Appendix A The purpose and importance of market making

A.1 Financial contracts are important risk management tools that support the market for physical electricity in New Zealand. Prices in New Zealand's physical electricity market are volatile - fluctuating with changes in supply and demand, and the transmission network's ability to transport electricity from suppliers to consumers. Volatility in the physical market has been increasing in recent years. Financial contracts are important because they allow businesses and consumers to manage risks associated with buying and selling physical electricity without having to invest in generation assets or in a customer base. Financial contracts also help interested parties form a view of what the price of physical electricity will be in the future.

Risk management contracts are part of suite of tools that help participants manage risk

A.2 There are a range of options for parties to manage the risk of spot price volatility. For example, participants with large balance sheets may be able to ride out the cash flow implications of spot price volatility. Generators may choose to invest in a retail book, and large consumers may invest in generation assets, so that the overall volatility of the company's portfolio is lower than each of the businesses separately. Many participants also choose to manage their risk with financial contracts, or some combination of all options above.

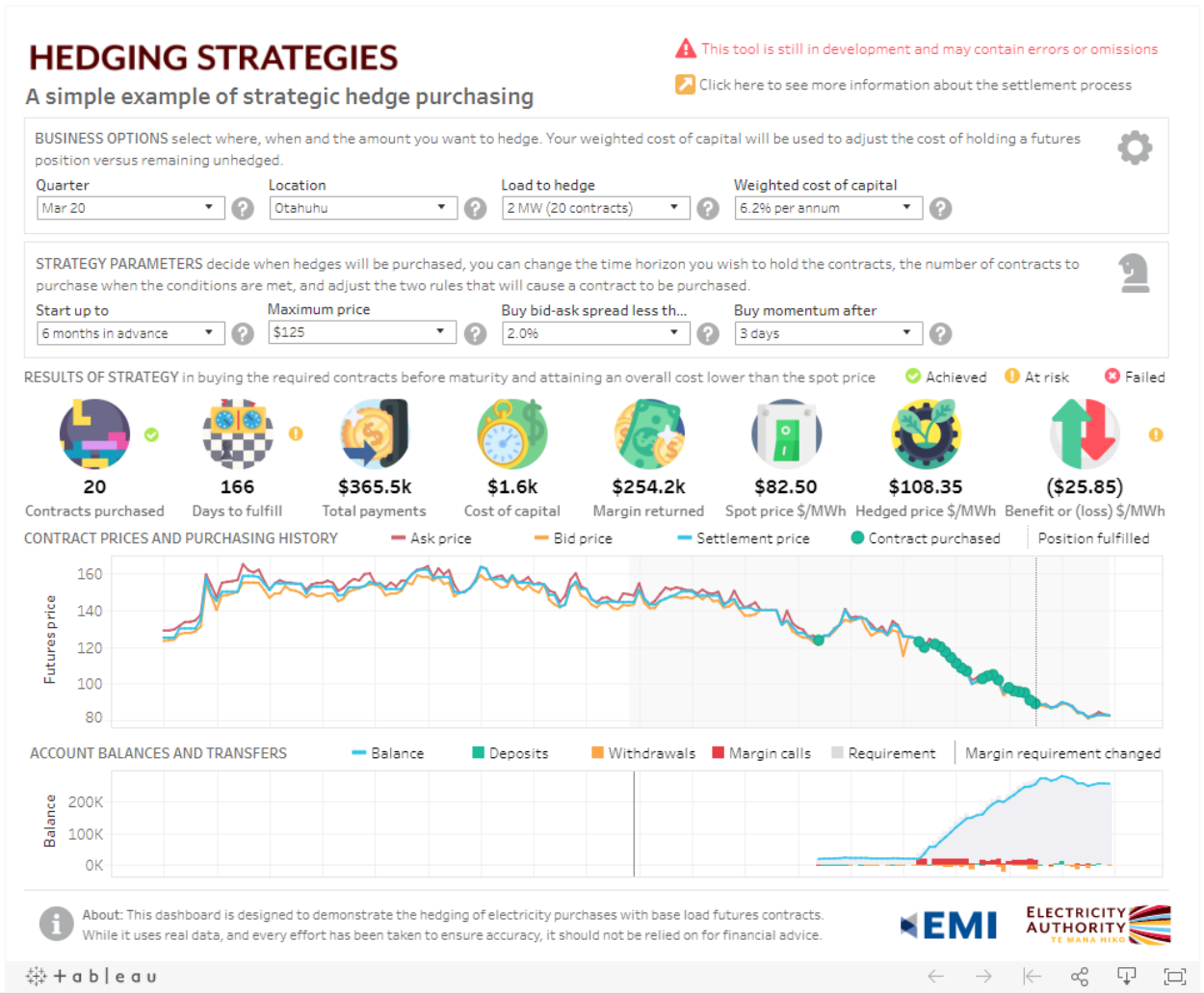
A.3 The Authority does not have a view on how, or the extent to which, participants should manage their risks (except that they act as prudent operators). Integrated businesses that are exposed to both buying and selling electricity is a legitimate means of managing spot price volatility risk. If integrated businesses can more efficiently manage volatility risk they may have a competitive advantage.

A.4 Risk management contracts help to manage risk by smoothing out the volatility of the physical spot market and giving participants certainty of the price they will pay in the future. This is an important consideration for all participants in the electricity industry that buy or sell electricity – but is particularly important for smaller or new entrant participants who may be less resilient to price volatility than larger, diversified and established participants.

A.5 Risk management contracts allow smaller and less diversified businesses without generation or large customer books to compete, innovate, and deliver value to customers.

Managing risk with financial contracts

The Authority is developing a simple hedging calculator that will allow stakeholders to better understand how ASX contracts work and the value they can provide in managing risk. A beta version is currently available online for testing (*https://public.tableau.com/profile/electricity.authority#!/vizhome/Hedgingstrategies/Hedgingstrategies*). Please send any feedback to HME.feedback@ea.govt.nz.



Risk management contracts produce a view of future prices

A.6 Risk management contracts also play an important role in creating a shared understanding of what the future price of physical electricity (spot prices) will be – which is important information for anyone making decisions that are affected by the electricity price. The price at which two parties agree a hedge contract indicates their respective understanding of what spot prices may be over the period covered by the contract. Accordingly, the forward price curve represents the most recent market view of the price at which electricity can be bought and sold at different periods in future. The Authority

collects and publishes these prices on an anonymised basis so that anyone can view and assess what the market's collective view of future prices is.[15]

A.7 The importance of the ASX forward price curve to stakeholders is reflected in submissions to our 2019 discussion paper. For example, for ASX forward price curve:[16]

(a) is used to set prices for OTC contracts

(b) helps participants to understand and manage their risk

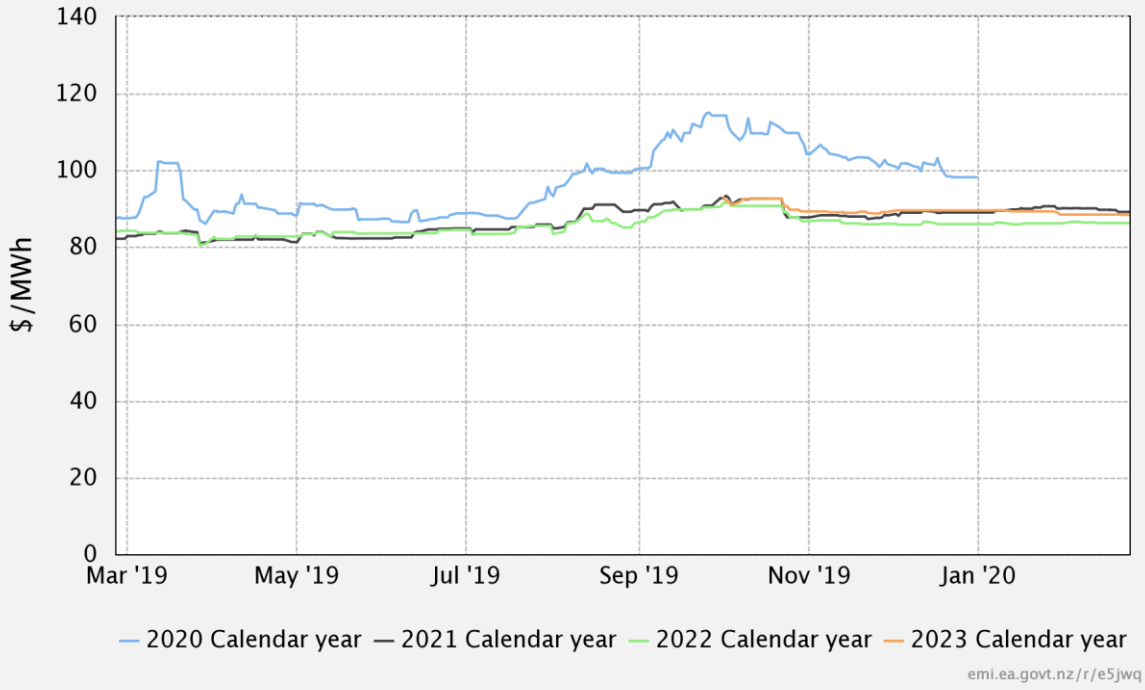
(c) is used for allocating capital within a business

(d) informs investment and operating decisions

(e) is used for mark to market accounting.

Forward price curve

A forward price curve shows the current price at which electricity can be bought and sold at different periods in the future. This is useful information for making decisions affected by the future price of electricity. For example, the Authority's EMI website allows anyone to view the price of ASX contracts over time, and aggregate them to produce a view of prices over a year:



15 All industry participants are required to disclosure their hedge contracts under the Code – these are published anonymously at electricitycontract.co.nz. The Authority also publishes exchange traded futures price information directly from the ASX at emi.ea.govt.nz.

16 Submissions available at: https://www.ea.govt.nz/development/work-programme/risk-management/hedge-market-development/consultations/#c18260.

This project focusses on *exchange traded* risk management contracts

A.8 ASX contracts are standardised and traded anonymously on the ASX market platform. They sit alongside bi-lateral contracts (over-the-counter or OTC contracts) and financial transmission rights (FTRs – a specialised hedging contract for locational price risk) as tools that participants can use to mitigate their exposure to volatile spot prices. Each of those types of contracts complement each other and (to some extent) are substitutes for each other for the purpose of hedging risk.

A.9 However, ASX contracts stand out from other types of hedge contracts because of their importance in creating the most useful and widely used forward price curve. This is principally because futures contracts are standardised and trade relatively frequently and the prices and volumes traded are published.

A.10 Accordingly, the Authority views exchange traded contracts as:

(a) vital to producing a robust forward price curve; and

(b) an important part of the range of risk management options available to participants.

Market making supports the success of exchange traded futures contracts

A.11 Exchange traded futures contracts enable participants to manage risk and produce a robust forward price curve with the support of market making services. The Authority expects that, if market making services were not provided, the market for exchange traded futures contracts would not produce a robust forward price curve. This is because (as set out in the Authority's 2019 discussion paper[17]) the forward price curve produced by activity on the futures market can be regarded as a public good, in that it is non-excludable (anyone can observe the forward price curve) and non-rivalrous (many parties using the forward price curve does not reduce its value). Markets tend to supply less than the optimal quantity of public goods. Without market making, market activity (ie, making offers and conducting trades) that is socially beneficial (but not privately beneficial) would not occur or not occur as frequently, and the forward price curve would be less robust than optimal.

A.12 Market making has also played an important role in ensuring exchange traded futures are available for New Zealand participants to manage risk. Market making of exchange traded futures was initiated to create an active market for trading financial hedge contracts and remove barriers to greater competition for the ultimate benefit of consumers. Such an intervention was considered necessary because New Zealand's institutional arrangements (dominated by four large integrated generator retailers) meant that a successful exchange traded futures market was unlikely to develop without regulatory intervention. Market making has since contributed (along with other reforms by the Authority) to an improved exchange traded futures market. The futures market has also contributed to an increasingly competitive retail market in New Zealand. This point was reiterated to the Authority in feedback received on its discussion paper from November 2019.

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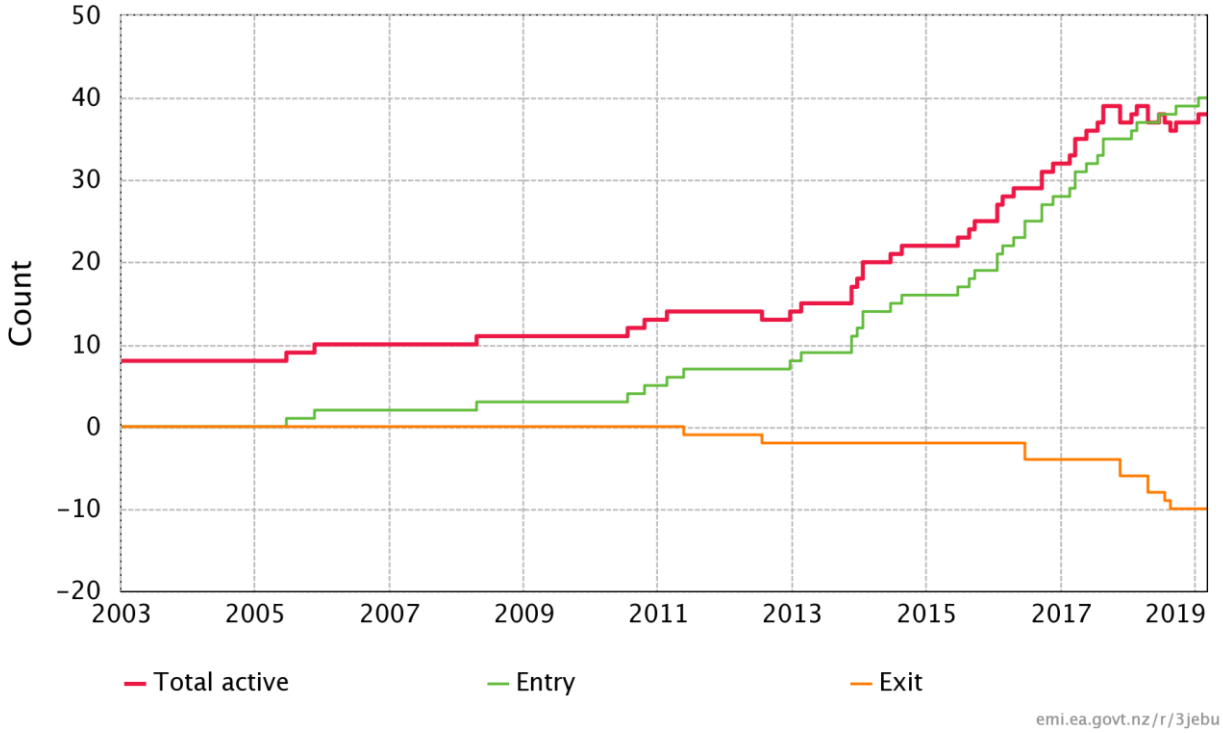
17 Available on the Authority's website: https://www.ea.govt.nz/development/work-programme/risk-management/hedge-market-development/consultations/#c18260.

Figure 1: Entry and exit of parent retail companies



A.13 The concern is that large generator-retailers are motivated to withhold supply (through either price or non-price barriers) to their competitors. This would be possible because the large generator-retailers control most generation capacity in New Zealand, and so are the largest group of natural sellers of hedge products to independent retailers. This same justification (focussing on the availability of contracts rather than the forward price curve) has been expressed in other jurisdictions that have or are considering regulating to provide market making.[18]

A.14 Market making of ASX contracts addresses this concern because it requires the largest generator-retailers to provide market making services. That is, to offer to buy and sell exchange traded futures and:

(a) the market makers are unable to impose *non-price barriers* because trades take place anonymously, and any retailer (or an intermediary) can participate on the ASX platform

(b) the market makers are unable to impose *price barriers* because of their obligation to offer to both buy and sell contracts at similar prices[19] – if they sought artificially inflate the price of contracts, traders would be able to sell contracts to the market makers at a similar price – resulting in a loss for the market maker.

A.15 Although it is not clear what level of market making services is necessary to achieve the important outcomes of a robust forward price curve and ability to manage risk, reducing or ceasing market making activity during periods of market stress may threaten those outcomes.

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18 For example, regulators in Australia, the UK, and Singapore have emphasised this issue. An overview of market making in these jurisdictions is set out in Appendix C.

19 The difference between these two prices is called the bid-ask spread. The requirement in New Zealand was initially set at 10%, and then tightened to 5% for a long period before recently changing to 3%.

A.16 Evidence available to the Authority and reiterated by stakeholders suggests that current market making arrangements work well during normal market conditions, but that they may be unreliable (too quick to reduce or even cease at times of market stress and too slow to return afterwards). In recent history they have shown to be quick to reduce or stop during periods of uncertainty, and difficult to restart. The Authority considers that to a large extent this is simply the result of the cost, reliability, and service level trade-off under the market making services operating at the time. Regardless, stakeholders have made clear their preference for increased reliability. The issues that affected reliability of market making are discussed in more detail below.

What is market making?

A market maker helps create a market for a product by offering to both buy and sell that product. Market makers decide the price of their offers to buy and sell, and are not obligated to buy or sell at fixed prices. The presence of offers to buy and sell a product establishes a market price. Market makers help ensure there is market liquidity, where there is volume of available contracts to buy and sell so other parties are able to trade. Without market makers, there would be lower liquidity and less opportunity for other parties to trade.

Market makers can make returns by charging a spread between the buy and sell prices. If prices are stable, the difference between the buy and sell price would represent a market makers profit. For example if the bid price is $100 and the ask price is $105, a market maker would make $5 for the net buy and sell of one security. When markets become volatile, the financial risk to market makers increases, as they may hold positions when the underlying price of the security changes adversely.

Market making is common in stock exchanges such as the New York and London stock exchanges. Other markets such as currency markets, government bond markets also feature market makers. The ASX hosts a number of markets with market making services: https://www.asx.com.au/products/market-maker-arrangements.htm

Market making services for electricity futures are less common, but they exist in Singapore, Australia, and Europe (for example, https://www.eex.com/en/trading/market-making). The UK market previously provided for market making services. However, these were removed in 2019, following changes in market structure that resulted in very few market makers facing excessive financial risk. Overseas examples of market making schemes are discussed more in Appendix C.

The Authority can adjust market making services to ensure the market for exchange traded futures contracts continues to be successful

A.17 Market making is the key lever that the Authority can adjust to ensure that exchange traded futures contracts provide a robust forward price curve and allow participants to manage risk. The goal of the project is to ensure that market making services are provided to the ASX market in an enduring way that supports those two functions.

History of market making for exchange traded futures on the ASX

In 2009 the ASX began hosting a platform to trade New Zealand electricity futures contracts at the Benmore and Otahuhu nodes. Initially, there were four market makers offering a bid-ask spread of 10%, which was tightened to 5% in November 2011. From June 2014, monthly contracts were also subject to market making (previously only quarterly contracts were market made).

The futures market saw significant stress during 2018/2019. In May 2019 the ASX and the voluntary market makers developed a new voluntary scheme to balance the risk concerns with service provision. In January 2020 the voluntary market makers increased the service levels they provided in response to a request from the Authority. In February 2020 the Code was amended to include a back-stop mandatory market making provision. Because the back-stop provision was added to the Code under urgency, it will automatically expire in November 2020.

Appendix B Issues and opportunities with market making

In 2019 we identified several issues and opportunities that warranted further investigation

B.1 The Authority released a discussion paper[20] in late 2019 to engage with the sector to identify problems and opportunities with market making that warrant further analysis. In that paper the Authority considered:

(a) whether the current market making arrangements were too fragile

(b) whether the bid-ask spread requirements[21] in the market making arrangements were too wide

(c) whether there was sufficient volume of contracts available to purchase, particularly when the market was stressed

(d) whether the ASX market was sufficiently 'liquid'

(e) whether the prices of ASX products were too high

(f) whether the current market making arrangements were sustainable.

B.2 The sections below set out the Authority's current thinking on the issues and opportunities with market making – these will be the primary considerations when the Authority designs and implements an enduring market making solution. The feedback the Authority received on its discussion paper, both formal and informal, as well as new data and analysis it has received, has informed its current thinking. Where this has resulted in a change in the Authority's understanding of the issues and opportunities affecting market making, this is explained.

B.3 As set out below, the Authority considers there are two high level issues and opportunities to address with market making. The first is the level of confidence among some stakeholders in market making and price formation on the ASX market. The second is that stakeholders have expressed a strong desire for more reliable market making arrangements – which will require an adjustment to the trade-offs between the cost, service levels, and reliability of market making. There are also several issues and opportunities that the Authority will not be addressing as part of this project.

B.4 Some stakeholders also drew attention to other aspects of the Authority's work programme. Non-integrated retailers pointed to the importance of work on profitability of the retailer arms of generator-retailers, and the allocation of costs embodied in internal transfer pricing. Market makers pointed to the importance of the work on wholesale market information disclosures in supporting greater confidence in futures pricing. Along with hedge market enhancements these related pieces of work constitute a broader programme in 2019-21 to improve the efficiency and effectiveness of the New Zealand electricity markets for the long-term benefit of consumers.

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20 Available on the Authority's website: https://www.ea.govt.nz/development/work-programme/risk-management/hedge-market-development/consultations/#c18260.

21 See the Glossary for a definition of bid-ask spread.

The Authority wants to increase confidence in the market for exchange traded futures products

B.5 Some stakeholders the Authority engaged with were confident in the current performance of the ASX market and the market making services that support it. Others considered it worked well most of the time but could be improved. However, a significant number of stakeholders expressed a lack of confidence in some of the fundamental aspects of the market and market making services, such that the Authority considers this is an important issue that should be addressed. The EPR final report noted 'The wholesale contract market isn't working effectively, limiting the ability of independent generators and retailers to manage price risk and undermining confidence in the market'. If participants lack confidence in the exchange traded futures market and market making services they may underutilise ASX contracts for hedging purposes and reduce reliance on the forward price curve they produce – to the detriment of the market as a whole.

B.6 Engagement in the market for exchange traded futures is complex and can be expensive. Some industry participants have deep and long experience in the market. New entrants can have relatively low levels of exposure and experience. Some submitters pointed to the role of greater education to building confidence and understanding of exchange traded futures and as a way of promoting risk management tools generally.[22]

B.7 Confidence can be increased by producing more and better reporting on the ASX market as a whole and on market making services – this is already occurring but may take some time to have an effect. Some potential interventions to increase confidence relate to market making (such as increasing the depth and diversity of market makers and market participants). However, other potential interventions, such as greater monitoring and reporting, setting performance expectations, and education, are unrelated to market making.

Lack of confidence in the performance of the market and market making services

B.8 Our engagement with stakeholders suggests there is an apparent lack of confidence amongst some participants in how the ASX market performs, and how market making services are performing. Many of the larger and more established stakeholders we spoke to were confident in the performance of the ASX market generally. However, other stakeholders expressed a lack of confidence in the way that prices were formed for exchange traded futures contracts and in the performance of market making services in general.

Some submitters considered ASX contract prices were being manipulated

B.9 In our 2019 discussion paper we considered whether the absolute price of futures was an issue – at the time the Authority had no evidence prices were being manipulated, and the paper invited participants to present it. We received many submissions that questioned whether ASX futures prices were really a reflection of future spot prices, or were being artificially inflated by market makers.[23] We also received many submissions

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22 See for example, submissions from Contact and Trustpower.

23 See for example, the combined submission of Ecotricity, Electric Kiwi, energyclubnz, Flick, Pulse and Vocus.

that strongly supported the view that futures prices reflect the market's views of future spot prices,[24] taking into account the risk that prices will go up or down.[25]

How are exchange traded futures prices formed?

The final settlement price of ASX baseload contracts is the average of the spot price in each trading period which they cover. For example, the Benmore September 2019 monthly baseload contract's final settlement price was $118.65. Monthly contracts are available to trade nine months ahead of time, so the September 2019 Benmore monthly contract was available for trade from January 2019. The price parties are willing to sell and buy the contract for should reflect their estimate of what the average spot price electricity will be at the Benmore node in September 2019 – plus or minus any uncertainty or risk premium (the extra price a party may be willing to pay to lock in a future price for electricity). As the chart below shows, the market's view of September spot prices at Benmore changed significantly over the course of 2019.

B.10 Generators are motivated to sell futures at a high price and purchases (retailers and direct consumers) are motivated to buy at a low price. Market makers must offer to both buy and sell electricity at prices that are close to each other (dictated by the bid-ask spread requirement). They are motivated to offer contracts at what they consider the future price of electricity will be because, if they did not, they would lose money to traders (including other market makers) who would take advantage of the difference between prices offered and the expected final settlement price of the contract. There are traders active in the market, and the Authority has seen no plausible evidence that

24 See for example, submissions from Energylink, Trustpower, and Nova.

25 Submitters noted that ASX prices (and electricity prices in general) had an 'upside risk' meaning that there was a greater risk that prices would rise significantly (because electricity prices in New Zealand are uncapped) than risk prices would fall significantly (because generators are unable to offer at negative prices – although prices can theoretically be negative).

market makers could systematically artificially inflate the price of futures contracts to their advantage.

B.11 If market making services reduce or cease during times of stress, then the bid-ask spread requirement that disciplines the price that market makers offer would no longer apply. This is a potential concern during periods of market stress and is covered in the discussion below regarding the reliability of market making services. To some extent, the widening of spreads during a market stress event is an appropriate trade-off that may be necessary to ensure the costs of market making services are contained to an appropriate level. These trade-offs are a matter for the detailed design phase of the project. Widening spreads also convey useful information about the level of uncertainty in the market – market making services that prevented spreads from widening at all during periods of market stress would stop this useful information being conveyed.

What role do traders play in the market for exchange traded futures?

In this context the Authority refers to traders as entities that both buy and sell futures contracts on the ASX platform. Traders can include physical participants in the New Zealand market, intermediaries that may trade on the ASX on behalf of physical participants, as well as entities that trade purely in the hope of profiting from those trades. This can be contrasted with many smaller physical participants that only buy and sell contracts to hold them for the purpose of risk management.

The activity of traders ensures that prices on the ASX platform (and the forward price curve) are an accurate-as-possible reflection of future spot prices. Because traders are willing to buy and sell contracts, they will arbitrage any difference between offers to buy or sell, and what they consider the actual future price of electricity to be.

Potential responses to increase confidence

B.12 Stakeholders have suggested many responses that could increase confidence in the market for exchange traded futures and in market making. These can be characterised as non-structural (ie, what market making services are provided, and transparency reporting) and structural (ie, how market making services are provided).

Structural responses to increase confidence

B.13 In the Authority's discussions with stakeholders it was apparent that some of the confidence issues in the ASX market and market making stemmed from the parties that participate in that market. For example, for many non-integrated retailers it was a concern that their largest competitors were also the entities providing market making services and were also the largest participants in the ASX market.

B.14 One way to address this concern is to increase the number and diversity of market making service providers. For example, the Authority could increase the number of market makers beyond the existing four. The Authority could also diversify the types of market makers away from generator retailers towards professional market makers. Professional market makers (such as large banks or financial institutions) have no interest in the absolute level of prices for ASX contracts – other than wanting to ensure they accurately reflect future spot prices. Some stakeholders agreed that this would increase their confidence in the market and market making services, but others did not. On balance, the Authority considers that increasing the number and diversity of market

makers will increase confidence of stakeholders. This response is available under some of the approaches the Authority is considering for market making.

Non-structural responses to increase confidence

B.15 Stakeholders suggested a range of responses that could increase confidence in the market and in market making. The Authority is currently working through these requests and considering which it can progress immediately. Specific examples include:

(a) increased reporting of specific metrics. For example, depth and churn

(b) creating and publishing a liquidity index (the Authority was sceptical of this approach in its 2019 discussion paper, but is reconsidering this after engaging with stakeholders)

(c) setting clear performance expectations – taking into account what is possible in a small market like New Zealand's[26]

(d) the Authority arranging free or subsidised training on risk management[27]

(e) the Authority requiring participants to certify a level of understanding of risk management before they could register.[28]

B.16 The Authority has hosted some of its initial work on reporting metrics on a public webpage: https://public.tableau.com/profile/electricity.authority#!/vizhome/Hedgemarketenhancementconsultation/Marketdepth. Please provide any feedback to HME.feedback@ea.govt.nz.

The Authority will seek to increase the reliability of market making

B.17 Market making in New Zealand can be characterised as facing a trade-off between three key factors: the cost of providing the services, the level of services provided, and the reliability of service provision:

(a) The cost of service provision. This is the fixed and variable costs incurred by the service provider. These costs will be incurred regardless of whether they are publicly visible or not and will likely ultimately fall on consumers.

(b) The service levels include such considerations as the depth and breadth of contracts covered by the services (what types of contracts and for what period into the future), the volumes required to be offered (including any refresh obligation), and the maximum bid-ask spread.

(c) The reliability of service includes the arrangements in place to reduce or temporarily withdraw service provision during periods of market volatility or market maker financial stress. These arrangements come in many different forms including, for example, fast market rules, exemptions, and trading caps.

B.18 Trade-offs between these three characteristics are necessary because each affects the other two. It is not possible to simultaneously reduce costs, increase reliability and increase service levels. For example, reducing the service levels will decrease costs

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26 See, for example, submissions by Genesis and Energylink.

27 For example, Trustpower and Contact. The industry already provides courses that cover risk management. Providers include, for example, EnergyLink and ASX.

28 See submission by Trustpower.

and/or increase reliability. It may also be possible, for example, to hold costs constant if reliability is decreased and service levels are increased.

B.19 Many of the issues and opportunities identified in the Authority's 2019 discussion paper and raised by stakeholders can be usefully characterised in terms of the cost, reliability, and service level trade-off.

Current market making service levels appear sufficient to achieve the Authority's statutory objective during normal market conditions

B.20 The Authority's 2019 HME discussion paper stated that the futures market, supported by market making services, works well most of the time. That is, the evidence the Authority is aware of suggests that the current service level of market making (as at November 2019) is sufficient for the ASX market to achieve its functions during normal market conditions. This was supported by many submitters, including Meridian, Contact, Genesis, Trustpower, Nova, OMF and Prime, although not all agreed – in particular the joint independent retailers. The Authority was (and remains) concerned about the performance of the market during times of stress (ie, its reliability), and this issue is discussed in more detail below.

B.21 The Authority's understanding that the market works well most of the time is underpinned by an analysis of types, volumes, and bid-ask spread of market made contracts. That is, our analysis, set out below, suggests the types of contracts, volumes offered, and bid-ask spread obligations are sufficient to support the ASX market, during normal conditions, to:

(a) produce a robust forward price curve; and

(b) contribute to the range of risk management options available to participants.

B.22 Accordingly, a key consideration as the Authority designs and assesses its enduring solution is that, in general, appropriate service levels for the prevailing market conditions are available, and that any adjustments to the cost or reliability of market making do not materially reduce the service levels of market making to the point that consumer interests are threatened.

Volume

B.23 The 2019 discussion paper noted that trade data available to the Authority at the time suggested there was sufficient volume of contracts available to trade on the ASX during both normal and stressed market conditions. That was on the basis that there was frequently contracts available to trade at the close of the market each day. In that paper we noted that we would shortly begin analysing a more comprehensive data set from the ASX that would allow us to consider the depth of the market. That is, the volume of contracts available to trade, not just the actual trades that took place. We have looked at that data and it shows that, during the market making window the depth of the market largely reflects the volume made available under the market making arrangements. This suggest that market making service levels are a key contributor to the depth of the market.

B.24 The volume provided to the market under market making arrangements (as at November 2019) appears to be sufficient for most participants most of the time.[29] For example, for hedging purposes, a retailer growing at 1,000 residential ICPs per month would need approximately 1MW of new hedge cover for those additional customers.[30] Under the current arrangements an order of magnitude more than this amount is available to purchase every day of the month – and this amount (1MW) was available to purchase during the stress events of 2018/2019 even when market making services were reduced, although the bid-ask spread was significant at times.

B.25 There also appears to be sufficient volume available to participants that have greater needs, such as large retailers, and independent generators and large consumers. Submitters to the 2019 discussion paper have told us, and some have modelled, the way in which a relatively large hedge position can be built up over time at efficient prices.[31]

B.26 The Authority also heard from several smaller participants that they were concerned with the marginal price impact of their activity in the market. That is, they could observe the price moving significantly after trading relatively small amounts. To some extent these experiences reflect the depth of the market – a deep market should see less price volatility. Submitters invited the Authority to consider data that might highlight this change in marginal price as a better measure of contract availability. It is also possible that any change in price after a trade reflects that new information was provided to the market, and so this phenomena could reflect uncertainty in the market.

B.27 It was apparent from extensive discussions that many stakeholders primarily derived benefit from the forward price curve - many participants do not trade on the ASX, and those that traded for hedging purposes (ie, physical participants, such as large consumers, generators, and retailers) generally only purchased ASX contracts to top up or adjust a hedge position build mostly using OTC contracts.

B.28 We received submissions in November and early December 2019 that the volume of contracts available in the front six months at the time was insufficient, and that it was important the volumes of short and long term contracts are aligned.[32] The Authority's Board moved quickly to address this issue in December 2019 in the short term through requesting greater depth and tighter bid ask spreads in the voluntary arrangements at the time, and these changes went live in January 2020.

B.29 Some participants also considered there was insufficient volume available in the OTC market, and there was also a concern raised that increasing the volume of contracts available in the ASX market (through adjusting market making services) would make less volume available in the OTC market – particularly if market makers had difficulty managing their risk. This is an issue that we will consider when designing and implementing the enduring market making solution – stakeholders will have an

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29 Currently 3MW for all contracts per market maker, meaning there is 12MW to buy and 12MW to sell for each market made contract, every day (this amount will be reduced on any day that one or more market makers uses an exemption). For a period during 2019 (including at the time the 2019 discussion was released) the requirement was only 1MW per market maker for contracts expiring within six months (and 3MW for all other market made contracts).

30 This is a very conservative figure that assumes a flat load profile.

31 For example, Trustpower modelled how a relatively large position could be built up over time using various strategies – highlighting how 10 MW could be built up over a period of 2 months, purchased when spreads were less than 4%.

32 See for example submissions by OMF and Mercury.

opportunity to comment on the trade-offs (if any) between improving service levels and reliability of market services and the impact on the OTC market.

B.30 We understand from discussions with participants that volume available under market making, particularly in the front six months, is a key driver of the costs of market making. This is an area we will closely consider during the detailed design and implementation phase to determine if there are any cost savings available while still maintaining sufficient volume to support the market achieving its outcomes.

Bid-ask spreads

B.31 In the 2019 discussion paper we considered whether spreads alone (separate from whether they are affected by the fragility of market making arrangements) are an issue. We received mixed feedback on this. Some participants called for tighter spreads all the time while others said that depth, volume, and spreads were an issue.[33] However, many others said that the then current spread requirement (5%) was not an issue[34] and that 5% represented an appropriate balance between the cost of market making and the efficiency of prices (Bold Trading), although widening spreads during stress events was a concern (OMF and Prime). Trustpower produced analysis showing it was possible to buy significant quantities of contracts at spreads much tighter than the market making obligation, this analysis can be reproduced in our online hedging calculator.[35] Since market making requirements were tightened to 3% in early 2020 the Authority has received feedback that this change has had little material effect on participant's ability to manage risk or the robustness of the forward price curve.

B.32 On balance, we received no evidence that tighter spreads would flow through to consumer benefits, or that the costs of tighter spreads would outweigh any benefit to consumers of tighter spreads. This is an issue that we will revisit during the detailed design and analysis phase of the project. It is not necessary to decide at this stage on what the most appropriate spread is.

B.33 In January 2020 the market makers voluntarily reduced the maximum spreads at which they offer contracts to 3%. Over time, the result of this change will be observable in the market, which can inform the Authority's work during the implementation of an enduring solution. Our initial understanding of the changes in January 2020 is that the tightening of the bid-ask spread had a much smaller impact on the cost of market making than the increase in volumes. Non-market makers considered the change to be helpful, but of limited benefit. The Authority will continue to monitor the impact of this change and values the ongoing involvement of users of market making services to identify appropriate service levels. High levels of service carry additional costs which are ultimately borne by consumers. The Authority avoids imposing unnecessary costs to the market if these do not provide overall benefit to consumers.

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33 For example, see the submissions the joint independent retailers and Mercury.

34 For example Contact, Nova, Trustpower, OMF, Meridian, and Genesis.

35 Available at: https://public.tableau.com/profile/electricity.authority#!/vizhome/Hedgingstrategies/Hedgingstrategies.

Other aspects of market making service levels

B.34 Some stakeholders called for market making services to be extended out further years into the future.[36] This extension appeared to be aimed at supporting new generation investment.[37] The data available to the Authority does not support this change for several reasons. The first is that outer year contracts are traded less frequently, so it is not clear that listing more contracts for trade (and supporting them with market making) will result in material trades of those contracts. The second is that there are material levels of construction of new generation already being undertaken or in advanced levels of planning – it is not clear whether this suggested change would make a material impact. Finally, ASX contracts are not well suited to support new generation investment, as generation investments typically have a planned life of several decades – well beyond the requested increase to ASX contracts.

B.35 There were also some calls for market making services to cover other existing or new contracts on the ASX, such as peak products or cap products. These requests did not appear to have wide support, and will not be a focus for the Authority when designing and implementing an enduring solution. However, it does highlight the benefit of the enduring solution being flexible to change service levels over time as the needs of the market change.

Potential options to address these issues and opportunities

B.36 The key finding from the Authority's analysis above is that the 'service level' part of the cost, reliability, and service level trade-off appears to be working well during normal market conditions. Accordingly, the Authority will be mindful when considering what trade-offs may be necessary that an increase in service levels is probably not warranted, and that there may be scope to reduce service levels them if costs can be decreased or reliability increased.

The Authority will address concerns regarding the reliability of market making

B.37 The reliability of market making (or lack of) has been raised as a concern on several occasions in the past few years including by the Authority, its advisory groups, and many stakeholders – most recently by the EPR Panel and the Minister of Energy and Resources.

B.38 In the discussion paper we did not consider that reliability (referred to fragility in the discussion paper) of market making arrangements was an issue in itself. We considered that reliability was best considered in terms of the effects on bid-ask spreads and available volume, particularly when the market was stressed. On reflection, and after considering stakeholder submissions, our revised position is that expectations of reliability of market making is a central issue for stakeholders that should be addressed.

B.39 As set out above, we think it is useful to consider the cost, service levels, and reliability of market making as carrying clear trade-offs. If the Authority were to increase the reliability of market making (ie, if market making services were to be provided more often during periods of market stress) then costs of market making would increase, the service levels would decrease, or some combination of both. There are many trade-offs

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36 This would require the ASX to agree to list contracts traded further out, as currently all available quarterly baseload futures (available out 3 – 4 years) are market made.

37 For example, the New Zealand Wind Energy Association and Ecotricity.

possible, and these will largely be determined during the cost benefit analysis undertaken as part of the detailed design and implementation phase – the next steps for the HME market making project are set out in Chapter 7 of this paper.

Stakeholders have signalled they would prefer market making arrangements to be more reliable

B.40 Many stakeholders have identified an issue with the reliability of market making services. This issue has been flagged by the Authority for some time, including in its review of the events of winter 2017,[38] and the Authority's 2018 UTS decision.[39] More recently the EPR Panel found that market making services were not sufficiently reliable, a finding supported by many submitters to that Panel.[40]

B.41 The Authority's understanding of reliability is the tendency for market making services to continue to be provided during periods of market stress – such as the significant uncertainty and volatility that affected the market during 2018 and 2019. Market making services become significantly more expensive to provide during these periods. Under the market making regime that operated during the 2018/2019 stress periods, market makers were able to cease or withdraw from providing services when they cited 'portfolio stress'[41] – which many did. The portfolio stress provision at the time was not clearly defined, and so is not amendable to measure or reporting on relative performance.

B.42 The EPR final report noted that once one market maker leaves the others typically follow, rendering market-making fragile and unpredictable.[42] This was reiterated by many submitters to the HME discussion paper in 2019,[43] and is supported by the data available to the Authority.

B.43 Market making in a volatile market like New Zealand's electricity futures market has inherent features that make market making less resilient to times of stress or uncertainty. In particular, there is an advantage to being the first market marker to cease or reduce services during a stress event and a distinct disadvantage to being the last market maker maintaining services. Similarly, there is also a disadvantage to being the first market maker to restart or increase services after a stress event. This creates a situation where if one market maker leaves during a stress event, the others are likely to follow in quick succession, and there will be difficulty in getting them to return.

B.44 In many ways, reliability is just a way to express the cost and benefit trade off that the service providers are making. For example, holding service levels the same, increasing the reliability of market making services will increase their costs, and vice-versa. The market making services that have historically been provided for exchange traded electricity contracts can be characterised as low cost / lower reliability. That is, the cost

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38 Report available at: https://www.ea.govt.nz/monitoring/enquiries-reviews-and-investigations/2017/winter-2017-review/.

39 Decision available at: https://www.ea.govt.nz/code-and-compliance/uts/undesirable-trading-situations-decisions/15-september-2018/.

40 Report available at: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-consultations-and-reviews/electricity-price/.

41 This term was not defined or consistently applied by market makers.

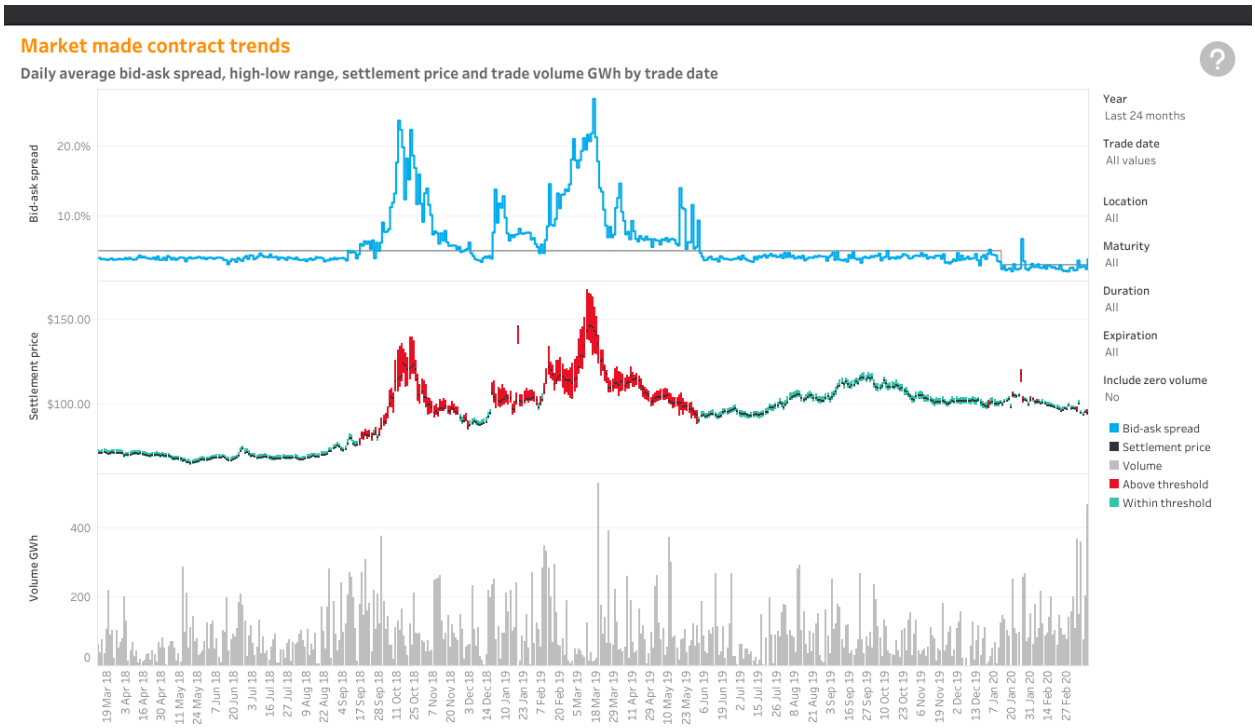
42 Electricity Price Review, *Final Report,* May 2019, pg 43.Available at https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-consultations-and-reviews/electricity-price/

43 For example existing market makers, Nova, Trustpower, MEUG, the joint independent retailers, and Vocus.

of the services were relatively low ($1-4 million per year per market maker[44]) and fell on the four largest generator retailers, representing approximately 72% of the wholesale market for electricity in New Zealand.[45] This cost increases significantly during periods of market stress – even when market makers provide reduced services.[46]

B.45 The level of reliability can be seen in the bid-ask spread of market made contracts over time – during much of the market stress period in 2018 and 2019 market making services were stopped, reduced, and the end of day bid-ask spread widened significantly.

Figure 2: Market made contract trends - previous 24 months



B.46 We heard from many stakeholders that the current arrangements are not reliable enough and the Authority should move away from the current low cost / lower reliability settings. For example, almost all stakeholders suggested that market making arrangements should be formalised and that the current approach is no longer suitable.[47] If service levels are kept constant, this would move market making services to a higher cost / higher reliability scheme. This is a trade-off the Authority wants to consider, however, doing so is complicated for several reasons. Ultimately, any additional costs in the market will likely be borne by consumers in some way.

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44 As self-reported by the existing market makers – see paragraph 5.16 in the 2019 discussion paper. Available at: https://www.ea.govt.nz/development/work-programme/risk-management/hedge-market-development/consultations/#c18260.

45 In 2019 the four largest generator retailers represented 72% of the market for selling and purchasing electricity in New Zealand on an energy basis.

46 For example, Meridian states in its submission that it cost $5.7 million to provide market making services in the financial year to 30 June 2019 - despite reducing the services it provided for some of that period under the previous 'portfolio stress' allowance.

47 Exceptions include Genesis who noted that the current scheme had evolved and improved over time, and Trustpower who noted that the current market making arrangements have been effective.

B.47 One issue affecting the Authority's ability to trade-off the costs, reliability, and service levels of market making services is that the current costs of market making fall on four parties, and there are little reliable data available concerning trade-offs that have occurred historically. For example, there has historically been no consistent or regular reporting of market making costs.

B.48 Another issue affecting the Authority's ability to trade-off the costs, reliability, and service levels of market making services is that the Authority has historically had few effective means to adjust those trade-offs. Service levels have slowly increased over the ten years that market making arrangements have been in place. However, there has never been an explicit conversation regarding how those increases in service levels have affected the cost or reliability of market making services. Under the current voluntary arrangements (backed by regulatory pressure), there has been no regulatory-based review of market making services nor has there been any commercial pressure or signal to market users of the cost of modifying services.

B.49 It has been difficult to get meaningful engagement on the issue of necessary trade-offs as most parties that receive benefit from market making services do not directly or explicitly pay for its costs, and have not for the last ten years. The Authority's understanding of who benefits from market making services is described in Chapter 5 of the main paper.

B.50 The Authority is mindful that any trade-off between the cost, reliability or service level of market making services is likely to flow through to consumers. Some stakeholders acknowledged these trade-offs.[48] However, the Authority also considers that many submitters calling for changes to market making that would result in increased costs are doing so on the assumption that they will either not bear the cost of those changes, or will be able to pass them through to consumers. The Authority's statutory objective is to act for the long-term benefit of consumers, and it will consider any trade-offs with consumers at the centre of its decision-making.

B.51 The Authority's 2019 discussion paper noted that spreads widen due to uncertainty, and that this was not necessarily detrimental as it conveyed useful information about the market's sentiment. Some submitters supported this characterisation of the relationship between bid-ask spreads and certainty.[49] In the discussion paper we asked for ideas on how to determine the relationship between uncertainty and bid-ask spreads, so that we could determine when and for how long it might be appropriate for spreads to widen. On reflection, we do not think it is useful to pursue this line of questioning – instead we are focussing on making trade-offs so that market making services (as a whole – without reference to bid-ask spreads specifically) are appropriately reliable during periods of stress and uncertainty. We recognise that at times of significant stress, the bid-ask spread may widen appropriately to convey the additional risk of uncertainty for market makers.

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48 See for example, submissions by Mercury, and Trustpower and the EPR final report acknowledged the need to balance the performance of market making services with their costs. Final report available at: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-consultations-and-reviews/electricity-price/.

49 For example, submissions by Nova, Genesis and Trustpower.

Potential changes to increase the reliability of market making

B.52 There are several potential interventions to address the issues identified above. The first set of interventions could help to ensure that trade-offs between the costs, reliability, and service levels of market makings services are made explicit and visible:

(a) the Authority already publishes data and reports on the level of market making services and performance of the ASX market during normal market conditions.[50] However, publishing more and better data and reports could improve visibility of the level of services being provided. The Authority could also bolster the powers it has to collect data and publish reports.

(b) the Authority could collect and potentially make visible the costs that market making service providers incur. How this could occur will depend on which approach to providing market making services the Authority decides to take in August 2020.

(c) the Authority already publishes a report on the reliability of market making services.[51] However, there may be opportunities to improve reporting on reliability. The Authority could also bolster the powers it has to collect data and publish reports.

B.53 Another possible intervention is that, if beneficiaries are made to bear the costs of market making services, they are more likely to demand an efficient level of service. There are several options available to achieve this, and which ones are available and appropriate will depend on the approach the Authority takes to ensure market making services are provided in August 2020. The Authority recognises that it is not practicable to identify and allocate cost to the very broad range of entities that benefit from market making services – broad categories of beneficiaries are identified in Chapter 5 above. Pragmatic options to more fairly share the cost of market making include compelling more participants to provide market making services, and/or to raise a levy on physical participants that benefit from market making.

B.54 There are a wide range of adjustments to market making services that could increase reliability. All these adjustments will impact the cost or service levels of market making (or impose some other cost on the industry). The Authority will better understand these necessary trade-offs when it completes a cost-benefit analysis as part of its detailed design and implementation phase. However, it is important to identify the potential adjustments now, as the high-level approach decision that the Authority takes in August will affect what adjustments are open to it in the detailed design and implementation phase. Suggested adjustments include:

(a) Increasing the number of market making service providers. This adjustment was suggested by many submitters.[52] This adjustment could increase the reliability of services because the higher cost of service provision during market stress events falls on a larger number of market makers. The Authority expects this adjustment

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50 See, for example: https://www.emi.ea.govt.nz/Forward%20markets/Reports.

51 See, for example: emi.ea.govt.nz/r/ap4ep.

52 Meridian suggested a scheme that could potentially involve a wider group of market makers, including specialist electricity traders and financial intermediaries who currently speculate on the ASX New Zealand electricity futures market, Bold suggested widening the pool of market makers to cover more participants with generation assets.

to also increase overall costs of market making, as market makers incur fixed costs to provide services.

(b) Increasing the diversity of market makers. The existing market makers all share similar characteristics. However, the Authority understands they have different appetites to provide market making services. Diversifying market makers to include commercial providers (such as large banks or financial institutions) could ensure market makers are willing service providers – increasing reliability of the services overall. A more diverse range of market makers may also help to improve confidence in market making arrangements. Such market makers would have, for example, no particular interest in the absolute price of contracts but rather be concerned primarily on that price being an accurate reflection of future prices. The Authority expects this adjustment to increase the costs of market making – because commercial providers will likely require full compensation for the costs and risks incurred in market making – whereas market makers who are physical participants may derive other benefits from providing market making services which would offset some of their costs of providing service and so may not require the same level of compensation as commercial providers.

(c) Creating prescribed circumstances in which market makers can reduce or cease providing services. A shift has already occurred under the current voluntary arrangements away from a subjective 'portfolio stress' provision towards an objective exemption-based system.[53] Objectivity ensures that market makers and non-market makers can be confident that the reliability of market making services is transparent and adhered to, and tracked over time.

(d) Increasing the number and diversity of entities that trade on the ASX platform.[54] Having more and more diverse market participants could increase the reliability of market making if it reduces the costs of providing market making services during market stress periods. Currently, market makers are involved in most trades (although this is not always the case).

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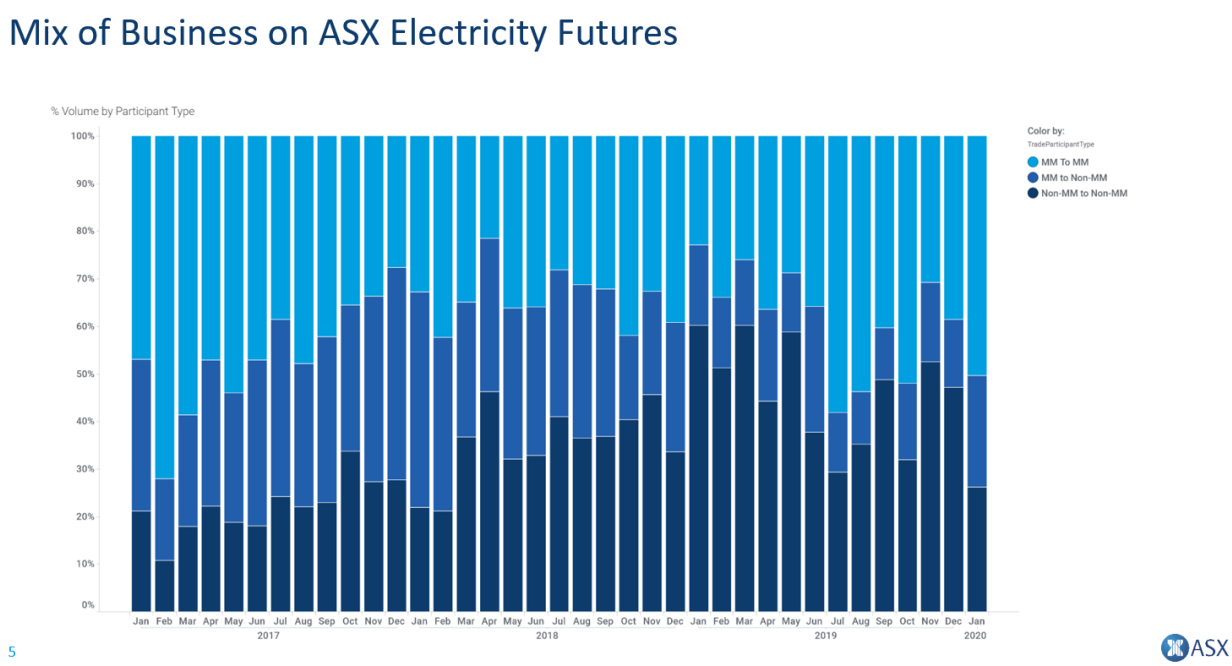
53 Currently, market makers receive five no-questions-asked exemptions each month.

54 See submissions by for example, Meridian and Genesis.

Figure 3: Market makers make a large proportion of the market



(e) Creating a soft opening to the market making period. This could involve, for example, a wider bid-ask spread obligation during the first five minutes of the market making period. A soft opening like this could reduce the cost of price discovery for the market makers by potentially avoiding unwanted trades between the market makers at the opening of the market making session. Reducing the cost of price discovery during periods of volatility and uncertainty could make it easier for market makers to continue to provide services during those periods.

(f) Fonterra suggested paying market makers more for their services during periods of market stress, as that is the time at which the market values their services most. This adjustment would be available under some of the approaches the Authority is considering.

(g) Increasing the level of gas disclosure, while outside the scope of this workstream, is something the Authority is currently addressing. This was raised by some submitters as a means of increasing the reliability of market making services.[55] The existing market makers have different involvement in the gas industry, leading to a perception of information asymmetry among them. This perception can be seen contributor to the reduced reliability of market making services during the 2018/19 market stress events.

There are a range of other issues and opportunities that are out of scope for this project

B.55 There are several issues and opportunities that are either related to market making, or have been identified in the context of market making, but are out of scope of this project. For completeness, some of these are set out below.

55 See submissions by Mercury and Trustpower.

Vertical separation of large generator retailers

B.56 Some submitters appeared to be advocating for the actual or effective separation of vertically integrated businesses, and saw the Authority's project to review market making arrangements as a vehicle to make this change.[56]

B.57 The EPR Panel clearly stated in its final report that it considered the benefits of vertical integration outweigh the costs, even after the costs of promoting competition in a vertically integrated industry are included. The EPR Panel was focussed on ensuring the benefits of vertical integration are more widely shared.[57] The Authority shares this sentiment and wants to be very clear that the focus of this project is to design and implement market making arrangements that are fit-for-purpose over time – for the long term benefit of consumers. The Authority sees vertically integrated businesses as a feature of the New Zealand market and not a problem per se. The Authority will not design and implement market making arrangements with the purpose of actually or effectively separating vertically integrated businesses.

Barriers to entry and participation on the ASX platform

B.58 Some stakeholders considered that the barriers to entry and participation on the ASX platform were too high. In particular, that the level of initial margins is too high, and that the Authority should or could lower them.[58] The ASX's initial margin requirements are designed to protect the ASX and users of the ASX from the risk of default. The Authority is not able to comment on whether those margins are set appropriately.

B.59 If participants wish to support another exchange traded futures platform with a different risk tolerance, then the Authority does not want to prevent this happening.

B.60 Submitters also commented that exchange traded futures contracts would be more attractive to trade if they could be used to offset prudential requirements in the physical market. The Authority has already considered this issue and released a decision paper in 2018 setting out its reasons for not pursuing the issue further.[59] The Authority welcomes any submissions that show why this decision should be revisited.

Some submitters questioned the relationship between ASX contract prices and internal transfer prices

B.61 Some submitters raised concerns that prices on the ASX were not reflective of prices that generator retailers are willing to sell to their own retail arms – as evidenced by the 'internal transfer price' that large generator retailers publish from time to time.[60]

B.62 ASX contract prices are not easily or directly comparable to retail prices for several reasons, including because of different credit risk concerns, and because retail prices are often 'shaped' to meet the pattern of demand required to be hedged.

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56 See submissions by Vocus and Haast/Electric Kiwi.

57 Final report available at: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-consultations-and-reviews/electricity-price/.

58 See submissions by for example, Ecotricity and Mercury.

59 The decision paper is available at: https://www.ea.govt.nz/development/work-programme/risk-management/hedge-market-development/development/decision-paper-on-treatment-of-prudential-offsets-in-the-wholesale-market/.

60 For example Genesis Energy, *Annual Report 2019*, August 2019 and Meridian Energy, *Integrated Report 2019*, August 2019.

B.63 Nonetheless, comparisons can be made, and some submitters considered that the large generator retailers are essentially offering to sell their generation output to their retail arm at significantly lower prices than they offer into the ASX market.[61]

B.64 The EPR Panel's recommendations to the Government included that vertically integrated companies report (among other things) the internal transfer price between their generation and retailing operations. The Government accepted this recommendation. That work is not a first order priority (the Government and the Authority's Board have prioritised reviewing market making arrangements), but the Authority is seeking to progress this piece of work.

61 See submissions by for example, the joint Independent retailers. Submissions available at: https://www.ea.govt.nz/development/work-programme/risk-management/hedge-market-development/consultations/#c18260.

Appendix C Observations from overseas

C.1 Submissions to the discussion paper acknowledged that experience from other jurisdictions where market making has been provided for electricity futures products could be used. Specifically, Singapore, the United Kingdom and Australia were suggested.

International benefits of futures markets

C.2 The Singapore Energy Market Authority considers there are three benefits of a liquid futures market, facilitated by market making services:

(a) For generation companies: The futures market provides an additional option to hedge and manage risk.

(b) For contestable customers: The futures market can provide a way to secure future prices and provides a transparent platform to gauge prices.

(c) For potential new entrants: New retailers can use the futures market to secure prices for their customers and reduce barriers to entry, increasing retail competition and reducing retail prices.

C.3 Ofgem (the UK's Office of Gas and Electricity Markets, the government regulator of electricity and downstream gas markets) introduced a market making obligation in 2014. Ofgem aimed to provide regular opportunities to trade for smaller suppliers, establish a reference of prices along the forward curve and to increase wholesale competition, to benefit the retail market and consumers.[62]

International lessons

C.4 In Singapore the market maker scheme was to be introduced at the same time as the start of the futures market. The market making scheme was designed as an incentive-based scheme. Incentive payments were initially based on the long-run marginal cost of generation and the spot price. Changes were made to the scheme as the incentive payments to market makers grew substantially to $204m (Singapore dollars, SGD) in 2017/2018. From 2018 onwards market makers were compensated under a tender approach, with all tenderers paid the marginal bid price. The cost of providing market making services is passed through to consumers. The EMA currently has six market makers, with only two linked to the wholesale physical market. Current bid price is SGD$218,000 per market maker per month, SGD$15.7 million per year. In calendar year 2019, both New Zealand futures trading on the ASX, and Singapore electricity trading volumes were just under 30,000 GWh.

C.5 Choice of the incentive payment method is important. The evidence in Singapore shows the potential for higher than anticipated costs. Although evidence suggested the benefit from market making activities exceeded the cost to consumers, the EMA made changes to reduce the cost to consumers. Design choices in an incentivised scheme should observe the potential for costs of market making changing as market conditions change.

C.6 In the United Kingdom there was a mandatory obligation. The initial setup of the market making scheme by Ofgem saw six vertically integrated companies obligated to provide market making services in 2014. At the time, those companies had a retail share of 94%

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62 Ofgem (November 2013), WPML: statutory consultation on the 'S&P' licence condition, p.18, 4.1.

and a generation share of 70%. There was a transferable obligation to a third party, but the third party could not market make for more than two parties.

C.7 Since the introduction of the market making obligation the structure of the vertically integrated generator/retailers changed significantly, with four market makers being excused their requirements through reductions in market share. At the end of October 2019, two remaining market makers had retail and generation shares of 24% and 36% respectively.

C.8 Ofgem suspended the market making obligation in November 2019. Ofgem noted that information provided by the two remaining market makers suggested the costs and market risk for the remaining two market makers increased materially. This resulted from reduction in market depth, and market makers have been unable to execute previously used risk mitigation strategies to avoid large unbearable costs.

C.9 The reduction of market makers is of relevance for the New Zealand situation. The UK market makers were chosen due to their vertical integration. Since that time, some market participants changed their business model to no longer be vertically integrated. There is no evidence that the market making obligation was a significant factor in the divestment decision although it could have been a consideration.

C.10 Although there is no indication that this will be the case in New Zealand, any approach to market making should consider the impacts of a change in company structure. For example, targeting specific company structures in a mandatory scheme may be counterproductive if companies divest either their generation or retail arms, and consequently reduce the number of market makers.

C.11 The AEMC (Australian Energy Market Commission) in September 2019 decided to not add any further market making obligations to the national electricity market. This was because of existing initiatives underway, including a voluntary market making scheme run by the ASX and market liquidity obligation (MLO) as part of the Retailer reliability obligation (RRO).

C.12 The combination of the MLO and the RRO place incentives on generators and retailers to manage their contribution to peak demand adequacy (through contracting for generation, and providing for offers of generation). This is a narrower obligation for imposing requirements to buy and sell, focussing on periods when the market is most stressed, with the backstop of the voluntary market making scheme run by the ASX. A comparative situation in the New Zealand context could be to mandate market making and require retailers to purchase peak cover in periods of pre-defined stress, such as times of fuel shortages (gas or hydrological storage), accompanied with a voluntary market making scheme in non-stress periods.