

19 October 2020

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Submission on the ESB's Post-2025 Market Design Consultation Paper

Introduction

1. This is Vector Limited's (Vector)¹ submission on the Energy Security Board's (ESB) *Post 2025 Market Design Consultation Paper*, dated September 2020.
2. As a leading technology solutions company in New Zealand and a metering service provider in Australia's National Electricity Market (NEM), Vector supports market reforms that enable the development of new and innovative services and emergence of new energy markets without compromising energy system security and reliability.
3. We consider smart meters to be a critical enabling technology of the post-2025 market design envisioned by the ESB. In this submission, we set out how smart meters help unlock and optimise the value of demand flexibility and the integration of renewable distributed energy resources (DER) to the grid for industry participants and consumers.
4. We further identify emerging barriers to the accelerated rollout of smart meters in the NEM and suggest some solutions on how these can be addressed. We suggest that the ESB recognise these barriers and consider our proposed solutions to help ensure that the ESB's proposed market design can be implemented, and the benefits to consumers delivered, in a timely manner.

Responses to selected consultation questions

5. This submission broadly responds to the consultation questions relating to the ESB's proposed Market Design Initiative E (two-sided markets) and Market Design Initiative F (valuing demand flexibility and integrating DER).

Section 8 Two-Sided Markets – Market Design Initiative E

1. What do you consider are the risks and opportunities of moving to a market with a significantly more active demand side over time? How can these risks be best managed?

¹ Vector's Australian and New Zealand advanced metering business – Vector Metering – is an accredited Metering Provider and Metering Data Provider, and a registered Metering Coordinator, in Australia's National Electricity Market and the equivalent in New Zealand. Vector Metering provides a cost-effective end-to-end suite of energy metering and control services to energy retailers, distributors and consumers.

Vector is one of New Zealand's largest listed companies and provides energy and technology services across the country, with a vision of *creating a new energy future*. We are the largest provider of electricity and gas distribution network services in New Zealand, and the country's leading provider of smart metering solutions. We also provide fibre network services, solar PV, energy storage, home energy management solutions, and electric vehicle recharging services.

2. What are the barriers preventing more active demand response and participation in a two-sided market? What are the barriers to participating in the wholesale central dispatch processes?
3. Do you think any other near-term arrangements or changes to the market design can be explored in this workstream?
4. What measures should be deployed to drive consumer participation and engagements in two-sided market offerings, and what consumer protection frameworks should complement the design?
5. What might principles or assessment criteria contain to help assess whether it is timely and appropriate to progress through to more sophisticated levels of the arrangements?
6. The ESB is considering combining the DER integration (below) and two-sided markets workstreams, or elements thereof, do stakeholders have suggestions on how this should be done?

Section 9 Valuing Demand Flexibility and Integrating DER – Market Design Initiative F

1. Are there any key considerations for the incorporation of DER into the market design that have not been covered here? For DER to participate in markets, it needs to be responsive. How should the Post-2025 project be thinking about enabling responsive DER?
2. In the next phase of the project the ESB proposes to focus on development of a detailed DER market integration proposal. What are the most important priorities for DER market integration? The ESB is considering combining the DER integration and two-sided markets workstreams, or elements thereof, do stakeholders have suggestions on how this should be done?
3. How can we ensure that owners of DER can optimise the benefits of their DER assets over time as technology and markets evolve? How do we time reforms to manage the costs and benefits for DER owners?

Smart metering is a key enabler of current and post-2025 energy markets

6. Smart meters are an enabling technology that underpins broader policy objectives, including the ESB's Market Design Initiatives. The benefits of smart meters to consumers have been widely discussed during the development of the *Power of Choice* reforms and are widely accepted. Smart meters enable consumers to make clear choices about how and when they use electricity, and to take actions such as implementing energy efficiency strategies, shifting demand from peak periods, changing consumption patterns, and generating their own electricity. This provides consumers with incentives to engage more actively in energy markets, take greater control over their energy use and consumption (e.g. how often they are billed), and make informed choices on who they share their data with (e.g. through the Consumption Data Right for the energy sector).
7. Smart meters underpin the ESB's post-2025 market design by enabling more sophisticated demand response programs and the efficient integration of renewable DER to the grid. The use of the following data and services delivered by smart meters enable these outcomes and the further development of new services and new energy markets:
 - a. live data feeds, and measurement data and control services to support demand response programs;
 - b. on-demand DER (solar) generation data to support decision making for dispatch to virtual power plants (VPPs);
 - c. 5-minute interval data to align pricing signals with the physical operation of the market;

- d. measurement data and control services to support DER integration and management; and
 - e. measurement data and control services to support smarter and more efficient electricity networks.
8. The use of the following data, generated by smart meters, enable distribution network service providers (DNSPs) to manage their network more efficiently, promoting energy system security and reliability:
- a. stream of power quality data that provides useful information about the distribution network's performance to allow for more efficient network management and network fault finding;
 - b. voltage anomalies over or under nominal requirements;
 - c. outage alerts to allow for faster restoration of outages;
 - d. near real-time alerts on potential safety issues such as potentially faulty neutrals; and
 - e. dynamic control of load on dedicated circuits such as hot water systems, slab heating, pool pumps, etc to allow for better network management during security of system events.
9. Smart meters also deliver indirect benefits by improving the following outcomes:
- a. resilience - earlier detection of unmetered and cross-metered sites;
 - b. health and safety - identification and removal or management of 'non-compliances', hazardous materials (asbestos), and dangerous devices (metal clad fuses) contained within household meter boards; and
 - c. pricing innovation – ensuring the customer tariff matches the metering on site.
10. Smart meters are already enabling ongoing reforms in the NEM, including the shift from 30-minute to 5-minute settlement in the wholesale electricity market. This reform is intended to reduce gaming and incentivise the entry of fast response and renewable generation such as solar and batteries to the wholesale market. It is one of the programs supporting the transition to two-sided markets (Market Design Initiative E).
11. The increased use of renewable energy and greater digitalisation enabled by smart meters further contribute to broader policy objectives such as emissions reduction and the decarbonisation of the economy.

The benefits of smart meters are best delivered through a competitive market

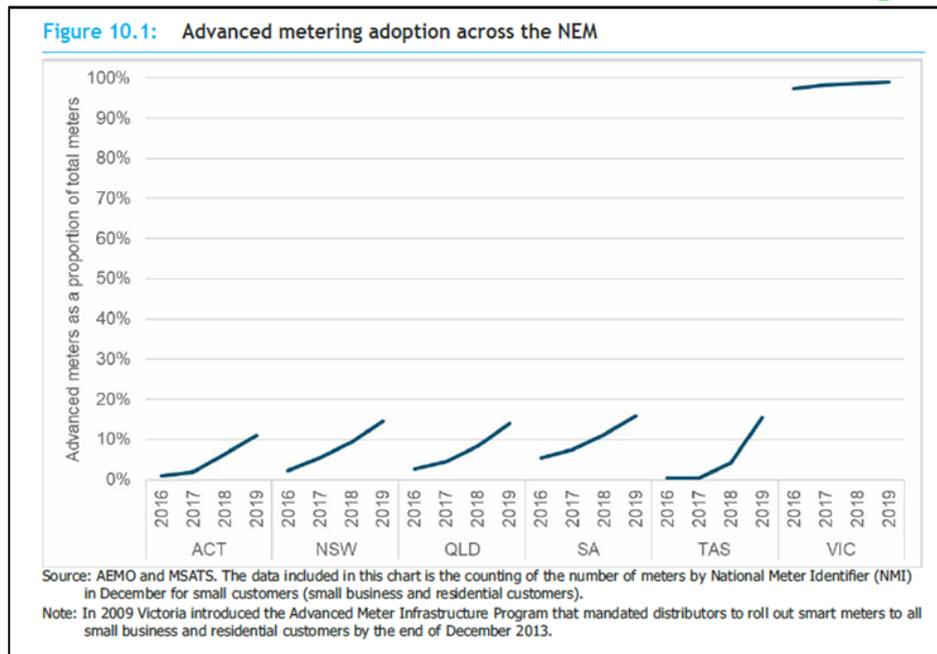
12. Vector's view is that the benefits of smart meters are best delivered through a competitive market, as designed under the *Power of Choice* reforms. The current competitive market has seen the decline of upfront metering costs to consumers and downward pressure on ongoing metering costs.
13. Importantly, incentives for continuous innovation are stronger under a competitive market where metering service providers focus more on delivering new and improved services to consumers than on regulatory compliance.
14. While metering service providers face natural incentives to deliver new services to their customers and consequently consumers, the take-up of these services is adversely impacted by the slower-than-expected deployment of smart meters and a relatively low smart meter population. The population of smart meters must reach a critical mass before the market can

reasonably expect these new services to be developed and delivered to consumers. For this reason, any barriers that impact the volume of smart meters deserve immediate attention.

Smart metering rollout expectations are not being met

15. Three years into the introduction of the *Competition in Metering Rule* in the NEM, we expected the ongoing reforms to deliver a wide range of benefits to retailers, DNSPs, consumers and other/new service providers in a timely manner to support future market arrangements. At this point of market development, we anticipated to see:
 - a. new retail products being developed by retailers supported by timely interval data such as Time of Use and other innovative tariffs, and uptake of functionalities provided by smart meters, e.g. remote re-energisation and de-energisation;
 - b. power quality data being sought by DNSPs to enable them to more efficiently manage their network, including timelier fault resolution; and
 - c. increasing demand for new services authorised by parties such as aggregators of DER.
16. To date, we have seen activity in some of the above areas but not much in others. We had expected that demand for new services enabled by smart meters would increase faster than the level we are currently seeing.
17. Vector Metering had anticipated that, by now, over 500,000 meters per annum would be installed across the competitive metering regions in the NEM. Rather than this anticipated number, competitive Metering Coordinators are currently installing closer to 300,000 smart meters per annum across the market.
18. We expected volumes of 3% to 5% of the legacy metering fleet to be refreshed annually based on a 20 to 30-year asset life. This would represent approximately 200,000 meters per annum or 600,000 meters since the commencement of competitive metering arrangements in December 2017. Instead, we believe less than one-third of this number has been released by DNSPs for replacement. Based on this replacement rate, the legacy metering fleet will not be completely replaced with smart meters until 2060, way beyond the proposed commencement of any post-2025 market design arrangements.
19. The figure below from the Australian Energy Market Commission's (AEMC) *2020 Retail Energy Competition Review* (Final Report) clearly shows that the completion of smart metering rollout in the NEM is far from being achieved (except in the state of Victoria).² It is evident that a business-as-usual pace of meter replacements will 'not cut it' for the envisaged post-2025 market arrangements.

² https://www.aemc.gov.au/sites/default/files/documents/2020_retail_energy_competition_review_-_final_report.pdf, page 229



Barriers to the accelerated rollout of smart meters need to be explicitly recognised

Volumes of metering “Family Failures” released by DNSPs have ‘dried up’

20. Vector Metering’s expectations around smart meter installation volumes were higher than the volume we are currently installing. Lower-than-anticipated volumes are currently impacting the economics of delivering smart metering services particularly in regional and rural areas. The economies of scale we anticipated have not been reached, resulting in a higher cost to serve per customer than would otherwise be the case.
21. The main area where there is a sizeable shortfall is in the category of Family Failures of smart meters. Assumptions had been made based on metering replacement programs from pre-*Power of Choice* network pricing determinations that indicated that an asset life of 20-30 years for legacy metering would logically result, on average, to 3% to 5% replacement program each year. We saw increased meter replacement volumes in Year 1 of the *Power of Choice* reforms in metering (2018), but have hardly seen any since.
22. In our view, the very low replacement volumes are largely caused by the smaller-than-expected Family Failures. This removes any flexibility to smooth resourcing needs and results in higher costs in delivering installation services for Customer Initiated work (new connections and Adds & Alts). Lower volumes also reduce the critical mass of smart meters required to promote the development of new services to and by retailers and other parties.
23. The lack of incentives to maintain a reasonably consistent year-on-year flow of aged meter replacement is adversely impacting the deployment of smart meters. It appears that relying on (ad hoc) malfunctioning meters will not deliver volumes at reasonable levels. Lower-than-expected deployment and the lack of scale are adversely impacting our ability to drive down costs.
24. The reasons for the very low replacement rate of legacy meters with smart meters are unclear.
 - a. Networks may not have the required incentives or controls to continue investing in their testing and maintenance programs, resulting in lower volumes being declared as part of a Failed Family of meters.

- b. Under the *National Electricity Rules* (NER), meters can only fail as a Family based on the results of an accuracy test. It could be that meter replacement programs undertaken by DNSPs in the past considered factors other than accuracy failures, e.g. likely component failure based on asset age, the desire to ensure an efficient replacement program overall by adding older assets that still generate accurate reports, or the expansion of scale or addition of new technology to help with network management.

Retailers do not face sufficiently strong incentives to accelerate the deployment of smart meters

25. The inability of retailers to make a case for large-scale retailer-led deployments is another issue impacting the rollout of smart meters.
26. Vector Metering is seeing almost no retailer-led deployment of smart meters (new meter deployment as defined in the *National Energy Retail Rules*), as contemplated by the *Power of Choice* reforms. While we had not forecast any volumes in this category, the fact that there have almost been none is an indication that retailers are unable to build a business case to support deployment. Current market conditions have developed in such a way that retailers alone carry the cost of deployment even though the benefits from smart meters are 'split' across multiple parties, e.g. DNSPs, third party data access seekers, etc.
27. In our view, the reluctance by retailers to invest in large-scale smart metering deployment is driven by the cost differential between legacy metering and smart metering. Under current market conditions, the smart meter is materially more expensive than the avoided cost of the legacy meter being replaced. A key factor driving this is the removal of upfront fees for a meter installation that the customer was previously required to pay. In many cases, these fees were significant and outrightly recovered the costs of the metering asset. These costs are no longer charged directly to the customer and are now recovered by the retailer over a longer period via annual metering charges. This makes it difficult for retailers to make a business case for replacing legacy meters with smart meters. As a result, retailers are only deploying smart meters where the NER requires them to do so, i.e. in the case of New Connections, Adds & Alts, and meter malfunctions.
28. Unrecoverable legacy metering charges and the low volume of smart meters are driving the costs of smart meters higher, making the business case for large-scale deployment (or further deployment) unattractive to retailers.

Recent regulatory changes are driving up the costs of smart metering

29. While the *Power of Choice* reforms have delivered competition between metering service providers that is driving down the cost of metering services, the delivery of this benefit is being put at risk by recent regulatory changes driving up costs. Examples include mandated metering installation timeframes, requirements around shared fusing, and new obligations under South Australia's Smarter Homes program.
30. In addition, earlier expectations of uniform and consistent smart metering requirements across the NEM have not been met. Examples include inconsistent approaches around load control services across networks, inconsistent installation requirements by health and safety regulators, and recent changes to minimum smart meter specifications in South Australia. These inconsistencies constrain metering service providers' ability to reduce the price of smart metering to consumers, and therefore their uptake.
31. Regulatory barriers have also adversely impacted the ongoing deployment of basic smart metering services. In New South Wales, the moratorium on the use of remote energisation services has only been recently removed (1 October 2020) and regulation in Queensland is still in place that effectively makes these services impractical.

32. In addition, the Default Market Offer (DMO) that retailers are required to offer their customers on standing market offer does not realistically reflect the costs of smart metering and how those costs are recovered under current market arrangements.

Barriers to the accelerated rollout of smart meters could compromise the timely implementation of the post-2025 market design and need to be addressed

33. As an enabling technology, smart meters deliver benefits that are split across various market participants. This needs to be recognised so that steps can be taken to allocate these costs efficiently and fairly, rather than the current situation where the costs are borne by a single group of participants (i.e. retailers).
34. We believe the following measures or regulatory changes are needed to address, if not remove, the above-identified barriers to the accelerated rollout of smart meters for the benefit of all industry participants and consumers:
- a. rules/reforms that would deliver a higher volume of legacy meters for replacement with smart meters, e.g. legacy metering assets to be replaced at a targeted minimum rate;
 - b. switching away from accuracy-based Family Failure as the only large-scale mechanism to upgrade the legacy metering fleet to a more pro-active and strategic deployment of smart meters, e.g. allowing DNSPs to determine that a legacy meter can be replaced by a smart meter for reasons other than a malfunction;
 - c. rules/reforms that would improve the business case for retailers to continue to invest and accelerate retailer-led smart metering deployments, e.g. removal of unrecoverable legacy metering charges;
 - d. rules that would mandate the upgrade of defective/unsafe metering installations – This issue relates to a Metering Coordinator’s or retailer’s lack of authority to require a customer to address defects and ‘non-compliances’ at the customer’s site that prevent a meter installation from proceeding. Current rules do not give the Metering Coordinator any mechanism to require the customer to resolve site-related issues. Vector Metering has a growing number of sites (in the thousands) with this issue;
 - e. rules that would improve consistency in the implementation of the national competitive metering framework across jurisdictions, to reduce compliance costs and confusion;
 - f. exploration of innovative solutions such as a ‘network tariff discount’ for sites with smart meters;
 - g. reviewing the metering costs used in the calculation of the DMO to ensure they reflect more realistic costs of installing a smart meter under current market conditions; and
 - h. expanding the competitive metering market by ‘opening up’ metering markets in jurisdictions that do not have multiple/competitive metering service providers, e.g. the metering markets in Victoria and Western Australia.
35. We suggest that the ESB explicitly recognise the above barriers and consider the recommended regulatory changes as part of the further development of its post-2025 market design. This would ensure that the implementation of any future market arrangements will not be delayed or frustrated by the very slow deployment of smart meters.
36. We note the AEMC’s upcoming review of the regulatory framework for metering services, which we intend to actively participate in. We further suggest that the ESB engage with the AEMC on the above matters to pave the way for the development of options to address the identified barriers.

Concluding comments

37. For the proposed post-2025 market design to be implemented in a timely manner, the benefits of smart meters need to be fully unlocked now. This would require addressing the above barriers so the deployment of smart meters can be accelerated, and their benefits to consumers can be optimised now and in the future.
38. We are happy to provide further information to support our submission or discuss potential solutions to the above barriers with the ESB, federal government officials, and energy regulators. Please contact Paul Greenwood (Industry Development Australia - Vector Metering) at Paul.Greenwood@vectorams.com.au or 0404 046 613.
39. No part of this submission is confidential, and we are happy for the ESB to publish it in its entirety.

Yours sincerely



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