

# **solarZero's submission on to the Commerce Commission's Targeted Information Disclosure Review – Electricity Distribution Businesses**

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## **Background to solarZero**

solarZero (sZ) has some 6500+ solar and battery residential systems in market which we actively manage. The systems report on a range of parameters every 5 minutes providing unparalleled visibility across the low voltage network. We can manage the batteries and key loads in the house to provide services to the electricity system, as well as to households. Panasonic is our technology partner.

## **Overview**

The power system will need to go through a substantial period of innovation as society asks the electricity industry to step up and power much of the economy. The next thirty years will be the biggest step change for the electricity industry since the industry was created in the 1880s. We welcome that the Commerce Commission recognises this change via its focus on decarbonisation (context section of the process and issues paper).

Information is really important as the power system evolves. Currently, the power system uses capital relatively inefficiently, due building for peak demand. There is a large opportunity to “fill the troughs” in electricity demand during the day without increasing peak demand, therefore at a very low marginal cost. For example, we estimate that there is enough “space” in the Christchurch electricity network to charge 300,000 electric vehicles each day (travelling 50km) without exceeding the limit at the Islington GXP. Good information is critical to ensuring a smart, innovative, efficient and high productivity electricity system that is being called upon to do the heavy lifting to address climate change.

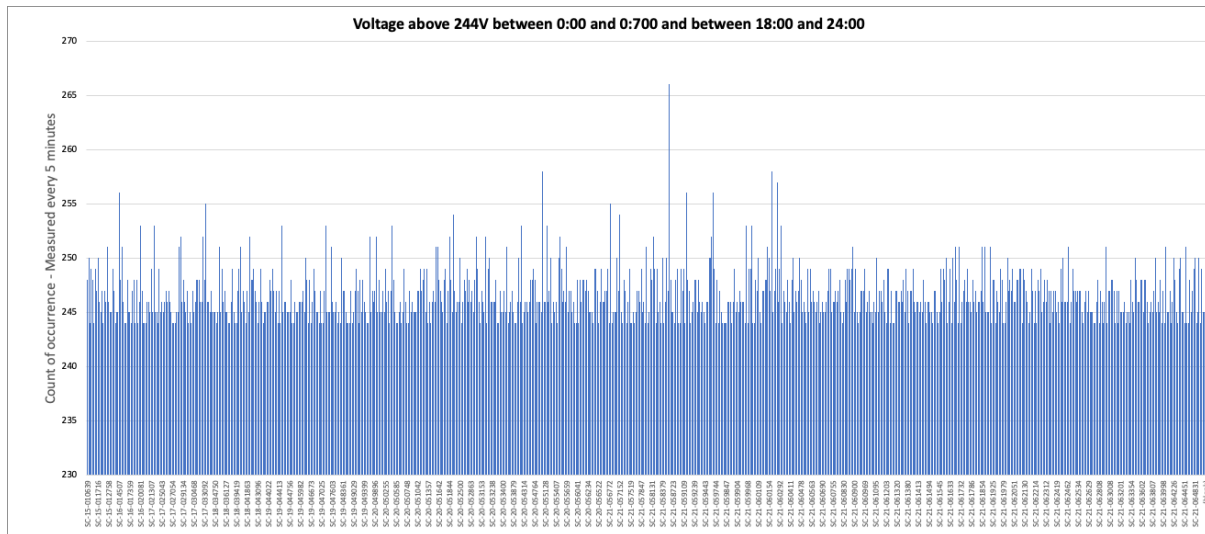
## **Quality of service**

We are observing that in some rural areas, some households and businesses are expecting very high levels of reliability. Meeting these expectations will be very expensive for lines companies in some rural areas. Solar and batteries provide an opportunity for households/businesses requiring ultra-high reliability to have reliable electricity. This concept needs to be explored more and information collected about the future reliability that communities expect and how those expectations might be met through innovative approaches (e.g. household solar and batteries), not just through building a more robust system overall, which may be very costly.

In some areas just meeting a reasonable standard of reliability is challenging for lines companies. Again, lines companies should be encouraged to collect information enabling decisions to be made on whether/how innovative technologies, such as solar and batteries, could augment the existing power system to enable more cost-effective solutions for rural communities in terms of a reliable and effective electricity supply.

Q3: Distributed generation equipment has the potential to provide information on power quality. Below is a graph of voltage between 6pm and 7am at some 1700 sites across Aotearoa/New

Zealand. A framework is needed whereby distributed generators provide information to lines companies as a service and associated payment terms.



Graph showing voltages above 244V for some 800+ solarZero systems throughout New Zealand at times when solar will not be producing.

Q9. With solar and batteries the whole concept of “reliability” needs to be challenged. We are not sure what a new reliability framework would look like, but the starting point is to collect information at a more granular level on reliability and community expectations of reliability. Presumably this would be a small cost compared to the costs of improving reliability in some areas. We suggest that the Commerce Commission begins a conversation about what reliability looks like in a 21<sup>st</sup> century power system including all the different ways that reliability services can be provided.

**Decarbonisation**

We strongly support the Commerce Commission focusing on the impact of electrifying the economy. Lines companies need to have the right information to support the decarbonisation challenge and associated impact on the electricity system – the biggest challenge since the electricity system was invented. The impact of decarbonisation is increasingly being focused on by lines companies, for example, the work by Wellington Electricity on the impact of households changing from gas and adopting EV which was part-funded by EECA.

The process and issues paper references the pricing principles developed by the Electricity Authority in 2019. These principles may need to be updated in light of the rapid progress towards decarbonisation and the findings from studies such as the one by Wellington Electricity.

D1: Better information is needed. Exactly what that “better information” is needs to be worked through across the industry. For example, we don’t find asset management plans that useful. Some asset management consider that massive electrification (for example, transport) will not occur until the late 2030’s/early 2040s, others much earlier. What we do find useful is talking through the issues a lines company faces with relevant lines company staff, with the asset management plan providing background. The approach with Aurora is a good start, but moving further along the spectrum (as outlined in the process and issues paper) may be needed. We suggest workshops to explore how far along the spectrum is desirable, which may be different in different contexts.

D2: The work by Wellington Electricity shows the significant impact that a very large number of small loads, e.g. conversion of gas heating to electricity and EV charging, can have on the network. It is not just changes to large loads that will impact the electricity system – changes to a vast number of small loads will have a significant impact on the LV system. The scale of that change needs to be identified, as Wellington Electricity is doing, and the information used to develop appropriate responses.

D3: Better information is needed on the challenges that networks are facing/will face. An example of the kind of information that would be useful is heat maps. Reviewing international practice and workshops would be useful to help lift overall industry performance in terms of information. As stated above, we do not find existing asset management plans that helpful for identifying constraints. New tools and techniques are needed that solution providers can use to have much more informed conversations with staff at lines companies.

D4: We support initiatives to highlight and encourage innovation. The feedback we hear from lines companies is that some of the regulatory settings inhibit innovation. The Commerce Commission needs to listen to these concerns and identify ways to encourage innovation across the system. Included in the overall innovation framework is reporting on innovation. We have no specific suggestions and suggest looking overseas as well as canvassing ideas across the industry on ways to encourage and report on innovation.

D5: We fully support requiring information on investigations into flexibility services. Many asset management plans contain phrases like, “explored non-network solutions but they were not appropriate” in many locations in the asset management plan and these phrases change little from year to year in each asset management plan. More information in this area would potentially be useful to solarZero to help us understand lines companies’ approaches and methodologies.

D6: Pricing performance is very important to ensure an efficient electricity system. It is critical to have both good information on the challenges the network faces and the pricing regime. For example, we are aware of one network that has a holiday peak, but no time of use pricing (ToU) on the peak days because ToU only applies to week days. We strongly support lines companies providing more information on pricing, both current pricing and future pricing. We cannot emphasise how important pricing regimes are for flexibility traders to provide services and to improve the productivity of the entire power system.