**MDAG Report – Price discovery in a renewables-based electricity system**

6th March 2023

Eric Pyle, Director Public Affairs and Policy

**Introduction: A laudable, well-intentioned effort**

The report by the MDAG is laudable. It is forward looking, well intentioned and seeks to set priorities for adjusting the market as New Zealand moves towards 100% renewable generation.

We strongly support the philosophy that flexibility services are going to be key to enabling the existing market to operate at 100% renewable generation. This is much more than “demand side”. As well as demand management in the traditional sense, such as hot water control, it is about generation from different sources at different scales in the network, such as household batteries behind the meter, batteries embedded in network, embedded windfarms and so on.

This submission is in two parts:

1. Barriers to implementing the proposals in the MDAG report
2. Comments on the proposals in the MDAG report

***Part 1: The elephant in the room - The Electricity Code is a major blocker to most of the MDAG suggestions***

While the MDAG report is laudable and well-intentioned it does not address the elephant in the room. The elephant is the process of changing the Electricity Code and how to actually do that efficiently.

The Code essentially sets out standard operating procedures (SoP). It was developed ***after*** the technical procedures were developed and fully shaken down in practice. Vignettes in the book “Keeping the Lights on” (a history of power system operation in New Zealand 1939-2013) outline how the industry slowly adopted an SoP approach.

For the last 140 years the power system has essentially operated in the same way. Incorporating batteries and before that interruptible load were perhaps two of the most recent technology-driven updates to the Code. Both these Code changes were time consuming for all involved and attempted to second-guess how the technology would actually work in practice.

The power system is going through its first ever major technology-driven change. These two technology examples (IL and batteries) show that the Code tail is now wagging the electricity system. It should be the other way round. The Code should not be a constraint and blocker to new technology in the power system as a wave of new technology enters the power system.

It is not reasonable to expect the Code to address and enable new technology, given that the Code is nothing more than an SoP and by definition is backward looking.

Exemptions can be used for new technologies and new ideas. The Authority must grant these in a timely manner.

How then to progress the adoption of new technology and the recommendations that the MDAG will inevitably make?

For new technology and approaches to be tested and adopted into the electricity system, the Code needs to be set to one side, i.e. exemptions rapidly granted. Some tests are needed such as:

* Can the technology be accommodated technically, such as by the reserves system, the dispatch system or via network management?
* Will the market be impacted to any significant degree in the short term, i.e. while the technology is being tested in the power system?

The new technology and approaches need to be fully tested and then, and only then, should the Code be adopted to cover the new technology/approaches. In other words once we have figured out the SoP for the new technology/approaches we should do what we did as an industry in the “old days” – we should codify the SoPs into the Electricity Code.

Implementing MDAGs laudible and well-intentioned recommendations will grind the electricity policy process to a halt under the status quo processes. In fact, the evidence would suggest that the Code change process has already in effect ground to a halt given the amount of time and effort to make any sort of change to the Code. It’s just that no-one has called it.

More staff for the Electricity Authority will not address the Code-constipation problem and may in fact perpetuate it. Adding more staff to run a fundamentally flawed system will only increase frustration across the entire industry. Some agency, be it the Electricity Authority, or its Advisory Groups or MBIE needs to tackle the issue of how to speed things up. Exemptions are important but what else might be needed?

MDAG, the Electricity Authority, MBIE and others need to take a step back and figure out how to efficiently enable the future that the MDAG report points to. Using the status quo systems and approaches will drive the entire industry to distraction.

***Part 2: Comments on the proposals***

**Overview**

The future is indeed arriving faster than most people expect. The reason is that change is generally exponential but generally society thinks in a linear manner. Global EV uptake and solar generation are two examples of exponential growth that appears to be surprising many in both industries because both industries have thought about change in a linear manner.

It is underplaying the situation to suggest that the electricity industry can support actions to address climate change. Society has tapped the electricity industry on the shoulder to address climate change. That is a massive shoulder tap. The industry needs to step up enormously. The MDAG report needs to clearly state that the industry is being asked to deliver a massive step up in the next decade or so.

The electricity market is founded on a fossil fuel paradigm, i.e. generation with a significant marginal price. That paradigm will need to change. Incorporating flexibility is important for ensuring the marginal price paradigm can in fact operate in a future where a significant portion of generation has very low marginal costs.

There is an assumption in the MDAG report that markets drive innovation. Markets drive efficiency but, even then, only if well structured. Regulation, i.e. market design, drives innovation. This point is fundamental to policy development and does not appear to be well recognised or understood in the MDAG report. As an example, the market only allowed certain reserves and the rules had to be changed to allow batteries to provide reserves.

In the comments to specific sections below we only comment on areas that we have a view on or that are relevant to solarZero.

**Section A: Ensuring reliable and efficient operational coordination**

* A1: Improve short term forecasts of wind and solar. Potentially better forecasts help, but still need better systems for coping with the variability. If the lights go out the industry cannot say “oh, but the forecast was wrong”.
* A2: Strengthen governance of FSR. It is not clear what this actually means in terms of strengthening the governance. The whole FSR programme needs to be accelerated.
* A3: VOLL – yes to periodically looking at this.
* A4: Yes, a product may well be needed to cover variable renewables. Who pays and how the financials work do need to be thought through. Forecasting fits into this area, but as above we cannot rely on forecasts.
* A6: Day ahead. Could have some benefits, worth exploring.

**Section C: Demand side, or more correctly, flexibility**

A key question for MDAG is how quickly does it want the demand side-sector to grow in terms of its incorporation into the operation of the power system. That is a question of policy. It is inevitable that the flexibility sector will develop. How fast it makes a contribution to power system management at the system operation, transmission and network levels is down to how rapidly policies can be developed and implemented. The technology is there and being rolled out. What is lacking is the policy, regulatory, operational and market systems.

* C1: Tariff availability info is important.
* C2: High frequency metering data from traditional ICP meters may not be that relevant. Metering data may increasingly be collected at specific locations, e.g. the EV charger, the inverter, hot water meters. These device-specific data collection options should be enabled. The whole area of data management needs to be looked at. The traditional ICP meter may become much less relevant and a very different role in the near future as metering shifts to individual devices, such as EV chargers, battery inverters, hot water systems.
* C3: In theory the market should move over time away from retailers who cannot provide DSF tariffs. MDAG needs to explore if there are barriers to this occurring, i.e. is there evidence that the market is working/not working effectively?
* C4: Shaped hedges – may have some value.The analysis in the MDAG report is accurate and identifies the issues. Shaped hedges could benefit aggregators. This point is worth exploring further.
* C5: Funding for pilots and trials. We strongly support the funding of pilots and trials.
* C6: Customer compensation scheme. It is difficult to reduce overall demand as compared to peak demand. Peak demand management should not be conflated with overall demand management during times of hydro drought, which this section appears to be doing.
* C7: Negawatt Scheme. The negawatt idea is interesting. It is one way of finding out the price sensitivity of people on fixed contracts. It is worth exploring more.
* C8: FSR – remove code barriers. Point is to enable new tech. As per the first part of this submission, the Code should be put to one side/exemptions granted for new technology to figure out how to make the new technology work technically. Then, and only then, should the Code be amended.
* C9: Accelerate new ancillary services for DSF. Absolutely yes. But as above the Code is a barrier that needs to be addressed.
* C10: Procurement process for high-scarcity DSF uptake. This should be progressed rapidly. The system will become peakier as the economy is electrified and variable renewables will increase. The electricity system needs this type of solution now and developing this facility will provide a clear signal to potential providers.
* C11: Distribution pricing reflects network needs and so wholesale market participants can optimise wholesale and network value streams. This point seems to be considering coordination and optimisation between meeting distribution and national market needs by DSF. Ultimately DSF will respond to pricing and will be influenced by opportunities. In other words, DSF will decide what it wants to do to gain the best return. Contracts will be important for establishment of clear priorities in space and time to ensure that who wants the DSF most has it available to them when and where they need it.
* C12: Investigate extending LMP into distribution networks. This should be looked at over time.
* C14 Provide info to help domestic customers with DSF decisions. It is important that tariffs are well understood and have some longevity to help with investment planning.

**Section E: Increasing public confidence**

E1: More information on security of supply would be useful.

E2: More briefings on spot price: We are neutral on this. The risk is that there are issues with the market but these are explained away as normal working of the market. The flip side is that more briefings may enable greater scrutiny of the market. Another view is that repeatedly telling people that the market is working may, in itself, not work.

E3: More international experts. A very good thing. We need to draw on international thinking. It is one thing to read it. It is quite a different thing to have the people in a meeting and to explore issues in depth.

E4: Enhance monitoring with more autonomy: Part of the monitoring should include benchmarking. How do we compare with other locational markets in the world? Where are we leading, where are we lagging? How do we compare with other jurisdictions on performance-based regulations for lines companies? These are all the kinds of issues that enhanced monitoring should provide information on.

E5: Periodic warrant of fitness: Possibly a good idea, but how could it work in practice? External surveys? What can we learn from overseas? As above, should part of this be assessing where New Zealand sits in relation to initiatives being taken in overseas jurisdictions?