

7 June 2018

By Email

Murray Sherwin
Chair of the Productivity Commission

Dear Murray

Submission on the Productivity Commission's draft report on a low-emissions economy

The Electricity Authority (Authority) would like to thank the Productivity Commission for the opportunity to provide a submission on the Report, specifically Chapter 12 on electricity.

We consider your Report clearly describes the electricity sector and the transformation currently underway due to evolving technology, innovation and greater participation. We agree with your findings and recommendations. In particular, we agree with you taking a 'general equilibrium' approach to emissions reductions and recommending relying on the emissions trading scheme (ETS) as the mechanism for encouraging lowest cost emissions reduction, rather than picking winners via mandates, restrictions or subsidies.

Our view is the legislative and regulatory framework for the electricity sector generally works well, and makes New Zealand well-placed to manage the transition to even more renewable energy sources and increased electrification (particularly of transport and industrial processes), while still maintaining a reliable supply at the lowest cost. However, we think improvements could be made to provide flexibility and allow the regulatory framework to adapt to the fundamental changes facing the electricity sector from the uptake of evolving technology and new business models.

New Zealand has a high proportion of renewable electricity generation

Your Report notes New Zealand already has a low-emissions electricity system with up to 85% of electricity generated from renewable sources. We are well-placed within the list of OECD countries, with the third highest renewable electricity percentage, and 11th lowest residential prices. We also rank third among the top 25 energy users in the world for energy security, according to the Business Energy Council.

Our current situation has been achieved using market-based arrangements. The settings have been refined over time to reflect the dynamic environment, including technology change (eg, advances in wind generation technology and computing power), market structure (eg, entry of new generators and forms of demand response) and business models (eg, retailer provision of spot-based pricing to residential consumers). We expect the share of renewables to continue to grow as, based on issued resource consents, most new generation investment will be renewable. The pipeline of future generation is renewable because it is the cheapest form of generation.

General equilibrium approach to emissions reductions

We support a 'general equilibrium' approach to emissions reductions because it promotes emissions reduction at least overall cost to the economy. Interventions which specifically target the electricity sector to lower emissions could increase emissions elsewhere in the economy and at the same time, reduce reliability of supply and raise costs.

Consistent with this view, the Authority agrees with the first sentence in F12.5 of the Report.

With an effective emissions-pricing system, a statutory objective for the Electricity Authority (EA) to have regard to reducing greenhouse gas emissions in electricity is unlikely to incentivise efficient emissions reductions across the economy as a whole.

As such, we do not think revising our objective is necessary. In fact, we think requiring the Authority to consider emissions would reduce overall consumer welfare due to the significant risk of Authority decisions forgoing either efficiency or emissions reduction benefits elsewhere in the economy and by creating policy uncertainty.

The Commission also canvases in F12.5 that there may be a case to amend the Authority's objectives to include minimising any regulatory barriers to efficient emissions reductions in the electricity sector. The Authority thinks that such a change would be unnecessary. The Authority already has an active programme of work to reduce barriers to new technologies and business models. Overwhelmingly, such new technologies and business models will reduce emissions.

Picking winners will lead to consumer harm without necessarily reducing emissions

Effective emissions pricing should incentivise emissions reduction in the electricity sector where this is the most efficient source of reductions for the economy overall.

Given the rapid changes in technology being used in the electricity sector, there is a high risk of picking the wrong technology or business model. Picking winners through subsidies, mandates or restrictions also carries significant risk of unintended outcomes. Even at a macro level, picking winners when technology is changing is fraught. For example, currently there are at least two conceivable quite different generic paths the electricity sector could take with respect to generation investment and associated transmission investment. One path, involves more grid-connected generation and the infrastructure to support that. The other path involves much more distributed small scale generation, and more demand response with a lot less transmission build. It is not clear which path or which combination of paths the electricity sector will proceed along.

We think it is important to maintain a participant- and technology-neutral approach when setting rules for the electricity sector. As your Report recommends (R12.1) we think this is especially important in a changing environment where traditional electricity services can be supplied by non-traditional means and by non-traditional parties.

An example of the harm from picking winners is the old ACOT (avoided cost of transmission) arrangements. We amended the Electricity Industry Participation Code 2010 (Code) after finding provisions which favoured distributed generation relative to other users of the distribution network and grid-connected generation. In particular, the ACOT regime favoured distributed generation as a supplier of network support to Transpower, when in fact often that network support was not needed or there were cheaper ways to provide it. The new arrangements were a significant step to put distributed generation on a level-playing field. Consumers and the economy overall are benefiting and there is no effect on emission reductions because distributed generation is no more renewable than grid-connected generation.

The Authority is promoting more efficient pricing and cost allocation of electricity and electricity services, thereby encouraging participants to pursue least-cost solutions for obtaining electricity and electricity-related services. Likewise, the ETS encourages participants to pursue least-cost solutions for reducing emissions. As your Report recommends (R12.2), the two sets of pricing mechanisms provide participants with the ability and incentive to optimise for both efficiency (lower cost electricity) and emissions reduction.

New Zealand is well-placed to see uptake of renewables and emissions reducing technology

The New Zealand electricity market is well placed to accommodate an increasing proportion of renewable and emissions reducing generation. The combination of flexible hydro generation which can operate as both baseload and peaking generation, and technological developments such as more flexible geothermal plant and new storage technology, means the New Zealand electricity system can cope with high penetration of intermittent renewable generation.

The low marginal cost of renewable generation is not problematic. At times, the New Zealand electricity market operates at close to 100% renewables but the spot price is positive. For example, the NZ electricity system was operating at 90% renewable for 12% of the time in 2016 and prices on the half-hourly spot market averaged about \$43 per Megawatt-hour (MWh) for those trading periods. Baseload electricity futures contracts at Benmore in the South Island for 2019 are currently trading at about \$69 per MWh.

The current energy-only market design will best ensure that a high renewable electricity system is able to provide the necessary security of supply, including in dry years. This is because the spot market is designed so that spot prices increase at times of resource scarcity. This stimulates demand response and encourages parties to forward contract (hedge) and make generation plant available, and over the longer term invest in new plant.

The Authority agrees with the Productivity Commission that we have a voluntary firm energy market. For over 20 years the spot market has operated effectively in providing signals for efficient generation investment, including to manage dry years. This has been supported in more recent years by well-functioning hedge and futures markets that provide parties with the means to enter into forward contracts, such as the contract between Meridian and Genesis for dry-year cover, without the prescription of a formal capacity mechanism that can be readily gamed. Key Authority initiatives—including the development of cap hedge products, and introduction of more accurate prices and nodal scarcity prices through real-time pricing—will provide further support for parties to forward contract to manage risks, including dry year risk, into the future. These latter initiatives are good examples of how the Authority is able to continue to evolve the design of the market to ensure that it delivers long term benefits to consumers.

Authority focus on reducing barriers to evolving technologies and new business models

Your Report recommends (R12.3) the Authority continue its programme of work to update pricing and regulation to facilitate the integration of distributed energy resources (DER) and demand response into the electricity system.

Integrating DER and demand response is part of our focus on reducing barriers to evolving technology and new business models. We think that efficient uptake of DER and demand response will provide consumers with greater choice, promote competition, improve reliability of supply and reduce costs. We also think that, although not our objective, the efficient uptake of DER and demand response will help lower emissions.

Realising the benefits of DER and demand response requires a participant and technology neutral whole-of-supply chain approach. There is no 'silver bullet'. As such, we, along with the Commerce Commission, are working to provide a level playing field for the evolving technologies and new business models which will be part of the solution.

Examples of work we have underway which we think will facilitate uptake of DERs and demand response are:

- **Equal access:** reducing barriers to innovative parties gaining equal access to electricity networks. The Authority's project on introducing **default distributor agreements (DDAs)** is a key instrument for facilitating equal access and promoting more participation, innovation and competition.
- **Integration of hosting capacity:** ensuring network hosting requirements are technology and participant-neutral and pave the way in the future for merit-based dispatch within distribution networks.
- **Multiple trading relationships:** reducing barriers to consumers buying electricity retailing services from multiple providers simultaneously; a key barrier addressed in this project is innovative providers gaining quick and easy access to accurate consumption data at the household level.
- **Spot market settlement on real-time pricing:** reducing barriers to retail competition and new technologies for demand response.
- **Improving accuracy of spot price forecasts:** reducing barriers to parties employing new technology and business models to deliver demand-response to the wholesale electricity market.
- **Participation of new generating technologies in the wholesale market:** removing barriers to different forms of generating technologies in the wholesale market, in particular new grid-scale battery energy storage systems.
- **Enhancing dispatchable demand:** enabling aggregators of demand response to participate in the spot electricity market in more circumstances than currently occurs.
- **Transmission and distribution pricing reviews:** ensuring prices for network services signal efficient investment in and use of evolving technologies, and removing barriers to more efficient use of, and investment in, the electricity supply chain.

We are also working alongside the Commerce Commission to identify any barriers arising from the capability of existing participants to support uptake of evolving technology and new business models. Together with the projects listed above, our **Review of the distribution sector** will look at the capabilities of distributors to meet the challenges of evolving technology, including making sure power system resources have competitive access to a well-configured common distribution infrastructure, coordinate DER and provide rewards and allocate costs efficiently.

Opportunities to improve on the legislative and regulatory framework

There are opportunities to improve the performance of the existing legislative and regulatory framework. In particular, we think improvements are possible to allow the framework to adapt to three key developments:

- **More contestability of outputs:** electricity lines services that were once easily designated as pure monopoly services are increasingly contestable due to technology developments – we think about this as provision of alternative electricity delivery services
- **More contestability of inputs:** recent technology advances make it more commercially viable for emerging contestable activities to be used to support and complement traditional methods of delivering electricity lines services – we think about this as provision of network support services.

- Ownership of contestable activities: in both cases above, providers of regulated lines services are increasingly interested in owning and operating the emerging contestable services that affect the electricity lines service, and this is greatly increasing the breadth of activities where regulated network businesses are competing with non-regulated businesses.

To better provide for these developments we consider there could be improvements made to the legislative and regulatory framework for electricity.

We would be pleased to discuss our views further

We would like to thank the Productivity Commission for the opportunity to provide this submission and we would be pleased to meet and discuss our views further.

Kind regards



Carl Hansen
Chief Executive

