

## Submission: Energy Competition Task Force: Entrant generators – context, headwinds and options for power purchase agreements.

Waikato Regional Council (the council) staff welcome the opportunity to comment on the Taskforce's consultation paper. This is a staff submission and is based upon matters already considered by the council.

Council staff support power purchase agreements as they have a key role in enabling energy sources with high initial capital outlay. However, they are only part of the solution and should be considered in the context of a National Energy Strategy. This is discussed in further detail below.

The government's growth agenda cannot be achieved without energy. Sustainable, low-emission renewable energy is required at scale. The government has recognised this through the national targets for renewable electricity generation and for greenhouse gas emissions reductions, but there is no coherent process to ensure this happens. There currently appears to be a disconnected approach, a part of which is the present discussion document. What is needed is a National Energy Strategy to ensure that changes to regulatory settings work synergistically within the market environment.

The council is in the process of reviewing and updating its Regional Energy Strategy aimed at aligning regional actions to that of central government and supply and demand side operators to meet one of its five strategic directions – a transition to a low emissions economy.<sup>1</sup>

Council staff have prepared an inventory of current knowledge of the energy matters within the region to inform a review the council's Regional Energy Strategy. The inventory briefly analysed the electricity market and how it works. It found that current market settings do not provide for the needs of the region (and by extension, the nation). It concludes that the electricity market is set up to maximise the profits of shareholders, not to decarbonise the economy, nor to maximise the utility of consumers.

The proposed changes to Power Purchase Agreements (PPAs) that add structure to one element of the electricity market are welcome but are not a sufficient solution on their own. Individual changes must be seen in context and with an understanding of how they work with other initiatives. The only way to ensure this is to make changes to regulatory and market settings in the context of an agreed national scale energy strategy.

---

<sup>1</sup> [Waikato Regional Council - Strategic direction](#)

Electrification will have a large role in the transition to a low emissions economy and in meeting national greenhouse gas emissions reduction commitments. However, it is not the only answer. There are sectors that will be hard to electrify, which will require other innovative solutions. Power Purchase Agreements can provide confidence to investors for large scale renewable projects by reducing investment risks.

Examples of matters that must be aligned to achieve the energy component of the national emissions reduction commitment are:

- The need to phase out the use of fossil fuels for electricity generation, transport and for space and industrial process heat. Some of these uses can be substituted for electricity (resulting in an increase in demand) but not all, i.e. it would not make sense to use electricity to generate electricity (apart from, perhaps, using electricity for pumped storage of the NZ Battery Project type). As electrification takes a greater role, more generation will be required and there will need to be a matching of intermittent supply peaks and existing demand peaks.
- The intermittent nature of electricity generated from renewable resources (other than geothermal) does not always coincide with peak grid demands. This will require storage of energy (either electrically or chemically through manufacture of green molecules) and/or demand management by shifting peak usage. Geothermal energy may be used directly for industrial process heat including the production of biomass pellets for substitution of coal, as well as electricity generation.
- The climate will influence the ability to use water for hydro generation, given projections are for future reductions in rainfall. The northern Waikato received 25% less rainfall in the last decade than it received in the 1960s. This will influence the nation's ability to rely on hydro with its seasonal and annual variability. The current reliance on hydroelectricity may change to using the stations for grid support or peaking. Changes to the electricity market will be required to support such a change in use.
- With limitations on hydro resources and scientific unknowns of using deep geothermal energy, we must focus on reducing the costs of solar and wind technology and provide regulatory settings and instruments that support the high initial capital outlay required to install this form of renewable energy and to put in transmission infrastructure. Power Purchase Agreements have a key role to play in this situation.
- We must acknowledge our world-class renewable energy resources and provide for their use, particularly those located in the Waikato region,<sup>2</sup> and develop these such that the demand peaks can be met using renewable resources and their

---

<sup>2</sup> An abundance of sunlight, land, offshore wind, proximity to Auckland's high demand and the Upper North Island's 'Golden Triangle' for growth, a strong transmission grid and with high quality logistical connections. See attached infographic.

derivatives (i.e. e-fuels). This can be achieved by developing large scale renewable generation assets to the extent required to meet peak load requirements from renewable sources and storage of renewable generation. This will best work if we create a dynamic market for the products of large-scale renewable electricity generation projects regardless of whether the generation is needed for the grid or is able to be used for other energy dense industries. This can be achieved by market supply instruments that provide certainty for investment through a guaranteed buyer for the product. These need not and should not be limited to Power Purchase Agreements but could include other forms of off-take agreements such as Contract for Differences mechanisms. These should also be in scope and addressed concurrently.

- Transmission grid upgrades would also be required so that there is no longer a first-mover disadvantage to investment in renewable electricity generation infrastructure away from existing grid connections.

We consider that Power Purchase Agreements and similar financial instruments will be critical in getting such an intermittently available product to market. The issue does not appear to be as pressing for renewable electricity sourced from geothermal heat as this is base load.

Future energy supply will require a portfolio approach that builds upon the current system of mature renewable sources (hydro and geothermal) to include more wind, and grid and network connected solar and biomass. All renewable projects, especially offshore wind, have high up-front costs to build the structures that capture the ‘free’ energy. This has short term financing implications, but once built the cost of the fuel does not change, in contrast to the current reliance on external supply chains and markets for availability and price of imported fossil petroleum-based fuels. Innovative market instruments such as Power Purchase Agreements can provide for this.

The key is to create a market, or demand for ‘green electricity’ generated from renewable sources, at periods of low demand so that electricity generated from wind at night or solar during the middle of the day is used productively. Such a demand is provided by storing the ‘surplus’ generation in battery cells or as green molecules. Both can be used to firm up the grid during peak times and as transport fuels. Changes to market settings and new instruments will be needed to achieve this and Power Purchase Agreements have a role in this.

Demand management can also be assisted by removing the market barriers to distributed, network-connected generation (i.e. roof-top solar) such that urban solar roof-top generation is either fed into the grid or used within networks such that less grid supply is required at critical times, thus smoothing variations in demand.

Decarbonising transport offers one the best returns from the region’s abundant renewable energy and creates the conditions for national economic growth, which can be achieved through the developing energy dense industries within the region. Last year, New Zealand spent \$10.8 billion on mineral transport fuels. This amount was roughly equivalent to all export income from the entire meat (\$8.6 billion) and seafood (\$2.1 billion) sectors just to move goods and products around and for private vehicle use.

Decarbonising the transport sector through electrification and manufacture of e-fuels (e.g. hydrogen, ammonia, bioethanol) have the potential to reduce the supply chain (scope three<sup>3</sup>) emissions that burden international exports.

For the above things to occur there needs to be a co-ordinated number of interconnected steps of which market power purchase mechanisms are only one.

PPAs are required; their absence was one of two reasons cited by BlueFloat Energy<sup>4</sup> in their decision to pull out of the country and concentrate on projects in other countries:

*“Our decision to cease developments here reflects a number of key uncertainties about how the market for offshore wind will develop in the country – including both route to market and allocation of seabed”.*

---

<sup>3</sup> Scope three emissions are corporate emissions that are not produced through a company’s operations or electricity consumption, such as supply chain emissions. For more information see [Scope 3 Calculation Guidance | GHG Protocol](#)

<sup>4</sup> Nathan Turner, BlueFloat Energy: Waikato Times 24 October 2024 Out of puff: BlueFloat pulls pin on NZ - and planned Waikato wind power scheme