

# IEGA

INDEPENDENT ELECTRICITY  
GENERATORS ASSOCIATION

**Chairman:** Warren McNabb,  
[warren.mcnabb@altimarloch.com](mailto:warren.mcnabb@altimarloch.com)  
**Secretary:** David Inch, [david@nzenergy.co.nz](mailto:david@nzenergy.co.nz)

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Andy Burgess  
Head of Energy, Airports, and Dairy Regulation  
Regulation Branch  
Commerce Commission  
P O Box 2351  
Wellington 6140

By email: [regulation.branch@comcom.govt.nz](mailto:regulation.branch@comcom.govt.nz)

Dear Andy,

**RE: Open letter – ensuring our energy regulation is fit for purpose**

The Independent Electricity Generators Association (IEGA) welcomes the opportunity to engage on whether Part 4 regulation is fit for purpose for the energy sector as it evolves to support the Government's climate change and energy sector targets.

The IEGA comprises about 40 members who are either directly or indirectly associated with predominantly small-scale power schemes connected to local networks throughout New Zealand for the purpose of commercial electricity production.<sup>1</sup> IEGA members are small, entrepreneurial businesses, essentially the SMEs of the electricity generation sector, who have made significant economic investments in generation plant and equipment 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. We are price takers in the electricity market and provide significant benefits to the regions in which we operate.

IEGA members are proud to contribute to achievement of New Zealand's sustainability goals. We strongly support efforts to lower emissions in the electricity and energy sector as well as the entire economy. Members have new generation investment options which can meet growth in local demand. However, decisions about when to invest depend on stable and predictable government targets and regulatory environment.

The IEGA's interest in the Part 4 regulatory regime arises because our assets are embedded within distributors' network infrastructure. Further, distributed generation competes with transmission and

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<sup>1</sup> The Committee has signed off this submission on behalf of members.

distribution infrastructure to deliver electricity to end consumers. The plant of some of our members was in place prior to the transmission grid; in other areas our distributed generation has deferred or avoided the need for transmission and distribution investment.

We anticipate 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'.

Renewable distributed generation has advantages over utility scale grid connected generation, for example: lower losses on the transmission grid; lower losses on the distribution network as the generation is located close to load; deferring or avoiding investment in transmission and distribution infrastructure; and a smaller environmental footprint and visual impact.

In our view there is considerably more potential for investment in these lower emissions sources of electricity. The regulatory environment during NZ's transition path to a low emissions economy should involve reducing barriers to entry for consumers and investors so that New Zealand can benefit from the full economic and wider community benefits of solar and other distributed energy resources. Part 4 regulation covers investment and recovery of costs by distribution companies and Transpower that enables, and competes with, distributed generation.

### **System benefits from distributed generation and compensation for these benefits**

This section of the submission describes the network benefits provided to both distribution and transmission infrastructure owners; how distributed generation had been and now is no longer compensated for these benefits; and our suggestions for changes to application of the Part 4 regulatory regime to ensure it is fit-for-purpose, especially as investment in distributed energy resources is anticipated to increase.

#### ***Distributed generation provides distribution network benefits***

Historically, small commercial scale distributed generation has contributed more than 12% of peak energy generation supply.

The Climate Change Commission (CCC), in its recent draft Advice report for consultation, has highlighted the benefits of electricity consumers reducing demand during peak usage periods:

*"Reducing demand at peak times helps the entire energy system as there is less need to upgrade electricity lines, avoiding potential additional costs for all households. This would require both the adoption of technologies for demand response, and innovative business and pricing models. Electricity pricing incentives, such as low cost night rates, combined with smart charging technology could be an effective way to address this issue."*<sup>2</sup>

Output from distributed generation directly into a distribution network achieves the same peak demand management benefits. Distributed generation is enrolled in Transpower's demand response programme. Currently small commercial DG receive no compensation from distribution companies for generating during periods of peak demand and reducing the volume the distribution company has

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<sup>2</sup> Page 83 of Draft Advice report

to carry from the national grid. The IEGA submits that this is inequitable relative to other customers of the distribution company (for example, a lower tariff for controlled versus uncontrolled load when the differential can be up to 8c/kWh).

In addition, distributed generation can defer or avoid investment in both the distribution and transmission networks. Under the 2007 Government policy decision, 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 current low emissions debate. Distributed generation was eligible for transmission costs the distributor avoided (ACOT) because distributed generation generated during peak demand periods and reduced the volumes the distributors took from the transmission grid.

### ***Distributed generation provides transmission network benefits***

Analysis in 2017-2018 also revealed that over 80% of the assumed contribution of existing distributed generation to winter load (megawatts) is required for Transpower to meet its grid reliability standards to ensure secure supply of electricity<sup>3</sup>. Distributed generation is not compensated for this which is effectively a transmission service.

As you are aware Transpower and the distribution companies are required by the Commission's regulatory regime to consider non-network infrastructure alternatives. These alternatives, such as investment by third parties in distributed generation, provides Transpower and distributors with flexibility to manage uncertainty about the future need for, or timing of, transmission investment.

In addition, the Electricity Authority's 2016 changes to the ACOT mechanism also require new distributed generation to negotiate with Transpower for avoided cost of transmission payments. This is bizarre when Transpower is a competitor to distributed generation. A member described this as a farmer with two cows trying to negotiate with Fonterra.

It is only in the last year that Transpower has signed a Grid Support Agreement with a transmission alternative. Thus far, to our knowledge, no distributed generation investor has negotiated a Grid Support Agreement with Transpower. We are unclear if the process of engaging with Transpower and negotiating a signed contract is manageable for smaller potential alternative providers: IEGA members are, and other owners of transmission alternatives maybe, small businesses with limited resources to apply to complex negotiations with a large corporate entity with asymmetry of information. IEGA submits that the process of engaging with Transpower on transmission alternatives, negotiating and signing a contract should be proportionate to the scale of the alternative provider or size of investment.

We also monitor Transpower's consideration of non-transmission alternatives during grid planning. Distributed generation is unlikely to achieve the reliability standard required by Transpower based on their expectations of transmission infrastructure – this is unlikely to change.

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<sup>3</sup> See Mitton ElectroNet reports on the four transmission regions in consultation to determine the list of distributed generation eligible to receive ACOT <https://www.ea.govt.nz/development/work-programme/pricing-cost-allocation/acot-code-change-implementation/consultations/#c17067>

For existing distributed generation, lumpy investment in transmission infrastructure, due to huge economies of scale, does not mean the system value provided by distributed generation changes over time. Distributed generation can defer investment in transmission up to the point when a lumpy investment can no longer be avoided. Distributed generation is a long-life asset, like transmission, with a number of plants around New Zealand over 100 years old. Figure B represents the correct analysis of the economic efficiency impacts of distributed generation on excess supply of delivery capacity. Further, it is common and acceptable to have surplus capacity following an economically sized infrastructure expansion that meets future demand projections.

Figure B - *Correct Economic Perspective: DG is part of in-use capacity, Transpower upgrade results in excess capacity (AIEG)*



The CCC acknowledged the challenge of lumpy investment in electricity infrastructure:

*“The challenge is delivering a timely, reliable and affordable build out of the electricity system, while managing the opposing risks of under or over-investing in the system. Continuing to build new electricity generation and transmission infrastructure throughout the 2020s would avoid construction bottlenecks and potential delays to wider decarbonisation in the 2030s.”<sup>4</sup>*

**How to compensate distributed generation for the distribution and transmission network benefits provided**

This regulatory environment was overhauled by an Electricity Authority decision in 2016 which removed ACOT obligations. Distributed generation provides valuable deferral benefits but a ‘market mechanism’ or alternative pragmatic compensation mechanism for this important system benefit has yet to eventuate that would enable investors to maximise the potential of distributed generation. With the removal of the ACOT distributed generation does not get compensated and is no longer incentivised to generate and thus reduce load on the transmission grid.

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.

The Productivity Commission identified these same issues in its 2018 report on its low emissions economy inquiry. The IEGA agreed with their following statement:<sup>5</sup>

<sup>4</sup> Page 62 of Draft Advice report

<sup>5</sup> Page 340

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.

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.

Investments by both Transpower and distributed generation are efficient, and both should be allowed to be compensated by adequate cost recovery.

The Part 4 regulatory regime should ensure distributed generation contracted as an alternative to transmission investment is compensated on the same basis as Transpower's transmission assets for the life of the investment. Once signed up as an alternative to investing in transmission infrastructure, the cost of this alternative must be recovered in the same way as Transpower's transmission assets and for the life of the investment. The alternative forms part of the integrated transmission grid. The value of the alternative is not eliminated when the next tranche of transmission assets are installed even if that tranche of transmission investment results in excess capacity. In addition, a peak demand price signal is important to signal the upcoming need for more capacity – which could be provided by a transmission alternative. This price signal had been the RCPD charge but it is unclear if there is any signal for this type of investment with the new Transmission Pricing Methodology Guidelines. A price signal is necessary to incentivise third parties to investigate options to offer services at a cost less than that of a lumpy major transmission investment.

A standard measure and value for 'reliability' would be a good start. Government could standardise the value for reliability and ancillary services provided by distributed generation across all networks. For example, the value of reliability should be standard across New Zealand when the value of lost load in the transmission context and security of supply framework is set at one number of \$20,000/MWh.

The IEGA strongly supports work on resolving valuation of and payment for services already provided by existing small scale commercial distributed generation to their network company. Progress in valuing these benefits and agreeing compensation is overdue. It is our view that this is within the scope of Part 4 as it relates to consideration of distribution network alternatives.

The different policies applied by lines companies and poor approach leads us to **recommend a pragmatic nationwide solution to recognise the benefits of distributed generation**. The previous Avoided Cost of Transmission was such a pragmatic standardised approach. A stable well understood compensation mechanism for system benefits (network congestion management and investment deferrals) would assist with securing debt funding for investment in distributed generation.<sup>6</sup>

A further option is to consider the climate change costs associated with investment in long-life assets. The CCC's draft Advice report for consultation commented that *"Incorporating long-term abatement cost values consistent with climate change goals into the Government's cost-benefit or cost-*

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<sup>6</sup> The UK's Flexibility Mechanism work could be a useful comparator.

*effectiveness analysis would have a powerful effect in helping to make sure policy and investment decisions are net zero compatible".* The CCC's Time-critical necessary action 6 Align investments for climate outcomes included the following recommendation:

**To meet emissions budgets and achieve the 2050 target, it is important that policy decisions and investments made now do not lock Aotearoa into a high emissions development pathway. Safeguards and signals will be needed to prevent this, including a specific focus on ensuring long-lived assets such as infrastructure are net-zero compatible. To achieve this, we recommend in the first budget period the Government:**

- a. Immediately start to factor target-consistent long-term abatement cost values into policy and investment analysis in central government. These values should be informed by the Commission's analysis which suggests values of at least \$140 per tonne by 2030 and \$250 by 2050 in real prices.**
- b. Encourage local government and the private sector to also use these values in policy and investment analysis.**

The IEGA suggests the Commission consider incorporating market-based carbon costs as well as the long-term abatement cost values in the distribution companies' and Transpower's capital expenditure proposals.

The carbon cost can be applied to the quantity of losses incurred in delivering electricity.

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.

## **Innovation**

The IEGA supports distributors being funded for innovations that are for the long-term benefit of consumers and where any investment by distributors in the competitive part of the electricity market is made at arms-length on third-party terms. However, it is questionable about whether the current innovation allowance is sufficient and flexible enough to maximise the potential benefits.

Development of a demand response market and distributors taking on regional distribution system management (DSO) could be two examples. However, it is important the demand response market and DSO changes are well structured, funded and have clear objectives / outcomes within a stipulated timeframe.

In the IEGA's submission to the CCC on its draft Advice report we noted the CCC's comments:

*“The regulatory regime must continue to adapt and respond to innovations, to ensure it can deliver access to abundant, affordable, and reliable low emissions electricity. It must be able to deliver the services needed to underpin electrifying the vehicle fleet and industry. The capacity and capability of electricity distribution businesses will be an important consideration.”*<sup>7</sup>

as well as their recommendation that government, during the period to 2025<sup>8</sup>,

- d. Assess whether electricity distributors are equipped, resourced and incentivised to innovate and support the adoption on their networks of new technologies, platforms and business models, including the successful integration of EVs.**

The IEGA submitted:

*“Our members connect to distribution networks and are subject to their connection and operational requirements.*

*There are examples of distribution companies preferring distribution solutions without discussing if the distributed generation could make a lower cost investment that achieves the same outcome. Appendix A includes a case study on a dispute that took six years to resolve between an IEGA member and a distribution company that cost hundreds of thousands of dollars because the distribution company was acting as a monopoly provider. In early 2019 the Authority published a case study of their investigation into the dispute. This is a clear articulation of the issues, including evidence of poor behaviour, that can and does form a barrier for distributed generation.*

*The mindset and expertise of distribution companies is focused on traditional distribution infrastructure assets. A wider perspective could result in distribution companies working with owners of distributed energy resources to manage capacity or power quality issues on the network.*

*Distribution companies’ also often view distributed generation as only a cost when distributed generation can and does provide services to distribution companies which they are not being paid for.”*

This feedback to the CCC is equally relevant to the Commission’s consideration of whether the Part 4 regime is fit-for-purpose.

Also in its 2018 report, the Productivity Commission recommended that the regulator undertake a review of and develop measures to raise the capabilities of distribution businesses to “co-ordinate distributed energy resources (including smart, flexible demand) to meet participants’ preferences for security, quality and reliability”.<sup>9</sup> It is not clear how much this type of work has progressed.

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<sup>7</sup> Page 113 of Draft Advice report

<sup>8</sup> Page 113 of Draft Advice report

<sup>9</sup> Recommendation 12.4 Page 340

[https://www.productivity.govt.nz/assets/Documents/lowemissions/4e01d69a83/Productivity-Commission\\_Low-emissions-economy\\_Final-Report\\_FINAL\\_2.pdf](https://www.productivity.govt.nz/assets/Documents/lowemissions/4e01d69a83/Productivity-Commission_Low-emissions-economy_Final-Report_FINAL_2.pdf)

## Enable more independent generation and distributed generation investment

The Commission has a role to play in achieving one of the CCC's draft recommendations<sup>10</sup>, namely

*"We recommend that, in the first budget period the Government take steps to ensure a low emissions, reliable and affordable electricity system to support electrifying transport and industry through progress on the following:*

*e. Enable more independent generation and distributed generation, especially for remote rural and Māori communities, and ensure access to capital for this purpose."*<sup>11</sup>

There are new small commercial scale distributed generation options available that are environmentally and economically sustainable. Construction of this capacity will contribute to NZ's renewable energy target as well as realising substantial benefits from generating electricity close to local load<sup>12</sup>.

### Summary of key messages

- 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 capacity<sup>13</sup> 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. A stable and predictable regulatory environment is important for investors.
- Existing and new distributed generation is/will provide system benefits for distribution and transmission network owners. An equitable regulatory environment would facilitate compensation for these benefits – just as the network owners are compensated for the provision of their assets.
- A stable, pragmatic nationwide solution to recognise the benefits of distributed generation must be implemented – this is within the scope of the Part 4 regulation of monopoly network businesses. Part 4 regulatory regime can enable the ability for distribution companies to compensate distributed generation for deferred or avoided investment as a network alternative and recover that cost from customers.
- The UK regulation of monopoly electricity networks and the progress achieved there with the Open Networks Project must provide relevant learnings for NZ, despite the difference in size. For example, standard agreements by distribution companies and Transpower for services that provide reliability or security of supply; a standard definition of 'reliability' against which alternatives to transmission / distribution infrastructure investment can be assessed (instead of ~29+ definitions).

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<sup>10</sup> Under Necessary action 5 to maximise the use of electricity as a low emissions fuel

<sup>11</sup> Page 113 of Draft Advice report

<sup>12</sup> Including improving local resilience and security of supply especially with an increased dependence on electricity, reduced transmission and distribution losses

<sup>13</sup> Estimated at over 150MW using Electricity Authority data at

[https://www.emi.ea.govt.nz/Wholesale/Datasets/Generation/Generation\\_fleet/Proposed](https://www.emi.ea.govt.nz/Wholesale/Datasets/Generation/Generation_fleet/Proposed)



## Concluding comment

Regulators in fast changing and disruptive markets need to ensure that natural competition prevails, and not become the disruptors and create barriers. The IEGA recommends the approach to regulatory arrangements outlined in the report “ReShaping Regulation, Powering from the Future”<sup>14</sup> which describes regulatory principles to shape a new energy system from a blank sheet of paper. This paper comments that the focus on ‘transition’ is “*resulting in incremental rather than systemic thinking that is creating significant policy and cost “drag”, is constrained by incumbent thinking and does not draw sufficiently from drivers of change beyond the energy sector. ... Prescription is yesterday, facilitation is tomorrow, all judged against great consumer outcomes.*”<sup>15</sup>

We would welcome the opportunity to discuss this submission with you.

Yours sincerely



**Warren McNabb**  
Chair

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<sup>14</sup> See <https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/collaborative-publications/Reshaping-Regulation-Powering-from-the-future.pdf>

<sup>15</sup> Ibid Page 4