stabilisation mechanisms to support new investment. These are not subsidies. The futures market for electricity in New Zealand currently points to a wholesale price of approximately NZD150/MWh for 2024, 2025 and 2026. This is significantly higher than the accepted LCOE for new renewable generation projects. Yet, according to MBIE's EDGS consultation earlier in 2023, there is over 2.5GW of consented onshore renewable projects which have not yet started construction.

The lack of market solutions to make projects bankable is holding back investment in new generation. If we allow this barrier to persist, supply will fall behind demand with the result of higher prices, lower reliability and slower decarbonisation – consequences that we can ill afford.

CFDs can support effective long-term planning, lower project costs and potentially even generate new revenue for the Government. Our modelling shows that a NZD105/MWh CFD for a 900MW South Taranaki offshore wind farm for the four year period from 2018-2021 would have generated >NZD150M in revenue for the government based on historical market prices and wind data. The contract would have provided much needed revenue stability to the developer in order to secure cost effective project financing to proceed with project construction. Structures like this reduce financing

costs and encourage more generation (onshore and offshore) to be built. Both of these factors will increase the supply of new generation and lower wholesale electricity prices. A more affordable and reliable electricity system would promote broader economic development, resulting in a more prosperous future economy for New Zealand.

We support the conclusion from the Interim Hydrogen Roadmap that green molecules will play a critical role in decarbonising hard to abate sectors and meeting New Zealand's net zero goals. Whilst we acknowledge that electrification will be the primary decarbonisation tool in this decade, we believe it is critical to start our green hydrogen journey now in order to ensure that the workforce and supply chain develops locally to adopt large scale green hydrogen in the longer term. This will require difficult economic decisions to be made when green hydrogen applications fail to beat traditional fuels on cost today, but we believe these short-term trade-offs are important to ensure long-term success.

Here again we see a key role for offshore wind in supporting the growth of green hydrogen production. Without large scale new renewables, electrolyser demand can place upward pressure on wholesale power prices, thereby challenging near-term electrification. By developing large scale offshore wind projects in parallel with a green hydrogen strategy, New Zealand can ensure that hard to abate sectors are able to decarbonise without placing undue pressure on New Zealand's electricity system.

We also support the review of electricity market measures to facilitate New Zealand's decarbonised future. We believe it will be critical to enable proactive and strategic investments in transmission / distribution networks to ensure that this infrastructure does not become a barrier to new generation development. We support the introduction of new ancillary services markets to enable greater uptake of demand response and new technologies, such as grid scale batteries, to mitigate the risks of a more intermittent generation mix. We also support the introduction of sustainability and decarbonisation goals into regulated investment tests.

In the past, New Zealand has attracted large industrial developments by leveraging abundant hydro and gas assets (largely constructed by the NZ Government in the last century). In the future, we will need to develop large volumes of new renewables to attract ongoing investment in existing and new sectors to ensure our economic growth. By leveraging our already highly renewable electricity system, we can more rapidly decarbonise other parts of our economy to retain New Zealand's leadership position in attracting sustainable business development. However, other countries are investing heavily in new renewables and green hydrogen projects to attract industry to their own jurisdictions. If we do not act quickly, investment opportunities will be lost and New Zealand will fall behind its competitors.

We encourage the Government to move quickly in adopting an energy strategy and supporting regulations that promote investment in both decarbonisation initiatives and renewable generation. Our planet and our economy depend on it.

Submission on the *Interim Hydrogen Roadmap*

Name	
Organisation (if applicable)	BlueFloat Energy and Elemental Group
Contact details	

Release of information

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I would like my submission (or identified parts of my submission) to be kept confidential because [Insert text]

[To check the boxes above: Double click on box, then select 'checked']

Responses to questions

Section 3: Government position and actions

Do you agree with our positioning on hydrogen's renewable electricity impacts and export sector?

1

We agree that rapid development of green hydrogen electrolysers (for either domestic or export application) could place upward pressure on domestic electricity prices unless the rate of new generation development is increased substantially. Whilst we note this risk, we consider that improved long-term energy planning can significantly mitigate this risk to ensure that sufficient new generation is brought to market to match new demand.

As we have noted in other submissions, numerous overseas Governments are legislating renewable generation targets and establishing mechanisms to ensure these targets are delivered upon (such as auctions for CFD contracts). These targets and capacity auctions are informed by overall decarbonisation goals, including to support green hydrogen development.

It is inevitable that New Zealand will need to rely upon green molecules to decarbonise hard to abate sectors in the future. At the same time, it's critical that electricity prices remain affordable to ensure electrification is economically attractive. As a result, we consider it highly important that the Government more actively encourages the development of renewable generation such as by implementing regular auction rounds for CFD contracts.

We believe that New Zealand will require a diverse set of renewable generation technologies in the future to deliver on the energy transition, including onshore renewables. However, we note that offshore wind has characteristics which make it a most suitable partner for green hydrogen projects. These include:

1. <u>The ability to develop projects at scale</u>. In order to ensure green hydrogen is affordable in the future, it will be important that green hydrogen electrolysers are developed at a large scale (500MW+). As a result, these projects will also require renewables to be developed at scale. Offshore wind offers the unique benefit of being able to develop gigawatt scale projects to efficiently supply electrolysers and rapidly ramp-up new generation. Offering hydrogen developers the option to secure their supply from only 1 or 2 generation sources could significantly de-risk their projects compared to an alternative of needing to secure supply from a large number of smaller onshore projects.
2. <u>Proximity to demand</u>. Offshore wind projects are not subject to the same geographical constraints are onshore renewables. As a result, large offshore wind projects can be developed just off the coast, nearby to large electrolyser projects. This offers the ability to directly connect generation to load, minimising impact on landholders and communities and reducing the burden on Transpower and distribution companies to upgrade regional lines networks.
3. <u>High capacity factors</u>. New Zealand is blessed with a world class offshore wind resource. In a number of locations, offshore wind projects are expected to operate with an average

capacity of more than 50%. This semi-baseload type profile provides a good match to hydrogen electrolysers and offers a significant advantage over onshore renewables which generally operate with much lower capacity factors.

The report undertaken by Ernst & Young to support the Interim Hydrogen Roadmap simplistically assumes that all new power demand from hydrogen electrolysers in the future can be supported by onshore wind and solar. It also assumes that New Zealand has ample high-quality onshore sites to support average capacity factors of 40% and 20% respectively for these technologies. Based on the pace of onshore development today and characteristics of projects currently under construction, we believe this is highly unrealistic. If New Zealand is to build sufficient new renewable generation to decarbonise hard to abate sectors with green molecules, large offshore wind projects simply must be part of the future generation mix. We note that a number of European countries are already implementing market mechanisms which integrate offshore wind and green hydrogen developments[3].

Finally, we consider it important to emphasise the role that export focussed green hydrogen projects could play in balancing seasonal electricity demand in New Zealand. New Zealand currently experiences peak electricity demand in winter months, with lower demand experienced in shoulder and summer months. Whilst this seasonality will likely reduce in the future with electricity playing a larger role in transport and industrial processes, there will continue to be some seasonality in demand. Long duration storage is one option of meeting higher demand in winter months in a highly renewable generations system, but export facilities could also play a significant role. For example, if New Zealand had 5GW of export focussed electrolysers which had the ability to run at 50% of capacity in winter months, this would result in 2.5GW of additional generation becoming available during peak demand periods. Of course, it will be imperative that enough new generation is developed to meet the additional demand from these export facilities without disincentivizing domestic electrification and we reiterate our views above that these can be achieved with improved long term energy system planning. The Interim Hydrogen Roadmap seems to suggest that hydrogen exports from New Zealand should not be pursued as New Zealand is unlikely to be able to develop green hydrogen at a price lower than some other countries, such as the US. Whilst New Zealand will need to ensure a level of international competitiveness, we shouldn't consider that it is necessary to be the cheapest supplier in the market. For example, green certification of the hydrogen production process is likely to be an important criterion to overseas markets. Today, New Zealand is an exporter of oil which is no doubt produced at a cost much higher than some other jurisdictions, such as the middle east. Commodity markets require a variety of international suppliers and there is no reason to believe that New Zealand could not play a role in the international trade of green hydrogen.

2	**Do you agree with the proposed actions and considerations we have made under each focus area?**

[3] Germany to hold annual tenders for 500MW of green hydrogen produced from offshore wind, starting this year | Hydrogen news and intelligence (hydrogeninsight.com), Tender for 500MW offshore green hydrogen project in North Sea announced by Dutch government | Hydrogen news and intelligence (hydrogeninsight.com)

We support the actions taken by the Government to support the development of a domestic green hydrogen industry in New Zealand. Whilst we agree that short term decarbonisation goals will largely be achieved through a focus on electrification of easier-to-abate sectors, we believe it is important to acknowledge the key role that green molecules (such as hydrogen) will play in the longer term. With this in mind, we consider it imperative that the development of the industry is supported in the short to medium term as the technology continues to mature and the economics remain challenging. This support is important to ensure that New Zealand has a regulatory framework, supply chain and workforce able to scale up in the future to decarbonise harder to abate sectors. With this in mind, we encourage the Government to play a greater role in stimulating demand for green hydrogen in priority sectors. We note the steps being taken by other Governments in Europe (European Hydrogen Bank CFD scheme) and the USA (Inflation Reduction Act tax credits) to achieve this.

We strongly encourage the Government to ensure that planning policy applicable to renewables is extended to green hydrogen infrastructure. For example, we consider that the policy guidance set out in NPS-REG could usefully be extended to green hydrogen projects in order to streamline the consenting process and ensure that long-term decarbonisation benefits are adequately considered in any planning assessment.

Submission on *Measures for Transition to an Expanded and Highly Renewable Electricity System*

Name	
Organisation (if applicable)	BlueFloat Energy and Elemental Group
Contact details	

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Responses to questions

Part 1: Growing Renewable Generation

	Are any extra measures needed to support new renewable generation during the transition?
1.	Please keep in mind existing investment incentives through the energy-only market and the ETS, and also available risk management products. Any new measures should add to (and not undermine or distort) investment that could occur without the measures.

Yes. Whilst we acknowledge that the falling cost of renewables and rising carbon price will make renewable generation increasingly competitive against thermal alternatives, we believe that government has a strong role to play in supporting the increased development of new generation projects.

Whilst large integrated energy companies with existing customer bases have a unique ability to develop new generation projects without project finance (ie gentailers), independent developers are largely reliant on project finance structures to enable projects to move to the construction phase. In turn, securing project finance is dependent on demonstrating long-term, stable and credit-worthy offtake arrangements are in place to ensure a sufficient revenue stream to underwrite debt obligations.

Whilst corporate PPAs will play a role in supporting some new projects to come to market, New Zealand lacks a large pool of heavy electricity consumers who are able to provide the long-term, credit-worthy offtake required. Today, New Zealand has over 2.5GW of consented renewable projects which are NOT being built. This is largely because these projects lack the necessary offtake arrangement to move to a financial investment decision.

We believe there is a strong case in New Zealand for government to help to fill this market gap by providing revenue stabilisation mechanisms for new renewable generation and firming/storage products. We believe that establishing long-term renewable generation targets with a regular programme of government-run auctions for CFD contracts would ensure that New Zealand develops the quantities of new generation required to support the energy transition. With futures electricity prices in New Zealand now trading >$150/MWh, it is clear that the market expects demand to outgrow supply without some kind of new intervention. With decarbonisation goals heavily dependent on a high degree of electrification, it is critical that New Zealand develops enough new generation to bring power prices down, thereby supporting the economics of electrification projects.

Further, we believe that such government-facilitated CFD contracts would increase competition in the power generation market, putting further downward pressure on prices for the benefit of consumers and to encourage a greater rate of electrification to support decarbonisation. As a highly creditworthy counterparty, government-backed CFDs would also act to de-risk generation investments, resulting in lower financing costs and therefore lower power prices for consumers.

In establishing a programme of CFD auctions, we encourage government to implement a design which facilitates the development of a diverse range of new generation projects. These projects should be diverse in both technology and geography to ensure a resilient fleet of generation assets. In this respect, we note the regime implemented in the UK in which each auction round allocates generation capacity into different technology categories (ie onshore wind, solar, fixed offshore wind, floating offshore wind) and invites bids for CFD contracts into each of those categories.

4.	Do you think measures could be needed to support new firming/dispatchable capacity (resources reliably available when called on to generate)? If yes, which kind of measures? What needs do you think those measures could meet and why?
	We refer to our response to question 1 and note that government-facilitated price stabilisation measures could be used to support firming / storage assets in the same way as they could be used to support new renewable generation. As with generation assets, we believe that New Zealand consumers would benefit from strong competition on the market for energy storage and firming generation. Without government-facilitated offtake measures, energy sector incumbents will continue having a significant advantage in the development of new storage/firming assets which will continue to limit competition and lead to higher prices.
5.	Are any measures needed to support storage (such as battery energy storage systems or BESS) during the transition? If yes, what types of measures do you think should be considered and why?
	Yes, as noted above we believe that further measures to support storage development (including both BESS and green molecule based storage) are warranted. This could include government based CFD schemes or an expanded ancillary services market to support investment. We also note that simple changes, such as changing the settlement period for electricity prices from 30 minutes to 5 minutes could improve the economics of BESS investments which have the ability to ramp very quickly.
8.	Are any measure(s) needed to support existing or new fossil gas fired peaking generation, so as to help keep consumer prices affordable and support new renewable investment?
	We support increased long-term planning for the energy sector as part of New Zealand's energy strategy to ensure that the right incentives exist to avoid thermal peaking assets being decommissioned too early.
16.	What new measures could be developed to encourage large industrial users, distributors and/or retailers to support large-scale flexibility?
	We strongly encourage government to implement a more advanced suite of ancillary services products in the electricity market as a means of encouraging demand response, storage and flexibility services. Short term ancillary services, such as those required to manage frequency and voltage in a highly renewable energy market, could be contracted by Transpower in its role as System Operator. Enabling a clear market mechanism for these services would allow industrial users to commercially assess how they can operate their facility to participate in this market. Such a market would also provide an additional revenue stream for energy storage project developers to support a greater rate of development of those assets.
Part 2: Competitive Markets	
18.	Do you agree that the key competition issue in the electricity market is the prospect of increased market concentration in flexible generation, as the role of fossil fuel generation reduces over time?
	We agree that market concentration in generation is a key risk which is particularly acute for flexible generation. We encourage the government to ensure an attractive investment

environment in new generation and storage assets to maintain a healthy level of competition in these critical markets.

Part 3: Networks for the Future

27. Do you consider that the balance of risks between investing too late and too early in electricity transmission may have changed, compared to historically? If so, why?

Yes, we believe this has changed for two key reasons:

1. the pace at which new generation assets can be constructed compared to historical norms; and
2. the importance of the electricity system in supporting decarbonisation.

In the past, new generation was primarily added to the system with large hydro or thermal generation assets and it was therefore possible for transmission upgrades to largely be planned and developed in parallel with these generation assets. Since then, transmission assets have become harder to build (ie consent) whilst generation assets (ie renewables) can now be built very quickly and in a much more dispersed fashion.

Further, avoiding climate change has become the key challenge for society to address. It is widely accepted that electrification of transport and industry (along with renewable generation for production of green molecules) will be critical to decarbonising our economy. Having a reliable, sustainable and affordable supply of electricity will be critical to achieving our net zero targets.

In this context, we strongly encourage government to adopt a more proactive approach to long term energy system planning, including the use of proactive transmission system upgrades to send positive signals to encourage greater renewables development. We acknowledge that consumers ultimately bear the cost of transmission system costs and thus bear the risk of investing too early. However, customers also bear the risk of investing too late, in the form of higher energy prices when new generation is unable to keep up with demand.

As at 6 October 2023, Transpower is managing 362 new connection enquiries to the network. Many of these will be opportunistic applications seeking to utilise remaining capacity in the existing system. Further, many of these will be projects competing for the same spare capacity as other projects in the queue, meaning that Transpower is actively working on a far higher number of connection applications than will ultimately go ahead. In the context of New Zealand's capacity constrained labour market, this is highly inefficient and results in delays for new projects (both demand and supply) being connected. The current waiting time to commence engineering after lodgement of a connection application with Transpower is over 12 months.

28. Are there any additional actions needed to ensure enough focus and investment on maintaining a resilient national grid?

Under existing regulations (and the Benchmark Agreement), Transpower has no liability in the event that generation is constrained because of insufficient transmission capacity. Whilst Transpower agrees to performance targets related to availability at connection points, there is no tangible incentive on Transpower to ensure interconnection assets are sufficient to move electrons from supply sources to demand centres.

This places a significant risk on generators who have no control over the downstream investments by Transpower in the interconnection assets. This increased risk on generators results in higher financing costs and therefore higher power prices for consumers. We recommend that regulations (and the Benchmark Agreement) are updated to place a responsibility on Transpower (and associated liability) to minimise curtailment of generation.

30. Are there pressing issues related to the electricity distribution system where you think new measures should be looked at, aside from those highlighted in this document? How would you prioritise resolving these issues to best enable the energy transition?

We note recent policy guidance implemented which seeks to support the more efficient consenting of renewable energy and electricity transmission assets. Given the scope for renewable generation, electrification projects and battery storage assets to be connected to distribution networks, we would encourage that this policy guidance is also extended to distribution assets.

40. Will the existing statutory objectives of the Electricity Authority and Commerce Commission adequately support key objectives for the energy transition?

We consider it appropriate to incorporate themes relating to sustainability, decarbonisation and climate change into the statutory objectives of these bodies.

41. Should the Electricity Authority and/or the Commerce Commission have explicit objectives relating to emissions reduction targets and plans set out in law? If so,

- should those objectives be required to have equal weight to their existing objectives set in law?

Why and how might those objectives affect the regulators' activities?

We support sustainability, decarbonisation and climate change resilience becoming express objectives in relation to investment decisions.

59. Are there significant advantages in adopting a REZ model, or a central planning model (like the NSW EnergyCo), to coordinate electricity transmission investment in New Zealand?

Would a REZ model for local electricity distribution be an effective means of addressing first mover disadvantage with connecting to electricity distribution networks?

Related to our response at question 27 above, we support more proactive long-term planning in the energy system. We believe that a REZ model in New Zealand could provide an effective means of identifying high priority areas for new renewable generation, fit for purpose infrastructure development and more efficient use of limited resources to deliver the upgrades required for the energy transition. Such a REZ model should:

1. be linked to long-term renewable generation and decarbonisation targets;
2. ensure geographic diversity, through the development of multiples REZs; and
3. ensure technology diversity by facilitating a range of generation types including solar, onshore wind, offshore wind and storage.