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Low-emissions economy inquiry
New Zealand Productivity Commission
P O Box 8036
The Terrace
Wellington 6143

By email: info@productivity.govt.nz

Dear Steven,

Re: Draft Report – Low-emissions economy inquiry

The Independent Electricity Generators Association Incorporated (IEGA) welcomes the opportunity to make submissions to the NZ Productivity Commission (Commission) on the draft paper relating to transitioning to a low-emissions economy.

The IEGA's membership either directly or indirectly associated with predominately small scale power schemes throughout New Zealand for the purpose of commercial electricity production.¹ We introduced our organisation in a submission on the Commission's issues paper in October 2017.

Our members have made significant economic investments in generation plant and equipment throughout New Zealand that is embedded within local distribution networks with 95% of the plant using renewable fuel. Combining the capacity of member's plant makes the IEGA the sixth largest generator in New Zealand.

IEGA members are small, entrepreneurial businesses, essentially the SMEs of the electricity generation sector. We are price takers in the electricity market and provide significant benefits to the regions in which we operate.

This is an exciting time for the energy sector, and potentially our members. For example, the supply of electricity will become more diverse as consumers decide to invest in solar pv and / or battery storage; and distributed generation, or distributed energy resources, may become the norm with investment in physical transmission and distribution network infrastructure becoming the 'alternative'.

¹ The Steering Committee has signed off this submission on behalf of members

Distributed generation reduces peak demand and electricity losses

Distributed generation, or distributed energy resources, are already an important component of the electricity industry – delivering electricity to meet around 10% of total demand².

Distributed generation is different from generation connected to the transmission grid. Distributed generation is located the closest to individual consumers – and therefore has minimal losses. About 3-4% of the electricity generated by grid connected plant is lost to the atmosphere as it is conveyed on the transmission network; and about 5-7% of electricity conveyed across the distribution network. The laws of physics mean the amount of electricity lost to the atmosphere increases exponentially as the quantity transported increases. Thus, during periods of peak demand, electricity lost – that is generated at a plant distance from load but does not reach consumers – is about 500MW, equivalent to the capacity of the Huntly thermal power station.

Huntly is often the marginal generator and so is generating to meet peak demand at times of high losses, producing the highest greenhouse gas emissions of the entire generating fleet. The Electricity Authority (Authority) ignored these losses when it made December 2016 decisions relating to the Distributed Generation Pricing Principles³ that could result in existing renewable distributed generation becoming uneconomic and making it more difficult for investors in new distributed generation. If the value of losses had been taken into account in the Authority's cost benefit analysis – both in terms of the cost of electricity and the emissions associated with the use of thermal generation to supply peak demand – the decision would not have been made in our view.

The Commission acknowledges the benefits of DR in reducing demand at peak times:

“By dampening demand at peaks, DR has the potential to reduce the use of on-call thermal generation”⁴

Distributed generation is the same as DR. Distributed generation has been a growing and innovative segment of the electricity market until recently when the Authority made its very disruptive change to the regulatory regime for existing and new distributed generation.

Regulatory regime for distributed energy resources

Electricity Authority mandate

IEGA members' investments have been put at risk, because the Authority pursued a narrow economic mandate and ignored the policy foundation which members had relied on for making long life investments in distributed generation. The policy foundation, the Electricity (Connection of Distributed Generation) Regulations 2007, were introduced to facilitate connection of distributed generation to monopoly distribution companies because the government recognised distributed generation provides energy diversity and security, has a lower environmental impact and displaces thermal generation contributing to climate change policy – all completely relevant objectives in the

² Although not included in the description of the industry on page 323 of the Commission's report

³ Electricity Authority Distributed Generation Pricing Policy Decision, 6 December 2016

⁴ Page 337

current low emissions debate. The government also acknowledged the difficulty for small investors in generation negotiating revenue for services and charges with monopoly distribution companies.

The highly disruptive regulatory change was estimated to reduce to have the potential to reduce cashflow (EBITDA) on average by 30% and wipe out \$500 million of enterprise value for distributed generation investors.

IEGA therefore strongly supports the Commission’s view in Section 6.3⁵:

“To mobilise the investment needed to support the transition to a low-emissions economy, two elements provide a critical foundation underneath an overarching framework of climate policy settings that are “coherent, consistent and credible” (Matikainen, 2017a, p. 9):

- *institutional arrangements that act as an enduring commitment device for decision-making (Chapter 7); and*
- *an effective emissions pricing regime (Chapter 4). A foundation of stable and credible climate policy is vital. It enables investors to confidently expect that emissions reductions policies will actually be implemented as planned (Amin et al., 2014).”*

Adding further:

“These core elements are vital to help to offset the nature of climate change as a “tragedy of the horizon” (Carney, 2016, p. 2). Capital markets have significantly shorter time horizons than necessary for the transition to a low-emissions economy. This includes the problem of the short-term focus of financial analysis not being able to shed adequate light on long-term risks, and a lack of a long-term time horizon when making corporate disclosures (2° Investing Initiative, 2017a, 2017b). Enduring commitment devices, and an effective emissions price, help to signal where investment may be most effectively directed over the longer term. They can help to create a new path dependency centred on low-emissions activities and technologies, as well as to foster investment into social and natural capital to achieve long-term goals (Te Rūnanga o Ngāi Tahu, pers. comm. 26 March 2018).”

IEGA notes these points are not just good elements supporting innovation or ETS policies but are relevant to all areas of policy that support the government’s climate change objectives.

Consistent with the above, we agree that there is a case to amend the Authority’s statutory objective to include minimising any regulatory barriers to efficient emissions reductions in the electricity sector⁶.

F12.5

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. There may be some case to amend the EA’s objectives to include minimising any regulatory barriers to efficient emissions reductions in the electricity sector.

⁵ Page 138

⁶ Page 345

If this objective had been in place, the IEGA suggests the Authority could not have made its December 2016 decision in relation to the compensation mechanism for distributed generation.

Compensation for the services provided by distributed generation

We agree with the following statement:⁷

To fully realise its potential scale, DER should enjoy the same incentives as grid-scale generators to provide energy services and (with high-quality inverters and/or batteries) ancillary services such as frequency and voltage stability (Stevenson et al., 2018; John Crook, sub. 31). Currently DER, unlike grid-scale generators, are only paid the average cost of energy and cannot access markets for ancillary services (such as frequency and voltage control), even if they meet the requirements.

Distributed generation competes with transmission and distribution infrastructure to deliver electricity to consumers co-located within the local network. As more distributed generation connects to local networks and generates to supply peak demand, the need for any increase in capacity in the transmission and distribution network can be deferred or avoided.

Policy settings must recognise and include an appropriate mechanism for compensating distributed energy resources for the range of benefits provided. For example, delivering electricity to consumers just like transmission infrastructure does for grid-connected generation.

The tragedy of the horizon discussed above is equally relevant to the Commission's recommendation R12.4 (below) which suggests a change to existing rules for distribution charges to distributed generation, from incremental to marginal costs. Incremental charges were introduced by the government in the above mentioned 2007 Regulations to facilitate connection of distributed generation. In our view, any change to distribution charging is a Big P policy decision by core government agencies to support the government's objective to transition to a low carbon economy.

R12.4

The Electricity Authority should, in conjunction with its work programme to update pricing and regulation of the electricity distribution sector, undertake a review of and develop measures to raise the capabilities of the electricity distribution businesses to:

- ensure all power system resources (including distributed energy resources – DER) have competitive access to a well-configured common distribution infrastructure, at a reasonable cost for monopoly assets;
- coordinate DER (including smart, flexible demand) to meet participants' preferences for security, quality and reliability; and
- provide rewards and allocate costs commensurate with the marginal costs and benefits of each load and generating source.

An initial proposal by the Authority to remove the 'incremental' cap on distribution charges to distributed generation revealed potential charges that would financially cripple existing distributed generation. Indications were for charges that were 25 – 50% of the average wholesale electricity price when distributed generation are price takers and would have to absorb this cost (unlike grid-

⁷ Page 340

connected generators that are setting the wholesale price to recover their actual and opportunity costs).

National Policy Statement for Renewable Electricity Generation

In relation to the National Policy Statement for Renewable Electricity Generation (NPSREG) the Commission asks⁸:

Q12.1

Does decision making under the Resource Management Act 1991 unduly constrain investment in renewable electricity generation, particularly wind and hydro generation? In what ways could the National Policy Statement on Renewable Electricity Generation 2011 be strengthened to give clearer direction to regional, district and unitary councils to make provision for renewable electricity generation in their regional and district plans, regional policy statements and resource management decisions?

IEGA supports a review of the NPSREG. IEGA members can provide numerous examples of how the Resource Management Act constrains investment in renewable generation, in addition to those in the draft report. Further the NPSREG does not provide clear direction. The NPSREG must be more prominent and taken more seriously by decision makers.

Our concerns include:

- the NPSREG has equal weighting with numerous other criteria in the RMA so has no 'teeth'
- there is little consistency between regions / districts as to the provisions that apply to the operation, maintenance and development of renewable electricity generation activities
- the provisions in the NPSREG are not as directive or 'forceful' as those within the New Zealand Coastal Policy Statement ('NZCPS') or the National Policy Statement on Electricity Transmission ('NPSET') which impacts on its implementation within lower-order statutory planning documents
- the NPSREG has not provided any certainty for the re-consenting of existing renewable electricity generation schemes.

We would welcome the opportunity to participate in a thorough and wide ranging review of this policy instrument given the significant need for new renewable generating capacity if NZ is to transition to a low emissions economy.

Outlook for the renewable electricity sector

We note in Section 12 of the Commission's report concludes:

"The electricity market is complex and has been evolving over time as participants and regulators learn from experience with regulatory adjustments; and respond to changing technology, weather patterns and economic conditions. The Government should consider the

⁸ Page 336

risk of unintended and expensive consequences of any new interventions in the electricity system. An efficient and well-functioning electricity system will play a central part in the transition to a low-emissions economy.”

The IEGA agrees in principal with this conclusion about electricity market complexity and its evolving design. However, we also believe the market is not “fit-for-purpose” for the rapid growth in distributed energy resources nor for the changes that are envisaged in this report to meet the net zero climate objectives.

For smaller players such as the IEGA membership investing in generation (and new competitors in the electricity retail market) the electricity market is essentially inaccessible in many areas due to Code complexity, wholesale trading illiquidity and the costs of meeting the requirements of a vast array of rules.

Market statistics support the IEGA’s view. Independent and privately funded participants have less than 15% of generation and retail market shares after over two decades since the introduction of competition in the electricity market.

The wholesale hedge market remains relatively illiquid relative to other trading markets and the futures trading market exhibits too much price volatility to be considered an affordable risk management options for smaller companies’ balance sheets.

Without resolving these more fundamental market design flaws, the innovation and contribution of smaller players to invest and support climate change outcomes will be limited by their lack of ability to scale up to compete at the same cost efficiencies as the five gentailers.

The Commission’s scenarios are forecasting an increase in energy demand of over 30GWh by 2050. This will require some \$30bn+ of new investment over the next three decades. Changes to the market structure are required to encourage more diversified new investments.

The IEGA believes some level of policy support will be required to ensure smaller generation (and retailing businesses) can actively participate alongside smaller scale demand management, solar, hydro, biomass and wind technologies. We query the interest or incentive on the larger players to make the required investment. In addition, the narrow focus of the current electricity market regulatory regime is a major constraint on the investment required to transition to a low emissions economy.

Summary

In summary, our key messages are:

- Distributed generation is already playing an important role in NZ’s renewable electricity system in competition with transmission and distribution infrastructure. Existing distributed generation must be treated on a level playing field with all other ways of supplying electricity to consumers, including emerging technologies.

- There are options for new generating capacity⁹ connected to local networks that are economic, have a smaller environmental footprint than grid-connected generation and provide an incremental increase in supply more aligned to growth in demand. However, a stable and predictable regulatory environment is critical for investors.
- The NPSREG should be reviewed to improve its effectiveness for consenting new or re-consenting existing renewable generation plant.
- All government agencies, including independent agencies, must be required to take into account the government's climate change targets and international commitments in its policy, primary and secondary legislative and rule decisions. This includes including the carbon price and the value of emission reductions in any cost benefit analysis. In our view, the Climate Commission has an important role to play in guiding this cross-agency commitment to transitioning to a low emissions economy.

The IEGA would welcome the opportunity to discuss this submission with you in more detail.

Yours sincerely



Warren McNabb
Chair

⁹ Estimated at over 150MW using Electricity Authority data at https://www.emi.ea.govt.nz/Wholesale/Datasets/Generation/Generation_fleet/Proposed