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Feedback on fit for purpose regulation: ensuring electricity networks have sufficient incentives to prepare for accelerating electrification and uptake of distributed energy resources

This submission to the Commerce Commission request for views on any significant barriers in either Part 4 of the Commerce Act 1986 or the input methodologies (IM), and possible improvements, is from Cortexo and Our Energy.

Cortexo (<https://www.cortexo.com/>) is a grid-edge software platform that enables a greater uptake of distributed energy resources on electricity networks

Our Energy (<https://www.ourenergy.co.nz/>) is an innovative energy technology company with a proprietary online platform that matches real-time data from those producing their own electricity with others in their communities

Cortexo and Our Energy published a series of articles during February and March 2021 highlighting how the electricity sector in Aotearoa New Zealand must urgently commit to upgrading its regulatory settings to provide a fit-for-purpose electricity system and market able to cope with the heavy lifting required for rapid electrification, uptake of distributed energy resources (DER) and achieving the emissions reduction targets of our zero carbon commitments.

Our comments here build on the conclusions outlined in the articles, available here: <https://www.ourenergy.co.nz/news>.

The Commerce Commission has asked whether there are currently any significant barriers in either Part 4 itself or the IMs, and possible improvements, relating to achieving the following outcomes:

- supports the transition to a low carbon economy, but in a way that does not compromise consumers receiving the energy services they demand, across reliable and resilient networks
- encourages innovative approaches to delivering least-cost energy services
- continues to provide a level of regulatory certainty and predictability conducive to efficient investment
- recognises wider regulatory systems and competitive energy markets, and the role of our regulation within them.'

We consider the Commission's decision on the IMs will have far-reaching effects on when electricity networks achieve the capacity and capability to reliably deliver power to charge all the electric vehicles, to electrify space heating for homes and keeping buildings warm, to electrify industrial processes and to connect and deliver increased amounts of distributed and renewable generation.

A bigger nudge is necessary to encourage innovation and the evolution of investment and operating practices

This submission focuses on two issues related to the strength of incentives for network operators to innovate, and more accurately, to evolve investment and operating practices to reflect the fundamental changes to the operating environment which will occur over the coming decade. The two issues are:

- Part 4 puts a narrow focus on the efficient supply of distribution services only, rather than the efficient supply of the delivered electricity service to the customer. This narrow focus is likely to create a material barrier to innovation, achieving highest value (to consumers) delivery of electricity services and the transition to a low carbon economy.
- Barriers to innovation by electricity networks and the evolution of operating and investment practices to reflect the changing environment are higher than has been recognised to date, thereby slowing the pace of innovation and changes to delivery of distribution services and the end-to-end electricity service.

A bigger nudge is necessary if electricity networks are to promptly begin and complete the difficult transition to a different operating environment, particularly by committing to the long-term investment required if consumers are to realise the substantial benefits from leveraging the flexibility of DERs.

Use of and delivery of distribution services must change over the coming decade in response to changes to how people use the network – solar, electric vehicles, batteries, electrification of space heating, energy efficiency – and changes to how network operators manage and leverage the capability of these DER. The change will be accelerated by the public and legislated commitment to transition to a low carbon economy.

The forward-looking expectation of the operating environment for network operations must be the Climate Change Commission perspective that ‘wider electrification of energy use is an essential part of the transition and will require a major expansion of the electricity system. Wind, geothermal and solar power can meet the expected growth in demand from electrifying transport and heat to 2050...’.

Focus on efficient supply of distribution services only may result in a higher total cost of supply

Part 4 puts a narrow focus on the efficient supply of distribution services only, rather than the efficient supply of the delivered electricity service to the customer. This narrow focus is likely to create a material barrier to innovation, achieving highest value delivery of electricity services and the transition to a low carbon economy.

The Part 4 regime focuses on promoting the efficient supply of distribution services only. This narrow focus reflects a siloed approach to the supply of the separate components of the delivered electricity service to the customer – generation, transmission, distribution, retail – with limited interaction with or overlap between the activities of the separate parts of the supply chain.

A siloed approach is likely to result in situations where the efficient (least cost) network solution is not the efficient (highest value) whole-of-supply chain solution.

Just as increased uptake of DER will affect how, where and when generation services are provided, this same DER will profoundly affect how, where and when distribution services are delivered.

For example, a synchronous converter may be a lower cost method for a network to obtain frequency keeping services compared to batteries, but does not provide the extra functionality and extra value available from batteries such as from network deferral of network expenditure and demand-side flexibility. A whole-of-supply-chain approach would consider this additional value in investment decisions, and potentially increase the net consumer benefit through a reduction to the total delivered cost of the electricity service.

A bigger nudge is needed to get over the high barriers to innovation and the evolution of operating and investment practices to reflect the changing environment

The 2015-16 IM review concluded the Part 4 regime provided adequate incentives on distributors to innovate and no fundamental changes to the IMs were needed based on the information available at the time.

In reaching this conclusion, the Commission tested whether the IMs were fit for purpose to deal with the impact of emerging technologies in the energy sector. In particular, the Commission considered:

- the risk of under-or-inefficient investment if distributors did not invest (particularly in emerging technologies) because the benefits would not accrue until future regulatory periods
- the risk of under-or-inefficient investment if distributors did not invest (particularly in emerging technologies) because the benefits are split along the value chain.

Experience since 2016 suggests innovation – or a preparedness to adapt operating and investment practices – is not occurring in a widespread, consistent way, or with necessary urgency.

The DPP3 determination in 2019 recognised that additional incentives were required for innovation by introducing the new recoverable cost for innovation expenditure. However, this incentive has, anecdotally, not yet seen wide uptake. Our experience is this incentive is not materially influencing decisions of distributors about innovation or investment.

The broader implication is innovation and evolution of investment and operating practices to leverage the capability and benefit of DER and avoid the harms is hard, and significant pressure (via financial incentives or obligations) is required to avoid the inertia of the status quo.

In contrast, distributors in the United Kingdom have made significant progress toward a smart, flexible electricity system which supports achieving zero-carbon goals. The progress reflects active involvement by the distributors, the regulator, and the Government, including through availability of extra funding.

Experience suggests there are insufficient incentives for distributors to prioritise investments requiring longer than five years to realise efficiency gains or to prioritise investments involving sharing of costs and value across the supply chain.

Achieving similar progress here as can be observed in the UK does not seem plausible without extra and specific incentives.

The underlying issue is that the Part 4 regime is not designed for a transition environment - the fundamental design premise is historical operating practices, performance, and costs, are the best guide for future practices, performance and costs. This is no longer the case, particularly in light of the central role electricity networks have in supporting the zero carbon commitments.

More incentives needed for distributors to prioritise innovation and investments with benefits not accruing until future regulatory periods

Experience suggests there are insufficient incentives for distributors to prioritise investments requiring longer than five years to realise efficiency gains, resulting in reduced innovation and less preparedness to adapt operating and investment practices.

The Commission considered in 2015-16 the risk and impact of distributors not investing (particularly in emerging technologies) because the benefits do not accrue until future regulatory periods.

However, the DPP3 determination recognised that additional incentives (funding) were required for innovation because, for example, according to Unison, 'there are no incentives or compensation for EDBs to undertake research and development unless benefits can be realised within the regulatory period'.¹

The Commission's response was to introduce a new recoverable cost for innovation expenditure because 'in some instances the potential benefits of the investment may go to third parties, be uncertain, or may not eventuate until future regulatory periods.' ... or distributors 'may be more likely to invest in options (like traditional poles and wires investments) that have clearer benefits that can be more easily quantified.'

Experience since 2016 and 2020 is that distributors do not have sufficient incentives to innovate and adapt operating and investment practices to begin the transition towards a very different operating environment.

Although the Electricity Networks Association Network Transformation Roadmap clearly shows the way forward, there is no widespread or coordinated effort by network operators in Aotearoa New Zealand to adapt their operating and investment practices as is being demonstrated by their peers in the United Kingdom, and to a lesser extent in Australia.

In general, distributors continue to apply traditional operating and investment practices and solutions. There is no commitment to transition to a flexibility-first approach which leverages the capability and value of DER, despite research

¹ Commerce Commission, November 2019, Default price-quality paths for electricity distribution businesses from 1 April 2020 – final decision, Reasons paper, paragraphs 4.56 to 4.75.

indicating this is a more efficient approach over the long term (ie, longer than the five-year regulatory cycle²).

More incentives needed for distributors to prioritise innovation and investments with benefits shared along the value chain

Experience suggests there are insufficient incentives for distributors to prioritise investments which require a distributor to incur upfront costs, has an extended period to realise savings, requires a change to operating practices and involves relying on other parties.

In 2016, the Commission concluded the potential for sharing of value would not result in under-investment in emerging technologies if the total benefits of the investment outweighed the total costs. The Commission acknowledged that transaction costs associated with coordination and contracting between parties may raise barriers but did not consider the impacts sufficiently material to require intervention.

In its 2018 Powerco CPP decision, the Commission noted network evolution ‘is likely to offer benefits to stakeholders other than consumers (such as shareholders and other non-network market participants through more efficient ways of working and potential new commercial opportunities) and we would expect to see those other stakeholders also contribute to the cost of funding these initiatives and investments.’

The transaction costs remain too high, particularly given the early stage of development of operating practices and business models, for distributors to commit to sharing of value.

Innovation and investments requiring sharing of costs and benefits require addressing a chicken and egg relationship between incentives for distributors to make the long-term investment commitment needed to establish a market (ie, for flexibility), the incentives on the supplier-side of the market to invest, and the incentives for distributors to adopt new operating practices to participate in the market (ie, by purchasing flexibility). Experience from the UK suggests regulatory intervention is required – with changes to monopoly regulation and market settings and funding – to overcome the coordination problems preventing access to the full value of DER (ie, emerging technologies).

Flexibility markets which leverage the value of DER (including lower cost distribution services) will not emerge without a market framework and without network operators being provided incentives to make the long-term investment commitment needed to build and grow the market. There is a clear parallel with the evolution of generation and retail electricity markets. A key reason for the generator-retailer construct was the need to ensure there was ‘liquidity’ in the market. It is difficult to see why a similar

² Including the five year cycle for the incremental rolling incentive scheme.

intervention is not required to establish a liquid flexibility market. Expecting to rely on an organic 'market-led' outcome ignores the experience of over 20 years with the wholesale market.

The UK flexibility market has taken over 4 years to get to where it is. It's hard to see how a market with sufficient liquidity and low emissions characteristics to give networks operators confidence in using flexibility to maintain reliability can emerge fully formed by 1 April 2025 without alignment of network and market regulatory regimes, policy clarity and a bigger nudge.

Concluding thoughts

A bigger nudge (or shove?) is needed to provide electricity networks with the encouragement to start the difficult change from a steady state environment to a very different environment, requiring changes to operating and investment practices, new skills, tools and capabilities.

Without the support of regulatory settings which actively and explicitly encourage innovation and changed practices, we expect electricity networks will continue to hesitate due to the natural preference for the status quo. The result will be to delay and increase the cost of the transition to a low carbon economy, along the way compromising the opportunity for consumers to invest in solar, batteries, electric vehicles and electrification of space heating, and potentially resulting in reduced network reliability and resilience.

We caution against too strong a preference for incremental change to provide regulatory certainty and predictability in a changing environment. Stability in a time of transition is most likely to result in inertia, with less, and less efficient investment, because investors are not provided the flexibility to manage the increased risks which come with change.

We strongly encourage deliberate efforts to integrate the regulation of electricity networks into the wider electricity market to reflect the breaking down of siloes of the old electricity supply chain.

Urgency in upgrading the regulatory settings, particularly the IMs, is critical because the cost (value lost) of distributors investing too much too soon will be significantly less than the cost of distributors investing too little too late.

The value lost from investing too soon is the cost of bringing forward investment. The value lost from investing too late is the cost of unnecessary (traditional) investments made in the meantime, less innovation, diminished consumer amenity because they cannot use the network as they'd prefer, slower uptake of DER and electric vehicles, reduced reliability and resilience and slower emissions reduction.

Providing a bigger nudge to distributors to invest from 2025 in the capability necessary to efficiently deliver distribution services in the future low carbon economy. Ensuring the IMs from 2025 provide sufficient incentives for distributors to innovate and to evolve investment and operating practices is the approach likely to result in the least harm to consumers, the economy and the environment.

Please contact Craig Evans, CTQ Advisors, with any questions regarding our submission on 021784419 or at craig.evans@ctqadvisors.co.nz.

Yours sincerely,

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