



COUNTIES POWER

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Low-emissions economy
New Zealand Productivity Commission
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Counties Power submission

Counties Power welcomes the opportunity to provide feedback on the New Zealand Productivity Commission's (Commission) draft paper 'Low-emissions economy' (Paper). Counties Power fully supports the move towards a low emission economy and the review being undertaken by the Commission.

Overall, Counties Power believes that the move to a low-emissions economy is inevitable so certainty is needed in the electricity industry because of the long-lead times¹ and longevity of conventional electricity infrastructure investments. In this respect, New Zealand is lagging behind a growing number of countries that have, amongst other measures, announced policies banning the sale of new petrol and diesel vehicles (from as early as 2025 for Norway) and also signalled end dates for methane reticulation.

Background on Counties Power

Counties Power is a trust-owned electricity lines company, based in Pukekohe, in Auckland's rural south. The Company distributes electricity to over 40,000 ICPs across a geographical region of some 2,250 square kilometres across a total circuit length of 3,125 kilometres. Shares in the Company are held by the trustees of Counties Power Consumer Trust on behalf of all local power consumers.

Capabilities of trust owned lines companies

Counties Power is concerned that the conclusions reached in the Paper on the capabilities of the trust owned lines companies, who are mainly smaller electricity distribution businesses (EDBs), is inaccurate and derived heavily from the 2017 IEA Report² and which included a limited number of larger EDBs.

In particular, Counties Power notes that the Paper, in reaching the conclusion "The combination of current shortfalls in the capability of EDBs, the increasing sophistication required to operate new distribution service models ... suggests a fresh look at EDB capabilities"³, appeared to be based in part

¹ The long-lead times are required because of the need for easements power lines, land purchase and rezoning for substations and lead times for delivery of core infrastructure such as substation transformers.

² Energy Policies of IEA Countries, New Zealand 2017 Review.

³ Draft Low-emissions economy, page 344, second paragraph.

on a statement in the IEA Report⁴ on the size of some EDBs. Counties Power believes that this is a simplistic and unsubstantiated view of New Zealand's electricity distribution sector that does not consider the consumer and long-term focus of trust owned EDBs versus the shareholder returns drivers of non-trust owned EDBs.

For Counties Power, and similar trust owned EDBs, nearly all profits earned are reinvested into the network and consumers benefit from reduced line charges through an annual discount. In addition, Counties Power has held lines prices, or the distribution component of the lines price, for four years in a row. Furthermore, Counties Power has invested significantly in deploying smart meters to around 95% of its customer base⁵ including commercial and industrial customers⁶. This has created a smart grid through the meters operating as a meshed network providing real-time outage data and regular updated consumption data.

Added to this technology, Counties Power has developed a real-time software platform⁷ that brings together the meter data, GIS infrastructure data and field operatives over a Google map interface. This system was used to efficiently manage the response to outages in April 2018 when one of the worst storms to hit the Counties Power network resulted in one third of consumers losing power. Access to data and a real-time software platform was critical to managing this event with *Energy News* reporting that "Vector wants to get its systems to where Counties Power's capability is"⁸.

Counties Power would like the Commission to note that Counties Power's meters combined with its software platform is one of New Zealand's leading examples of the use of new technology with smart meters creating an Internet of Things combined with big data processing software. Counties Power has used the learnings from that project to create a big data energy analytics company, Ampli in a joint venture with Axos Systems.

Counties Power deployment of an advanced meshed communication network⁹ is the largest such concentration of meters on any network in New Zealand and in conjunction with Metrix¹⁰ is used by all retailers on the Counties Power network. The software developed is advanced by international standards and continues to be refined. No such similar technology has been deployed on New Zealand's five largest EDBs.

⁴ Energy Policies of IEA Countries, New Zealand 2017 Review "...the relatively small size of some distributors may limit their capacity to efficiently and cost-effectively invest in the monitoring, management and control systems required to maintain reliability as distribution systems become more complex and subject to more dynamic real-time power flows. (p. 160)

⁵ Finalist in the Deloitte Energy Awards for community initiative. See <http://www.energyawards.co.nz/finalist/2016/energy-project-of-the-year/counties-power>

⁶ Up to category 2 metering, with categories above 2 using Counties Power TOU metering.

⁷ Known as INDI it was a finalist in the Deloitte Energy Awards for innovation. See <http://www.energyawards.co.nz/finalist/2017/innovation-in-energy-award/counties-power>

⁸ <http://www.energynews.co.nz/featured-content/storm/37529/lessons-april-storms>

⁹ The meshed network is a communication network formed with communication between the smart meters, communication routers and twenty-four access points that are connected via either the Vodafone mobile network or a fibre network back to datacentres in Greenlane and Albany.

¹⁰ Metrix is the metering division of Mercury that runs the metering headend through which the meter data is sent.

Counties Power is also trialling one of New Zealand's largest grid scale batteries¹¹ at one of its substations. This work is being undertaken in conjunction with Genesis Energy and will test the ability of this new technology for use in energy arbitrage¹², demand management and voltage stability. The Company has also invested in a sizable solar array, behind the meter batteries, electric fast vehicle charges and will be investing in technology to improve power quality supply. In addition, an advanced customer app will be launched in July that provides customers real-time outage information and repair times¹³.

Counties Power believes that non-Trust owned lines companies are focused on maximising shareholder returns and the investments required to meet this end. In comparison, Trust owned lines companies, while smaller, are focused on the consumer experience and sustainable intergenerational value creation. Consequently, Trust owned companies, while smaller, are likely to be more flexible and agile in being able to invest to support the transition to a low emissions economy.

Acceleration of distributed energy resources

Acceleration of distributed energy resources (DER) is required given that the number of solar installations in New Zealand remains extremely low by international standards at around 19k. This compares to Australia with 1.7 million homes and business having installed solar arrays.

Counties Power agrees with the Commission that government solar subsidies could result in poor long-term generation investments and so another approach is required. To this end, trust owned EDBs can play a vital role in accelerating the uptake of DER in New Zealand, with their community focus and connections with key players such as property developers. We note in the IEA Report there is a CEER quote "that there may be cases where allocating a role or function to a distributor for a transitional period may provide the most cost-effective option for helping to accelerate efficient market development". This is the case with electric vehicle fast chargers, with EDBs making loss leading investments in fast chargers to support the uptake of electric vehicles¹⁴.

Given the low DER uptake, and the need to accelerate this market, Counties Power would question the benefits of the "creation of the role of a distribution system operator (DSO)" the costs of which would need to be recovered from consumers. Furthermore, the concept of a DSO has not been required in Australia where nearly a quarter of houses have solar arrays installed. Furthermore, the analogy with the transmission network that DER benefits the network is not so straightforward because distribution networks are more of a cobweb of interconnections, rather than a backbone like the transmission system, where back feeding is required to maintain supply and capacity constraints are harder to forecast.

¹¹ 250kW capacity with 500kWh of storage from US company S&C.

¹² Power is being purchased at night when the energy price is low and then sold during the afternoon peak when the energy price is high.

¹³ Repair information being provided by linesmen who have cellular tablets in the field. Other information is provided on the time for the linesmen to get to site and the reason for the fault.

¹⁴ Counties Power has installed two fast chargers and will be installing a third. These investments are not expected to make a WACC return.

Load management experience exists for EVs

It is noted that the Paper does not recognise that for the past fifty years EDBs have been managing peak customer loads through control of electricity supply to hot water cylinders. Approximately thirty percent of household energy (excluding transport)¹⁵ is for hot water and that is already used to manage transmission and distribution peaks, and is available for avoiding peak generation.

This system would work well for the future demand of electric vehicles because electricity peak demand occurs over a limited time frame for most EDBs, usually weekday winter mornings and afternoon/early evening peaks when there is a cold weather front. Outside of this timeframe spare capacity exists within the high voltage distribution network to accommodate electric vehicles. Consequently, the impact of the electric vehicle charging may be more focused on the demand placed on street transformers and customer fuses¹⁶.

Emissions from residential and commercial reticulated gas

Counties Power believes that a 'quick win' could be obtained from phasing out the reticulation of natural gas in new developments and the conversion of residential and commercial end use gas appliances to electricity. Ten percent of residential energy consumption comes from reticulated methane and 12% of commercial energy comes from methane¹⁷.

For residential homes, the use of gas is predominantly for water heating space heating and cooking, where there exists an electricity substitute. In Australia and the UK, investigations are underway to replace reticulated methane with reticulated hydrogen. Our understanding is that this requires existing gas appliances to be changed and for the hydrogen to be produced using electricity to extract the hydrogen from water. For New Zealand, it would be more cost effective to simply use the electricity directly.

Reducing emissions in transport

Counties Power believes that a more pragmatic approach to reducing transport emissions is for the government to introduce policies that place a ban on new petrol and diesel vehicle sales. Counties Power believes that care needs to be taken in the use of government subsidies of low emission vehicles and rail¹⁸.

Regarding the Commission's vehicle emission measures, Counties Power believes that emissions should be measured on the same basis as energy efficiency in transport, which is based on passenger-kilometres¹⁹. This is important because simply looking at vehicle efficiency is missing the critical measure of how many passengers the vehicle is carrying²⁰. As a result, the proposed low emission vehicle rebate incentive may have a perverse outcome on transport networks in that it promotes

¹⁵ EECA Energy End Use Database, 2015.

¹⁶ There may also be further low voltage upgrades required on the main service line to the dwelling and wiring within the home.

¹⁷ Energy Supply and Demand Balance, Calendar Year 2016.

¹⁸ If cars and trucks become electric or hydrogen powered then logically there would be no emission savings from diverting passenger car trips and freight from trucks to rail.

¹⁹ Freight is measured in tonne-kilometres.

²⁰ Part of New Zealand's low vehicle efficiency is because the vehicle is often only transporting one person to work.

smaller single occupancy vehicles and so increases single person transport (as compared to promoting seven seater vehicles that can carry greater numbers of passengers).

The other issue with the proposed rebates is that they will likely impact low income households because they are more likely to purchase less efficient second-hand overseas vehicles and less likely to be able to afford newer more efficient or electric vehicles. A combination of these two factors could result in large less well-off families subsidising new small occupancy vehicles for the wealthy.

Counties Power would recommend that a more equitable outcome would be to charge a levy on all petrol and diesel vehicles based on the value of the vehicle. This would likely encourage the uptake of electric vehicles because they are competing with premium petrol and diesel vehicles.

Putting aside the rebate, a more effective measure would be to phase out all new gasoline and diesel vehicles sales from 2030, which is in line with the actions from many other countries²¹. This would give the investment certainty required by both the electricity and the petroleum industries. It is likely that the costs of electric vehicles would be comparable to petrol and diesel vehicles by this date so there would be little impact on low-income houses by this date and there would remain a pool of older petrol and diesel vehicles on the roads.

Economic benefits from electrification of transport

There would be a significant economic benefit to the Country with electrification of transport through the reduction in the billions per annum spent on importing petroleum products²². This is about ten percent of total imports by value and approximately twice the national trade deficit. In addition to the cost of petroleum imports, fluctuations in international petroleum prices exposes the economy to price shocks.

Summary

Counties Power believes that the trust owned, mainly small EDBs have the existing capability and drivers for innovation to support a future low emissions economy. What we believe is required from the government are robust decisions and initiatives that help ensure appropriate long-term investment choices are made today.

While there is a focus on the costs of transitioning to a low emission economy, this needs to be balanced with the economic and environmental benefits. This is not just from reducing petroleum imports but also maintaining New Zealand's branding as 100% pure, which holds significant value to New Zealand's exporters and tourism industry.

Yours sincerely



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²¹ UK banned from 2040, France 2040, Germany 2030, India 2030, Ireland 2030, Israel 2030, Netherlands 2030, Norway 2025, Taiwan 2040.

²² Additional cost savings would be made from reduced petrol and diesel tanker freight costs, refining costs and petrol and diesel retail operations.