Economic Regulation Authority

Electricity Generation and Retail Corporation regulatory scheme: 2020 effectiveness review

Report to the Minister for Energy

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Executive summary

The Electricity Generation and Retail Corporation (EGRC) regulatory scheme commenced with the merger of the state-owned electricity retailer, Synergy, and generator, Verve Energy in 2014. As these two companies had the highest market share in their respect ive markets, the EGRC regulatory scheme was intended to create a level playing field for new and existing market participants to trade with the merged company, Synergy. The Economic Regulation Authority reports to the Minister for Energy on how effectively the scheme achieves its intended purpose.

The scheme contains three main requirements to support its intent. Synergy must first restrict some information and certain transactions between business units. Second, in trading, Synergy must not discriminate against other market participants or provide an advantage to its own retail business unit. Third, Synergy must set the 'buy' and 'sell' prices it is willing to accept for a small parcel of energy, known as a standard product. Synergy must publish these prices for different types of standard products (annual, quarterly, peak and flat) and trade at the request of any market participant.

In previous reviews of the EGRC regulatory scheme, the ERA has recommended that the Minister for Energy require Synergy to price standard products more efficiently by applying a smaller gap between the buy and sell prices. Market participants use standard product prices for price discovery when negotiating contracts with Synergy or other participants or when making operational and investment decisions. Also, trading standard products with Synergy allows market participants to reduce their exposure to balancing market prices.

If the spread between buy and sell prices is too wide, the price discovery function is compromised because standard products can be priced inefficiently. As a result, participants over-pay for hedge products and the scheme does not deliver against its intended objectives.

In 2019, the Minister for Energy temporarily reduced the spread from 20 per cent to 15 p ercent for transactions in 2020. Synergy implemented this reduction by increasing buy prices (to close the gap between its sell and buy prices) while continuing to price sell products as it did in earlier years. Even at the increased buy prices there were no buy transactions and no adverse effect on Synergy's standard product revenue from the reduction in spread to 15 per cent.

When reducing the spread, a balance must be struck between a spread that is wide enough to allow Synergy a margin to cover possible trading risks but no greater, otherwise it risks inefficient standard product pricing. The ERA has found that, historically, spreads of 5 per cent for annual products and 10 per cent for quarterly products would have provided that balance.

In its review, the ERA considered: the ongoing integration of renewables and storage technology, the commencement of a new market by October 2023, the financial evidence in support of a lower standard product spread, and how a lower spread may affect Synergy. Synergy's submission noted that it would be difficult to maintain its forecast accuracy through the market transformation. The ERA agrees that given the shift in the market following the introduction of a new market design and changing market dynamics, Synergy may face increasing forecast risk. However, the ERA found that a 20 per cent spread contains a significant buffer that continues to allow Synergy to price inefficiently.

Between 2014 and 2020, just under 90 per cent of standard products traded and matured yielded a nominal profit to Synergy. All calendar and financial year products traded, except for one, yielded a nominal profit to Synergy. On average, Synergy made a nominal return of 7.1 per cent on quarterly products traded and a nominal return of 11.9 per cent and 13.1 per cent on calendar and financial year products traded, respectively.

The ERA recommends the maximum spread be reduced from 20 per cent to 15 per cent in July 2022, and to 10 per cent in July 2023. The phased transition will provide Synergy t ime to improve its pricing method while still allowing Synergy a reasonable profit on transactions. When Synergy applies a narrower spread, the standard product regime will become a more effective price discovery tool and standard products will be more use ful as hedge products. This mitigates any risk market participants might perceive from changing market dynamics and the implementation of the new market design. Standard product sales can also provide Synergy with the opportunity to manage its risk during this transition period in the market.

1. Introduction

This report presents the ERA's conclusions from its 2020 review of the effectiveness of the Electricity Generation and Retail Corporation scheme. In response to the Minister for Energy's 2019 regulatory amendments, the focus of this review was to consider how changes to the standard products regime could increase the effectiveness of the scheme.

1.1 Overview of the EGRC scheme

The EGRC, trading as Synergy, was created by the merger of the State Government-owned electricity generator, Verve Energy, and electricity retailer, Synergy, in January 2014.

The State Government implemented a regulatory scheme, recognising that the new entity was the dominant retailer for households and businesses and controlled three quarters of wholesale electricity supply in the WEM through its own generation and contractual arrangements with third-party generators.

The State Government noted that the primary purpose of the EGRC scheme was "to mitigate the increased potential for market power that arises due to the merger, to ensure a level playing field for competitors and new entrants, in order to facilitate competition."[1]

The scheme comprises the:[2]

- Electricity Generation and Retail Corporation Regulations 2013
- Segregation and Transfer Pricing Guidelines 2013
- Electricity (Standard Products) Wholesale Arrangements 2014.

The EGRC regulatory scheme compels Synergy to internally separate its different business activities and control the flow of commercially sensitive information between business units.

Under the Segregation and Transfer Pricing Guideline s, Synergy must establish transfer pricing arrangements for trading wholesale electricity supplies between its wholesale and retail business units. Transfer pricing arrangements are intended to ensure that internal pricing and sales are at arm's length, similar to trading arrangements between independent parties.

Synergy's retail business unit contracts for wholesale supplies of electricity to supply Synergy's retail customers through the foundation transfer pricing mechanism or the additional transfer pricing mechanism. The foundation transfer pricing mechanism governs the terms and conditions of electricity used to supply Synergy's foundation customers. These were Synergy's customers at the time of the merger that have chosen to stay with Synergy. The

1 Public Utilities Office, 2019, *Electricity Generation and Retail Corporation Regulatory Scheme – Response to 016 Report to the Minister for Energy on the effectiveness of the Scheme*, p. vi. (online) [accessed 14 December 2021].

2 Electricity Corporations (Electricity Generation and Retail Corporation) Regulations 2013 (WA).

Segregation and Transfer Pricing Guidelines 2013, Western Australia, Western Australian Government Gazette, No 243, 30 December 2013, 6525.

Electricity (Standard Products) Wholesale Arrangements 2014, Western Australia, Western Australian Government Gazette, No 73, 19 May 2014, 1577.

Segregation and Transfer Pricing Amendment Instrument 2019, Western Australia, Western Australian Government Gazette, No 111, 23 July 2019, Government Gazette No. 111 of 2019.

additional transfer pricing mechanism governs the terms and conditions of electricity used to supply new customers that have contracted with Synergy following the merger.

Synergy's latest foundation transfer pricing mechanism is publicly available and indicates that Synergy bases its foundation transfer price on its forecast of market prices, called the energy forward curve.[3] Synergy's published wholesale pricing arrangements also confirm that the same energy forward curve is used to price wholesale supplies between Synergy's wholesale and retail business units for new customers, using the additional transfer price mechanism, as well as for pricing standard products.[4]

Synergy's terms and conditions for supplying customised products, which are tailored to suit the requirements of a counterparty trading with Synergy, are governed by a separate and published wholesale supply arrangement.[5] The EGRC scheme requires Synergy to not discriminate between its own retail business unit and private retailers and generators when supplying wholesale electricity. The non-discrimination requirements also require Synergy to determine the terms and conditions of a wholesale supply for private retailers and generators without regard for the financial interests of its retail business unit.[6]

Under the Electricity (Standard Products) Wholesale Arrangements, Synergy must provide specified wholesale energy products.[7] These standard products are small parcels of energy for quarterly, calendar and financial year terms that can be bought or sold as:

- "Flat" products (contract prices are fixed in all trading intervals over a 24-hour period).
- "Peak" products (contract prices are fixed for all trading intervals between 8:00am and 10:00pm on business days).[8]

Standard products must be offered in increments from 0.5 megawatt hour (MWh) per trading interval to a minimum aggregate weekly supply of 2.5 MWh per trading interval. For each product, Synergy must offer to sell 150 MW and purchase 100 MW.

Standard product contracts commit Synergy to buying or selling an agreed quantity of energy in the future at the current published price.[9] Having a guaranteed future electricity price allows retailers and generators to hedge against variable prices in the electricity balancing market.

Synergy must publish standard product prices and anonymised transactions. This price transparency mechanism indicates what market participants will need to pay to enter into a contract with Synergy, and what others are willing to pay to contract with Synergy. Synergy's published prices also provide an indication of Synergy's view of future electricity spot market prices to which market participants can compare their own price expectations. Market participants and customers can also use Synergy's published prices as a benchmark to inform their negotiations with Synergy and others for contracting.

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3 Synergy, 2020, *Internal Synergy Wholesale Agreement*, p5 and 8 (online) [accessed 14 December 2021].

4 Synergy, 2020, *The Electricity Generation and Retail Corporation, trading as Synergy Internal Synergy Wholesale Arrangement (ISWA) between Synergy Wholesale Business Unit and Synergy Retail Business Unit*, p. 13 (online) [accessed 14 December 2021].

5 Synergy, 2021, *Wholesale electricity supply policy*, pp. 4-5 (online) [accessed 14 December 2021].

6 Electricity Corporations (Electricity Generation and Retail Corporation) Regulations 2013 (WA) s 22

7 Electricity (Standard Products) Wholesale Arrangements 2014, Western Australia, Western Australian Government Gazette, No 73, 19 May 2014, 1577

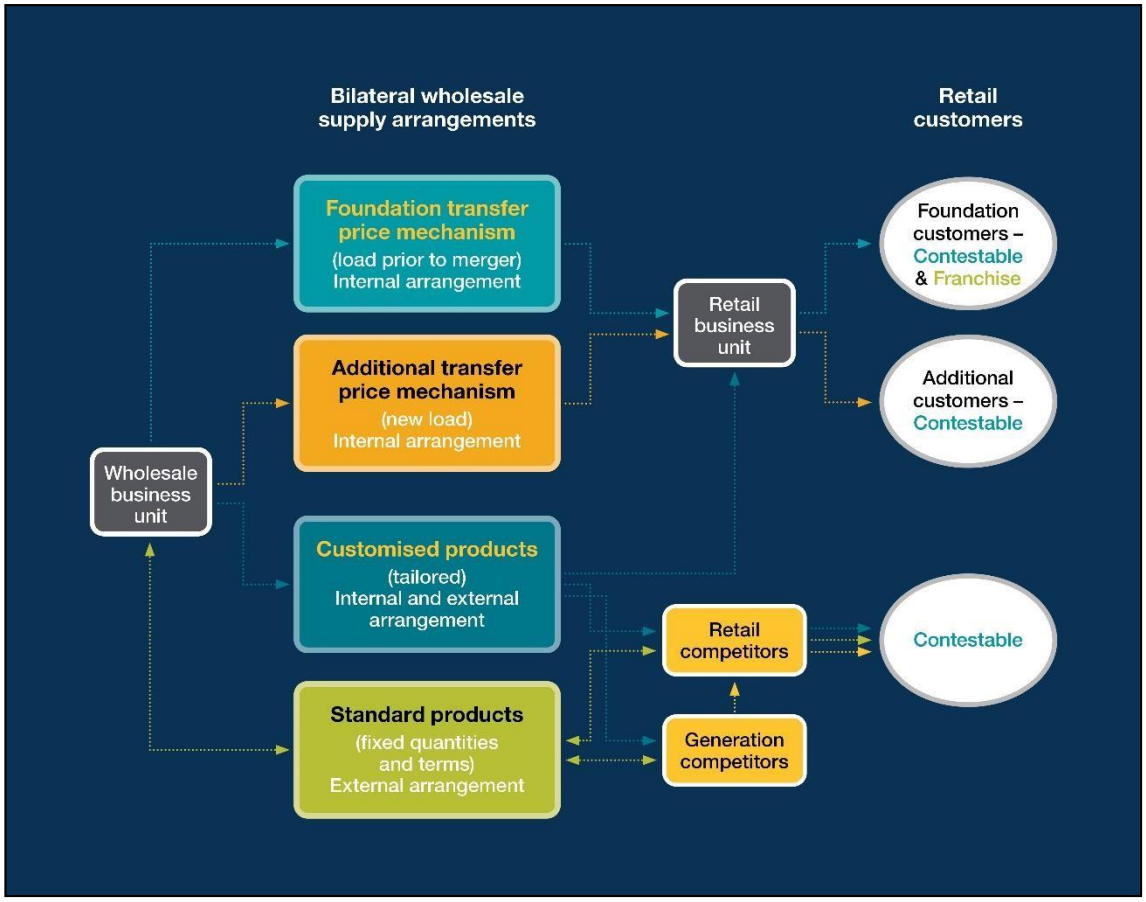
8 Flat and peak standard product prices are subject to escalation by the Consumer Price Index as described on Synergy's website (online) [accessed 14 December 2021].

9 Synergy may update its advertised standard product prices up to a month before the relevant supply period commences. Transaction prices are the published standard product prices on the date of the transaction.

The standard products regime was also intended to expose Synergy's internal prices to competition and act as a price discovery mechanism.

There are four main contractual arrangements covered by these guidelines as illustrated in Figure 1.

Figure 1: Bilateral wholesale supply arrangements



Third-party retailers and generators can contract for wholesale supplies of electricity from Synergy's wholesale business unit through customised or standard products. Synergy's retail business unit cannot trade in standard products but can trade in customised products and can access the spot markets indirectly through its wholesale business unit.

1.2 The ERA's role reviewing the EGRC scheme

The EGRC regulations require the ERA to "carry out a review of the operation of the EGRC regulatory scheme for the purpose of assessing its effectiveness."[10] When conducting its review, the ERA can also consider any prevailing circumstances in the South West Interconnected System (SWIS) and any other matters the ERA considers are relevant to the review.

As the regulations do not contain an objective to review the scheme's effectiveness against, the ERA identified the following objective in its last review:

[10] *Electricity Corporations (Electricity Generation and Retail Corporation) Regulations 2013* (WA) s48.

> To mitigate the potential for Synergy to exploit its market position as a dominant, vertically integrated electricity business, for the purposes of engaging in anticompetitive conduct, to the detriment of competing electricity generation and retail businesses and electricity customers.[11]

In its response to the last review, the State Government stated that it "agrees with the ERA that 'the primary purpose of the scheme should be to mitigate the increased potential for market power that arises due to the merger, to ensure a level playing field for competitors and new entrants in order to facilitate competition'."[12]

In this review, to assess the effectiveness of the scheme against this objective, the ERA focussed on what behaviour the elements of the scheme allow and incentivise, and whether this is consistent with the original intent of the scheme.

The ERA does not assess compliance, as the Office of the Auditor General conducts regular audits of Synergy's compliance with the scheme.[13]

1.3 Consultation

The ERA published a discussion paper for comment on 31 August 2021 and closed the consultation period on 28 September 2021. The ERA received submissions from Energy Policy WA's Expert Consumer Panel and six retailers, including Synergy. All submissions are available on the ERA's website.[14]

During the consultation period, the Secretariat also met with interested stakeholders to hear informal feedback on the findings presented in the discussion paper. The ERA has taken stakeholders' views into account when preparing this report. Stakeholder feedback is summarised in Appendix 2.

[11] Economic Regulation Authority, 'Report to the Minister on the Effectiveness of the Electricity Generation and Retail Corporation Regulatory Scheme 2017', (online) [accessed 14 December 2021].

[12] Public Utilities Office, 2019, *Electricity Generation and Retail Corporation Regulatory Scheme – Response to 2016 Report to the Minister for Energy on the effectiveness of the Scheme*, p vi (online) [accessed 14 December 2021].

[13] The Auditor General's 16 April 2021 report on the scheme is available on Parliament's website (online) [accessed 1 December 2021].

[14] Economic Regulation Authority, 2021 *Review of Synergy's Regulatory Scheme 2018-2020* (online) [accessed 14 December 2021].

2. 2020 EGRC scheme review findings

The ERA's review covers the 2018, 2019 and 2020 calendar years. As it has found in each previous scheme review, the ERA has concluded that the scheme is not effective.

The review was informed by the ERA's analysis of publicly available market data, Synergy's internal trading data and stakeholder feedback. The clear message from all retailers, except for Synergy, is that the scheme is essential to the ongoing involvement in the market of private market participants, but that aspects of the regulations allow the scheme to operate contrary to the scheme's intent.

In this review, the ERA focussed primarily on the effectiveness of the standard product regime and the implications of the Minister for Energy's temporary reduction of the standard product maximum buy-sell spread for 2020. The spread is significant because it influences how standard product prices are set by Synergy and how the products and advertised prices are perceived and used by market participants and customers.

2.1 Standard product regime objectives

The State Government's Merger Implementation Group oversaw the development of the EGRC regulatory scheme to support the creation of the new entity, Synergy. The Merger Implementation Group established the following objectives for the new standard products regime to operate as part of the scheme:

- "Function as a price-discovery mechanism to provide greater transparency and predictability for short to medium-term energy contracts.
- Provide a simple alternative to customised products by:
  - facilitating new market entrants with simple products and lower barriers to entry; and
  - enabling market participants to rebalance their portfolios (at the margins) with simple products."[15]

These objectives were designed to support the scheme's intent by providing market participants with certainty of access to hedge products. This function of standard products is especially useful to small retailers who lack the natural hedge provided by having in-house generation and to independent generators, who may wish to cover the risk of variation in spot prices during outages, such as maintenance periods.

A wide maximum standard product spread permits pricing that is at odds with these objectives. When the merger occurred, market reform was under way, and it was unclear how much risk Synergy would face when trading standard products. To ensure Synergy could recover a high risk premium if required, the maximum standard product spread was deliberately set high at 25 per cent.

The Merger Implementation Group intended for the spread to be reduced once the demand for standard products became clear, as the spread has reduced in the standardised markets of other jurisdictions. The maximum spread was reduced to 20 per cent in January 2015 and

[15] Public Utilities Office, 2019, Electricity Generation and Retail Corporation Regulatory Scheme – Response to 2016 Report to the Minister for Energy on the effectiveness of the Scheme, p. 8. (online) [accessed 14 December 2021].

stayed at that level until the temporary reduction in spread to 15 per cent for 2020. The maximum spread reverted to 20 per cent from the beginning of 2021.

When the State Government reduced the maximum buy-sell spread it noted that a 69 per cent chance of profiting on a single trade provides a reasonable balance between managing Synergy's risk and achieving efficient pricing outcomes, as "a reduced maximum buy-sell spread of 15% will still allow Synergy a reasonable probability of making a profit on Standard Product transactions."[16]

Allowing Synergy the opportunity to recover a nominal profit on 69 per cent of trades provides a balance between Synergy recovering its risk premium and market participants being provided with access to reasonably priced standard products.

2.2 Analysis and findings

The ERA sought to understand Synergy's pricing behaviour enabled by the standard products regime and if, or how, this may be preventing the scheme from reaching its objectives.

Through its analysis the ERA considered whether the maximum standard product spread ensured Synergy had a reasonable chance of making a profit on a standard product transaction and whether the regime had delivered outcomes for participants in providing price discovery and efficiently priced financial hedging instruments.

The ERA found that the maximum spread was wider than Synergy required to cover its cost of offering standard products and that the maximum spread provided a significant buffer that has allowed Synergy to apply the inefficient pricing method for standard products, observed in this review. By applying the wide maximum spread, Synergy could price standard products to take advantage of market participants' willingness to pay and could exercise market power.

For 2014 to 2020, the ERA considered Synergy's method of setting forward contract prices, published standard product transaction prices, Synergy's spot price forecasts and Synergy's margin. This included ERA's calculation of:

- Nominal profits Synergy earned on historical trades and would have earned on advertised standard product prices (that is, possible trades).[17]
- Synergy's accuracy in forecasting spot prices, as measured by the difference between Synergy's forecast of spot prices (used in the determination of standard product prices) and actual balancing prices over the same period.

For this review, Synergy provided the ERA with the margins it calculated for each standard product price since the regime commenced. However, Synergy did not provide a description or calculation for how its margins were determined. In the absence of this information, the ERA assumed that the margins provided by Synergy only include d the four factors that typically influence the size of the risk premium in forward contracts:[18]

[16] Economic Regulation Authority, 31 August 2021, *Electricity Generation and Retail Corporation regulatory scheme: 2020 effectiveness review – Discussion paper* p.6. (online) [accessed 14 December 2021].

[17] A nominal profit for Synergy on a standard product transaction is where the return exceeds the cost of holding the contract, expressed in the margin.

[18] For a discussion of factors influencing risk premia included in electricity forward contracts refer to Benth, Fred Espen and Cartea, Álvaro and Kiesel, Ruediger, *Pricing Forward Contracts in Power Markets By the Certainty Equivalence Principle: Explaining the Sign of the Market Risk Premium* (December 14, 2007). Journal of Banking and Finance 32, Issue 10, (2008), pp. 2006-2021, (online) [accessed 14 December 2021].

- The greater the expectation of error in forecasting the average balancing price over a contract period, the higher the risk premium.
- The higher the level of risk aversion, the higher the risk premium required.
- The higher the risk of financial distress (due to expected variation in balancing prices), the lower the required risk premium.
- The higher the liquidity of the standard products market, the lower the risk premium.

These four factors are discussed in more detail in section 3.2.1.

In summary, the ERA found that the maximum spread was sufficiently large for Synergy to recoup its margins most of the time.[19] The spread is wide enough to allow Synergy to change its margin to account for known errors in its forecasting of future balancing market prices. The ERA's more detailed findings are described in sections 2.2.1 to 2.2.2.

2.2.1 Return on trades

The ERA analysed returns on all actual and possible standard product transactions since the scheme began, to determine whether Synergy had a reasonable likelihood of making a profit on standard product trades.

Synergy makes a nominal profit on a sell standard product trade if the average balancing price during the contract period falls below the product price.[20] Similarly, Synergy makes a nominal profit on a buy standard product trade if the average balancing price over the contract period clears above the buy standard product price.

Since the start of the standard products regime, the likelihood of Synergy making a nominal profit on all actual and possible trades was significantly higher than the likelihood of its counterparties making a nominal profit.

Between 2014 and 2020, just under 90 per cent of standard products traded and matured yielded a nominal profit to Synergy. All calendar and financial year products traded, except for one, yielded a nominal profit to Synergy.

On average, Synergy made a nominal return of 7.1 per cent on quarterly products traded and a nominal return of 11.9 per cent and 13.1 per cent on calendar and financial year products traded, respectively.

All eight standard product buy transactions had matured by the end of 2020. These trades revealed a higher likelihood and magnitude of profit for Synergy than sell transactions.

- The three, calendar year buy standard products yielded a nominal return of between 13.4 per cent and 21.7 per cent for Synergy.

[19] Since the 2021 discussion paper was written, the ERA has received additional information from Synergy on how it prices standard products. This new information has not changed the ERA's findings published in the 2021 EGRC discussion paper.

[20] The settlement of standard product trades is subject to an escalation of the contract price based on the change in Consumer Price Index (CPI) between the contract date and the settlement date as specified in Synergy, Standard Products – CPI adjustment mechanism (online). [accessed 14 December 2021]. Synergy makes a nominal profit on a sell standard product when the CPI adjusted contract price is greater than the average balancing price over the trading intervals covered by the product.

- The five quarterly buy standard products yielded a nominal return of between negative 0.6 per cent and 30.2 per cent for Synergy. Only two transactions produced very small losses for Synergy.

The ERA also calculated nominal returns on all the possible trades for standard products advertised over the same period. Overall, Synergy had a high likelihood of making a nominal profit at the advertised prices.

An entity's expected forecast accuracy is one of the four factors influencing risk premia, and so the ERA considered how Synergy's forecast accuracy affected standard product prices. Synergy's chance of making a profit or loss on a future standard product trade depends on how accurately it can forecast balancing prices during a contract period. The ERA found that forecasting error has decreased since 2017. The range of forecast error for annual standard product prices was generally lower than for quarterly prices. This indicates that Synergy would require a lower margin for the pricing of annual products compared to quarterly products.

The ERA analysed data provided by Synergy to understand the difference between the risk premia cited by Synergy and the margin Synergy applied in its standard product pricing over time. Synergy's data showed that its risk [redacted]. These premia could have been recovered with a spread lower than the regulated maximum spread, most of the time. Since the publication of the ERA's discussion paper, further information from Synergy showed that, on the occasions when Synergy required a larger spread than the regulated maximum, it had included an unreasonably high margin. Synergy explained these high margins to the ERA by noting that it increased its margins to compensate for known omissions in its forecasts.

The ERA's analysis of Synergy's return on trades and the margins applied to standard product prices strongly suggests that the maximum spread set in the regulations is higher than Synergy requires to cover its costs. Appendix 3 contains further analysis of the margins applied to standard products.

2.2.2 Transaction number and volumes

The Merger Implementation Group "did not intend for the standard products regime to operate as a market."[21] Instead, the objective of the standard products regime was to provide a simple product that allowed market participants to hedge their exposure to spot prices and to give an indication of Synergy's expectation of future spot market prices.

Transaction numbers and volumes show how much standard products are used. Low numbers of transactions does not mean market participants do not value standard products as they provide transparency of Synergy's wholesale product pricing. Feedback from retailers, other than Synergy, was that standard product prices are valuable for price discovery in the absence of any transactions.

From the start of the standard product regime in 2014 to the end of 2020, Synergy traded 102 standard products, with a total volume of 360 MW: 94 were sell transactions and eight were buy transactions. Over two thirds of the sell transactions were flat products.[22] The eight buy transactions were for a total volume of 40 MW. Five of these contracts were traded in 2015 and three were traded during 2019.

[21] Public Utilities Office, 2019, *Electricity Generation and Retail Corporation Regulatory Scheme – Response to 2016 Report to the Minister for Energy on the effectiveness of the Scheme,* p. 8. (online) [accessed 14 December 2021].

[22] "Flat" products are those where contract prices are fixed in all trading intervals over a 24-hour period.

There was no increase in the number of standard product transactions when the standard product spread was reduced to 15 per cent in 2020. The total volume of standard product trades in 2020 was 108 per cent higher than 2019 but only 30 per cent above 2017, the previous highest volume year. This was mostly driven by the purchase of 25 standard products by just two counterparties. The overall volume of standard product trades remains low compared to the average annual electricity demand in the WEM, approximately 1,900 MW.

The ERA has found that the standard product sell price reflects Synergy's forecast spot price plus a margin. In contrast, the buy price is set as low as permitted by the scheme. Although inconsistent with forward contract pricing principles, this approach to pricing standard products is allowed under the scheme. This means that Synergy has been setting the buy price lower than it required to cover its margin. This pricing behaviour may explain the low number of standard product buy transactions.

In 2020, Synergy did not change its standard product sell prices in response to the temporarily lowered maximum spread. Instead, Synergy implemented the new maximum spread by increasing standard product buy prices to ensure buy prices were no more than 15 per cent below the sell prices. Despite the increase in buy prices, no buy transactions occurred in 2020. The ERA found no evidence to indicate that Synergy's revenue was adversely affected when the buy-sell spread was reduced in 2020 to 15 per cent from 20 per cent.

2.2.3 Implications for the effectiveness of the standard product regime

Analysis of historical standard product prices and returns, Synergy's required risk margins and the number and volume of standard product trades, indicates that the maximum spread is set too high. Although there are not many standard product transactions, submissions in response to the 2021 EGRC discussion paper confirmed that market participants use published standard product prices to understand the cost of hedging with Synergy.

The publication of standard product buy and sell prices acts as a price discovery mechanism. The range between buy and sell prices reflects Synergy's view of the most likely level of electricity spot prices in the short to medium-term. The narrower this range, the better market participants can use the forward spot price estimate to inform their operational and financial decisions.

A smaller spread would improve the effectiveness of standard products as a price discovery mechanism. A smaller spread can encourage some activity in trading buy and sell products and further improve price discovery.

In discussions with the ERA, market participants expressed concern that the wide buy-sell spread concealed Synergy's expectation of future spot market prices. However, two small retailers noted that, despite the wide range, the published standard product prices were the best indicator available, and they valued the price transparency provided by the standard products regime. In their submissions to the ERA, Blue Star and Shell Energy noted that a smaller maximum spread would remove a significant barrier to providing effective price discovery for retailers.

In its submission to the ERA, Change Energy noted that it did not expect that a reduction in the maximum spread would increase the number or volume of trades, citing instead the importance of the published standard product prices as a basis for negotiations. Informally, retailers other than Synergy noted that the low prices and limited specifications of buy products make it unlikely that a market participant would choose to trade buy products with Synergy.

A new market design for the SWIS will be introduced in October 2023, enabling delivery of the State Government's energy transformation strategy. The ERA acknowledges that balancing prices may be affected by some uncertainty.

Submissions to the ERA's discussion paper from retailers other than Synergy stated that the planned market transformation and the changing market dynamics would not affect implementation of lower maximum spreads. Synergy's submission noted that it may not be able to maintain its forecasting accuracy given " increasing essential system service requirements, the introduction of facility bidding and constrained network access and changes to the SWIS plant mix (notably the imminent retirement of Muja C)."[23]

The ERA has considered these changes in the WEM. Section 4 details the ERA's recommendation to improve the effectiveness of the EGRC scheme by phasing in a reduction in the buy sell spread, commencing with a drop from 20 per cent to 15 per cent in July 2022, and to 10 per cent in July 2023.

The ERA considered how markets for standardised products operate in electricity markets in three other jurisdictions, Singapore, New Zealand and the United Kingdom.

The regulator of the Singapore Electricity Futures Market, the Electricity Market Authority, notes that standard products enhance wholesale and retail competition, and provide price transparency through the forward price curves. Contestable consumers can access the forward reference market prices and use them as a reference price, contributing to making informed decisions on retail contracts.[24]

New Zealand's Electricity Authority cites functions of exchange traded electricity futures markets, as being to:

- manage spot price risk and use the forward price curve to inform investment and operational decisions.[25]
- promote the long-term interest of consumers through enabling efficient decisions and fostering competition.[26]

Appendix 1 provides more detail on standardised product markets in these jurisdictions.

2.2.4 Implications of reducing the spread to Synergy

Apart from improving the effectiveness of the standard product regime, a narrower spread would incentivise Synergy to price more efficiently and improve its forecasting accuracy.

Synergy's probability of making a profit on a standard product trade depends on how accurately it can forecast balancing prices during the upcoming contract period. Therefore, through improving its forecasting accuracy, Synergy could increase its likelihood of making a profit on each standard product trade.

[23] Synergy, 1 October 2021, Submission to the *EGRC scheme review discussion paper*, p.5. (online) [accessed 14 December 2021].

[24] Energy Market Authority (20 October 2012). *Development of an Electricity Futures Market in Singapore: Consultation Paper*. (online) [accessed 14 December 2021].

[25] Participants agree on a price ahead of time, locking in the price at which each will buy and sell electricity.

[26] Electricity Authority (November 2019) *Hedge-Market Enhancements (market making): Ensuring market making arrangements are fit-for-purpose over time. Discussion paper*. (online) [accessed 14 December 2021].

The forecasts that inform Synergy's pricing of standard products also inform how Synergy prices other wholesale and retail products. The Internal Synergy Wholesale Arrangement states that Synergy's pricing is based on an energy forward curve which is Synergy's "forecast of the future market energy price."[27] Synergy's submission to the ERA noted that "Synergy uses the same underlying forward price curve to establish standard product pricing, customised pricing and foundation transfer pricing." [28] Improved forecast accuracy improves Synergy's likelihood of making a profit on its other products.

Synergy's submission to the ERA's discussion paper, explained that it was long on energy.

> The sum of energy expected to be produced by Synergy's generators plus energy acquired from power purchase agreements is greater than the sum of Synergy's contract demand. To reduce exposure to uncertain and volatile balancing market prices, Synergy enters forward sales contracts with third party retailers or directly with contestable customers through its Retail Business Unit (RBU). [29]

Synergy's submission implied that it may reduce the standard product sell price to manage the risk of being required to enter into standard product buy transactions when it was already long on energy. This would involve Synergy reducing prices across its products to avoid buy transactions.

The smaller spread may lead to a reduction in revenue for Synergy due to the lower likelihood of it making a profit on standard product transactions (from 90 per cent likelihood to 70 per cent likelihood). The ERA's analysis considers that Synergy – acting as a prudent commercial entity – will price standard products around its expected market price , including a margin for risk.

Synergy's statement in its submission is not supported by how Synergy responded to the State Government's reduction of the maximum spread from 20 per cent to 15 per cent during 2020. Synergy increased its buy price and left the sell price unchanged. Despite the increased buy price, counterparties did not offer to sell energy to Synergy and Synergy's revenue was not affected.

Synergy's submission to the ERA expressed the concern that it would not be able to maintain its balancing price forecast accuracy in the new market.[30] Synergy noted that:

> The historic measure is inappropriate given imminent, significant changes to the WEM and the SWIS. It is unreasonable to expect Synergy to maintain such tight forecasting accuracy with increasing essential system service requirements, the introduction of facility bidding and constrained network access and changes to the SWIS plant mix (notably the imminent retirement of Muja C).[31]

Synergy's submission identified that market dynamics posed additional risks to Synergy. Synergy noted its declining share of the generation market and expected this trend to continue with the retirement of the Muja C coal plant and major power purchase agreements ending in the mid to late 2020s. In addition to risks stemming from a declining supply position, Synergy noted that offering long-term contracts increased its risk due to unknown costs in outer periods including exposure to: unknown fuel costs through contractual price reviews; unknown gas transport costs; unforeseen generator outages; and increased reliance on fast and flexible gas

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27 Synergy, 2020, Internal Synergy Wholesale Agreement, p. 8 (online) [accessed 14 December 2021].

28 Synergy, 1 October 2021, Submission to the *EGRC scheme review discussion paper*, p.8. (online) [accessed 14 December 2021].

29 Ibid p.4.

30 Ibid pp.5-6.

31 Ibid p. 6.

turbines during peak periods, to offset baseload energy displaced by distributed energy resources and large-scale renewables.

The WEM has been continually developing since it commenced in 2006. The changes in the market in 2014, when the EGRC regulatory scheme was introduced, recognised the uncertainty in the market, and the risks to Synergy of operating a standard product regime by initially setting a high (25 per cent) maximum standard product spread. A year later the spread was reduced by 5 percentage points.

Over time and despite changing market conditions, average spot prices have become less variable. Synergy's data shows that changing market conditions from 2014 to 2020 have not inhibited Synergy's ability to forecast average spot prices, as evidenced through its historically low risk margins.

The ERA's analysis demonstrates that at both 20 per cent and 15 per cent the maximum standard product spread has been too high, making the standard product regime inconsistent with the original intent of the scheme.

Section 3 outlines how a maximum spread can be set to provide Synergy with appropriate compensation for operating the scheme and to deliver on the original intent of the scheme, as an efficient price discovery and financial hedge instrument.

3. Pricing standard products

The efficient pricing of standard products is essential to the standard products regime providing the price discovery and transparency intended by the Merger Implementation Group.[32] This chapter provides an overview of how:

- Standard products are used by market participants.
- Synergy's spot market forecasts underpin their pricing of standard products.
- Synergy's forecasts are used in the ERA's model to determine a reasonable buy-sell spread.

3.1 Function of standard products

Prices in spot markets for electricity can change and be unpredictable. A rapid increase in demand or a drop in generation can lead to large increases in spot prices, while an increase in low-cost generation or a reduction in demand can depress the spot price.[33,34] Unpredictable variations in the spot price can expose both generators and retailers to risk and most businesses will strive to avoid exposure to price risks. To manage their financial risk, generators generally value selling energy forward at fixed prices and retailers value buying energy forward at fixed prices.

Electricity retailers may seek to contract at an agreed price with a generator for a certain volume of energy for settlement in a few months' time. This forward contract between the generator and retailer will specify such things as the agreed price, the volume covered, the settlement period, the date of payment and any penalties for failure to honour the commitment. The cash flow from these forward contracts offsets the variation in payments from and to the balancing market and hence provides certainty about parties' future cash flows. Effectively the seller of energy under a forward contract foregoes the opportunity to sell the contracted volume at the cleared balancing price and instead receives the agreed forward contract price.

To calculate an agreed forward contract price, given likely volatility in the spot market, the generator and the retailer will begin by calculating their best estimate of what the spot price will be at the time of delivery in the future. This estimate will consider any information about the market and future market conditions, such as historical spot prices, and weather and demand forecasts. The forward contract will proceed when both parties settle on an agreed contract price.

Where the spot price is higher than the agreed price at the time of delivery, this represents a nominal loss for the generator and a nominal profit for the retailer; the generator could have done better by trading in the spot market. If the spot price is lower than the agreed price, the forward contract represents a nominal loss for the retailer and a nominal profit for the generator; the retailer could have done better by trading in the spot market.[35]

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[32] Public Utilities Office, 2019. Electricity Generation and Retail Corporation Regulatory Scheme - Response to 2016 Report to the Minister for Energy on the effectiveness of the Scheme, p. 8. (online) [accessed 14 December 2021].

[33] Retailers and large consumers are unable to predict their consumption needs with perfect accuracy and generators cannot guarantee the exact quantity that they can produce.

[34] Kirschen, D.S. & Strbac, G. (2019). *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 35.

[35] Contract parties may accept some nominal loss on their contract if they value having certain cash flow in the future from forward contracts.

The use of forward contracts makes it possible for market participants to share the price risk by allowing both parties to trade at an acceptable price. The party that gets the premium is paid for accepting the price risk. For example, a generator includes a risk margin around the expected spot price to reflect the benefit or cost of selling energy forward at fixed prices. If the generator perceives possible financial distress from balancing price variation it may choose to price forward contracts below the expected spot price. Or if there is no expected financial distress from future balancing price variation then the generator may include a premium on top of its expected spot price.

Standardised products are used in the same way in the three other electricity markets considered by the ERA in Appendix 1. However, there are differences between the outcomes in the WEM, UK, Singapore and New Zealand markets as the international jurisdictions have features that contribute to greater liquidity and a lower cost of hedging.

3.2 Standard products in the WEM

Synergy is the main supplier of risk management products in the WEM, through provision of bilateral contracts in the form of customised and standard products.[36] Market concentration means that participants' options are limited, and they rely on products being efficiently priced.

For standard products, price control is provided through the maximum spread. The maximum spread constrains Synergy's ability to charge unreasonably high sell prices. Synergy must not price its buy products more than 20 per cent below the sell price. If Synergy increases its sell price, it risks buying energy at high prices. This provides pricing discipline.

The standard product arrangements are set out in the Bilateral Trade Agreement for Electricity (Standard Products)[37]. Synergy is required to offer fixed quantities of both flat and peak standard products on a quarterly and annual basis. Standard products only comprise around 10 per cent of short-term to medium-term bilateral contracts traded in the WEM.

The method Synergy uses to set standard product prices is publicly available.[38] The ERA has described this as Synergy setting prices for standard products based on a forward energy curve representing its expectation of future energy market prices.[39] The uncertainty about future energy market prices is captured in the product price that is offered to the market in the form of a risk premium that adjusts the expected energy price curve.

Apart from providing a hedging tool, standard products provide pr ice discovery for market participants. The forward price curve produced by the advertised prices is derived from Synergy's forecast of average spot market prices and can provide an indication to market participants of where Synergy considers future market prices will be.

A reasonable standard product spread should be narrow enough to encourage efficient standard product pricing to ensure the scheme operates as intended, while being wide enough to cover Synergy's cost of risk of offering standard products.

[36] Customised products are bilateral contracts that are tailored to meet the needs of the counterparty trading with Synergy. Typically, bilateral contracts between market participants are confidential, with terms in the contracts, such as price, contract period and other conditions, known only to the contracting parties.

[37] Synergy Standard Product agreement. (online) [accessed 14 December 2021].

[38] Ibid

[39] Economic Regulation Authority, 31 August 2021, *Electricity Generation and Retail Corporation regulatory scheme: 2020 effectiveness review – Discussion paper.* p.11. (online) [accessed 14 December 2021].

3.2.1 Balancing price expectation underpins standard product prices

This section demonstrates how market participants manage their risk of exposure to variable balancing prices by trading risk management instruments such as standard products. These contracts provide assets to market participants the cash flow for which, when combined with balancing market payments, creates a more stable stream of cash flow.

In the WEM, the balancing market clears every 30 minutes, known as a trading interval. Market clearing is based on real-time demand and the minimum price each market participant is willing to accept to generate electricity, which is the price that is just sufficient to cover their cost. All generators receive the clearing price regardless of the minimum price they are willing to accept to generate electricity. All consumers of energy – for example, retailers – pay the balancing price regardless of the maximum price they are willing to pay.

AEMO settles the payment for the balancing market based on participants' metered supply and consumption. When settling payments AEMO adjusts metered volumes by the volume of energy participants choose to declare as traded bilaterally. Market participants may enter risk management contracts – such as forward contracts – to manage their financial risk due to the exposure of their revenue or costs to variable balancing prices. These contracts provide cash flows to parties that can offset variation in cash flows from the sale or purchase of energy in the balancing market.[40]

For example, a generator may enter a forward contract with a retailer to receive payments based on an agreed energy price for 5 MWh volume of energy for a set of trading intervals in the future. The generator can submit to AEMO and request adecrease in its volumes of energy to be settled at the balancing price and decrease in the retailer's volumes. During the contract period, the generator and retailer would have 5 MWh less volumes to be settled at the balancing price by AEMO; the 5 MWh would be settled at the agreed forward price.[41]

Standard products are forward contracts advertised for sale or purchase by Synergy. Effectively, Synergy is the market maker for the trade of standard products because the scheme requires Synergy to facilitate trades for buy and sell products.

The scheme requires standard product transaction quantities be declared to AEMO. [42] Standard products are financial risk management instruments under which physical delivery of electricity is not provided. Clause 5(b) of the bilateral trading agreement specifies:

> Neither party makes any representations or warranties that it will purchase or sell any electricity, or any particular quantity of electricity, from or to the other party under this Agreement.[43]

The agreement notes that parties are not bound to physically supply electricity:

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40 An entity may also speculate on future balancing prices and seek to make a profit by realising the difference between cleared balancing prices and forward contract prices.

41 Another way the parties can settle such contract is to not declare their trade to AEMO and instead settle the contract based on the difference between the observed balancing price and agreed forward price for the volume of energy covered under the contract.

42 *Electricity (Standard Products) Wholesale Arrangements 2014* Clause 6.4(b) states that a standard product agreement "must provide for parties to give effect to Transactions by making valid Bilateral Submissions to the Independent Market Operator for the relevant Standard Supply Quantity for each Trading Interval occurring during the Standard Supply Period of the Standard Product." (online) [accessed 14 December 2021].

43 Synergy Standard Product agreement. (online) [accessed 14 December 2021].

> The parties acknowledge that the responsibility for ensuring that there is sufficient capacity in the SWIS to meet load demand at any given time rests with the AEMO. Neither party is responsible to the other party for any failure to physically supply or take any electricity in respect of a Transaction except as expressly set out in this Agreement.[44]

Agreeing to a standard product transaction takes Synergy and the counterparty out of the balancing market for the agreed contract volume.

By trading a sell standard product Synergy forgoes the opportunity to receive the balancing price for the volume of energy covered under the forward contract. This is because AEMO reduces Synergy's volume of energy to be settled at the balancing price by the contract volume during the contract term.

Instead of the balancing price, Synergy receives the agreed sell standard product price from the counterparty. In agreeing to the standard product transaction, the counterparty forgoes the opportunity to pay the balancing price.

Selling a buy standard product reverses the outcomes: Synergy would have more volumes with AEMO to be settled at the balancing price and the counterparty more volume to pay based on balancing price. Synergy makes a direct payment to the counterparty for the contracted volume based on the agreed buy price. Synergy exchanges contract price for balancing price for the contract volume when selling a buy standard product.

Therefore, Synergy's expectation of balancing prices during the term of a standard product underpins the opportunity cost of selling or buying each unit of energy covered by the standard product contract.

The cost of generating electricity does not underpin standard product prices in the WEM or in other markets with standardised contracts. If Synergy priced its sell standard products based on its generation costs, it would incur a loss by forgoing the opportunity to sell its energy at balancing prices when its average generation cost is lower than its expected spot market prices. Data provided by Synergy to the ERA demonstrates that Synergy bases the price of standard products on its expectation of spot prices in the WEM.[45]

When it writes a standard product contract, Synergy is uncertain about future balancing prices. To avoid losses, Synergy produces a forecast of balancing prices to ensure it does not sell or buy energy at a price lower or higher than the average balancing price during the contract period. Synergy is therefore expected to include a margin on top of its forecast average balancing price over the term of a contract to compensate it for the risk of over or under forecasting average balancing prices.

The value of this risk margin depends on these factors:

- Degree of uncertainty about the average balancing price in the future. The larger the forecasting uncertainty the larger the risk margin.
- Synergy's propensity for risk. The higher Synergy's level of risk aversion the higher the level of risk premium it requires.

[44] Ibid. Schedule 3, paragraph 1

[45] For example, a low-cost generator such as a wind farm is not willing to write a forward contract for energy covering a future quarter at its cost of generation. This is because by writing such a contract it effectively would pay the balancing price to the other party and would receive its cost of generation. This would result in an almost certain loss to the generator. This is true unless the generator expects average balancing prices during the term of the contract to be around or below its generation cost.

- Synergy's perceived risk of financial distress from variation in balancing prices.
- The level of liquidity in the market for standard products. If the market was perfectly liquid, Synergy would be able to quickly match buyers and sellers and would not receive any exposure to variation in balancing prices from entering standard product contracts. Therefore, high liquidity contributes to a lower risk premium.

In addition, Synergy may obtain a hedge benefit of buying or selling energy forward that would influence the size of the margin needed. For example, if Synergy is long in energy across its generation, consumption and contractual volumes, selling energy forward would provide higher certainty about its future cash flows. Synergy may then consider discounting the margin it includes in the price of sell products by the amount of hedge benefit it receives by selling energy forward. When Synergy is long in energy, it would not receive a hedge benefit by trading buy products. However, the discount Synergy might include would depend on whether Synergy considers any material financial distress from variation in balancing prices.

The margin included in the standard product sell and buy prices differs depending on:

- Whether Synergy's expectation of future average prices is more likely to be higher or lower than Synergy's expected forecast average balancing price.
- Synergy's net energy position during the term of the contract.

In contrast, if an intermediary with no financial interest in electricity generation or retail had the market-making role for standard products, the intermediary's sell and buy price for would be symmetrical around its expected average balancing price.[46] Appendix 3 provides the ERA's understanding of Synergy's standard product pricing method which demonstrates asymmetric pricing of standard products.

The ERA has considered how Synergy prices standard products and the restrictions placed on pricing by the regulations in updating the Deloitte model for use in establishing a reasonable buy-sell spread. The Deloitte model was first proposed in the ERA's 2015 scheme review and subsequently applied by the State Government in 2019 when determining that the spread should reduce to 15 per cent in 2020.[47] [48]

Section 3.3 in the ERA's discussion paper described how Synergy sets standard product prices using the maximum spread as is permitted under the regime, which can inhibit price discovery and discourage transactions.

3.3 Model to calculate a reasonable spread

In its discussion paper, the ERA proposed a model for determining if the maximum spread was too wide or too narrow to both support the objectives of the scheme and allow Synergy to make a profit on standard product trades.

[46] Unless the intermediary expects asymmetrical possibilities for the average price around its expected price. For example, if the provider perceives future average spot prices to be more likely to be higher than its expected average spot price (than being lower), it might include a larger risk premium in its sell price.

[47] Public Utilities Office, 2019, *Electricity Generation and Retail Corporation Regulatory Scheme – Response to 2016 Report to the Minister for Energy on the effectiveness of the Scheme,* pp. 11 to 14. (online) [accessed 14 December 2021].

[48] Economic Regulation Authority, June 2016, *Report to the Minister on the Effectiveness of the Electricity Generation and Retail Corporation Regulatory Scheme 2015.* Pp. 58-62. (online) [accessed 14 December 2021].

The proposed model is the ERA's revision of the Deloitte method for calculating the maximum standard product spread. The ERA's model is detailed in Appendix 3.

Like the Deloitte model, the ERA's new approach also considered the illiquidity of the standard products market. The ERA assumed that Synergy's wholesale business unit could not close its trading position with a counterbalancing trade, and therefore, must settle its buy or sell contract by selling or buying at the balancing market price to meet its obligations under the futures contracts it had traded.

Using this approach, Synergy's risk of making a profit or loss on a future trade depends on how accurately it can forecast the average spot price during a contract period. The ERA's calculation of Synergy's historical forecasting error was used to determine a maximum spread that would provide Synergy with a reasonable opportunity of profiting on a trade (a 69 per cent likelihood). Where the Deloitte model used historical price volatility in the STEM, the ERA has applied Synergy's forecast error from the balancing market.

In submissions to this review, the ERA received positive feedback on its update to the Deloitte model from retailers other than Synergy. Change Energy noted that it found the model to be reasonable but recommended that a different approach should be taken to determine the maximum spread, as the risk to Synergy should not "inform the maximum spread as it is wholly within Synergy's control to manage."[49] Change Energy instead recommended that the ERA combine the outcomes expected in a competitive market with benchmarking from other jurisdictions to determine a spread.

The ERA considers that the updated Deloitte model provides a balance between encouraging more efficient pricing and allowing Synergy to cover the cost of its risk of providing standard products when the trading of standard products is illiquid. Efficient pricing contributes to a level playing field for new and existing market participants, supporting the intent of the scheme.

In the three other electricity markets considered by the ERA, the market maker that offers standardised products is expected to recover the cost of its risk of offering the product. In these three markets, higher liquidity means that the cost of risk to the market makers is much lower than in the WEM. See Appendix 1 for more detail.

Using the updated Deloitte model, the ERA has determined for:

- Quarterly products, a maximum spread of 10 per cent would have provided Synergy with a 69 per cent chance of making a profit on possible trades.
- Calendar and financial year products, a maximum spread of 5 per cent would have provided Synergy with a 69 per cent chance of making a profit on possible trades.[50]

The ERA's analysis of Synergy's stated risk premia from 2015 to 2020 revealed variations in 2018 and 2020 that could not be explained by changes in factors that determine the risk of selling or buying energy forward at fixed prices.

Forecast lead times and risk premiums applied to peak and off-peak forecasts of the balancing price are presented in Figure 2 and Figure 3.[51]

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49 Change Energy. 1 October 2021. Submission to the *EGRC scheme review discussion paper*, p.2. (online).

50 Public Utilities Office, 2019, *Electricity Generation and Retail Corporation Regulatory Scheme – Response to 2016 Report to the Minister for Energy on the effectiveness of the Scheme,* pp. 11 to 14. (online).

51 Note that lead times refers to how many days the forecast product price leads product currency or delivery.

Synergy's risk premiums for peak products throughout 2020 do not appear to follow any clear pattern. For some months, the risk premiums were flat, and in others the risk premiums increased to a maximum that was fourteen times the modal value of the risk premium that had been in place since the scheme's inception. The risk premium then settled back down to between four to ten times the modal value at the end of 2020, depending on the product lead time.

Figure 2: Peak forecast lead times and indexed risk premiums 2014 to 2020

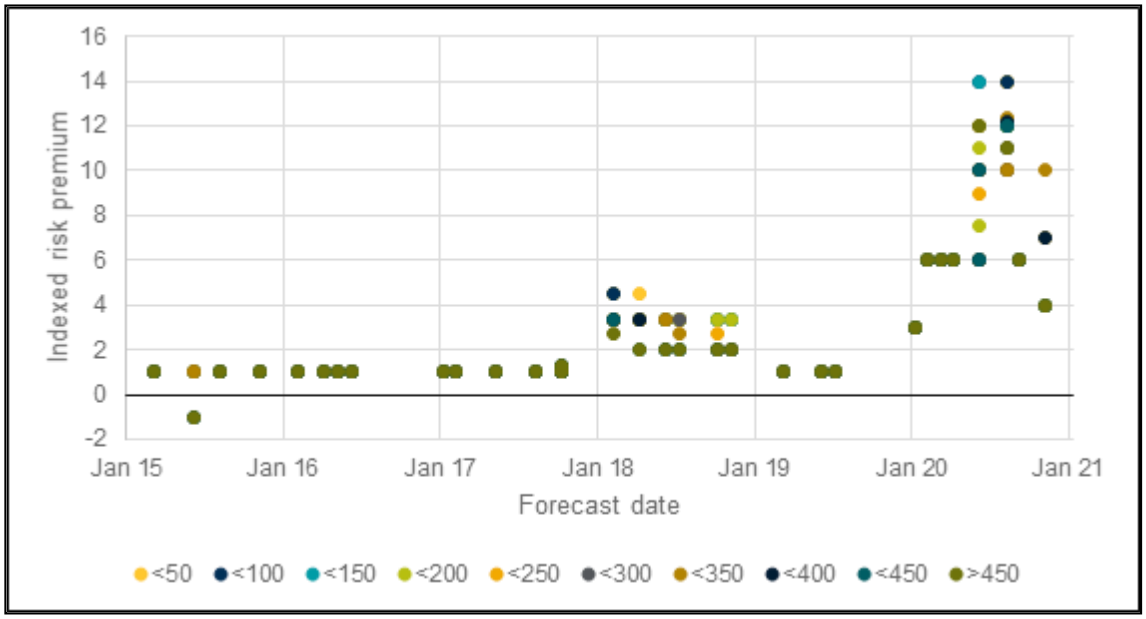
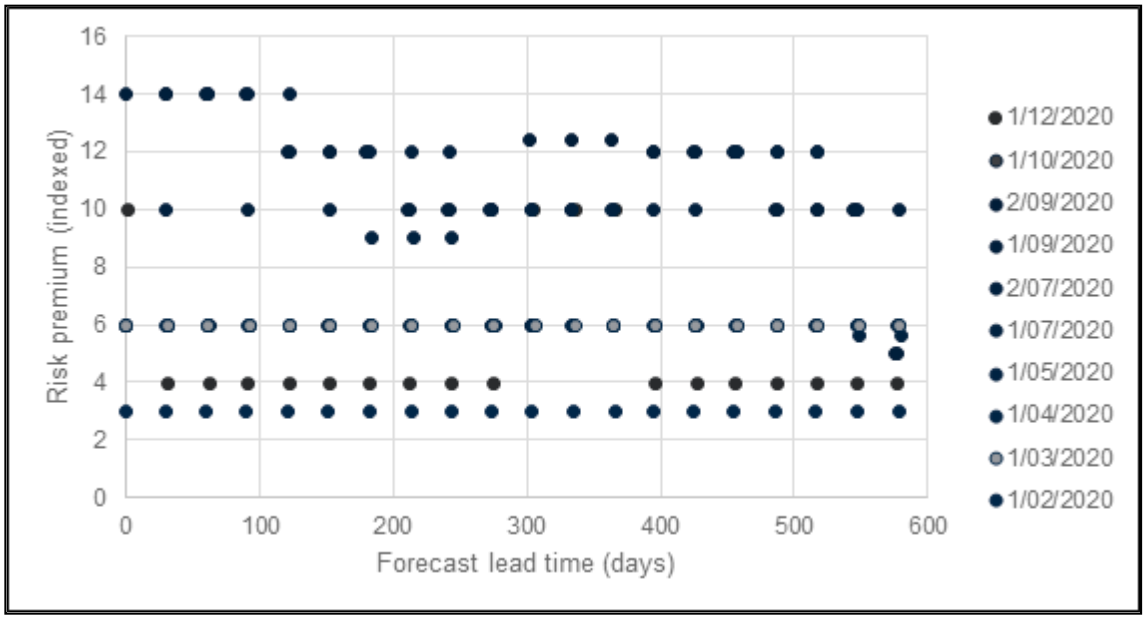


Figure 3: Average weekday peak risk premiums for forecasts prepared in 2020[52]



52 The distributions of Synergy's forecast average quarterly balancing prices between 2014 and 2020, for peak and flat prices, were normal and therefore Synergy's errors in forecasting were symmetrical around its expected values. In documentation provided to the ERA by Synergy explaining its pricing method, the ERA was not able to

The purpose of a regulated maximum spread is to constrain pricing behaviour. Synergy's pricing behaviour demonstrates that a smaller spread is required to provide discipline to Synergy's pricing method, which includes how its margins are informed by its forecasting. Section 4 outlines the ERA's view that lower maximum spreads will improve the effectiveness of the scheme by incentivising Synergy to improve its pricing method.

find any evidence or rationale for why Synergy should charge a risk premium in the buy price that is any different to that included in the sell price.

4. Conclusions of the review

The ERA's five past reviews of the effectiveness of the EGRC scheme each identified deficiencies that prevent the scheme from operating in line with the scheme's objective of ensuring a level playing field in the WEM. This review occurs during the market transformation as the State Government prepares for the implementation of a new market design by October 2023.

Of all the scheme amendments previously recommended by the ERA, a reduction in the maximum standard products buy-sell spread is the most likely to improve the scheme's effectiveness. Standard product prices are published and used by both WEM participants and large retail customers as an indication of future spot price movements from the largest market participant, Synergy.

In recognition of the ERA's advocacy for change to the scheme, the State Government trialled a new, lower maximum buy-sell spread of 15 per cent for standard products in 2020. This spread was not low enough to bring the operation of the standard products regime into line with the scheme's intent.

This section sets out how the ERA's recommendation for a phased reduction of the standard product maximum spread will improve the effectiveness of the EGRC scheme during and beyond the market transformation program. A lower maximum spread will improve the effectiveness of the scheme by placing greater discipline on standard product pricing and provide market participants with more efficient products to manage any new risks during the transformation.

The State Government's energy transformation program is designed to facilitate a high penetration of new, low emission technologies, including Distributed Energy Resources , across the electricity system while maintaining the system security and reliability into the future. Synergy has expressed concerns that the reform program may introduce uncertainty particularly during the move to a new market design in October 2023.

While it is unclear what impact the new market will have on Synergy's ability to forecast volatility in the balancing market, the recommended lower spread provides a sufficient buffer to allow Synergy to cover its cost of offering standard products.

4.1 Scheme intent and operation

The EGRC scheme was created to mitigate the potential for the newly merged entity, Synergy, to take advantage of its position as the dominant retailer and generator, at the expense of private market participants. Since 2014, various reforms and disruptions have occurred in the WEM, with the increasing penetration of solar photovoltaics being arguably the most disruptive. Synergy has remained the dominant participant in the WEM through this time.

The regulatory framework provided by the scheme continues to be essential for supporting the participation of new and existing private sector entities in the WEM through the current period of reform.

Feedback from market participants confirmed that they currently have limited alternatives to transacting with Synergy, and that the ongoing participation of private entities in the WEM and the entry of new participants remains a challenge, as it was when the scheme was introduced in 2014. As such, the opportunity to view standard product prices on Synergy's website and to access simple alternatives to customised products remains essential to allowing market participants to access wholesale supplies of electricity and to operate in the retail market.

Stakeholder submissions, outlined in Appendix 2, advocate amendments to the EGRC scheme to encourage private sector investment and competition.

The scheme could operate more effectively as a price discovery tool and standard products will be more useful as hedge products when Synergy applies a narrower spread. The objectives of the standard product regime may become more important to market participants during the implementation of the new market design. In addition, Synergy may take the opportunity to manage its risk during this transition period through selling standard products.

Given the industry and market changes under way at present, the ERA will analyse the standard product regime again in its 2023 review. At that time, the ERA's analysis will consider the prevailing market conditions. A recommendation at that time will seek to ensure the scheme meets its objectives under the new market design, including whether any characteristics of the scheme need to change.

4.2 Recommendation

Reducing the standard product buy sell spread will improve the effectiveness of the scheme. The ERA recommends that the reduction be phased in, commencing with a drop from 20 per cent to 15 per cent in July 2022, and to 10 per cent in July 2023.

The ERA's analysis of the operation of the scheme to the end of 2020 demonstrated that the maximum spread is wider than required and that this has allowed Synergy to price standard products inefficiently, reducing the effectiveness of standard products as a price discovery tool and as a hedge against balancing market price variability. A smaller maximum spread will provide the discipline and the incentive to support Synergy's improvement of its pricing method.

4.3 Path to effectiveness

The ERA expects that the scheme will move closer toward its original intent over time, starting with lower maximum spreads providing more efficient pricing signals to the market. As efficiency of the scheme increases, there will be scope for the ERA to recommend reducing regulatory costs to Synergy, for example through relaxing the bi-annual audit requirements.

Future scheme reviews will also consider the standardised market features that have been successful in other jurisdictions, such as anonymous trading, multiple market makers and a market making obligation, and look for further improvements in the effectiveness of the scheme in the WEM.

The ERA has considered three other electricity markets with standardised products and found that effective hedge markets increased benefits to consumers and reduced risk while increasing flexibility for participants, including for the market maker. Appendix 1 details the features of standardised markets and how each feature has been used in other jurisdictions to align the operation of the standardised market with its regulatory intent.

In its 2023 review, the ERA will consider if and how the reduced spread (if adopted by Government), the new market transition, and changing market dynamics, have affected Synergy's ability to price standard products and the demand for these products. The ERA will consider whether the demand for hedging products changes with the ongoing integration of renewables and storage technologies, and whether the industry and market changes are affecting how market risk is reflected in the standard product spread. Finally, the review will

consider whether the scheme meets its objectives under the new market design, including whether any aspects of the scheme need to be redesigned.

Appendix 1 Fundamentals of forward contracting in electricity markets

This appendix first describes the fundamental theories and principles underlying forward contracting in electricity markets, with a particular focus on standardised contract markets, which are relevant to an assessment of the effectiveness of the standard product regime.

The following sections then provide a brief overview of the history and objectives of three international jurisdictions, Singapore, New Zealand and Great Britain, that implemented new standardised markets to provide risk management instruments for market participants . The main features of these markets and their purpose are presented, with consideration given to how each feature operates in the standard product regime in the WEM.

Electricity spot markets

Prices in spot markets for electricity can change quickly and are unpredictable beyond participants' expectations.[53] A sudden increase in demand or a drop in generation can lead to large increases in spot prices, whilst an increase in generation or a decrease in demand can depress the spot price.[54] Prices in spot markets can also change, in response to news about changes in the future availability of generation.

Large and unpredictable variations in the spot price can expose both generators and retailers to risk. Most businesses will strive to avoid exposure to price risks, with generators trying to avoid selling their output at a very low price and conversely, consumers seek to avoid being obliged to purchase an essential good at a very high price.[55]

The desire to avoid exposure to unpredictable fluctuations in spot market prices has led to the introduction of other types of transactions to manage the risk of variation in spot prices and market participant revenue and costs, which creates financial risk.[56]

Forward contracting

Retailers set fixed prices for their retail products and therefore fluctuations in their input costs creates financial risk. To ensure that a retailer can manage its financial risk, it may seek to contract at an agreed price with a generator for delivery of the energy in a few months' time. This 'forward contract' between the generator and retailer will specify such things as the date of delivery, the agreed price, the volume to be delivered, the delivery period, the date of payment and any penalties for failure to honour the commitment.[57]

To arrive at an agreed upon forward contract price, given volatility in the spot market price, both parties will begin by calculating their best estimate of what the spot price will be at the time of delivery in the future. This estimate will consider any information about the market and

[53] Kirschen, D.S. & Strbac, G. (2019). *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 35.

[54] Retailers and large consumers are unable to predict their consumption needs with perfect accuracy and generators cannot guarantee the exact quantity that they can produce.

[55] Ibid. p.38.

[56] Ibid. p.35.

[57] Ibid. p.36

future market conditions, such as historical spot prices, weather forecasts and demand forecasts.[58]

The price agreed between the generator and retailer may differ from each party's best estimate because of differences in bargaining positions and risk appetite. One party may be more willing to accept a small loss rather than risking a much greater loss. For example, if a generator is concerned about a very low future spot market price, it may agree to a price below the expected spot market price. In such a case, the difference between the expected spot price and the price agreed in the forward contract represents the premium the generator is willing to pay to reduce its exposure to a downward price risk. Similarly, a retailer that is susceptible to an upward price risk, may be able to negotiate a price that reflects a premium above its expectations of the spot market price.[59]

Where the spot price is higher than the agreed price at the time of delivery, this represents a loss for the generator and a profit for the retailer but only reflecting the fact that the generator could have done better by trading in the spot market. However, if the spot price is lower than the agreed price, the forward contract represents a loss for the retailer and a profit for the generator, this time reflecting the fact that the retailer could have done better by trading in the spot market. Such a loss can influence the competitiveness of a market participant, as it means that it purchased or sold energy at a worse price than its competitors. [60]

The use of forward contracts makes it possible for market participants to share the price risk by allowing parties to trade at a price acceptable to both. The party that accepts the price risk is paid a premium. Over time, both parties could enter forward contracts with a premium above or below the expected spot price, such that, if their estimates of future spot prices are unbiased, the difference between the average spot price and the average forward price should be equal to the average premium in the long run.[61]

Hedging in the WEM

The balancing market in the WEM is a gross energy pool in which the physical dispatch of generators is determined regardless of participants' bilateral contracts. All sales for electricity must occur through the balancing market and a price is determined based on half -hourly supply and demand. Participants can manage their exposure to the risk of variable balancing prices through hedging markets, such as through the day-ahead Short-Term Energy Market (STEM) and through bilateral contracting between parties.

However, these hedging markets differ in terms of the specification of products, and thus, vary in the way they support parties in managing their risk of exposure to variable balancing prices. For example, trades in the STEM allow for hedging against expected variation in the balancing price over a trading interval in the next 24 hours. Trades in the STEM cannot provide parties with a hedge against uncertain market outcomes over the coming months and years.

The market rules place pricing discipline on market participants. In the balancing market, 'a market participant must not, for any trading interval, offer prices in its balancing submission in excess of the market participant's reasonable expectation of the short-run marginal cost of

[58] Kirschen, D.S. & Strbac, G. (2019). *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 36.

[59] Ibid.

[60] Ibid.

[61] Ibid.

generating the relevant electricity by the balancing facility, when such behaviour relates to market power.'[62] Similar requirements exist for the STEM and ancillary service markets.

Prices in the energy markets are also constrained by energy price limits or market price caps, which include the maximum STEM price (currently $267.14/MWh) the alternative maximum STEM price, and the minimum STEM price (negative $1,000/MWh). [63] Synergy, like other generators, sells energy at balancing market prices and it has the option to hedge ag ainst variable balancing prices through the STEM. Synergy's Retail Business Unit (RBU) can also buy energy through its Supply Balancing Cost Allocation Arrangement with the Wholesale Business Unit (WBU), which is the Synergy business unit responsible for t rading in the spot markets.

In the WEM, many bilateral contracts between market participants are confidential, with terms in the contracts, such as price, contract period and other conditions, known only to the contracting parties. Some market participants may report bilaterally contracted volumes to AEMO, but they do not have to do so and can opt to settle ex-market.

Under the EGRC Regulatory Scheme, Synergy's WBU supplies standard and customised products to the WEM. [64] Customised products are bilateral contracts that are tailored to meet the needs of the counterparty trading with Synergy.

The standard product arrangements are set out in the Electricity (Standard Products) Wholesale Arrangements 2014.[65] Synergy is required to offer both flat and peak stand ard products on a quarterly and annual basis. Synergy must make available a minimum 150 MW for sale and 100 MW for purchase, across all product types. The standard products must be offered in units of 1 MW (0.5 MWh per trading interval) and Synergy must of fer to buy and sell at least 5 MW per week.

Examples of common types of hedge contracts - options and contracts for difference

In many forward contracts, delivery of forwards or futures contracts is unconditional. Any generator that is unable to deliver the contracted energy must purchase energy in the spot market, and any retailer that cannot take full delivery must sell the excess on the spot market, eliminating any imbalances on the date of delivery.[66] In these contracts, many parties therefore agree to settle the contract based on the difference between the spot price and contract price, to avoid unnecessary transactions in the spot market, in which case, the contracts take the form of contract for differences, as explained in more detail below.

Some participants may prefer a contract with the right to exercise the contract. These contracts are exercised only if the holder of the contract decides that it is in its interest to do so, dependent on the spot price. These contracts, referred to as options, are either call options, giving the holder the right to purchase energy at the exercise price, or put options, giving the holder the right to sell a given quantity of energy at the exercise price. [67] The seller of an option

[62] Wholesale Electricity Market Rules (WA), 1 December 2021, Rule 7A.2.17.

[63] Economic Regulation Authority, August 2020, *2020 Energy price limits decision*, p. 1.

[64] As set out in the *Electricity Corporations (Electricity Generation and Retail Corporation) Regulations 2013*, (online) [accessed 14 December 2021].

[65] Electricity (Standard Products) Wholesale Arrangements 2014 (online) [accessed 14 December 2021].

[66] Kirschen, D.S. & Strbac, G. (2019). *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 38.

[67] A European option can only be exercised on its delivery date, whilst an American option can be exercised any time prior to the expiry date.

contract assumes the price risk in place of the contract holder and receives a non-refundable option fee from the holder of the option when the contract is sold. [68]

In turn, the holder of the option can protect itself against the risk of having to trade for energy at a less favourable price than in the spot market and is left free to trade at a price that is better than the exercise price of the option. The option fee that the holder pays to the seller of the option represents a sunk cost and does not influence whether the option is exercised or not.[69]

With a contract for difference, two participants agree on a strike price and an amount for the energy being traded. They then take part in trading in the centralised spot market, with the contract for difference settled in two ways. If the strike price is higher than the centralised market price, the contract purchaser pays the seller the difference between the two prices times the quantity agreed in the contract.[70]

Alternatively, if the strike price is lower than the centralised market price, the contract seller pays the purchaser the difference between the two prices times the quantity agreed in the contract. A contract for difference thus allows participants to take part in the centrali sed market whilst shielding them from price variation.[71]

In the WEM, options and contracts for differences can be transacted between any parties or can be requested as a customised product from Synergy. In practice, there are many different types of hedge contracts that market participants can enter into.

Standardised markets

Secondary markets where generators and consumers can purchase and sell standardi sed forward contracts can also help these parties to manage price risk more efficiently. The transactions costs (such as fees, administration, and the provision of information) for trading in products that are standardised in quantity, and terms and conditions, are smaller than those experienced when trading in products that are customised to buyer needs and that require negotiation of all the details of a forward contract.[72]

Standardisation makes it possible to resell forward contracts before the delivery dates. For example, if a retailer realises that it will not need all the energy to meet its customer demand for which it has signed contracts it can quickly resell the forward contracts to other retailers prior to the date of delivery through the spot market for forward contracts.[73]

A generator that is unable to generate the quantities specified in its forward contract may elect to purchase the energy in the spot market or alternatively, purchase a forward contract, rather than hoping that the spot price will be favourable on the date of delivery. The price at which the forward contracts will be traded will be the current market price for forward contracts with the same delivery date and can be higher or lower than the price agreed in the original contract, depending on the evolution of the spot price for forward contracts.[74]

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68 Kirschen, D.S. & Strbac, G. (2019). *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 38.

69 Ibid. p. 39.

70 Ibid. p. 39.

71 Ibid. p. 40.

72 Ibid. p. 37.

73 Ibid. p. 37.

74 Ibid. p. 37.

Electricity companies will generally try to reduce their exposure to price risks by hedging their positions using a combination of different types of contracts. At the time of delivery, market participants that have more or less contract coverage than they need, must be able to cover the difference by trading residual volumes that can result from unpredictable fluctuations in generation or demand on the underlying energy spot market or changes in participants risk preferences.[75]

Whilst the energy spot market is the market of last resort, the spot market price is the signal that drives all other markets and is thus the alternative against which other opportunities are measured. Expectations of spot prices during the term of forward contracts underpins the price of forward contracts. A sustained increase in spot market prices drives up the prices in other markets, whilst a sustained decrease forces prices lower in these markets. [76]

To provide confidence to market participants in the fairness of the forward market, the price discovery mechanism in the standardised market should be reliable and disseminate unbiased information about market conditions. Transparency in pricing and in the price setting process reduces the possibility of market manipulation, assuring market participants that the market is equitable for all that wish to trade.[77]

In principle, in the WEM, if a retailer with a long position in a sell standard product later considers that it will not need all the contracted volume of energy to manage its risk exposure it can effectively resell the forward contract by taking a long position in a buy standard product with the same contract period as for the sell product.

Interviews with market participants indicate that, in the WEM, the advertised standard product prices provide transparency in several ways. For example, the advertised standard product prices provide information on the price at which Synergy is willing to buy and sell standardised contracts. Through the non-discrimination requirements in the EGRC regulations, these prices can also provide insight to the likely prices for customised contracts, which are contracts supplied by Synergy that are tailored to meet the needs of the market participant.

The forward price curve produced by the advertised prices is derived from Synergy's forecast of average spot market prices and can provide an indication to market participants of where Synergy considers future market prices will be.

In addition, large consumers that are looking to contract may access the standard product website, using Synergy's advertised prices to negotiate contracts with retailers (including Synergy and others).

Speculators

Parties that cannot produce or take physical delivery of energy can also participate in standardised markets. These parties, referred to as speculators, may purchase a futures contract for delivery at a future date, in the hope that they will be able to sell the contract later, at a higher price; or they may sell a contract first, in the hope of purchasing one later at a lower price. Speculators balance their position closer to the delivery date because they cannot generate, consume, or store the energy.[78]

[75] Kirschen, D.S. & Strbac, G. (2019). *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 37 and p. 40.

[76] Ibid. p. 53.

[77] Ibid. p. 36 and p. 41.

[78] Ibid. p. 38.

If the markets are sufficiently competitive, and all participants have access to adequate information, the forward price should reflect the common expectation of the spot price. Hence, buying low and selling high may appear like gambling. However, Speculators are usually advantaged in comparison to other market participants by being less risk averse. Shareholders in companies involved in speculation hope for very high returns, such that the management is free to take significant risks, which might occasionally lead to very large losses. [79]

Speculators do not face the same risks as other market participants (such as the unforced outage of a generator) and have large financial resources that put them in a better position to offset losses over a sufficiently long time. Additionally, most speculators will diversify into markets for different commodities, to further reduce their exposure to risk. [80]

In contrast, shareholders in companies that produce or consume energy, expect the management to seek maximisation of value to its shareholders by pursuing making a profit from the generation and retail of electricity, rather than speculative activities. Such companies may accept a price somewhat worse than they could get later in exchange for the security of getting a fixed price now.[81]

Even though speculators may profit from trading in futures, the market still benefits because the presence of speculators increases the number and diversity of participants in the market, allowing physical participants to find counterparties for their trades more easily, increasing the liquidity of the market, and aiding in price discovery.[82]

Speculators do not participate in the standard product market in the WEM, as trading of the products is limited to electricity market participants. Speculative trading of buy standard products is also limited by design, because a counterparty to Synergy willing to trade a buy standard product needs to have previous nominations with AEMO to demonstrate it has access to volumes of energy it is willing to sell to Synergy.

However, in the NEM, spot prices vary significantly and can expose participants to the risk of very uneconomically high or low prices.[83] Several financial institutions act as speculators in the NEM, buying and selling hedges or providing a service for clients with electricity needs. If the participants needs or market conditions change, rather than hold a hedge to maturity, the participant may sell the hedge back into the market.[84]

Market liquidity

If enough generators and retailers are interested in trading energy in advance, a forward market will develop, which gives all market participants access to a larger number of possible trading partners that are willing to purchase or sell contracts.[85] If contracting takes place quickly and easily and usually in high numbers and volumes, such a market is commonly

[79] Kirschen, D.S. & Strbac, G., 2019, *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 38.

[80] Ibid.

[81] Ibid.

[82] Ibid.

[83] Prices in the NEM can currently vary from the price floor of negative $1,000/MWh to the price cap of $15,100/MWh. Australian Energy Market Commission schedule of reliability settings (online) [accessed 14 December 2021].

[84] ACCC, June 2018. *Restoring electricity affordability and Australia's competitive advantage.* Retail Electricity Pricing Inquiry—Final Report (online) [accessed 14 December 2021].

[85] Kirschen, D.S. & Strbac, G., 2019, *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 37.

described as being 'liquid.' In such a market, small changes in trade volumes do not contribute to large price changes.[86]

In 2009, the Office of Gas and Electricity Markets (Ofgem), explained that liquid markets provide investment signals to market participants and reduce the possibility of parties manipulating prices, to the detriment of the efficiency of wholesale markets.[87] Conversely, illiquid markets can act as a barrier to entry in both the generation and retail markets and may act as a source of competitive disadvantage to small retailers. [88] Ofgem warned that poor liquidity could be self -reinforcing, leading to poor availability of products and weak price signals, thereby reducing market participation and leading to further loss of liquidity. [89]

However, since that time, academics, regulators and market participants alike have not reached an agreed understanding on a definition of liquidity, on how to measure liquidity (see Measuring liquidity section below), or on an agreed level of liquidity that is sufficient for wholesale electricity markets. This lack of consensus makes it difficult to robustly and directly link liquidity to consumer benefit.[90] Moreover, regulators in differing jurisdictions (such as Great Britain, New Zealand and Singapore) have concluded that there was insufficient liquidity in their own wholesale markets, despite significant variation in the levels of liquidity between these markets.[91]

To promote liquidity, regulators in Australia and international markets have imposed market making obligations on vertically integrated entities. However, assessment of the effectiveness of these arrangements has often been difficult, given the concurrent introduction of other regulatory measures encouraging new entrants to the wholesale market, and by the fact that whilst a liquid market for forward contracts facilitates competition, a competitive market facilitates liquidity.

Even if it can be determined that liquidity in a market is low, it does not always provide justification for further intervention in a market, as low liquidity in the market may be an efficient response to market conditions. In such a case, intervening in the market may impose costly trading risks on market participants (e.g., leading them to take suboptimal risk positions). [92]

Without an agreed definition of liquidity or evidence to suggest that liquidity is inefficiently low, consideration can be given to whether a market failure exists in the market for wholesale electricity products or in related markets. Interventions to change liquidity should therefore be aimed at correcting the underlying market failures, which manifest themselves as low participation in the wholesale market.[93]

Ultimately, the entry of new participants to a market will provide market participants with the opportunity to access a larger number of trading partners, competing with each other, helping them to get access to more reasonable prices, and increasing the efficiency of the market. When considered in this light, the entrance of new, independent generators and retailers

86 Kirschen, D.S. & Strbac, G., 2019, *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 41.

87 Ofgem, June 2009. *Liquidity in the Great Britain wholesale energy markets* (online) [accessed 14 December 2021].

88 Ibid.

89 Ibid.

90 Electricity Authority, November 2019, *Hedge-Market Enhancements (market making): Ensuring market making arrangements are fit-for-purpose over time. Discussion paper* (online) [accessed 14 December 2021].

91 NERA Economic Consulting, 2019, *GB Wholesale Market Liquidity: Options Assessment*. Prepared for Ofgem, (online) [accessed 14 December 2021].

92 Ibid.

93 Ibid.

looking to hedge their positions in the market is important to the efficient functioning of the market.

Measuring liquidity

In the absence of an agreed upon definition of liquidity, there is no single agreed upon measurement that best represents the level of liquidity in a market. [94] Two commonly reported measures of liquidity are open interest and volume.

A contract is considered 'open' from the time that the contract is opened until the counterparty closes it or it expires or is exercised. 'Open interest' refers to the total number of contracts held by traders in a market that are still active, or not settled. In each period, open interest will decrease if buyers and sellers of contracts close out more positions than are opened in that period. Open interest increases again when trading parties purchase more of the contracts (i.e., take on long positions) than the number of contracts that were closed in that period.

Volume is used to measure the number of contracts (whether opening or closing) exchanged between buyers and sellers in each trading period. The greater the volume measured, the more buyers and sellers that are active in the market and the more interest in the contract.

Churn, in the Great Britain market, is defined as the number of times a unit of generation is traded before it is delivered to the customer. The higher the number of trades, the greater the liquidity.[95]

The Singapore market also measures the cumulative transaction volume of trade as a percentage of the underlying physical market on an annualised basis. For comparison, the Singapore regulator, the Electricity Market Authority, noted that in 2015, the volume in the Singapore Electricity Futures Market was only 5 per cent. Australia and New Zealand's Electricity Futures Markets reached about 3 percent to 10 percent in their first two years of trading, and based on experience in New Zealand, transaction volumes of over 30 percent can indicate sufficient liquidity.[96]

Interjurisdictional review of features of standardised markets

The following sections provide a brief overview of the history and objectives of three international jurisdictions that implemented new standardised markets to provide risk management instruments for market participants:

- Singapore – Electricity Futures Market on the Singapore Exchange (SGX) [97],
- Great Britain - Secure and Promote (S&P) market making licence condition[98],

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94 NERA Economic Consulting (2019). *GB Wholesale Market Liquidity: Options Assessment*. Prepared for Ofgem, (online) [accessed 14 December 2021].

95 Ofgem, 1 December 2020, *Update on the future of liquidity policy*, (online) [accessed 14 December 2021].

96 Energy Market Authority, 1 August 2017, *Enhancing the development of the electricity futures market. Consultation paper* (online) [accessed 14 December 2021].

97 SGX Electricity derivatives (online) [accessed 14 December 2021].

98 In the Great Britain market, companies independently chose the platforms on which they would trade. Ofgem, 23 January 2014, *Liquidity in the Wholesale Electricity Market (Special Condition AA of the electricity generation licence) – Guidance, and Ofgem (23 January 2014), Decision notice under Section 11A(1)(a) of the Electricity Act 1989*, (online) [accessed 14 December 2021].

- New Zealand – New Zealand Electricity Derivatives on the Australian Securities Exchange (ASX).[99]

This review reveals similarities between the markets in international jurisdictions and the standard product regime in terms of:

- the reasons for their implementation and the objectives that they set out to achieve, and
- the features implemented to achieve these objectives.

All three jurisdictions reviewed sought to promote competition in their electricity markets by improving access to risk management instruments for market participants to better manage their exposure to the risk of variable electricity spot market prices. Regulators also considered the benefit of futures contract markets in providing price discovery for market participants and the role these markets can play in promoting efficiency in operational and investment decisions. Ultimately, all jurisdictions considered the implementation of futures markets could benefit consumers through improved competition and lower cost of supply.

The primary concern to be addressed by the introduction of the standardised risk management markets was the concentration in the generation and retail markets in these jurisdictions because of the presence of vertically integrated entities. Due to vertical in tegration, transactions and wholesale prices between retailers and generators became internalised, weakening transparency and price discovery in the markets in terms of expectations about future wholesale prices and the cost of hedging against variable spo t prices.

The merger of Synergy and Verve in 2014 increased the level of concentration in the WEM. In the past, access to risk management instruments has been limited to bilateral negotiations between parties, the terms and conditions and prices for which, were not transparent. The ERA has received information from market participants that their access to short- to medium-term risk management instruments is limited and Synergy is the main supplier of these contracts. Efficient operation of the standard product mechanism is therefore important to promoting competition in the WEM.

Efficient operation of the standard product regime can provide price discovery and access to risk management instruments by existing market participants and prospective new entrants. Provision of standard products can ultimately benefit consumers.

In summary, this review shows that the features of the standard product regime design provide the following benefits to the WEM:

- Standardisation in contracting, which can facilitate and reduce the costs of contracting in the WEM.
- Publication of Synergy's prices for standardised contracts, based on its expectation of future spot market prices, which are available to all to inform operational and investment decision making:
- Providing all participants with an expectation of what price they will have to pay Synergy for risk mitigation cover, and some understanding of what Synergy expects the average spot price will be in the future.
- Providing large consumers looking to contract with Synergy, with Synergy's prices, that they can use to negotiate contracts with retailers (including Synergy and others), helping them to make efficient decisions, and fostering competition in the retail market, thereby promoting the long-term interest of consumers.

[99] ASX, New Zealand Electricity derivatives (online) [accessed 14 December 2021].

- Market participants identify the publication of Synergy's prices as the most important feature of the standard product regime.
- Safeguards (such as measures to address bottlenecks in meeting availability requirements and interruption events and availability limits for buy and sell products) to ensure that Synergy's interests are protected when meeting the requirements of the standard product regime.

However, the adoption of a large buy-sell spread in the standard product regime has weakened its ability to provide price discovery and has created a barrier for the development of liquidity. That is, trading does not take place quickly or easily, so that Synergy, as the market maker, cannot match buyers and sellers of standard products and thus avoid exposure to the risk of variation in spot prices when selling standard products. The large spread between buy and sell prices also discourages market participants from trading sell and buy products because the premia included in buy and sell product prices are large.

The forward price curve produced by Synergy's advertised prices provides a 'rough' estimate of where Synergy expects future market prices will fall, i.e., most likely anywhere between the buy and sell price, within a maximum range of 20 per cent. This maximum spread is inefficient and is larger than required to protect Synergy's interests, as evidenced by the ERA's analysis (see Appendix 3). The fact that Synergy has always set its prices using the maximum spread in the standard product regime despite not requiring it to recover its costs, changes in market conditions, and differences in contract terms, has raised uncertainty about future spot prices.

Experience in other jurisdictions shows that, as the spread between buy and sell prices in these markets decreased, lowering the cost of hedging for market participants, market activity increased, encouraging even more buy and sell transactions, increasing certainty and allowing market makers to lower their spreads further still.

An improvement in activity in the standard product regime would also reduce Synergy's risk of trading in standard products. This is because Synergy would be able to offset its exposure by trading counterbalancing products. For example, in a highly liquid market for standard products, Synergy would be able to instantly match buyers and sellers and would not be exposed to the risk of variation in future spot prices when trading in standard products.

A reduction in the maximum spread removes one of the barriers for the development of liquidity. Development of liquidity in standard product trading also depends on market participants' demand for short to medium-term risk management instruments. Liquidity may develop with a reduction in the maximum spread, but without a reduction in the maximum spread, liquidity will not develop.

Over time, other jurisdictions have also introduced risk management products to better suit market participants' requirements. In comparison, the specification of standard products in the WEM has not evolved with the substantial change in the market resulting from the entry of renewable energy technologies, including behind-the-meter solar. For example, the specification of peak standard products is outdated and no longer matches peak demand periods, and thus, high price periods in the WEM.

Regulators in other jurisdictions also considered possible costs and risks to entities that were obliged to offer standardised risk management contracts. This is particularly important when the level of liquidity in the market is low and the market maker, like Synergy, is exposed to the risk of variable spot prices when selling or buying energy forward at fixed prices.

Concentration in wholesale electricity markets

Of the three international jurisdictions considered in this review, all have a history of implementing standardised forward markets i.e., futures markets for energy, because of the concentration of their wholesale and retail markets. Primarily, these concerns are linked to the large shares of the generation and retail markets held by vertically integrated entities, possibly limiting access to contracts for risk mitigation and/or entry to the market by independent generators and retailers.[100]

The concentration and the outcomes following implementation of standardised markets are summarised briefly for each jurisdiction, below, revealing positive outcomes. However, no causal attribution is made, given that the implementation of the standard products markets often coincided with the implementation of other measures (e.g., market making incentives and vesting mechanisms) that also aimed to reduce the concentration in these markets. [101, 102]

Singapore

At the time that the Singapore Electricity Futures Market was implemented in April 2015, the three largest generation companies together shared about 60 per cent of the generation market, whilst the three largest retailers comprised a retail share of about 39.5 per cent. [103]

In a review of the effectiveness of the Electricity Futures Market in August 2017, the Singapore regulator, the Electricity Market Authority (EMA) explained that since the introduction of the market, the number of electricity retailers in the National Electric ity Market of Singapore (NEMS) had increased from seven to 25, and electricity prices had become more competitive, lowering by at least 10 per cent.[104] Additionally, prices of new retail contracts lowered by about 10 to 20 per cent.[105]

The EMA noted that the Electricity Futures Market had also enabled the development of innovative business models, such as “green” power packages or green tariffs. Solar providers were better able to hedge the price risk for providing power during non-sunny hours and blend the solar energy into a power package for customers. Demand response providers were also now able to offer a complete energy package to consumers by leveraging the Electricity Futures Market to hedge their price risk, as base load electricity future contract s provided more price certainty compared to purchasing solely from the wholesale electricity market. [106]

The EMA reported that, as of 31 May 2017, there were 4,186 total lots traded for the quarterly base load electricity futures contracts (i.e., about 4,600 GWh with a total value of

[100] NERA Economic Consulting, 2019, *GB Wholesale Market Liquidity: Options Assessment*. Prepared for Ofgem, (online) [accessed 14 December 2021].

[101] For example, see discussion of the vesting contracts within the Singapore market in: Energy Market Authority, 30 September 2016, *Review of the Vesting Contract Regime, Final Determination Paper* (online). Also see Energy Market Company. *NEMS Market Report 2020*. (online) [accessed 14 December 2021].

[102] For an example of an incentive scheme within the Singapore market, refer to: The Electricity Market Authority, July 2019, *Development of the Electricity Futures Market - Second Phase of the Futures Incentive Scheme (FIS)*, (online) [accessed 14 December 2021].

[103] Energy Market Company. *NEMS Market Report 2015* (online) [accessed 14 December 2021].

[104] The electricity regulatory statutory authority in Singapore (online)[accessed 14 December 2021].

[105] According to a study by Professor Frank A. Wolak from Stanford University, as cited in Energy Market Authority, 1 August 2017, *Enhancing the Development of the Electricity Futures Market: Consultation Paper* (online) [accessed 14 December 2021].

[106] Ibid.

approximately SD$376 million). Transaction volumes and open interest for quarterly contracts were generally increasing over time but this volume was largely supplied by market makers[107].

Only two years later, the EMA noted that between 1 August 2018 and 30 April 2019, a total of 10,064 lots were traded for the quarterly base load electricity futures contracts and a total of 4,463 lots were traded for the monthly base load electricity futures contracts.[108, 109]

While transaction volumes and open interest for the quarterly contracts were generally increasing over time, the volume was dominated by market makers, indicating their continued importance in the market. In this same period, the transaction volumes in the Electricity Futures Market grew to more than 30 per cent of the underlying physical market (on an annualised basis) and the monthly average open interest increased 53 per cent.[110]

Great Britain

In the Great Britain market in March 2014, when the S&P licence condition was implemented by the United Kingdom (UK) regulator, the Office of Gas and Electricity Markets (Ofgem), to impose market making requirements on the six largest generation companies, they had a combined share of about 70 per cent.[111, 112] The six largest retailers had shares of between 11 and 25 per cent, which had remained largely unchanged for the decade between January 2004 and January 2014.[113]

However, following an announcement by the UK Government on plans to close all coal fired power stations by 2025 and constrain their use by 2023, market participants began to divest their generation assets, so that by the end of 2018, the vertically integrated entities supplied only 23 per cent of the total volumes in the market.[114, 115] Ofgem was therefore considering whether, on balance, there was a case for suspending the market making obligation, given concerns that the policy could become less effective in meeting its objectives and that the remaining parties could be subject to disproportionate and possibly unfair costs.[116]

On 14 November 2019, faced with only two parties remaining under the market making obligation, Ofgem published its decision to suspend the market making obligation noting that:

[107] A market maker for electricity forward contracts, in this context, was a gentailer that tendered to accept the risk of taking a short or long position in forward contracts to facilitate trading of these contracts in the futures market.

[108] For quarterly contracts, this amounted to about 11,038 GWh, with a total value of approximately S$1.18 billion and for monthly contracts it amounted to about 1,628 GWh, with a total value of approximately S$194 million).

[109] The Electricity Market Authority, July 2019, *Development of the Electricity Futures Market - Second Phase of the Futures Incentive Scheme (FIS)*, (online) [accessed 14 December 2021].

[110] At this time, there was also ongoing consultation on developing a forward capacity market to enhance the Singapore Wholesale Electricity Market.

[111] The non-government National Regulatory Authority. See: Ofgem, 20 November 2013, *Wholesale power market liquidity: statutory consultation on the 'Secure and Promote' licence condition - Impact Assessment,* (online) [accessed 14 December 2021].

[112] Ofgem publications relating to the implementation of the Secure and promote Licence conditions (online) [accessed 14 December 2021].

[113] Ofgem, 27 March 2014, *State of the Market Assessment*, (online) [accessed 14 December 2021].

[114] National Grid Electricity System Operator review of the daily share of coal in the electricity mix since 2009 (online) [accessed 14 December 2021].

[115] NERA Economic Consulting, 2019, *GB Wholesale Market Liquidity: Options Assessment*. Prepared for Ofgem, (online) [accessed 14 December 2021].

[116] Ibid.

- The move to a two-party market making obligation had materially increased the costs incurred by the remaining parties, even in the absence of market volatility; and the market making obligation placed disproportionate costs on these parties.
- The policy had become less effective in enabling the development of robust reference prices along the curve.[117]

Following this, in December 2020, Ofgem published areview of the UK's liquidity policy, which analysed forward market data for the period up to October 2020.[118] Ofgem assessed whether further intervention was required to meet the first and second liquidity objectives for the wholesale electricity market, i.e., to:

- ensure the availability of a range of longer-term products to support hedging of risk of exposure to large changes to prices,
- support robust reference prices that are widely available to market participants.[119]

Ofgem's analysis indicated that, from the time when the market making obligation was suspended (and noting the progression of the Coronavirus) total brokered trading had slightly fallen, with peak load trading deteriorating more than base load trading, especially along the forward price curve (i.e., expected average spot market prices in the future). Bid-offer spreads for products previously subject to the market making obligations increased on average, year on year, continuing an upward trend from 2019. Whilst all spreads exceeded the previous limits under the S&P licence obligations, the natural liquidity in the market (i.e., withou t the obligation to market make) was maintained, with all spreads remaining under 2 per cent.[120]

Ofgem concluded that the evidence did not demonstrate a prolonged deterioration of liquidity to a level that would result in a net consumer benefit from intervention and decided not to intervene to require market making to support liquidity at that time.[121]

New Zealand

The New Zealand electricity futures market was first listed on the ASX in 2009.[122] According to the regulator, the Electricity Authority (EA), whilst changes to the features of the ASX futures market were developed over time, almost ten years later, on 21 May 2019, the five biggest generator-retailers continued to dominate the retail market, with a 90 per cent market share.[123] The New Zealand Government considered that the wholesale contract market was not working effectively, limiting the ability of independent generators and retailers to manage price risk and undermining confidence in the market.[124, 125]

On 2 November 2021, the EA published a trading and open interest update on its website noting that it had reviewed the effectiveness of some interventions that it implemented in early

[117] Ofgem, 14 November 2019. *Decision to suspend the secure and promote Market Making Obligation with effect on 18 November 2019*, (online) [accessed 14 December 2021].

[118] Ofgem, 1 December 2020, *Update on the Future of Liquidity Policy*, (online) [accessed 14 December 2021].

[119] Ibid.

[120] Ibid.

[121] Ibid.

[122] Electricity Authority, 2 November 2021, *Market Insight – Trading and Open Risk update,* (online) [accessed 14 December 2021].

[123] Such as reducing the maximum spread between the buy and sell prices from 10 percent down to 3 per cent and reducing the volume from 1 MWh per trading interval to 0.5 MWh per trading interval.

[124] Ministry of Business, Innovation and Employment (online) [accessed 14 December 2021].

[125] New Zealand Government, 21 May 2019, *Electricity Price Review. Hikohiko Te Uira. Final Report*, (online) [accessed 14 December 2021].

2020.[126] These were to introduce mandatory market making for four integrated generator retailers, to increase the volume of market making contracts, and to reduce the spread between market makers bids and offers (currently set at the greater of 3 percent or NZ$2). [127] The EA's review indicated that these changes had been effective.[128]

The EA found that in the two years following the interventions, there was a significant increase in the level of ASX futures trading, from about 2,000 GWh per month in the period of late 2016 to 2019 to between 4,000 GWh and over 8,000 GWh per month in 2020 and 2021. The EA noted that, for context, this was about twice as much electricity that is consumed monthly in New Zealand.[129]

Along with the increase in trading activity, there was an associated increase in open interest, which was measured as the total volume of contracts that can earn or owe money on the exchange at a given point in time (excluding buy and sell products cancelling each other out). Between October 2016 and September 2021, open interest increased nearly 470 per cent, from 3,472 GWh to 19,809 GWh. The EA noted, for comparison, that during the twelve months to September 2021, 39,894 GWh of electricity was used in New Zealand. [130]

Growth in open interest primarily occurred in long dated contracts i.e., with greater than twelve months until the contract was settled, growing from about 2,000 GWh to over 11,000 GWh from January 2020, and possibly indicating increased confidence in the use of ASX futures products by participants to manage price risk further out in the future.[131]

The EA considered that, generally, more volume through increased trading and open interest in the hedge market creates more opportunities for generators, retailers, and large consumers to manage spot price risk efficiently and effectively.[132]

The WEM

The standard product regime in the WEM came into effect in mid-2014. Synergy is the main provider of forward contracts in this market. In the 2014/2015 financial year, its share of the generation market was 78 percent per cent and its share of the retail market was 60 per cent. Like wholesale markets in other jurisdictions, the WEM was highly concentrated. Table 1 below shows the change in Synergy's generation market share from the financial year ending 2014 over time.[133]

[126] Electricity Authority, 2 November 2021, *Market Insight – Trading and Open Interest Update*, (online) [accessed 14 December 2021].

[127] These market makers previously provided hedge contracts on a voluntary basis.

[128] Electricity Authority, 2 November 2021, *Market Insight – Trading and Open Interest Update*, (online) [accessed 14 December 2021].

[129] Ibid.

[130] Ibid.

[131] Ibid.

[132] Ibid.

[133] Generation market share is calculated as Synergy's sent out generation (in MWh), divided by the total generation sent out (in MWh), times 100.

Table 1: Changes in Synergy's generation market share over time

Financial Year Ending	Generation Market Share (%)
2014	61
2015	56
2016	56
2017	54
2018	49
2019	46
2020	43
2021	45
2022	49

Source: ERA analysis

Synergy's generation share reduced over time up until 2020 where it began to trend upward again. Synergy's share of the generation market, including bilateral and STEM purchases, is 67 per cent (also trending upward from a low of 66 per cent in 2019/2020).

Table 2 Changes in Synergy's Retail Market Share Over Time

Calendar Year	Average of Contestable Retail Market Share (%)	Average of Total Retail Market Share (%)
2014	37	60
2015	33	57
2016	29	54
2017	25	49
2018	24	48
2019	26	47
2020	27	49

Source: ERA analysis

Synergy's average of the total retail market share reduced over time until 2018 where it also began to trend upward again. Synergy's average contestable retail market share has also reduced over time, reaching a low of 24 percent in 2018 and then beginning an upward trend to 27 per cent in 2020.

Objectives of standardised markets

The overarching goals of the standard product regime, described by the Merger Implementation Group (MIG) on 7 March 2014, were as follows:

1. The primary aim of the standard product regime is to maintain private sector activity by imposing discipline on Synergy's wholesale pricing.

2. By acting as a price discovery mechanism, it is expected that the regime will provide transparency and predictability for market participants.

3. It is intended that the regime will mitigate industry concerns by:

    a. Providing a competitive benchmark price for the wholesale supply of electricity on a non-discriminatory basis.

    b. Providing simple products that reduce barriers to entry for retailers and allow market participants to rebalance their portfolios.[134]

The objectives of the international standardised markets differ little to those identified by the MIG. These objectives are encompassed in the benefits that the regulators in each market describe for generators, retailers, and consumers. The Singapore and the New Zealand regulators consider the practical benefits for their respective markets, whilst the Great Britain regulator perceives the benefits as arising from a reduction in poor liquidity in trading risk management products. All regulators note that the standardised markets have brought benefits to consumers through increased competition.

In Singapore, the EMA considers that the Electricity Futures Market provides an additional platform for generators to manage their commercial and operational risks and facilitates greater efficiencies in the wholesale market. It also allows generators to reduce price exposure and efficiently transfer price risk by hedging plant outages ahead of time. [135]

For retailers, the EMA considers that the Singapore Electricity Futures Market provides an additional tool for hedging price risks. It allows incumbent retailers to expand their possible retail volumes, lowers barriers to entry for new and independent retailer s, and allows entry by independent retailers that use the electricity futures market to lock in fixed retail prices for consumers. This enhances competition, puts downward pressure on retail prices, and facilitates the development of new retail products.[136]

In Great Britain, Ofgem considers that the S&P generator licence condition, requiring mandatory market making by certain participants, removes poor liquidity in trading risk management products as a barrier to entry, allowing generators and retailers to e nter, trade, compete and manage risks in the market. Greater competition then improves the robustness of price signals along the forward curve, and encourages participants to price more keenly, possibly through a reduction in participants' costs or profits. Ofgem considers that the improved liquidity is also helpful for participants investing in generation and may also encourage improved customer service and innovation by retailers. [137]

In New Zealand, in the context of the Electricity Price Review, the New Zealand Government considered that an efficient contract market is particularly important for stand -alone retailers and generators which, it noted, are a main source of innovation and competitive pressure.

[134] Department of Finance: Public Utilities Office, 7 March 2014, *Standard Product Regime Participant Briefing: Merger Implementation Group*. p. 4.

[135] Energy Market Authority, 20 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper* (online) [accessed 14 December 2021].

[136] Ibid.

[137] Ofgem, 18 December 2014, *Wholesale Power Market Liquidity: Interim Report*, (online) [accessed 14 December 2021].

Without an efficient contract market, innovators wanting to generate or retail electricity must enter both markets at once.[138]

According to the EMA, the Singapore Electricity Futures Market enhances wholesale and retail competition, and provides greater price transparency through the forward price curves. Contestable consumers can access the forward reference market prices and use them as a reference price, contributing to making informed decisions on retail contracts. [139]

The EA agrees with the EMA, citing two main functions of exchange traded electricity futures markets as being to:

- manage spot price risk and to use the forward price curve to inform investment and operational decisions, [140]
- promote the long-term interest of consumers through enabling efficient decisions and fostering competition.[141]

Similarly, Ofgem notes that the benefits of competition for consumers is downward pressure on bills, better service, and greater choice. Ofgem also considers that investments in generation, through improved liquidity, contribute to secure energy supplies for consumers.[142]

Trading platforms also provide insight to the benefits of trading in standardised markets, as compared to trading in over the counter (OTC) contracts. For example, in Singapore, the SGX notes that in addition to the benefits observed by the EMA, the benefits of the electricity futures market include:

- Market Participants do not need to set up individual credit agreements with multiple counterparties.
- Bids and offers are quoted anonymously, helping to create equivalencies for all traders regardless of their size and sophistication, and facilitating better price discovery and transparency for the market.
- Contracts traded and matched in the SGX are guaranteed by SGX's Derivatives Clearing House, which is in turn, guaranteed by a common bond system, providing counterparty credit risk mitigation.
- Cleared contracts are 'marked to market' (revalued) and settled daily i.e., market participants receive the profit or pay the losses made on their positions daily, enabling efficient management of trade positions and accounts. This ensures losses due to price fluctuations are accounted for and settled, preventing the accumulation of large losses.[143]

[138] New Zealand Government, 21 May 2019, *Electricity Price Review. Hikohiko Te Uira. Final Report*, (online) [accessed 14 December 2021].

[139] Ibid.

[140] Participants agree on a price ahead of time, locking in the price at which each will buy and sell electricity.

[141] Electricity Authority, November 2019, *Hedge-Market Enhancements (market making): Ensuring market making arrangements are fit-for-purpose over time. Discussion paper,* (online) [accessed 14 December 2021].

[142] Ofgem, 18 December 2014, *Wholesale Power Market Liquidity: Interim Report*, (online) [accessed 14 December 2021].

[143] SGX also notes other benefits of its market such as increased capital efficiency through automatic multilateral netting of trade positions, margin offsets for market participants holding opposite positions in electricity futures and correlated products, global access via electronic trading and access from major financial centres in London and Chicago. SGX's margining system is described on its website. (online) [accessed 14 December 2021].

Similarly, the ASX platform, which sells New Zealand contract products, identifies the benefits of contracting on its platform as:

- Forward price transparency, with futures prices looking forward 3 years, as well as historical end of day settlement prices.
- Cash settled ASX futures wholesale electricity market spot prices, with no electricity derivatives involving the physical delivery of energy, providing opportunities for speculators, and ensuring liquidity in the New Zealand market.
- A range of products, 39 plus futures and options contracts, available across each of the New Zealand electricity nodes (Benmore and Otahuhu).
- Access to contracts underpinned by renewable energy generation, which is extensive across the New Zealand Electricity market (the New Zealand government is targeting 100 per cent renewable energy generation by 2030).
- Opportunities for generators and retailers, including:
- Price risk management – allows a business to protect itself against price fluctuations and take greater control of the prices the business receives or pays.
- Managing counterparty credit risk – the market is centrally cleared, with daily margin collection, helping to ensure participants meet their obligations.
- The ASX offers market making incentives to promote liquidity in the electricity market. [144]

The main features of standardised markets

The primary features of standardised markets can be loosely categorised as being:

1. Prescribed elements of markets, that are influenced by the characteristics of the underlying market for electricity in a particular jurisdiction, such as the volumes and types of products.

2. Inherent characteristics of markets, such as 'anonymity in trading.'

3. Operational characteristics of markets, produced through the combined operation of the various elements of a market, such as the forward price curve, which is shaped by such elements as the buy and sell prices, given a maximum spread, over a maximum cumulative contract duration.

Each of these types of features is discussed within the context of the three international jurisdictions, with consideration given to the main theories outlined by regulators about their objectives, and any learnings following implementation of the features in their respective standardised market.

Analogous features in the WEM are identified and, together with feedback provided from market participants, are used to assess how effectively each feature is meeting its purpose.

Supply of standardised contracts

Standardising contracts promotes liquidity and reduces transaction costs, such as fees, administration costs, and the provision of information, for trading in products that are

[144] ASX, October 2021, *New Zealand Energy: ASX New Zealand Energy Products Fact Sheet. Version 1*, (online) [accessed 14 December 2021].

standardized in terms of features such as the volume of electricity traded, the length of the contract and/or expiration dates, and the contract size. The costs are smaller than those observed when trading in products that are customised to buyer needs and that require negotiation of all the details of a forward OTC contract.[145] Standardisation of contracts allows parties to easily buy a product and later, if they choose to do so, to sell it back to the market at prevailing prices.

Standardisation of risk management contracts characterizes all markets considered in this review, including the WEM, where Synergy is required to provide standard products. For example, in the WEM contracts are standardised in terms of their term (quarterly and annual), coverage (peak and flat periods), volume, and general contract conditions. Each contract is advertised for sale or purchase between about 15 months and 1 month in advance of a settlement period.

Additionally, in the WEM, there are non-discrimination requirements whereby Synergy must ensure that:

- A wholesale supply of electricity is not offered to the retail business unit on terms and conditions that are, having regard to all relevant circumstances, more favourable than the terms on which a wholesale supply of electricity is offered to retail competitors or generation competitors; and
- The financial interests of the retail business unit are not considered in determining the terms and conditions on which a wholesale supply of electricity is offered to retail competitors or generation competitors.[146]

Synergy can supply everyone in the market on the same terms and conditions, but it cannot advantage its own retail business unit on the terms and conditions of supply.

There is thus, also a degree of standardization passed through in delivering customised products, which possibly reduces some of the cost of contracting with Synergy in the WEM.

Speculative trading

In the Singapore and Great Britain markets, market participants can take physical delivery of electricity or, along with speculators, they can trade in financial products. In the New Zealand market, no electricity derivatives involve the physical delivery of energy.

As noted in above, speculators that are not market participants seek to profit from trading in standardised products, in exchange for taking risk, and the market still benefits through an increase in the number and diversity of participants in the market, allowing participants to find counterparties for their trades more easily.

The standard products in the WEM are open to trading for market participants only. This limits speculative trading for standard products to a discreet number of parties, as market participants may speculate on price movements and trade standard products for speculative reasons rather than hedging. Nevertheless, this increases market activity and thus contributes to improved price discovery.

[145] Kirschen, D.S. & Strbac, G., 2019, *Fundamentals of Power System Economics. Second Edition*. John Wiley and Sons Ltd. p. 41.

Credit requirements

As noted above, the credit details for entering into standardised product transactions in other jurisdictions are handled by the independent market platform that the participants trade on.

Under the regulations, Synergy is required to prepare and maintain a written policy setting out standard processes to be followed in offering a wholesale supply of electricity to the retail business unit, a retail competitor, or a generation competitor, including processes for:

- assessing the ability of the retail business unit, the retail competitor, or the generation competitor to make payments for the wholesale supply of electricity,
- determining the terms and conditions on which the wholesale supply of electricity is to be offered, considering that assessed ability,
- ensure credit terms are not, having regard to all relevant circumstances, more favourable to the retail business unit than terms offered to a retail competitor or a generation competitor.
- Synergy must comply with this policy, which must be published on Synergy's website [147].

Interviews with market participants indicated that there is often little option available for trading other than with Synergy. It is clear from interaction with newer, smaller independents that the collateral arrangements are a challenge.

With few alternatives to Synergy in the market, the requirement to provide credit histories for trading in standard (or customised products) may leave other participants with little alternative but to either provide Synergy (with whom they should compete) with their commercially sensitive information, or to work with an alternative business model that largely removes the possibility of competing for customers in the retail market.

Anonymity

In other jurisdictions, in standardised markets, there are multiple market makers (not just one), and counterparties remain anonymous when trading with each other. The use of anonymous trading allows for bilateral contracting between parties that is based on price and quantity, without focussing or behaving based on who the counterparty is.

As noted by the SGX (see above), anonymity helps to create equivalencies for all traders, regardless of size or sophistication, facilitating better price discovery and transparency, and enabling the management of risk. Rather than needing to enter the market as a gentailer or to work with different business models, new entrants can procure hedge cover along with incumbents.

Feedback from stakeholders indicates that, in the WEM, Synergy provides most of the risk management products in the market, with trading in standard and customised contracts being anonymous to all but Synergy.

Nevertheless, the non-discrimination requirements ensure that Synergy does not advantage its retail business unit in comparison to generation or retail competitors, and that the advertised prices and terms and conditions for particular standard products are also available to all equally as customised products.

[147] As set out in the *Electricity Corporations (Electricity Generation and Retail Corporation) Regulations 2013*. (online) [accessed 14 December 2021].

Information asymmetry

In the Singapore jurisdiction, at market commencement, the success of the Electricity Futures Market was premised on there being little or no significant information asymmetry between the physical players (e.g., generators) and non-physical players (e.g., independent retailers and financial institutions).[148]

The EMA considered that information symmetry was critical to ensuring that the participants were able to trade on a level playing field and to building confidence in the Electricity Futures Market. Toward this end, the EMA intended to review and bridge gaps in physical market information disclosure to ensure fair access to information by participants in both the wholesale and futures markets, to such information as outage plans, forecast demand and prices, and gas curtailment.[149]

A large information asymmetry exists in the WEM, with Synergy owning and controlling most of the generation share in the market. Synergy is the sole known provider of publicly available standardised contracts and Synergy supplies energy through the OTC contract market as customised products. As a result, Synergy not only has access to a lot of information regarding the physical market, but it also has access to most counterparties trading and credit histories.

However, as noted above, the non-discrimination requirements ensure that Synergy does not advantage its retail business unit, or other generation and retail competitors when accessing products.

Access to buy or sell products when a participant needs them

Ofgem considers that access to buy and sell contracts when a participant needs them is essential to the operation of independent generators and retailers in electricity markets. If an independent generator or retailer is not certain that they can trade in electricity contracts to mitigate the risk of price volatility in the spot market, they may not enter the market. This poses a barrier to competition and may also limit investment in the market.[150]

In the WEM, either party to a Standard Product Agreement can act as a seller or buyer of a standard product. However, the ERA's analysis shows that the ability for participants other than Synergy to act as a seller of standard products has been prevented by Synergy setting the buy price unreasonably low, based on the maximum spread between the buy and the sell price, which is often well below Synergy's expected average spot price

In the WEM, one participant can purchase the maximum weekly volume, leaving no access to standard products. In this case, the participant should be able to access a customised product with the same terms and conditions, including the price, as the standard product, which can be a benefit of the EGRC scheme.

However, interviews with market participants indicated that, if access to standard products is impeded by concerns about the terms and conditions of Synergy's products (such as the need to meet credit requirements that expose its commercial information to a competitor), and the participant is unable to contract with someone else, participants will look to trade in the STEM.

[148] Energy Market Authority, 22 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper* (online) [accessed 14 December 2021].

[149] Ibid.

[150] Ofgem, 20 November 2013, *Wholesale power market liquidity: statutory consultation on the 'Secure and Promote' licence condition - Impact Assessment,* (online) [accessed 14 December 2021].

This is not ideal because trade in the STEM does not provide access to the same risk management cover, but instead, to a one day-ahead risk management instrument. These market participants remain exposed to uncertainty and volatility in spot prices, which is the very reason for wanting to contract in the first place.

Regular trade in products

The benefits of regular trade in products are best explained by Ofgem in its implementation of its S&P generator licence condition. Ofgem noted at the time that as participants trade, they reveal information about their valuation of the product, which is then incorporated into the market price to build a robust 'consensus view' of market prices.[151]

These 'price signals' then provide information upon which market participants can make trading decisions i.e., retailers can use prices to inform hedging strategies and tariff offers to consumers, whilst generators can use price signals to inform when to sell generation, make operational decisions (e.g., maintenance outages), and, in the longer -term, investment decisions. In contrast, a lack of price signals or opportunities for trade can deter participants from trading, further reducing liquidity.[152]

Similarly, but more recently, the EA in New Zealand, explained that the forward price curve is enhanced when more participants post bids and offers. If other parties, beside market makers, wait for a bid or offer that is suitable to them, less useful information is provided to the market than if they make offers based on their own understanding of the future. This forward curve provides a public good from which everyone benefits.[153]

In the WEM, Synergy publishes its standard product prices in the market as a requirement under the Electricity Generation and Retail Corporation Regulatory Scheme. Without regulatory intervention, Synergy would not be likely to publish its forward prices voluntarily. This is because the market for forward contracts in the SWIS is concentrated and Synergy is incentivised to trade forward contracts bilaterally and negotiate for the highest sell price possible or lowest buy price possible. When publishing standard product prices Synergy, will not consider the benefits to the market of transparency and information symmetry provided by standard product prices and transactions.

Since commencement of the standard product regime, trade in sell standard products has been intermittent, with only a few transactions in some years and multiple transactions in other years. Transactions in buy products have been negligible, with only eight transactions since market commencement in mid-2014.

In the WEM, publication of Synergy's prices provide transparency to the market i.e., it is clear to market participants what they will have to pay to transact with Synergy for a risk mitigation contract. However, the process of price discovery is limited because Synergy is the only participant required to publish prices for standard contracts. The published prices represent Synergy's expectation of future market prices only i.e., the consensus view of Synergy's wholesale and retail business units, rather than the consensus view of the market.

This is not to state that Synergy's standard product prices do not provide any benefit to the market. Standard product prices reveal Synergy's expectation about future spot prices, which

[151] Ofgem, 20 November 2013, *Wholesale power market liquidity: statutory consultation on the 'Secure and Promote' licence condition - Impact Assessment,* (online) [accessed 14 December 2021].

[152] Ibid.

[153] Electricity Authority, November 2019, *Hedge-Market Enhancements (market making): Ensuring market making arrangements are fit-for-purpose over time. Discussion paper* (online) [accessed 14 December 2021].

is an important piece of information to market participants because Synergy, with its large generation and retail share, is the entity with the best information available to forecast future prices.

Synergy's expectation of future spot prices is currently reflected as a range in which prices are most likely to fall, the range between standard product buy and sell prices. The larger this range, the weaker the level of price discovery provided by standard products. With an increase in liquidity of standard product trades, the price discovery function of standard products can increase. With an increase in the liquidity of the trades, the buy and sell prices converge to the market's expectation of future prices in the spot market.

There is limited contracting in the standard product market. This is exacerbated by the fact that one participant in the market can contract for the entire volume of standard products at the start of a week and there is no requirement for Synergy to refresh its available volume until the start of the following week.

Forward price curve

In the New Zealand market, as with markets elsewhere, participants buy and sell financial instruments, with prices based on expectations about the spot market and its underlying conditions.[154] The EA considers that an important function of exchange traded futures is therefore to provide a forward price curve that informs decision making, such as:

- whether to make an investment in generation, undertake demand response, or Distributed Energy Resources (DER), or to invest in some other sector where electricity is used as an input to production,
- whether to operate generation plant, undertake demand response or operate DER, or run an industrial plant or process for which electricity is used as an input,
- the value a generator places on its ability to store fuel,
- at what price to offer to sell electricity to retail customers.[155]

The forward price curve provides a public good i.e., it is non-excludable (prices are published and available to all) and non-rivalrous (one company using the forward price curve to inform decision making does not prevent others from using it to inform decision making). [156]

In the WEM, the forward price curve produced by Synergy's advertised prices provides a 'rough' indication to market participants of where Synergy expects future market prices will fall, i.e., anywhere between the buy and sell price, within a maximum range of 20 per cent [157] (see discussion on maximum spreads below).

Maximum spread

The EMA initially proposed a staged approach to the development of the Singapore Electricity Futures Market, where liquidity was to be built up over three phases throughout one year. The

[154] Electricity Authority, 2 November 2021, *Market Insight – Trading and Open Risk Update*, (online) [accessed 14 December 2021].

[155] Electricity Authority, November 2019, *Hedge-Market Enhancements (market making): Ensuring market making arrangements are fit-for-purpose over time. Discussion paper,* (online) [accessed 14 December 2021].

[156] Ibid.

[157] Noting that the current maximum spread is set at 20 percent, and that Synergy always uses the maximum spread

two-way price making spread would decrease over the phases, to create and maintain liquidity. The EMA noted that this is often done with the trading of other commodities in the futures markets, where there are sufficient physical providers playing this role as market makers, and it would allow generators to build the necessary skill sets and competencies for market making and trading in the futures market.[158]

Participants would be required to put up two-way pricing (i.e., both buy and sell prices) for each product, within a specified spread, in each phase. In the first phase , the spread was to be set at $20/MWh for 3 to 6 months and then it would be reduced overtime to not more than $10/MWh by phase 3, for 3 to 6 months.[159]

However, in 2014, the intended market makers for the scheme refused to take up the incentives to market make, and the market making obligation was opened to new entrants, with the EMA directly copying the New Zealand market and changing the maximum bid-ask spread to 10 per cent of the bid price.[160]

In 2017, only three years later, the Quarterly Base Load Electricity Futures two-way price making spread was $3/MWh and the Monthly Base Load Electricity Futures two-way price making spread was $4/MWh. At this time, the EMA undertook a review of the market and found that the open interest mix tended to be more heavily weighted in the earlier five of the nine quarterly contracts that market makers were required to provide (i.e., market participants tended to trade in quarterly contracts over shorter time horizons). [161]

As such, the EMA proposed that a dynamic spread, varying with changes in historical bid prices, would ensure that the spread reflects changes in the prevailing market conditions and remains relevant. [162] Later, the EMA also proposed tighter spreads for non-prompt futures contracts, to incentivise longer term hedging behaviour and greater liquidity in contracts that are further away from maturity.[163, 164]

To assess the market readiness for tighter spreads, the EMA noted that it would request for eight price bids based on the two indicated spreads (i.e., (i) $1/MWh or 2% of bid price, whichever is lower, or (ii) $2/MWh or 2% of bid price, whichever is lower), and the possible number of market makers to be awarded (i.e., 4 to 7). After receiving the bids, the EMA would then determine which of the two spreads would be implemented for the market making scheme.[165]

Industry feedback on the refinements to the spread was mixed. Some respondents felt that the two-way price making spread of $1/MWh or 2% of bid price, whichever is lower, for the quarterly base load electricity futures was too tight, especially given a lack of trading activity due to low wholesale prices. Many respondents considered that the scheme would be unlikely to increase liquidity as it did not incentivise market makers to tighten their spreads. One

[158] Energy Market Authority, 22 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper,* (online) [accessed 14 December 2021].

[159] Ibid.

[160] See Table 3.1 (page 15) and Appendix B of NERA's, 2019, *International Experience with Market Making Obligations*, (online) [accessed 14 December 2021].

[161] A similar outcome was observed again in 2019.

[162] For example, Q1 2018 would be based on available historical bid prices for Q4 2017.

[163] A prompt contract is a futures contract which is closest to maturity.

[164] Electricity Market Authority, July 2019, *Development of the Electricity Futures Market - Second Phase of the Futures Incentive Scheme (FIS)*, (online) [accessed 14 December 2021].

[165] Ibid.

respondent proposed tighter spreads of 0.5% of the bid price. There was no feedback on the corresponding spread for the monthly base load electricity futures.[166]

From August to December 2018, the Quarterly Base Load Electricity Futures two-way price making spread was $2/MWh. From January 2019 onwards, the spread was set at $1/MWh or 2 per cent of the bid price, whichever is lower, for quarterly contracts, and the prevailing quarterly contract two-way price making spread plus $1/MWh for monthly contracts.[167]

Initially, in the Great Britain market, the limits on the percentage spread between bid and offer prices at any time, for each product, within the first three months, were as provided in Table 2 below. Thereafter, the percentage spreads are presented in the second table.

Table 2 Spreads between bid and offer prices in the first three months of the Secure and Promote licence conditions

Product	Baseload	Peak
Month + 1	0.7%	0.9%
Month + 2	0.7%	0.9%
Quarter + 1	0.7%	0.9%
Season + 1	0.7%	0.9%
Season + 2	0.7%	0.9%
Season + 3	0.8%	1.2%
Season + 4	0.8%	N/A

Table 3 Spreads between bid and offer prices following the first three months of the Secure and Promote licence conditions

Product	Baseload	Peak
Month + 1	0.5%	0.7%
Month + 2	0.5%	0.7%
Quarter + 1	0.5%	0.7%
Season + 1	0.5%	0.7%
Season + 2	0.5%	0.7%
Season + 3	0.6%	1.%
Season + 4	0.6%	N/A

[166] Electricity Market Authority, July 2019, *Development of the Electricity Futures Market - Second Phase of the Futures Incentive Scheme (FIS)*, (online) [accessed 14 December 2021].

[167] SGX Electricity derivatives. (online) [accessed 14 December 2021].

According to Ofgem, a tighter spread directly delivers a clearer view of the price, improving price discovery and product availability, with increases in market activity having a self -re-enforcing influence on activity in the market.[168]

In the New Zealand market, the EA defines the bid-ask spread as a component of the risk premium involved in securing a fixed price for future electricity purchases or sale in the face of that uncertainty. The EA considers that the width of the spread indicates, among st other things, the level of uncertainty about future spot prices such that, if uncertainty increases, the bid/ask spread widens (in the absence of other factors). The EA notes that it would be concerned if bid-ask spreads could not widen during periods of uncertainty, as this would remove an important signal about expectations of price possibilities and mute the market's collective view of the future.[169]

The New Zealand Government initially required that the spread be implemented at 10 per cent (market makers had to offer to sell contracts at no more than a 10 per cent higher price than they offered to buy them). This obligation was later tightened down to 5 per cent. [170] More recently, market makers must not provide a quote with a bid-ask spread that exceeds the greater of 3 per cent or NZ$2.[171, 172]

Thus, in all three international jurisdictions, the maximum spreads were introduced with much less width than the spread in the WEM. They were then reduced to 3 per cent and below quite rapidly.

In the WEM, the maximum spread was initially set at 25 per cent until 1 January 2015 when it was reduced to 20 per cent. The spread was reduced to 15 per cent for the duration of 2020, leading to an increased volume of transactions. However, on 1 January 2021, after ju st 1 year, the spread reverted to 20 per cent.

Synergy has always set its buy and sell prices using the maximum buy sell spread in the standard product regime. There has never been movement in the spread to reflect increasing or decreasing uncertainty, such as may occur based on the positioning of products later in the time horizon, or with changing market conditions.

There have been no standard product transactions since the spread increased back to 20 per cent on 1 January 2021.

Price constraints

Under the Great Britain's S&P licence condition, to ensure efficient costs, the licensee's quoted prices had to be as good as the best price that was available to the licensee in the market for the relevant product, at the relevant time. The licensee was not exp ected to price on more attractive terms than the relevant market price and, if that market price was not

[168] Ofgem, 20 November 2013, *Wholesale power market liquidity: statutory consultation on the 'Secure and Promote' licence condition – Impact Assessment* (online) [accessed 14 December 2021].

[169] Electricity Authority, November 2019, *Hedge-Market Enhancements (market making): Ensuring market making arrangements are fit-for-purpose over time. Discussion paper* (online) [accessed 14 December 2021].

[170] Calculated as the sell price minus the buy price, divided by the sell price. See 1 September 2021 version of the *Electricity Industry Participation Code 2010*, for the definition of the bid-ask spread (page 7), (online) [accessed 14 December 2021].

[171] Ibid.

[172] Expressed as a dollar value, the spread is the difference in price between a buy price and sell price for an electricity future of the same type. Expressed as a percentage, the spread is calculated by obtaining the difference between the price to buy an electricity future and the price to sell an electricity future of the same type and dividing it by the price to sell the electricity future.

available, they had to instead offer the best price that they could trade at, provided that the quote could include separately itemised:

- Risk premiums – that must be objectively justifiable and itemised, reflecting the risk to the licensee of trading in volumes smaller than those available to the licensee in the wholesale electricity market. Ofgem accepted that some risk is incurred by trading small clip sizes that cannot immediately be backed out in the market and allowed for a premium to be added to the quoted price to reflect this risk. Ofgem specified that, if no demonstrable risk existed, then no risk premium could be charged. Ofgem did not expect the risk premiums to be excessive or to vary greatly between S&P licensees and warned that if it felt that this rule was being abused, it would review it and may seek to either make it more prescriptive or remove it.
- Wholesale market trading fees - at any cost (on a pro-rata per MWh basis) incurred by the licensee in executing the trade of the relevant product, excluding any administrative charge or any other internal costs (e.g., staff costs) incurred because of trading with the eligible trading partner. To be clear, Ofgem noted that the licensee was permitted to pass on the wholesale market trading fees incurred in executing a trade, but it was not permitted to pass on a portion of any fixed fees incurred from being a member of a trading platform.
- The requirement to itemise any risk premium or wholesale market trading fees could be met through itemisation at the point of quotation if it was clear to the eligible trading partner. [173]

In the WEM, Synergy's pricing is constrained by the non-discrimination requirements (see section on 'Supply of standardised contracts' above) and the maximum spread. Apart from this, there are no constraints on Synergy's product pricing. There are no requirements for itemising or justifying risk premiums or for the inclusion or exclusion of administration costs, making it difficult to determine whether products are priced efficiently.

Type of product

The EMA, the SGX and the electricity industry launched Singapore's Electricity Futures Market in April 2015, starting with quarterly base load futures contracts only. [174] An additional requirement for a near term (prompt) quarter contract, allowing for trading during the quarter itself, was also added to improve the initial liquidity of the electricity futures market. [175]

In April 2017, to complement the existing quarterly base load futures contracts and cater for the needs of different stakeholders, the SGX launched monthly base load electricity futures contracts. These contracts could, for example, allow generators to hedge more precisely when on planned maintenance, and provide retailers with more options for structuring their hedges when their retail contracts did not start at the beginning of a quarter. [176]

Similarly, in the New Zealand market, the electricity contract products include Base Load Monthly Futures, Base Load Calendar Quarter Futures, and Base Load Calendar Quarter

[173] Ofgem, November 2014, *Liquidity in the Wholesale electricity market (Special Condition AA of the electricity generation licence): Guidance.* (online) [accessed 14 December 2021].

[174] Energy Market Authority, 1 August 2017, *Enhancing the Development of the Electricity Futures Market: Consultation Paper* (online) [accessed 14 December 2021].

[175] For example, a trader would be able to trade an electricity futures contract on 2 December 2014 even through the maturity date of the contract was 31 December 2014.

[176] The EMA noted that any introduction of new electricity products by SGX would seek to benefit the industry by expanding the portfolio of electricity products available to stakeholders, providing them with more hedging options to meet their needs.

Average Rate Options. Unlike the Singapore market, however, the New Zealand market offers Peak Load Calendar Quarter Futures.[177]

The Great Britain S&P Licence condition included peak and baseload products, labelled as: Month + 1, Month + 2, Quarter + 1, Season + 1, Season + 2, Season + 3 and Season + 4.[178,179] This was to ensure that all market participants, including independent retailers and generators, had opportunities to trade in a range of products, providing robust price signals along the curve that are needed to compete effectively, and allowing participants to hedge their physical positions.[180]

In the WEM, the Standard Product Arrangements specify that Synergy must supply peak and flat, quarterly and annual products, including both calendar and financial year contracts, out to two years.[181]

Whilst all markets have differing characteristics and hence may differ in terms of the products that are offered, a notable absence from the product range in the WEM that is included in the three international markets is a monthly product. Interviews with market participants indicate that there is some interest in being able to access such a product, as the lead time to the start of delivery (i.e., to the start of a quarter) can be prohibitive if risk management is needed for the near term, and the Standard Product Arrangements do not allow for in-period (i.e., within a quarter) trading.

If monthly products were offered as standard products, the advertised prices would provide greater transparency to market participants, with prices also reflected in customised product prices. Monthly products may help retailers to better address their load shape and allow generators to address maintenance periods.

Refresh requirements

In the Singapore market, it was initially proposed by the EMA that market makers would be required to refresh their two-way pricing immediately after a transaction, once in phase two and once in phase three, followed by the market makers best endeavours to provide the products. However, the refresh requirement in the market was later revised to be simply not less than one in phase 3.[182, 183]

[177] ASX, October 2021, *New Zealand Energy: ASX New Zealand Energy Products Fact Sheet. Version 1*, (online) [accessed 14 December 2021].

[178] The UK has two seasons for wholesale energy i.e., Winter which runs from October to March, and Summer which runs from April to October. The contracts are thus 6-monthly.

[179] "Week+1" referred to the weekly product for delivery, starting the week following the current week (i.e., for a request to trade occurring in Week 39, the licensee had to be willing to trade in Week 40 if requested by an eligible company. Similarly, for "Month+1" the licensee had to be willing to trade in the month (e.g., May) following the current month (i.e., April). "Quarter+1" is the quarter following the current quarter, so if the request to trade occurred in quarter one, the licensee had to be willing to trade in quarter two. "Season+1" was the season starting the current season, so if the request to trade occurred in Summer 2014, the licensee had to be willing to trade in Winter 2014.

[180] See Schedules A, B and C of the license condition in Ofgem, 23 January 2014, *Decision notice under Section 11A(1)(a) of the Electricity Act 1989*, (online) [accessed 14 December 2021].

[181] Electricity (Standard Products) Wholesale Arrangements 2014 (online) [accessed 14 December 2021].

[182] Energy Market Authority, 22 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper,* (online) [accessed 14 December 2021].

[183] The phased approach was utilised to allow market makers to calibrate their risks accordingly .

The required volume of each product in the Electricity Futures Market was not larger than 0.5 MW for each of the 48 half-hourly Trading Intervals in a day (priced at the Uniform Singapore Energy Price: USEP), over the contract length.[184]

Together, the volume and the refresh requirements in the Electricity Futures Market worked to provide market participants with the assurance that continuous prices would be available for participants to enter into and exit from trading positions. The EMA considered that if market makers were not required to refresh their quotes following contracting, this could limit liquidity during periods of high trading.[185]

At present, in the Singapore Electricity Futures Market, market makers are required to provide not less than four reloads, to be made immediately after a transaction, with no grace period for refreshing quotes. This provides an assurance that prices are continuously available during the market making window.[186]

In the Great Britain market, licensees would post bids and offer prices simultaneously, for each product, and where a transaction took place, the licensee would post a new bid or offer price for the product within 5-minutes of the acceptance of the first bid or offer.

In the WEM, the volume of each product in the standard product regime is set in the regulations as 0.5 MWh per trading interval. There is also a 5 MW volume limit, per week, on buy and sell products. Synergy can offer more than 5 MW per week if it decides to do so, though this has occurred only once in the history of the market (for sell products).

Synergy must publish and update, in as close to real time as practicable, the availability of all standard products; and, in each transaction week, the remaining weekly supply availability, and the remaining weekly acquisition availability for that week.

In 'as close to real time as practicable' is not a defined term and arguably removes the need for 'immediacy', given other factors (constraints or practicalities), in signalling a change in availability of the products to the market. Additionally, under the regulations, one participant can purchase or sell the total available volume required to be made available in one week, at one time. There are no requirements for reloads within this week.

This can be problematic where the purchase of the entire weekly volume can mute price signals in the publicly facing standard product market. Others are prevented from purchasing standard products, though they can enter into confidential customised transactions with the same features at the same price.

Contract volume

In the Singapore Electricity Futures Market, the EMA initially proposed that the market making volume would increase over the market implementation phases. The EMA considered that, along with a decrease in the spread, this was similar to how liquidity is often created and maintained in the trading of other commodities in the futures markets, where there are

[184] Energy Market Authority, 22 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper,* (online) [accessed 14 December 2021].

[185] Ibid.

[186] SGX Electricity derivatives (online) [accessed 14 December 2021].

sufficient physical providers playing this role as market makers. The contract size was initially set at not larger than 0.5 MW per half hour, per day, over the contract length.[187]

However, as noted earlier, two years later, in 2017, a review of outcomes in the Singapore Electricity Futures Market showed that the open interest mix tended to be more heavily weighted in the earlier five of the nine quarterly contracts provided by market makers.

Accordingly, the EMA suggested that the volumes in the later four quarters be reduced, to lessen the associated burden on market makers. The EMA considered that if the base volume of each product was reduced, particularly for longer duration contracts, then the refresh requirements could be increased to maintain the total overall volumes, whilst providing more opportunities for trade.[188]

Today, in the Singapore market, the requirements for quarterly base load electricity futures are 6 lots of 0.5 MW contracts (totalling 3 MW) for each side (buy and sell), for each of the first 5 listed quarterly contracts; and 4 lots of 0.5 MW contracts (totalling 2 MW) for each side, for each of the next 4 listed quarterly contracts. Requirements for monthly base load electricity futures are 6 lots of 0.5 MW contracts for each side, for each of the 4 to 6 listed monthly contracts[189]

In the Great Britain market, the minimum product volume was 0.5 MW and eligible suppliers (i.e., retailers) could buy or sell any product in a volume of any integral multiple of the minimum volume, not exceeding 10 MW. The licensee could trade (both buy and sell) in smaller clip sizes or increments (e.g., 0.2 MW or 6.7 MW) if it chose to do so but was not obligated to. The maximum volume required to be traded in a year was 0.5 TWh, after which the generator was not required to enter into anymore transactions, but it could if it wanted to. [190]

The volumes of each product for which bid and offer prices must be posted were 5MW and 10MW; but if the licensee nominated as nominee (a person who or whose affiliate was itself a relevant licensee or was appointed as nominee by another relevant licensee), the volumes were: 5 MW, 10 MW, 15 MW and 20 MW. [191]

In November 2015, the New Zealand EA published a 'Market Insight' report on its website noting that the derivative contracts traded on the ASX were now being traded in a 0.1 MW per hour sized contract, instead of the traditional 1 MW per hour contract. This was a move that the EA considered would be a game changer for small, but growing, retailers looking to effectively manage the risky business of buying electricity at fluctuating spot market prices and selling electricity at fixed prices to their customers.[192]

The EA calculated that, as a retailer, you would need about 1,000 residential customers to have sufficient capital to purchase a 1 MW per hour futures contract. However, you would only need about 100 residential customers if the futures contract size was reduced to 0.1 MW per

[187] Energy Market Authority, 22 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper* (online) [accessed 14 December 2021].

[188] Energy Market Authority, 1 August 2017, *Enhancing the Development of the Electricity Futures Market: Consultation Paper* (online) [accessed 14 December 2021].

[189] SGX Electricity derivatives (online) [accessed 14 December 2021].

[190] Ofgem, 23 January 2014, *Liquidity in the Wholesale Electricity Market (Special Condition AA of the electricity generation licence) – Guidance*, and Ofgem, 23 January 2014, *Decision notice under Section 11A(1)(a) of the Electricity Act 1989*, (online) [accessed 14 December 2021].

[191] Ibid.

[192] Electricity Authority, 11 November 2015, *Reduction in size of New Zealand Electricity products Traded on ASX*, (online) [accessed 14 December 2021].

hour, allowing retailers to obtain risk management at a level that more closely matches the growth in their residential customer base.[193]

The EA further considered that, with the reduction in contract size, industrial consumers, commercial parties, and even financial intermediaries may be encouraged to participate more actively in the futures market. Additionally, the EA noted that the pricing of futures contracts is based on the daily settlement of each contract. Accordingly, the more futures contracts that are traded by different parties, the more confident the market would be in the forward price curve.[194]

The EA concluded that by providing small retailers and other businesses realistic access to smaller contracts on the ASX, they would have more opportunity to grow their businesses and further enhance retail competition for consumers. Finally, it is noteworthy that the EA also noted in its report that it felt positive about the change to the contract size because a greater range of businesses would find the ASX market an attractive place to buy their electricity futures contracts. [195]

At present, for a minimum of 25 minutes in every market-making period, market makers in New Zealand are required to provide quotes to buy and sell a minimum of:

- 30 monthly (i.e., that is 30 buy and 30 sell) base load futures contracts for each of the Otahuhu and Benmore reference nodes, for the current month, and each of the five months following the current month; and
- 30 quarterly (i.e., that is 30 buy and 30 sell) base load futures contracts for each of the Otahuhu and Benmore reference nodes, for each quarter that is available for trade on an exchange.[196]

In the WEM, feedback in interviews with market participants has indicated some interest in smaller products to help balance their loads at the margins. There is no suggestion in the historical data for the WEM of a propensity for trading in contracts over different time horizons, requiring differing product volumes for differing product types (e.g., aquarterly contract versus an annual product).

Maximum cumulative contract length

The EMA in the Singapore market considers that the cumulative contract duration is indicative of the length of the forward curve for the market. Initially in the Singapore market, the EMA proposed that in phase 1 of implementation, the length of the forward curve would be one year. However, participants would ultimately be able to trade electricity products up to three years ahead, enabling market makers to price electricity more effectively and efficiently ahead of time, and at the same time ensure a robust price discovery process in the market.[197]

Now in the Singapore Electricity Futures Market, the cumulative contract length is two years, which the EA considers provides market participants confidence in pricing their contracts

[193] Ibid.

[194] Ibid.

[195] Electricity Authority, 11 November 2015, *Reduction in size of New Zealand Electricity products Traded on ASX*, (online) [accessed 14 December 2021].

[196] The quantity of buy or sell quotes the participant must provide in each market-making period is reduced by the number of contracts of the same type bought or sold by the participant during that market-making period.

[197] Energy Market Authority, 22 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper* (online) [accessed 14 December 2021].

(even with a maximum spread of only 3 per cent or NZ$2), balanced with the need to offer longer duration hedging cover.

In the WEM, annual products are offered, at most, 15 months ahead (e.g., in 2021, products are available for calendar years 2022 and 2023 and for the financial year 2022/ 2023). By contracting in multiple contracts, hedge cover can be obtained for up to 2.5 years. In submissions from Synergy to the ERA's review of the standard product regime, Synergy has previously expressed concerns about its ability to forecast and set prices two years ahead, given a reduced spread.[198]

Market making window

In the Singapore market, to help concentrate liquidity and trading at a specific time, the EMA's initial proposed minimum period for market making was half an hour each trading day. During this period, as well as putting up two-way pricing for the required number of contracts or volumes of trade, market makers could also make additional trades (i.e., single sided trades of either buy or sell products) and market makers could also trade at other trading times.[199]

Currently, in the Singapore Electricity Futures Market, the market making window for each Singapore business day is between 2 and 5 pm, and not less than half hour, as may be directed by the exchange.

In implementing its market, Ofgem's intent was that independent generators and retailers would be able to access products offered by licensed market makers on an accessible, qualifying platform, in each 60-minute trading window, starting at 10.30 hours and 15.30 hours, every business day.[200]

In the New Zealand market, the participant must provide quote to buy and sell products for a minimum of 25 minutes in each market making session.[201]

In the WEM, parties can transact in standard products between the hours of 10.00 am and 4.00 pm on WA Business Days. However, it does not appear that the extended market making window in WA increases trading activity, and though it possibly makes it more convenient to trade, it may also increase the cost of market making (though this may just reflect a requirement for more staff).

Safeguards

Under the Great Britain S&P Licence condition, once the licensee had developed a 30 MW net position in a product (i.e., the difference between the licensee's traded bid volume and traded offer volume for a product equalled or exceeded 30MW) the licensee could decide to cease posting bids and offers and withdraw for the rest of the trading window.[202]

[198] Refer to Synergy's submission to the 2016 Report to the Minister for Energy on the effectiveness of the EGRC Regulatory Scheme, p.8. (online) [accessed 14 December 2021].

[199] Energy Market Authority, 22 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper* (online) [accessed 14 December 2021].

[200] This time aligned with peak activity in the gas market.

[201] *Electricity Industry Participation Code 2010*, p. 153, (online) [accessed 14 December 2021].

[202] Ofgem, 23 January 2014, *Liquidity in the Wholesale Electricity Market (Special Condition AA of the electricity generation licence) – Guidance*, and Ofgem, *Decision notice under Section 11A(1)(a) of the Electricity Act 1989*, (online) [accessed 14 December 2021].

This volume cap applied even if the licensee subsequently carried out a trade that reduced its net position in that product below 30 MW. The licensee's obligation to post bids and offers for this product then resumed at the start of the next window.[203]

Additionally, in the Great Britain market, if at any time in a trading window, a product was traded (on any qualifying platform) at a price that was more than 1.04 or less than 0.96 times the price at which the product was first traded within that trading window, the licensee could decide to cease posting bids and offers for that product for the remainder of that trading window. Such trades may have been made by the same or different persons and on the same or different qualifying platforms.[204]

Where the licensee decided to cease posting bids and offers for a product in a trading window it had to record its decision at the time it was taken, together with details of the trades referred to above and report the time and date at which it ceased to post bids and offers for the product in its quarterly report to the Authority. The licensee's duty to post bids and offers for the relevant product would then resume at the next trading window. This 'fast market' rule was intended to be used sparingly to provide protection for licensees against extreme volatility.[205]

As noted earlier, in the New Zealand market, in each 25 -minute market making period, the market makers provide quotes to buy and sell a minimum of 30 monthly base load futures contracts and 30 quarterly base load futures contracts for each of the Otahuhu and Benmore reference nodes.

However, the market maker is exempt from these requirements if the following circumstances occur:

- If the participant cannot comply with these requirements in a particular market-making period because an exchange trading platform is disrupted or unavailable.
- If, in the reasonable opinion of the participant, entering into a contract for an electricity future in that market-making period may cause the participant to breach an applicable law.

Additionally, at the participant's discretion, it can be exempt for up to two market making periods each month (excluding scenarios (a) and (b) above) but the participant must immediately notify the Authority of the exemption it has relied on and the basis for the exemption.[206]

Under the Standard Product Arrangements in the WEM, Synergy is required to develop and publish the procedures it will apply if an offer is made for more than one standard product and Synergy has insufficient availability or remaining weekly supply or acquisition availability to fulfil all standard product transaction offers. These procedures must provide for a fair and reasonable allocation of standard products between relevant offers on a pro rata basis.

Accordingly, Synergy produced the 'Procedure for Entering into Transactions, dealing with Limited Availability and Simultaneous Offers'.[207] Under this procedure, if Synergy has insufficient availability or remaining weekly supply or acquisition availability and Synergy

[203] Ibid.

[204] Ibid.

[205] Ofgem, 23 January 2014, *Liquidity in the Wholesale Electricity Market (Special Condition AA of the electricity generation licence) – Guidance*, and Ofgem (23 January 2014), *Decision notice under Section 11A(1)(a) of the Electricity Act 1989*, (online) [accessed 14 December 2021].

[206] *Electricity Industry Participation Code 2010*, (online) [accessed 14 December 2021].

[207] Synergy, *Procedure for Entering into Transactions, dealing with Limited Availability and Simultaneous Offers*. (online) [accessed 14 December 2021].

elects, in its sole discretion, not to acquire or supply the additional standard products required to fulfil an offer, then Synergy must notify the trader as soon as reasonably practicable.

However, if Synergy has sufficient availability or remaining weekly supply or acquisition availability to fulfil part of the transaction offer, then Synergy can include a counter-offer in its notification to the trader to acquire or supply (as the case may be) that part of the trader's offer.

Synergy is also protected in the case of interruption events where the electricity that can be generated or supplied by Synergy's facilities is reduced by at least 20 percent in aggregate, resulting from circumstances that are beyond Synergy's reasonable control,[208] including any of the following (either together or in isolation):

- an unplanned network outage,
- a disruption in fuel supply,
- an unscheduled outage of Synergy's facilities,
- an unplanned outage of registered facilities specified in the Standard Product Arrangements that is expected to last more than two months.
- an interruption to publication of standard product prices due to a failure or interruption to Synergy's standard product website or other information technology systems on which Synergy relies as a result of (including but not limited to):
- the unauthorised access of the website or other information technology system; or
- a denial-of-service attack (whether such attack is a distributed denial of service or otherwise).

In the case of these interruption events, Synergy must continue to publish standard product prices for the duration of the event. Synergy is also required to notify and regularly update the Coordinator of Energy and approved counterparties, or publish regular updates on its website about the reason for the interruption event, its expected duration, and the effect of the event, including any suspension or modification of Synergy's obligations, such as:

- suspension of the availability of all standard products, and the receipt or acceptance of standard product transaction offers,
- restriction to the availability of one or more classes of standard products that Synergy will acquire or supply.

The interruption event does not alter any binding tran sactions that have already been agreed to between Synergy and a counterparty prior to the interruption event or remove Synergy's obligation to enter into a transaction where an offer was received by Synergy prior to notice of the interruption event being given to the counterparty by Synergy.

Synergy must use reasonable endeavours to resume its obligations as soon as practicable. However, it only has one business day if the interruption event is due to an unplanned outage of specified plant expected to last more than 2 months.

[208] Protection for Synergy from interruption events is included in the Standard Product Arrangements in addition to (not in place of) specific requirements in relation to force majeure events (see section 6.5 of the Standard Product Arrangements).

Market access rules

One of the main parts to Great Britain's S&P licence condition was the introduction of Supplier Market Access rules into the generation licences of the eight largest electricity generating companies. These rules provided a framework through which small independent suppliers (i.e., retailers) could access agreements to trade in the wholesale electricity market with obligated generators. The rules required that the eight largest generating companies in the market could not refuse any reasonable request from independent retailers to buy electricity and provided deadlines for responding to these requests. [209]

To become an eligible counterparty to trade with these generators, the participant had to hold a valid Great Britain electricity supply licence, so limiting the traders to hedgers, and they and their affiliates must have supplied less than 5 TWh and generated less than 1 TWh, in the 12 months ending the month before the last full calendar month. This resulted in a reg istered list of participants that could trade in products advertised under a market making obligation. Licensees were only required to comply with the Supplier Market Access rules when dealing with participants on the eligible supplier list which was to be maintained by Ofgem on its website.[210]

In the WEM, any party can transact with Synergy for a buy or sell standard product, even its closest competitors, that might also be vertically integrated. The perceived risk that a competitor may speculate on future balancing prices and obligate Synergy to enter into a buy transaction may encourage Synergy to keep its buy prices as low as possible. However, buy standard product trades can provide benefit to Synergy if Synergy can purchase energy at reasonably low prices and sell it through the balancing market at a higher price.

Optionality of market making

In the Singapore market, participation by generators was initially proposed to be voluntary. The EMA proposed that the generators and an exchange would negotiate the market making agreements and contract specifications on a commercial basis but would include several baseline requirements for market making obligations and contract specifications required by the EMA.[211]

In 2014, the seven largest generators were the only seven retailers, and the market shares of retailers mirrored their annual generation market shares, with hedging occurring through vertically integrated arms. To facilitate participation in the Electricity Futures Market, the EMA proposed to offer a commercial arrangement (an incentive) called a Forward Sales Contract (FSC) to eligible generators that had entered into market making arrangements with an exchange. However, the generators did not take up the FSC, arguing that it impose d off-setting costs on their retail arms. [212]

[209] See Schedules A, B and C of the license condition in Ofgem, 23 January 2014, *Decision notice under Section 11A(1)(a) of the Electricity Act 1989*, (online) [accessed 14 December 2021].

[210] Ofgem, 20 November 2013, *Wholesale power market liquidity: statutory consultation on the 'Secure and Promote' licence condition,* (online) [accessed 14 December 2021].

[211] Energy Market Authority, 22 October 2012, *Development of an Electricity Futures Market in Singapore: Consultation Paper* (online) [accessed 14 December 2021].

[212] Participating generators could choose whether their FSC contracts were pegged to the prevailing LNG Vesting Price or Balance Vesting Price. The choice was binary, and the generators were not allowed to switch between the price references during the tenure of the FSC scheme.

Accordingly, in response to the gentailers refusal to take up incentives to market make, the market making obligation was opened to new entrants, with altered obligations (e.g., the change to the maximum bid-ask spread to 10 per cent).[213]

In the New Zealand market, in their final report on the Electricity Price Review[214], published by the New Zealand Government on 21 May 2019, the reviewers noted that, for the past decade, the four largest generator-retailers had underpinned the development of the market by voluntarily agreeing to act as "market-makers".[215] [216] The generator-retailers had voluntarily quoted buy and sell prices with spreads of no more than 5 per cent for certain contracts, which had added depth to the contracts market, and ensured clear price signals. [217]

However, in recent years, this voluntary system had faltered at exactly the times when it was most needed i.e., when the spot market was under stress. At these times, the spread between wholesale contract buy and sell prices had become uncomfortably wide, sometimes exceeding 50 per cent.[218] The reviewers considered that spreads of this magnitude were inconsistent with a well-functioning contract market and undermined confidence in the market to manage electricity price risk.[219]

The reviewers were not in favour of forcibly separating the generating and retailing segments of vertically integrated businesses, as this would be disruptive, undermine investor confidence and stall or delay the generation investment needed to move to a low-carbon economy. Instead, they considered that the benefits of vertical integration outweighed the costs, even considering the costs of promoting competition in a vertically integrated industry, but that the benefits of allowing vertical integration should be shared more widely. Hence, the recommendation for a mandatory market-making obligation was put forward.

A review by the EA in 2019 noted that, in the past several years, market makers had reported market making costs from $1 to 4 million per year (and also a profit). [220] The drivers for market making costs variously included the number of market makers, staff costs, prudential requirements for participation, capital allocation required to absorb losses, lo sses, transaction costs, the total volume required to be offered, the obligation to trade for aparticular time period, and the maximum bid-ask spread. Volatile trading conditions increased the cost and risk of providing market making services.[221]

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[213] See Table 3.1 (page 15) and Appendix B of NERA's, 2019, *International Experience with Market Making Obligations*, (online) [accessed 14 December 2021].

[214] In April 2018, the Minister for Energy and Resources in New Zealand commissioned an independent review into the electricity market because electricity prices for residential consumers had increased faster than inflation for many years, putting pressure on households. This contrasted with prices faced by commercial and industrial customers, which remained relatively flat. Electricity Price Review (online) [accessed 14 December 2021].

[215] New Zealand Government, 21 May 2019, *Electricity Price Review. Hikohiko Te Uira. Final Report*, (online) [accessed 14 December 2021].

[216] That is, the Ministry of Business, Innovation and Employment (MBIE) and Concept Consulting.

[217] Electricity Authority, November 2019, *Hedge-Market Enhancements (market making): Ensuring market making arrangements are fit-for-purpose over time. Discussion paper* (online) [accessed 14 December 2021].

[218] Ibid,

[219] Ibid.

[220] The Electricity Authority notes that these costs were 'selectively disclosed with little context' and concludes that it is not clear whether reliable comparisons can be made between market makers and between years . Electricity Authority, November 2019, *Hedge Market Enhancements -Discussion paper*. section 5.17, p.21, (online). [accessed 14 December 2021].

[221] Ibid.

Nevertheless, as noted above, in early 2020, an intervention was made to introduce mandatory market making for four integrated generator retailers, along with interventions to increase the volume of market making contracts, and to reduce the spread between market makers bids and offers. The EA's review indicated that, together, thesechanges were effective in boosting the main indicators of market performance (see section titled New Zealand above).

As noted earlier, in 2019, Ofgem decided to suspend the market makin g obligation when faced with only two parties remaining under the obligation, that were now facing disproportionate and materially increased costs compared to others, for providing a service that was less effective in enabling the development of robust reference prices along the curve.

A follow up review on the period up to October 2020 indicated that, from the time when the market making obligation was suspended, bid-offer spreads for products previously subject to market making obligations increased on average, however all spreads remained under 2 per cent.

In the WEM, Synergy is the only market participant with a requirement to provide standard products. This requirement was introduced because the largest generator in the market merged with the largest retailer in the market.

Information from market participants suggests that there are currently few options for trading risk management in the WEM and Synergy continues to be the main supplier of these instruments. Synergy faces costs that other vertically integrated entities in the market don't face for providing this service, however, the design of the scheme also allows Synergy to recover those costs, including costs of taking risk in offering these products. Indeed, 90 percent of the time Synergy made a nominal profit on standard product trades in the review period.

Appendix 2 Summary of stakeholder submissions

The ERA's discussion paper presented the results of the ERA's preliminary analysis and sought views on how the scheme's effectiveness could be improved by:

- Reducing the maximum buy-sell spread for standard products from 20 per cent to 10 per cent for quarterly products and 5 per cent for annual products.
- Making changes to other aspects of the standard project regime. These include requiring Synergy to publish more detailed periodic financial reports and its foundation transfer price, extending the scheme's non-discrimination requirements to pricing of electricity for foundation customers and changing standard product specifications (volume, contract terms, lead times and peak period definitions).
- Considering the new prohibitions on three types of conduct by corporations in the electricity industry and the Australian Competition and Consumer Commission's inquiry into the National Electricity Market.

Formal submissions were received from:[222]

- Perth Energy
- Change Energy
- Blue Star Energy
- Shell Energy
- Alinta Energy
- Synergy
- the Expert Consumer Panel.

Five retailers supported a reduction in the maximum spread, noting that it would improve the effectiveness of the scheme by providing better price discovery, reducing the cost of hedging and minimising costs for consumers. In contrast, Synergy advised that the standard products regime already meets its objectives and that the proposed regulatory amendments will increase Synergy's costs, risks, and regulatory burden, beyond the benefits to the market anticipated by the ERA.

All retailers, except for Synergy, supported the publication of more detailed periodic finan cial reports to provide greater transparency and confidence to the market that Synergy is complying with the scheme.

Stakeholders' responses to each of the discussion paper questions are summarised in the table below.

[222] Submissions available at Economic Regulation Authority, 'Review of Synergy's Regulatory Scheme 2018-2020 (online) [accessed 14 December 2021].

Table 4: Stakeholder responses to questions in the discussion paper.

Discussion paper questions	Summary of stakeholder feedback
1. What benefits do counterparties trading with Synergy anticipate would arise from changing the regulations to include lower maximum spreads for advertised standard products?	Shell Energy noted that it expects a lower spread will remove a significant barrier to effective price discovery, reduce the cost of hedging, increase liquidity in the bilateral contracts market and improve the overall effectiveness of the scheme. Shell Energy considered that these benefits all align with the WEM objective of minimising the long-term cost of electricity supplied to consumers.[223] Alinta Energy's submission agreed that the current spread is wider than necessary but presented an alternative solution to constrain Synergy's pricing. Alinta Energy raised concerns that reducing the buy-sell spread would not address the problems it identifies with Synergy's behaviour in the retail and wholesale markets. Instead, Alinta Energy recommended that Synergy be prevented from pricing below the transparent cost of its generation.[224] Perth Energy considered that the buy-sell spread is too large to support effective trading and noted that a smaller spread would lead to prices being closer to Synergy's short run marginal costs. Perth Energy noted that the current spread may be allowing Synergy to take advantage of small market participants who need to purchase standard products as a hedge against balancing market prices.[225] Blue Star considered that the proposed reduction in spread would support competition by removing barriers to entry for smaller retail competitors and new market entrants, and it would not only provide retailers access to competitively priced hedging options, but it would also have positive flow on effects on Synergy's products traded outside of the standard products framework, further underpinning a competitive environment in the WEM, and ultimately benefitting consumers.[226] Change Energy did not expect a reduction in the spread to result in a greater number of standard product trades, however, it would provide better price transparency and product availability for small retailers as a point from which

223 Shell Energy, 1 October 2021, Submission to the *EGRC scheme review discussion paper* (online) [accessed 14 December 2021].

224 Alinta Energy, 1 October 2021, Submission to the *EGRC scheme review discussion paper* (online) [accessed 14 December 2021].

225 Perth Energy, 1 October 2021, Submission to the *EGRC scheme review discussion paper* (online) [accessed 14 December 2021].

226 Blue Star Energy, 1 October 2021, Submission to the *EGRC scheme review discussion paper* (online) [accessed 14 December 2021].

Discussion paper questions	Summary of stakeholder feedback
	negotiations can occur. Change Energy considered that the buy and sell prices are important for any participant reliant on trading with Synergy, which includes most smaller participants in the WEM. [227]
2. What costs and benefits does Synergy anticipate if the alternative spreads in section 3.4.3 are implemented?	Synergy explained that, as it is long on energy, to reduce exposure to uncertain and volatile balancing market prices, Synergy enters forward sales contracts with third party retailers or directly with contestable customers through its retail business unit. Synergy considered that, should the propensity of counterparties to sell energy to Synergy increase, then Synergy may seek to reduce its buy product prices to manage the exposure to uncertain balancing market prices. Synergy contended that, given a reduced buy sell spread, it would also need to reduce its forward sale price, which would also reduce the prices for the wholesale business units customised products, and the retail business units contestable and non-contestable sales.[228] Synergy considered that the magnitude of any reduction to Synergy's prices would depend on the rate at which energy is sold to Synergy but could range from 0 percent to 15 percent, with 15 percent being the proposed reduction in the standard product spread for calendar and financial year products. Synergy estimated that a 15 per cent reduction in sales price would reduce WBU revenue by around $80 million per year if applied to all wholesale business unit customised and standard product sales, and to retail business unit contestable and non-contestable sales.[229] Synergy considered that a smaller spread "will very likely introduce significant arbitrage risk, potentially facilitating exploitation by sophisticated market participants for their own financial gain without attendant benefits flowing through to customers."[230] The Expert Consumer Panel noted that the spread has an indirect retail price effect on most consumers and the effect on retail prices for small-use customers of reducing the spread is unknown.[231]

227 ChangeEnergy, 1 October 2021, Submission to the *EGRC scheme review discussion paper* (online) [accessed 14 December 2021].

228 Synergy's public submission redacted the 15 per cent and $80m figures.

229 Synergy, 1 October 2021, Submission to the *EGRC scheme review discussion paper*, pp.4-5. (online) [accessed 14 December 2021].

230 Ibid p. 6.

231 Expert Consumer Panel, 1 October 2021, Submission to the *EGRC scheme review discussion paper* (online) [accessed 14 December 2021].

Discussion paper questions	Summary of stakeholder feedback
	On the relationship between customised and standard product prices, Synergy's submission noted "that a reduced buy-sell spread may create sufficient incentive for Synergy to take divergent pricing approaches" for customised and standard products.[232] Perth Energy considered that it would make commercial sense for Synergy to purchase energy at a lower rate from a third party, when this is available, rather than producing its own energy. Perth Energy reasoned that pitching the buy-price too low prevents Synergy securing this benefit.
3. What factors should inform the setting of a new maximum spread: a. the updated Deloitte method b. the outcomes expected in a competitive market c. the risk to Synergy of offering standard products d. benchmarking with other jurisdictions e. any other factors?	Synergy noted that the proposed lower maximum spreads were based on Synergy's observed forecast accuracy and argued that: > It is unreasonable to expect Synergy to maintain such tight forecasting accuracy with increasing essential system service requirements, the introduction of facility bidding and constrained network access and changes to the SWIS plant mix (notably the imminent retirement of Muja C).[233] Synergy claimed that the sample size of its forecasts used in the ERA's analysis was too small to be useful. Shell Energy supported the use of the updated Deloitte model to inform calculation of a new spread. Change Energy considered that combining the outcomes expected in a competitive market with benchmarking from other jurisdictions, would provide a better approximation than the proposed updated Deloitte method.
4. How could a new maximum standard product spread be implemented to both minimise any additional risk to Synergy and increase the effectiveness of the standard products regime? This could be phasing in a lower spread over several years or reducing the minimum volumes of	• Synergy asked the ERA to revisit the standard product volumes, given its falling supply position. Synergy expected its share of the generation market would continue to decline, particularly with the upcoming retirement of Muja C and the end of major power purchase agreements.

[232] Synergy, 1 October 2021, Submission to the *EGRC scheme review discussion paper*, p5. (online) [accessed 14 December 2021].

[233] Ibid. p6.

Discussion paper questions	Summary of stakeholder feedback
standard products available for the first year of a lower spread. For example, lowering the total standard product volume for sale (150MW to 100MW). Can stakeholders suggest alternative options?	
5. Are there any other factors the ERA should consider regarding the maximum standard product spread?	Synergy provided two worked examples of how a carbon tax could lower the buy-sell spread. Synergy argued that "when assessing the maximum standard product spread, the ERA should assess and advise on the potential impact of a carbon tax". Alinta Energy argued that the effectiveness of the scheme would increase if Synergy were not permitted to price below the cost of its generation. Alinta Energy noted that these pricing signals from Synergy dissuades new investment by signalling that wholesale prices will be insufficient to recover the costs of new projects. Shell Energy noted that the bilateral contract market would benefit if a broader range of counterparties offered futures products.
6. If Synergy were obliged to publish more detailed periodic financial reports, including separate financial results for its contestable and non-contestable customers, and gas and electricity: a. How would market participants use this information? b. Would having the information improve the effectiveness of the EGRC scheme? If so, how?	Synergy noted it is regularly audited under the EGRC scheme and asserted that publication of more detailed financial reports would be an unwarranted administrative cost burden. Perth Energy and Shell Energy argued that the publication of Synergy's foundation transfer price and more detailed financial statements would provide transparency of Synergy's internal pricing and give market participants the confidence necessary to participate in the market. Alinta Energy supported the proposal but did not believe it would bring meaningful change as it considers that the current financial reporting requirements provide evidence of Synergy's profit shifting.

Discussion paper questions	Summary of stakeholder feedback
7. If Synergy was obliged to publish its foundation transfer price, how would participants use this information and would having the information improve the effectiveness of the EGRC scheme?	Synergy argued against both publishing the foundation transfer price and extending non-discrimination requirements to the foundation transfer price. Synergy stated that, as it already uses the same underlying forward price curve to price standard products and price wholesale supplies between its wholesale and retail business units, the proposed change would increase the regulatory burden on Synergy disproportionately to any benefit to the market. Change Energy noted that publishing the foundation transfer price would provide clearer signals in the market and hold Synergy to account when pricing to contestable customers.
8. Do market participants see benefits in extending the non-discrimination requirements to the foundation transfer price mechanism? If so, please describe the expected benefits.	Change Energy fully supported the non-discrimination requirements being extended to the foundational transfer price mechanism to provide clearer signals to the market. Alinta Energy supported this proposal, noting that it may reduce Synergy's ability to discount prices even further for the retail business unit's contestable foundation customers in a manner that creates competition risks.
9. The ERA would like to understand if market participants are choosing not to enter into standard product contracts because of the associated credit requirements. If so, how do participants suggest Synergy's standard product credit requirements should be altered?	Perth Energy considered the standard product credit policy quite limiting and noted that it believes that the force majeure clause is a barrier to the use of standard products. Synergy defended its counter-party credit requirements and the inclusion of a force majeure clause in the standard product agreement as commercially reasonable. Change Energy considered Synergy's credit requirements acceptable and did not believe that infrequent trade is related to the credit requirements.
10. Although Synergy has never used the force majeure clause to suspend its obligations under a standard product transaction, is the existence of the clause still a concern for participants?	Change Energy noted that it understands the need for force majeure provisions and that they are generally passed from suppliers through to customers in the form of price resets or supply interruptions. Synergy noted that there is no evidence that the force majeure arrangements applicable to standard products lead to the EGRC scheme being ineffective or negatively impacting its efficiency, as there has never been a force majeure event applied to the standard products regime.

Discussion paper questions	Summary of stakeholder feedback
	Perth Energy argued that the force majeure provisions restrict its use of standard products, noting that in a force majeure event, a market participant could face higher balancing market prices despite purchasing a standard product to avoid this risk.
11. If the force majeure clause were to be amended, what changes would participants recommend and why? Is the list of generation units still suitable? If not, then why not?	There were no responses to this question.
12. What specifications would market participants find useful in a new standard product?	Change Energy, Shell Energy and Perth Energy advocated for a broader variety of standard products including longer time periods, weekday/weekend pricing and volumes, coverage for scheduled plant maintenance and a renewable energy product to assist retailers meet the growing demand for 'green' energy. The Expert Consumer Panel requested that standard products reflect genuine peak pricing to ensure that flat price products are not dulling significant signals in the SWIS.
13. The ERA is interested in hearing from Synergy if there are any costs and benefits to Synergy of making longer term standard products available?	Synergy explained that customised products are available to market participants wishing to contract for a longer period. While Synergy did not specify the number of years in which risks arise, its submission argued that 'long term' contracts increase Synergy's risk due to unknown costs.
14. What aspect of the new Commonwealth legislation or lessons from the ACCC inquiry need to be considered in the ERA's report to the Minister?	Synergy recommended that the ERA consider a broader range of inappropriate and inefficient conduct in the balancing market (such as withholding supply and rebidding strategies, such as shadow pricing) by any market participant in the context of the new prohibitions in the *Competition and Consumer Act 2010 (Cth).*

Appendix 3 Proposed model to determine buy-sell spread

The maximum difference between the buy price and the sell price Synergy can apply, referred to as the maximum buy-sell spread, is set in the EGRC regulatory scheme. The standard product buy price is set lower than the sell price. The maximum spread was set at:

- 25 per cent until 1 January 2015,
- 20 per cent from 1 January 2015 to 1 January 2020,
- 15 per cent from 1 January 2020 to 1 January 2021, and
- 20 per cent from 1 January 2021.

As part of the current review of the scheme, the ERA will review the effectiveness of the maximum buy-sell spread in the standard product regime.

This appendix presents preliminary analyses of forecast average spot prices and margin data, provided to the ERA by Synergy, to examine the spread previously employed in standard product pricing, and whether it has influenced the effectiveness of the standard product regime. Synergy's margins are referenced in this appendix but not revealed.

Following this analysis, the previous method used to set the maximum buy-sell spread, referred to as the Deloitte method, is reviewed, and a new method is developed for setting a suitable maximum buy-sell spread. This new method is then applied to Synergy's data to recommend two new maximum spreads of 10 per cent for quarterly and 5 per cent for annual standard products.

Scenarios to explain Synergy's use of the maximum spread

Although Synergy can offer buy and sell prices for standard products with a spread lower than the maximum allowed under the scheme, to date Synergy has always priced related buy and sell products at the maximum spread allowed.[234]

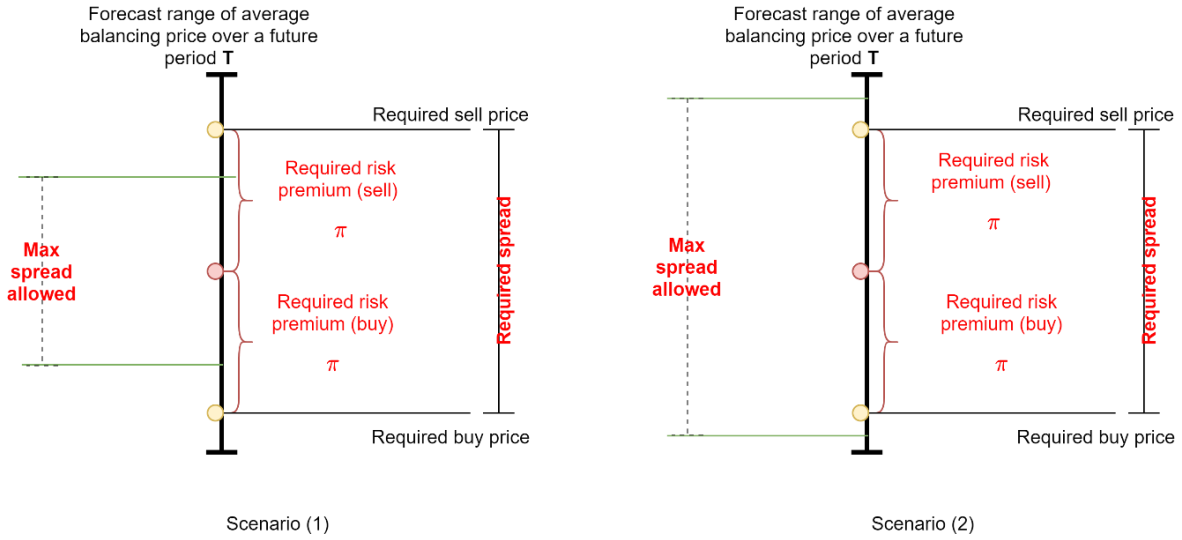
Two scenarios might explain why Synergy always used the maximum spread possible:

- Scenario (1): The maximum spread set under the regulations did not allow Synergy to recover its required risk premium. This could, for example, be due to the large range of uncertainty in forecasting the average balancing prices. Therefore, Synergy had to raise its required buy prices and/or reduce its sell prices to meet the requirements of the scheme.
- Scenario (2): The maximum spread set under the regulations did not limit Synergy in recovering its required risk premium. Synergy therefore lowered its required buy price and/or raised its sell price to the extent allowed by the maximum spread.

These two scenarios are illustrated in Figure 4.

[234] Clause 5.2(e), Electricity (Standard Products) wholesale arrangements 2014, (online) [accessed 14 December 2021].

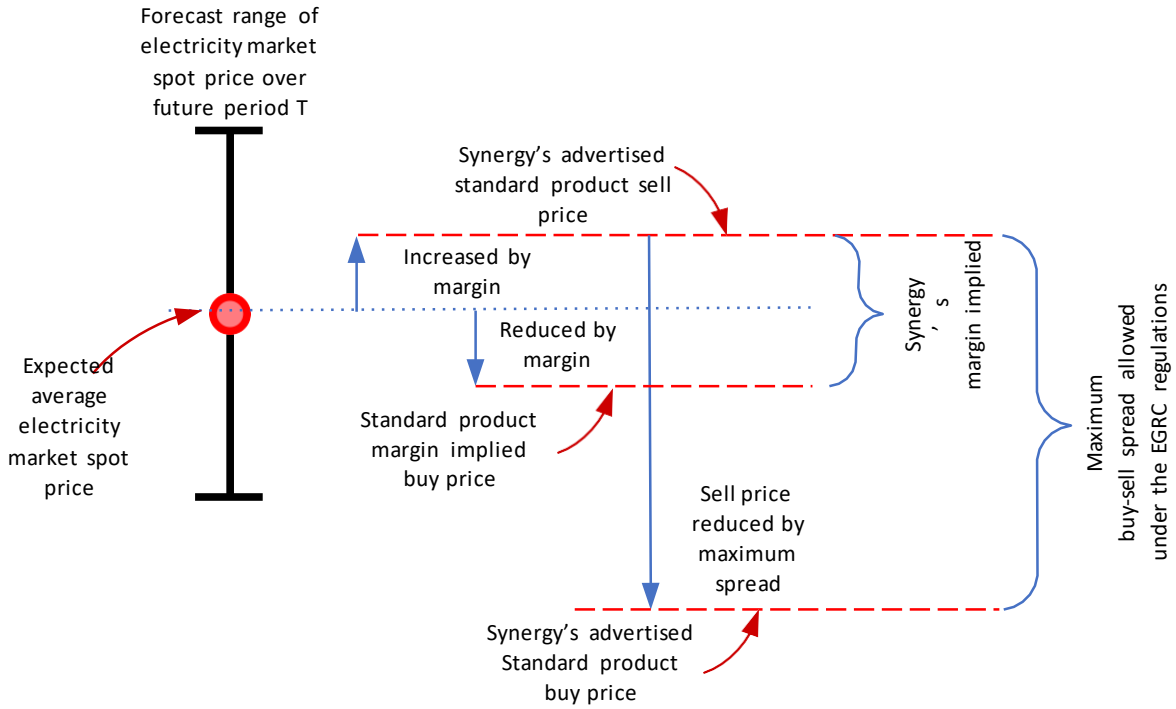
Figure 4. Two scenarios to explain use of the maximum buy-sell spread



The ERA reviewed Synergy's pricing of the standard products by analysing spreadsheets of pricing calculations between 2014 and 2020, provided to the ERA by Synergy. The ERA found that Synergy sets its sell price by adding its margin to the forecast average electricity market spot price, and then sets its buy price by reducing the sell price by the maximum allowable spread under the regulations. This way the spread is set asymmetrically around the forecast average electricity market spot price. Where the risk, and therefore the margin, is relatively low ([redacted]), Synergy's sell prices are closer than the buy prices to Synergy's expected average market price for the respective contract period.

The ERA's understanding of Synergy's pricing of standard products is illustrated in Figure 5.

Figure 5: The ERA's understanding of Synergy's standard product pricing method.



Margins and standard product pricing

This section examines whether scenario 1, described in the previous section, can also explain Synergy's pricing of standard products (as described above), by considering the question:

Is the spread allowed under the regulations sufficient to provide Synergy with the opportunity to recover its required risk premium?

To address this question, analyses were conducted on the spreadsheets of standard product pricing calculations between 2014 and 2020 that Synergy provided to the ERA. These calculations included a margin that the ERA understands includes risk premia and other factors, but the risk premium proportion of the margin is not clear. Consideration was given to whether forecast (contract) lead times influence margins, and to the outcomes in 2020, when there was a reduced maximum spread of 15 per cent.[235]

Figure 6 and Figure 7 show the ERA's analysis of change in margins based on forecast (contract) lead time for peak and off-peak periods, respectively. 'Lead times' refers to how many days the forecast product price leads product currency or delivery.

[235] A forecast lead time is the lead time between producing a forecast of spot prices for a future period (for example, a future quarter) and the start of the future period.

Figure 6: Peak forecast lead times and indexed margins, 2014 to 2020

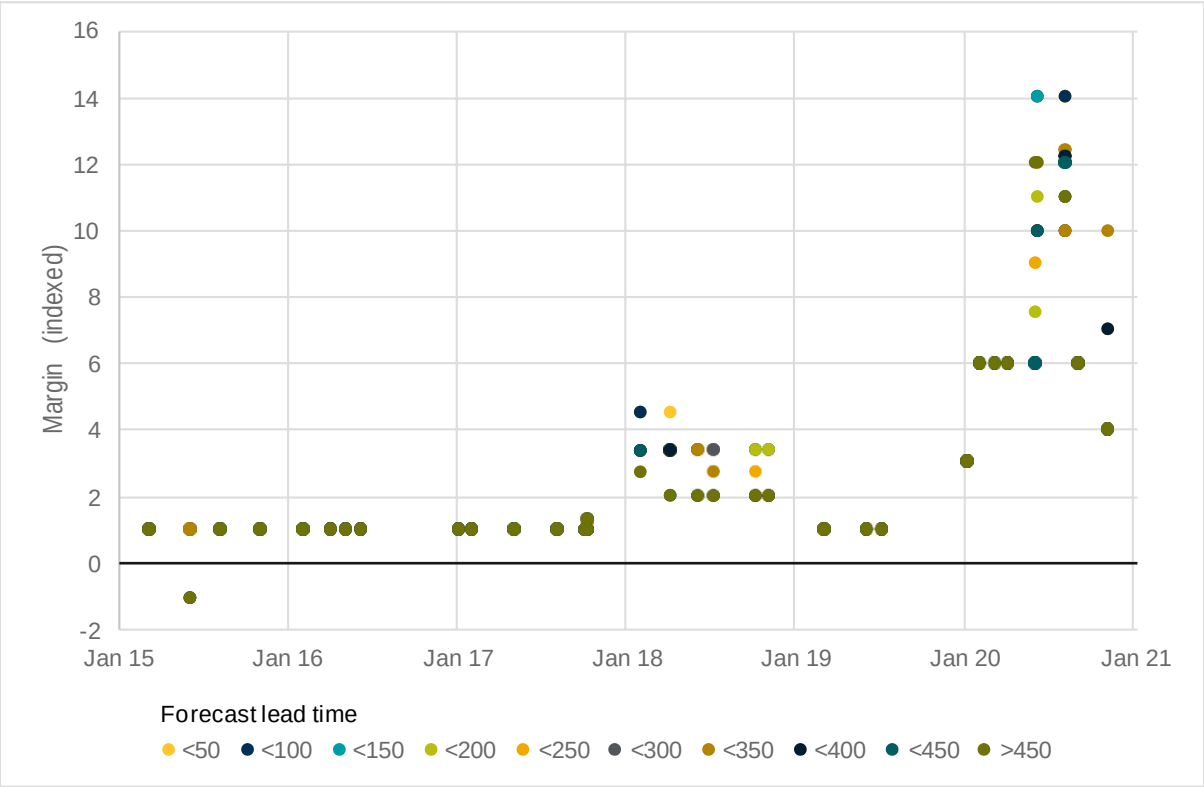
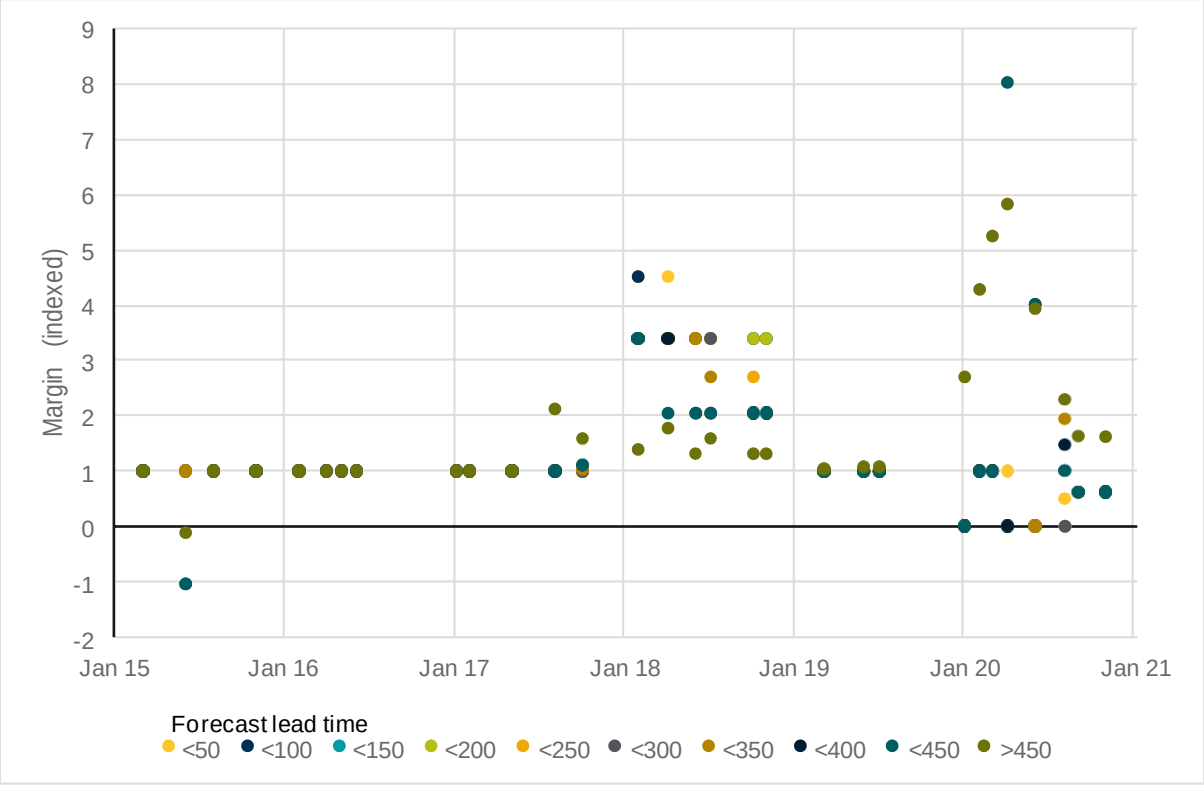


Figure 7: Off-peak forecast lead times and indexed margins, 2014 to 2020



From 2015 through to 2017, and in 2019, the ERA's analysis suggests that margins were insensitive to the forecast lead time, meaning margins did not change for longer lead times (more than a year for example) or shorter lead times.

The ERA's analysis demonstrates that Synergy's margins can be subject to substantial changes in magnitude and that Synergy's past margins may not be a good indicator of current or future margins.

In Synergy's margins, the ERA sought to identify normally expected patterns such as seasonality and positive correlations with contract lead time and periodic average balancing prices. For example, if there was a period (such as the third quarter of the year, when many planned outages occur) where the risks of forecast error were substantially higher or market volatility was high, one might expect to see an increase in risk moving through the forecasts as the period drew closer. This was not observed in Synergy's data.

The ERA has used Synergy's margins to set the spread symmetrically around the average forecast market price for the standard products.[236] The difference between the sell price and the implied buy price yields a 'margin implied spread'.

To illustrate the ERA's analysis, Figure 8 shows the margin implied spread for peak products. The line shows the average margin implied spread. The top and bottom of the vertical bars indicate the maximum and minimum margin implied spread. The primary vertical axis for Figure 8: ERA derived margin implied spread for peak products has been redacted to prevent the release of information on Synergy's margins. The chart is illustrative of the change in margin implied spread over time.

Where the margin was relatively low (as was the case for most years), the maximum spread tended to be much wider than the margin implied spread. Where the margin was very large and resulted in an implied spread larger than the maximum buy-sell spread, Synergy set the buy price above its forecast average electricity market spot price. This may have exposed Synergy to arbitrage risk for the buy product. However, if during 2020 Synergy increased its margin to compensate for known under forecasting (for example, known omissions in forecasts), there may have been no arbitrage opportunity.

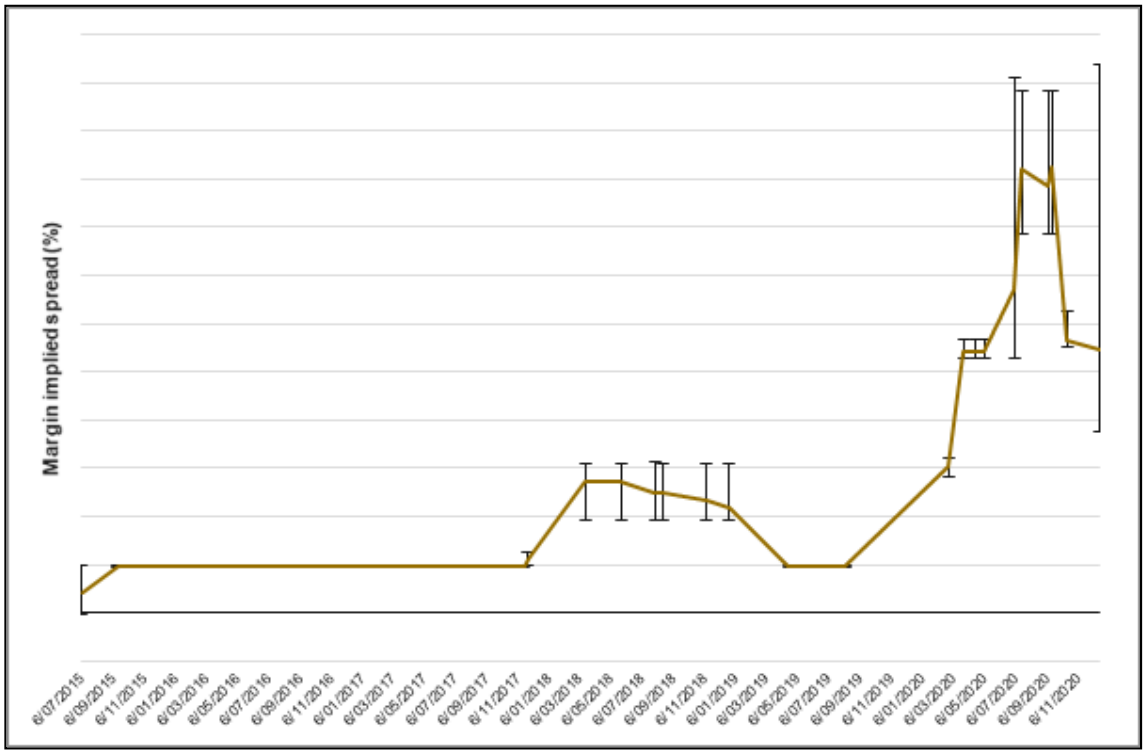
The following section shows that the variation in quarterly average balancing prices has decreased in recent years and Synergy's forecasting error also decreased over the respective period.[237] So, it is not clear why Synergy increased its margins, despite less variation in observed forecast errors.[238]

[236] Given information available, the ERA was not able to find any evidence or rationale for why Synergy should charge a margin in the buy price that is any different to that included in the sell price.

[237] Synergy's spot market forecasting accuracy was measured by the difference between Synergy's electricity market spot price used to determine standard products and the observed balancing price related to those forecasts.

[238] Prior to publishing this paper, and after the ERA finalised the analysis for this discussion paper, Synergy provided information about how it determines these margins. Initial analysis of Synergy's information shows that Synergy's margins can also include adjustments for factors other than mentioned in section 3.4.1.

Figure 8: ERA derived margin implied spread for peak products



The ERA's analysis also found that the implied spreads increased during 2018 and 2020, although the implied spreads for 2018 were, for the most part, substantially less than the maximum buy-sell spread under the regulations. In 2020 the implied spread exceeded the maximum buy-sell spread for both peak and flat products.

Based on the information available, the ERA could not find any reason for Synergy to charge a higher margin for buy products than for related sell products. Synergy took the opportunity allowed by the scheme to decrease its buy prices to the maximum spread, as described in scenario 2 (Figure 4), above. This method of setting buy standard product prices may explain the finding that Synergy had a very high likelihood of making a profit on buy standard product transactions, and that buy standard product transactions have seldom occurred.

Setting a suitable maximum spread

The analyses presented in this section addressed the following question:

> Given the ERA's calculation of Synergy's forecasting accuracy in recent years, what level of spread would be sufficient to provide Synergy with a reasonable likelihood of making profit on standard product trades?

To address this question, the section below first reviews the previous method used to determine an appropriate maximum spread in the standard product market. In the following section, this review is then used to inform the development of an improved method for determining a level of spread that would provide Synergy with a reasonable likelihood of making profit, given its forecasting accuracy, as calculated by the ERA.

Review of previous method for setting the maximum spread

For the 2015 review of the EGRC regulatory scheme, the ERA engaged Deloitte Access Economics (Deloitte) to determine a method for estimating a suitable maximum buy-sell spread for the standard product regime. [239] The main assumptions that underpinned Deloitte's approach were:

- The buy-sell spread should reflect the spread that would prevail in the WEM if the standard products were offered competitively to fulfil the objectives of the standard product regime.
- The spread represents the risk that Synergy's Wholesale Business Unit incurs through offering products in a perfectly illiquid market, where it cannot balance the sale of an electricity future by purchasing a corresponding future and must purchase or sell electricity in the spot market to fulfill its contract.
- The WBU's risk of making a profit or loss on a trade is therefore dependent on the prices and volatility in the balancing or STEM markets, which could thus be used to determine a spread that would provide the trader with a reasonable opportunity to profit on a trade. Deloitte recommended setting the spread with reference to historical price volatility in the STEM.
- Retailers would prefer to purchase electricity from the STEM rather than the balancing market because they can plan their purchases and buy electricity based on their bids.

The ERA agreed with Deloitte's assumption that the buy-sell spread should reflect the spread that would result if the standard products were offered competitively. However, Synergy can sell counterbalancing customised contracts. Synergy is also able to reduce the spread from its maximum to increase its offered standard product buy price and has entered into buy transactions in the past. [240] Despite this, the majority of transactions in standard products (91 per cent) are sell transactions.

In contrast to Deloitte's assumption that the historical volatility of the STEM is a good predictor of the required spread, the ERA's analysis of historical volatility does not necessarily predict Synergy's range of forecasting error, and spot prices underpin the pricing of standard products, rather than STEM prices. It is Synergy's error in forecasting average market prices during a future period that determines the amount of the spread required.

Finally, a limitation of Deloitte's approach was that it did not recognise the relationship between forecasting uncertainty and the width of the maximum spread; spreads widen as a function of increased uncertainty. In a competitive market for selling standard products, given normal market conditions, the risk premium charged for shorter lead time contracts, and so, the spread between buy and sell prices would be typically lower than those for the same quarters in future years because there is less uncertainty in forecasting near future periods. [241]

The difference in spreads across products with varying lead times provides an important signal about expectations of future prices and the level of certainty that underlies these prices. In

[239] Refer to the Review of Synergy's Regulatory Scheme 2015, (online) [accessed 14 December 2021].

[240] Synergy entered into a total of five 5 MW buy transactions in 2015 (on 30 March 2015, 7 April 2015, 26 June 2015, 29 June 2015 and 21 August 2015) and three 5 MW buy transactions in 2019 (two on 16 December 2019 and one on 26 December in 2019).

[241] Sometimes when scarcity events occur in a competitive market, the spread of shorter lead time products during that period can increase beyond that of longer lead time products as a function of increased uncertainty of future spot prices during that period. For example, see: Electricity Authority (2019). *Hedge Market Enhancements (market making): Ensuring market making arrangements are fit for purpose over time. Discussion Paper.* (online) [accessed 14 December 2021].

principle, Synergy would be able to forecast average market prices for quarters that have shorter lead times with greater accuracy and a higher level of confidence than when forecasting the average market prices for the same quarters in future years.

Deloitte recommended setting the spread with reference to a standard normal curve. Deloitte suggested allowing Synergy a 69 per cent (1 standard deviation higher than the mean of 50 per cent) or 77 per cent chance (1.5 standard deviations higher than the mean of 50 per cent) that it would profit from a standard product trade, given that a trader would expect a greater than 50 per cent chance of making a profit on any single trade in a competitive market.

Deloitte's approach to determining the maximum spread in the STEM (or balancing market) for quarterly products[242] was to:

- Determine the average historical quarterly price from the mean prices for each historical quarter, in each year across the review period.
- Determine the historical price volatility (the standard deviation) from the mean prices for each historical quarter, in each year across the review period.
- Use the standard normal distribution to select the desired number of standard deviations away from the mean that would allow the WBU a 69 per cent chance of not losing money on a trade; 1 standard deviation or ±0.5 deviations around the mean allowing for profits on both buy and sell products.
- Calculate the spread as the historical standard deviation divided by the result of the average historical quarterly price added to the accepted probability standard deviation from the standard normal distribution (0.5), multiplied by the historical standard deviation. Then multiply the obtained value by 100 to produce the spread as a percentage.[243]

The implied spreads derived from Deloitte's analysis for flat and peak products are presented in Table 5.

Table 5. Average quarterly implied spreads found by Deloitte (2015) for different product types based on historical volatility in the STEM.

	69% chance of making a profit		77% chance of making a profit	
Product type	**Flat**	**Peak**	**Flat**	**Peak**
Average of quarterly spreads	**10.6%**	**11.5%**	**15.4%**	**16.7%**

Deloitte concluded that providing Synergy's Wholesale Business Unit (WBU) with a 69 per cent chance of making a profit was a reasonable starting point that may begin to promote more liquidity and considered that the spread could be progressively reduced if liquidity were to increase in the trade of standard products.

The ERA considered that setting the maximum spread based on Deloitte's approach would:

- Result in a reasonable balance between managing Synergy's risk due to the uncertainty of predicting future energy prices and achieving efficient pricing outcomes.

[242] Deloitte considered that the same approach could be employed for determining the spread for annual contracts.

[243] For example, in the STEM, the maximum spread = (historical standard deviation in the STEM/ (historical average of the means in the STEM + (accepted unit normal probability standard deviation* (historical standard deviation in the STEM))*100.

- Provide a useful stepping-stone to eventually transition to a more competitive spread.

Subsequently, in its reviews of the EGRC regulatory schemes for the 2016 and 2017 calendar years, the ERA employed the Deloitte method and recommended imposing greater discipline on Synergy's pricing of standard products by reducing the standard product maximum spread to 10 per cent. Consideration of outcomes in standard product trades in each year resulting from changes in standard product pricing and reviews of spreads in other competitive markets also supported this recommendation.

Following the ERA's review, the Public Utilities Office (PUO) discussed the prospect of a reduced buy-sell spread with Synergy.[244] According to the PUO, Synergy was opposed to any reduction to the maximum buy-sell spread, contending that it could lead to perverse market outcomes and that Synergy would likely incur a financial loss. Synergy stated that it has a long position on energy, and a reduction in the buy-sell spread would increase the risk that Synergy would be obligated to purchase additional energy and exacerbate Synergy's risk position.

Synergy further considered that there was no evidence that the current maximum buy-sell spread was inappropriate, and that given the historic volatility in the balancing market, it would be unreasonable to expect the business to forecast future market prices within tight boundaries. Synergy stated that a lower buy-sell spread would transfer risk from other market participants to Synergy, increasing the likelihood of speculation and risk-taking amongst other WEM participants.

In 2019, in responding to the ERA's recommendation, the PUO considered Deloitte's method of calculating the implied buy-sell spread for quarterly products to be prudent. The PUO recalculated the implied spread based on Deloitte's method and directed the maximum spread to be set at 15 per cent from 1 January 2020 until the 31 December, after which the spread would revert back to 20 per cent (see Appendix 4 and the section in Appendix 5 titled 'Margins and standard products' for a review of outcomes in 2020).

A new method for setting the maximum spread: forecasting accuracy

The ERA has considered ways to improve the method it uses to recommend a suitable value for the maximum buy-sell spread in the standard product regime that allows Synergy to recover efficient costs, including a margin for risk. To do this, the ERA has considered the WBU's risk of making a profit or loss on a standard product trade, whilst having regard for Synergy's ability to forecast future average spot prices.

Like Deloitte, the ERA's approach in this review also considered the illiquidity of the standard products market. The ERA assumed that the WBU cannot close its trading position with a counterbalancing trade, and therefore, it must settle its buy or sell contract by selling or buying at the balancing market price to meet its obligations under the futures contracts it has traded.

Using this approach, the WBU's risk of making a profit or loss on a future trade therefore depends on how accurately Synergy can forecast the average market price during a contract period. The ERA's calculation of Synergy's historical forecasting error can thus be used to determine a maximum spread that would provide Synergy with a reasonable opportunity of profiting on a transaction.

As set out in Table 6 the new method for calculating the maximum spread has increased validity because of improvements in two main areas. The method accounts for spot price

[244] Public Utilities Office, 2019, *Electricity Generation and Retail Corporation Regulatory Scheme – Response to 016 Report to the Minister for Energy on the effectiveness of the Scheme*, p. 14. (online) [accessed 14 December 2021].

forecasting uncertainty (the driver of the margins) and the relationship between forecasting uncertainty and the maximum spread across time and contract term.

Table 6. Shows the advantages of the improved method to that developed by Deloitte.

Area of Improvement	Improved calculation method	Deloitte method
Driver of risk premiums included in contract prices.	Considers the relationship between accuracy in forecasting average spot prices in a single quarter (or year) in the future and the margins included in contract prices. The ERA developed a measure of Synergy's forecasting accuracy for determining the probability of Synergy making a profit.	Given data limitations at the time, assumed historical volatility of the spot markets is a good predictor of future volatility. Used a measure of historical average STEM price volatility across quarters in several years to determine the probability of Synergy making a profit and to set the risk premium included in contract prices.
Relationship between forecasting uncertainty and maximum spread.	Accounts for the possible effects of several factors on Synergy's forecasting accuracy, including forecast lead time, forecast period and possible improvements in forecasts across time.	Given data limitations at the time, did not consider the effect of forecast lead time, forecast period and possible improvements in forecasts over time.

The ERA's approach to determining the maximum spread for quarterly products using forecast errors is set out below. The maximum spread for yearly products can be estimated using the same steps below, with yearly average prices.

- Determine the historical average balancing price for flat and peak products for each quarter since 2014. For flat products, the average is taken over all trading intervals. For peak products, the average is taken over peak trading intervals only. The historical average balancing price over the contract period is represented as variable p.
- Calculate Synergy's forecast average spot prices for each quarter since 2014. Repeat this for all forecasts periodically produced by Synergy for determining the standard product prices. Adjust the forecast quarterly average spot prices for the effect of inflation by applying the Consumer Price Index (CPI).[245] The forecast quarterly average spot price is the price that the WBU could buy or sell a quarterly standard product for and have an equal chance of making a profit or loss. The forecast quarterly average spot price is represented as variable $\hat{p}$.[246]
- Calculate forecasting error, e, for forecasting quarterly average spot prices. This is the difference between the forecast quarterly average spot price and the historical quarterly average balancing price for each quarter since 2014, as calculated in the first two steps above:

$$e = \hat{p} - p$$

- Select the desired number of standard deviations away from the mean price in the standard normal distribution. Selecting one standard deviation (±0.5 deviations around the mean) would provide the WBU with a 69 per cent chance of not losing money on a trade. This is represented by variable z.
- Calculate the implied maximum spread, s_z, using the equation below (Equation 1):

$$s_z = \frac{2z\sigma_e}{\mu_{\hat{p}} + z\sigma_e}$$

where,

- σ_e is the standard deviation of forecast error, e, for the forecast average balancing price.
- $\mu_{\hat{p}}$ is the expected value of the forecast average spot price, $\hat{p}$.
- z is the z-score in the standard normal distribution related to the target probability level.

The mathematical proof of Equation 1 is provided below.

[245] The CPI adjustment method is specified in Synergy, Standard Products – CPI Adjustment Mechanism, (online) [accessed 14 December 2021].

[246] The calculation in this section only included forecasts with up to 800 days lead time.

Mathematical proof of Equation 1

Using the same approach as that used by Deloitte, this analysis assumes that the standard products market is perfectly illiquid and determines the maximum spread as the spread required to give Synergy a certain probability of making a profit in each standard product transaction.

Synergy makes a positive payoff on a sell quarterly standard product trade when its sell price p_{sell} is greater than the observed average balancing price, p, during trading intervals covered by the product, or:

$$p_{sell} > p$$

At the time of trading a quarterly product, the average balancing price during the term of the product is uncertain, and therefore, is a random variable. The figure below presents a stylised standardised distribution for the quarterly average balancing price, as expected at the time of advertising a standard product. This figure shows the possibilities of the average balancing price occurring during the contract.

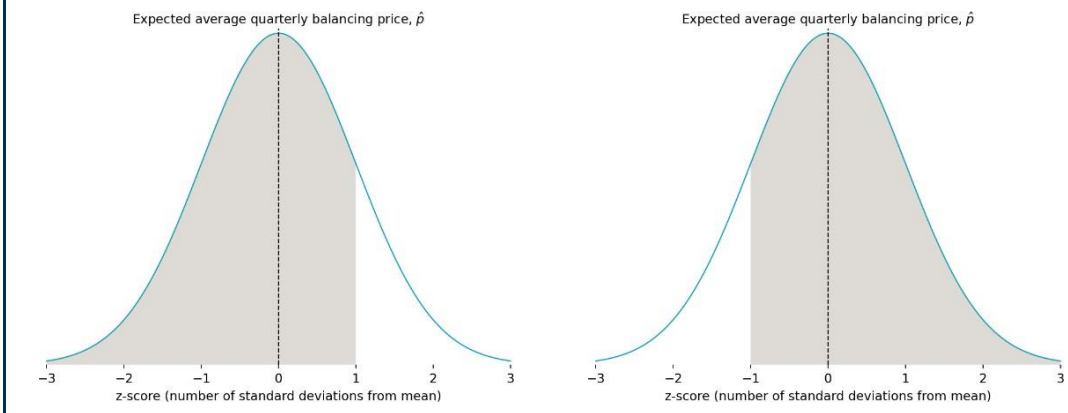
If Synergy set the sell price, p_{sell}, at its expected average quarterly balancing price, Synergy would expect a 50 per cent chance of making a positive payoff from the trade.

A trader in a competitive market would expect to profit from offering electricity futures. To account for the risk of forecasting error and incurring losses on a product trade, Synergy would price the sell quarterly product above the expected average balancing price.

The figure below shows that, in principle, Synergy sets its sell price, p_{sell}, at its target z-score level above the mean of the distribution, or its expected average price $\hat{p}$, to provide it with a target probability of making a profit commensurate with its propensity for risk:

$$p_{sell} = \hat{p} + z.\sigma_e \qquad \text{(I)}$$

where σ_e is the standard deviation of expected forecasting error distribution, and z is the target z-score to specify the target level of probability of making a profit.



Panel (a): Synergy sets the sell price, p_{sell}, for example, at one standard deviation ($z = 1$) above its expected forecast average quarterly balancing price. This provides Synergy with a probability of making a profit on a sell trade equal to 84 per cent.

Panel (b): Synergy sets the buy price, for example, at one standard deviation ($z = 1$) below its expected forecast average quarterly balancing price. This provides Synergy with a probability of making a profit on a buy trade equal to 84 per cent.

When Synergy's view of the possible average quarterly balancing price is symmetrical around its expected average quarterly balancing price, Synergy sets the buy price, p_{buy}, at this same z-score level but below the average of the distribution. The dist ribution of Synergy's forecast average quarterly spot prices between 2014 and 2020, for peak and flat averages, was normal and therefore was symmetrical around its expected value. [247] Accordingly, for a buy product, the required buy price would be:

$$p_{buy} = \hat{p} - z.\sigma_e \qquad \text{(II)}$$

Under the scheme, the buy-sell spread, s, is defined as:

$$s = \frac{p_{sell} - p_{buy}}{p_{sell}}$$

From equations (I) and (II) and the definition of the spread, a target level of spread, s_z, can be calculated to yield a target probability of profiting on standard product trades:

$$s_z = \frac{2z.\sigma_e}{\hat{p} + z.\sigma_e} \qquad \text{(III)}$$

Review of forecasting error

The ERA compared Synergy's spot price forecasts with observed balancing prices to determine Synergy's forecast error. The ERA's analysis found that since 2017 the range of forecast errors has decreased. The forecast error range for flat average spot prices was generally smaller than that for peak average spot prices. This is expected because flat average spot prices include spot prices from a larger set of trading intervals than just peak trading intervals. The larger the forecast period, the less the magnitude of variation in average prices, when compared to the average of the sample, because of the law of large numbers. [248]

The variation in spot prices during peak periods might also be inherently larger than that for off-peak periods due to the larger set of factors that can influence peak period prices. The decreased range of forecast error since about 2017 or 2018 may also be explained by the decreased variation in quarterly average balancing prices in the WEM over time, as presented in Figure 9. It is not clear whether forecast error after 2017 decreased because of any improvement Synergy made to its forecasts or because of decreased variation in the observed quarterly average balancing price in the WEM.

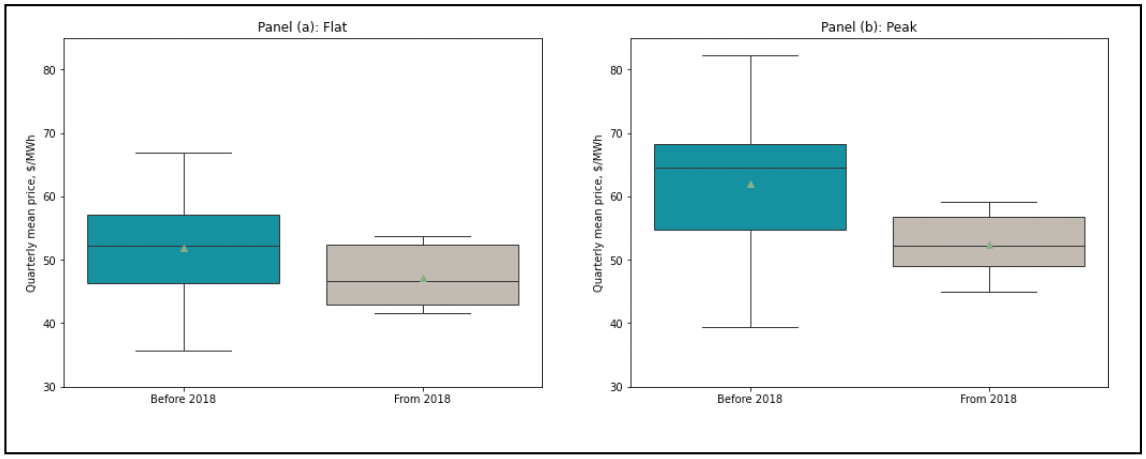
This decrease in variation of periodic average balancing prices might be partly due t o an increased penetration of renewable generators in the SWIS. For example, behind -the-meter solar generation has generally reduced balancing prices during the daytime, also reducing the variation in the periodic average prices. Although some extremely low prices have occurred in

[247] Normality test results indicated that the assumption that Synergy's distribution of forecast error for quarterly average spot prices between 2014 and 2020 (and between 2017 and 2020 and between 2018 and 2020) was normal could not be rejected. This was tested based on the null hypothesis that the sample of forecast errors for quarterly average spot prices (for peak and flat averages, separately) come from normal distributions. The chosen alpha level was 1 per cent. The test was based on D'Agos tino and Pearson's omnibus test of normality. Refer to D'Agostino, R. B., 1971, An omnibus test of normality for moderate and large sample size, Biometrika, 58, 341-348. and D'Agostino, R. and Pearson, E. S., 1973, Tests for departure from normality, Biometrika, 60, 613-622.

[248] The law of large numbers, or central limit theorem, is that, with large sample sizes, sampling distributions of means are normally distributed, regardless of the shape of the distribution of the variable. When the sample size is large, the mean of the sample is less affected by extremely large or small observations.Tabachnick, B.G. & Fidell, L.S. (1996). Using Multivariate Statistics, Third Edition. HarperCollins College Publishers.

the SWIS recently, balancing prices during very short extreme events were not sufficient to raise the variation in periodic average prices.

Figure 9: Distribution of observed quarterly average balancing prices between 2018 and 2020



Note: the small green triangles in the boxplots show the distribution means.

This analysis also considered whether forecasting error changes with forecast lead time. The results showed that there was not a substantial decrease in forecasting error range with a decrease in forecast lead time.

The ERA also found that, when compared to Synergy's quarterly average spot price forecasts, Synergy's forecast error range for annual products was smaller. This might be explained by the law of large numbers. Although more factors might influence spot prices over the period of a calendar year when compared to a quarter, extremely low or high prices are less likely to influence the average price over a longer period. This observation indicates that Synergy would require a lower spread (and risk premium) for the pricing of calendar and financial year products, when compared to that for quarterly products.

A suitable maximum buy-sell spread

Based on the method presented at the start of this section, the ERA calculated the level of the maximum spread required to provide Synergy with a 69 per cent chance of making a profit on quarterly and annual standard product trades. The required maximum spreads calculated are implied by Synergy's ability to forecast future spot prices, as observed between 2014 and 2020, presented in the previous section.

These results are presented in Table 7 and Table 8, for two separate expectations of forecast error range: one based on the forecast error distribution observed between 2014 and 2020, and another based on the forecast error distribution observed between 2018 and 2020. The most recent estimation period better reflects expected forecasting accuracy because it is based on the most recent forecasts produced by Synergy. Synergy's annual report indicates that since about 2018, Synergy has used Plexos as its market simulation tool for forecasting "providing the business with an improved level of forecasting accuracy". [249]

[249] Synergy, 2019, *Annual Report,* p. 17. (online) [accessed 14 December 2021].

Table 7. ERA implied maximum spread for quarterly standard products based on Synergy's observed forecasting error (per cent)

Forecast error distribution date range	2014 to 2020		2018 to 2020	
Quarter of year	Flat	Peak	Flat	Peak
Q1	16.8	18.6	11.5	10.3
Q2	12.1	13.3	7.9	8.8
Q3	16.3	18.5	9.4	11.0
Q4	12.3	13.5	13.7	14.6
Average	14.4	16.0	10.6	11.2

Table 8. ERA implied maximum spread for calendar and financial standard products based on Synergy's observed forecasting error (per cent)

Forecast error distribution date range	2014 to 2020		2018 to 2020	
Product type	Flat	Peak	Flat	Peak
Calendar	9.5	11.3	3.9	4.3
Financial year	9.2	11.1	5.2	4.7
Average	9.4	11.2	4.6	4.5

Given observed forecasting accuracy since 2018, the results suggest that:

- For advertised quarterly products since 2018, a maximum spread of 11 per cent would have been sufficient to provide Synergy with a reasonable chance of making a profit on possible trades.
- For advertised calendar and financial year products since 2018, a maximum spread of approximately 5 per cent would have been sufficient to provide Synergy with a reasonable chance of making a profit on possible trades.

Appendix 4 Other elements of the EGRC scheme

This appendix sets out commentary on the remaining elements of the EGRC scheme incorporating stakeholder comments on the effectiveness of each feature.

Business segmentation

The EGRC scheme requires Synergy to prepare separate financial statements for each of its segmented business units and for these reports to be published by the Minister.[250]

The ERA's past reviews have found that Synergy's financial reports did not separate gas and electricity or contestable and non-contestable financial results. The reports varied in the information provided and the time periods covered. This limited the ability to scrutinise the revenues, costs and profits of each business unit's electricity activities and led to concern among other market participants about the possibility of cro ss-subsidisation and adverse effects on competition in the retail market. The ERA reported that this aspect of the scheme was not operating effectively because of a lack of detail in the regulations about the level of financial information required to be provided by Synergy and the need for the information to be presented consistently from year to year.[251]

Publishing details of the revenue, costs and profits of each business unit allows Synergy to demonstrate its compliance with the segregation and non-discrimination requirements of the scheme. Making segmented financial reports publicly available provides a level of transparency that gives market participants the confidence to trade with and compete with Synergy, despite its dominant position in the wholesale and retail markets.

When reviewing the ERA's past recommendations for changing Synergy's financial reporting requirements, the State Government stated that "the current structure of Synergy's financial reports may undermine the ERA's ability to investigate any concerns raised by other retailers, thereby undermining industry confidence."[252] The State Government suggested that, instead of changing Synergy's reporting requirements, the ERA could exercise its information-gathering powers to perform regulatory scrutiny and provide assurances to the industry regarding any anti-competitive behaviour.[253]

The challenge with implementing the State Government's suggestion is that the ERA is required to review the effectiveness of the operation of the EGRC scheme as it exists, not perform a financial audit function involving the regulation of accounts to check the accurate ringfencing of costs.

The Minister recently amended the EGRC scheme to reduce the frequency of the ERA's reviews from one year to two years. Thus, even if the ERA were required to undertake a financial audit function, the reporting of any anti-competitive behaviour would occur up to two years after the behaviour happens. The Minister amended the EGRC scheme to reduce the frequency of the ERA's reviews from one year to two years.

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[250] *Electricity Corporations (Electricity Generation and Retail Corporation) Regulations 2013* (WA), s 3, s 5-7.

[251] Economic Regulation Authority, 2019, *Report to the Minister on the effectiveness of the Electricity Generation and Retail Corporation scheme 2017*, pp. 17-19, (online) [accessed 14 December 2021].

[252] Public Utilities Office, 2019, *Electricity Generation and Retail Corporation Regulatory Scheme – Response to 2016 Report to the Minister for Energy on the effectiveness of the Scheme*, p. 22. (online) [accessed 14 December 2021].

[253] Ibid.

In their feedback to the ERA, Shell Energy and Blue Star Energy noted that the publication of more detailed periodic financial reports, including transparent reporting for each business unit, would provide confidence to the market that Synergy is complying with the scheme. In contrast, Synergy's submission noted its existing audit requirements and argued that it already provides sufficient information in compliance with the scheme.

Transfer pricing

Synergy's foundation transfer price mechanism covers the terms and conditions applying to the supply of electricity to foundation customers. Foundation customers were Synergy's customers at the time of the merger, who have not moved to another supplier since this time. The details of the original foundation transfer pricing mechanism were captured in the EGRC regulatory scheme. When Synergy changed this mechanism in 2017, it provided the Minister for Energy with a copy, but there was no requirement for Synergy to publish the new mechanism.

In 2017, the ERA recommended that Synergy should publish its foundation transfer price and the method it uses to calculate this price.[254] In 2019, the Minister for Energy amended the regulations to require Synergy to publish the foundation transfer price mechanism and any replacements to the mechanism on its website.[255] At the same time, the Minister updated the Segregation and Transfer Pricing Guidelines with a reference to the current mechanism.[256]

In 2019, the State Government disagreed with the ERA's recommendation to publish Synergy's foundation transfer price and stated:

> The Public Utilities Office notes that the Second Reading Speech for the Electricity Corporations Amendment Bill 2013 states: 'In order to ensure transparency of the ring-fencing arrangements, the outcome of compliance and audit reports will be made publicly available. The high-level transfer pricing mechanism will likely also be made publicly available, although not the transfer price itself'. The publication of the replacement foundation transfer price mechanism, but not the foundation transfer price itself, would therefore be consistent with the original intent of the Scheme.[257]

Submissions from Change Energy and Blue Star Energy noted that publication of the transfer price would provide clearer signals to the market of anticipated price movements. However, the ERA expects that a narrower buy-sell spread would provide similar benefits to the market, as argued in section 3.3.

Non-discrimination requirements

The EGRC scheme requires Synergy to establish transfer pricing arrangements for trading wholesale electricity supplies between its wholesale and retail business units. Transfer pricing arrangements are intended to ensure internal pricing and sales are at arm's length, like trading arrangements between independent parties. This non-discrimination requirement applies to

[254] Economic Regulation Authority, 2017, *2016 Report to the Minister for Energy on the effectiveness of the EGRC Regulatory Scheme*, pp. 16-17, (online) [accessed 14 December 2021].

[255] Synergy, Foundation Transfer Price Mechanism 11 August 2020 to June 2023. *Internal Synergy Wholesale Arrangements.* (online) [accessed 14 December 2021].

[256] Public Utilities Office, 2019, *Electricity Generation and Retail Corporation Regulatory Scheme – Response to 2016 Report to the Minister for Energy on the effectiveness of the Scheme*, p. vi. (online) [accessed 14 December 2021].

[257] Ibid p. 16

all of Synergy's wholesale supply arrangements, except the foundation transfer pricing mechanism.

In its 2017 scheme review, the ERA identified the opportunity for the wholesale business unit to discount prices for the retail business unit's contestable foundation customers. Such behaviour would maintain Synergy's retail customer base and reduce the ability of third-party retailers to compete for foundation customers. Foundation customers account for roughly one third of the volumes supplied by the wholesale business unit to the retail business unit.

The ERA's previous recommendation was for the non-discrimination requirements of the EGRC scheme be extended to the foundation transfer pricing mechanism. [258]

The State Government's 2019 changes to the scheme were in response to the ERA's 2016 review and not the 2017 review, which was published in early 2019. Consequently, the regulations do not prohibit Synergy from providing discounts to foundation customers, including those with large flat loads that are less costly to supply.

In its feedback to the ERA, Synergy explained that further regulatory change is unnecessary as it already uses the same underlying forward price curve to price standard products and price wholesale supplies between its wholesale and retail business units. Synergy argued that extending the non-discrimination requirements to the foundation transfer pricing mechanism would increase the regulatory burden on Synergy, disproportionately to any benefit to the market.

In contrast, Change Energy's submission supported the extension of the non-discrimination requirements to the foundation transfer pricing mechanism. In its next review, the ERA will consider making a recommendation to formalise Synergy's stated current practice of applying the non-discrimination requirements to all wholesale supplies of electricity.

Standard products

As the generation mix in the energy industry is undergoing arapid transition to include a higher percentage of renewable generation sources, the scheme may need to adapt to meet the future needs of market participants. The ongoing integration of renewables and storage technology may change the profile of demand in the market. This may influence participants' risk profiles and change market participants' demand for the type and quantity of hedging products.

In their submissions to the ERA, respondents, except for Synergy and the Expert Consumer Panel, noted that different types of standard products, such as a product which reflected the true daytime peak, would be useful for the market. Synergy argued that no changes to the terms, conditions or specifications of standard products were required and that participants could request a customised product from Synergy if the standard products did not meet their needs.

The ERA has decided not to make any recommendations to change standard product specifications or quantities, as the assumptions underlying these recommendations may not hold in the new market. For example, the timing, duration, and severity of peak afternoon pricing may be different under the new market design. Consequently, a recommendation by

[258] Economic Regulation Authority, 2019, *Report to the Minister on the effectiveness of the Electricity Generation and Retail Corporation scheme 2017*, pp. 15-16, (online) [accessed 14 December 2021].

the ERA now for a new peak standard product that just covers afternoon peak pricing may not be relevant to or meet the needs of participants in the new market.

Terms and conditions

To trade in standard products, a participant must first become an approved counterparty to Synergy, which requires the participant to provide its last two audited financial year statements. Synergy's Wholesale Energy Credit Policy then requires that a formal credit assessment is performed for every new counterparty. Synergy can also conduct aformal credit assessment at least every 12 months and may conduct credit assessments at its discretion where there are indications of a change in a counterparty's financial health. If standard product terms are a barrier, there is little opportunity for independent retailers to procure wholesale supplies and source hedge contracts, which can reduce competition.

Concern about the asymmetry in standard product force majeure provisions was again raised by stakeholder in the current review. When Synergy is the seller in a standard product transaction, interruption to supply from any one of a list of generating units triggers the force majeure clause, and suspension of Synergy's obligations. [259] If supply from one of the generation units is interrupted, then it is likely that balancing prices will rise as a result of more expensive generating units being dispatched to meet demand.

Perth Energy's submission argued that its use of standard products is restricted by Synergy's ability to call force majeure on standard product contracts and expose the counterparty to unpredictable balancing market prices. Perth Energy notes that a reason for entering standard product contracts is to avoid these risks of price fluctuations in the spot market.

Force majeure events, by definition, occur rarely, and most of the wholesale supply price rises that retailers would be hedging against do not occur due to force majeure events. To date, Synergy has not used the force majeure provisions to relieve its obligations under any standard product contract. The ERA will continue to monitor the use of force majeure provisions in its next review and consider their ongoing relevance to the scheme, in the new market design.

The ERA expects that the State Government will update the EGRC regulatory scheme to reflect the status of plants on the specified list noting that the Worsley Cogeneration plant had been deregistered and the closure of the Muja C units has been announced. In 2019, the State Government's preferred approach was to "monitor the composition of Synergy's generating portfolio going forward, and not take any immediate action to amend the list of Specified Plant in the Wholesale Arrangements."[260]

Specifications

In past reviews, the ERA noted that standard products with different specifications may better meet the needs of market participants and contribute to a level playing field. These specifications may include different volumes and contract terms (both longer and sh orter than a quarter) varying definitions of peak periods and flexible commencements dates. [261]

[259] The list of generation units includes Collie, four Muja units, both Bluewaters generators and NewGen Kwinana.

[260] Ibid.

[261] Economic Regulation Authority, 2016, *Report to the Minister on the effectiveness of the Electricity Generation and Retail Corporation scheme 2016*, p. 23 (online) [accessed 14 December 2021].

Change Energy supported introducing peak and off-peak standard products that generally align with solar production as it would allow the increasing penetration of solar to be better managed by market participants.

The Expert Consumer Panel noted that the 'peak' pricing products no longer reflect the times when peak pricing is experienced, and that flat price products may dull signals which are of increasing significance in the operation of the South West Interconnected System. The Expert Consumer Panel suggested that a review of the standard products should be considered to ensure that they reflect genuine peak pricing.

Shell Energy's submission advocated for the introduction of standard products with a longer time period and non-flat options. Shell Energy noted that in the absence of regulatory changes to mandate new products, these improvements to the standard products market could occur if liquidly increased and if a more entities were able to provide standard products.

Other issues raised

Stakeholders raised other issues in their submissions that the ERA is not able to consider in its review. These issues are discussed in turn below.

Cost based pricing

Alinta Energy's submission noted that the current spread is wider than necessary and presented an alternative solution to constraining Synergy's pricing.[262] Alinta Energy raised concerns that reducing the buy-sell spread would not address the problems it identified with Synergy's behaviour in the retail and wholesale markets. Instead, Alinta Energy recommended that Synergy be prevented from pricing below the transparent cost of its generation.

Alinta Energy's submission noted that "Synergy appears to have suppressed its standard product prices well below its portfolio cost of generation over several years, and recently below balancing prices."[263]

Retail pricing is outside the scope of the current review. In addition, changing the standard products regime to require products to be based on Synergy's cost of generation, rather than its expectation of the future spot market price, would be a major departure from current practice for Synergy and for standard practice in futures pricing.

Carbon price

In its submission to the ERA, Synergy provided two worked examples of how a carbon tax could lower the buy-sell spread. Synergy argued that "when assessing the maximum standard product spread, the ERA should assess and advise on the potential impact of a carbon tax". Synergy's calculated examples are inconsistent with the calculations used in known carbon pricing mechanisms, the treatment of carbon pricing, the EGRC scheme, and Synergy's template contract for standard products.

[262] Alinta Energy, 1 October 2021, Submission to the *EGRC scheme review discussion paper* p.7. (online) [accessed 14 December 2021].

[263] Ibid p.1

The EGRC scheme provides for the possibility of passing through the effect of any change in law.[264] This clause is reflected in Synergy's Standard Product Agreement. [265] The scheme allows Synergy to pass through the effect of changes in greenhouse gas emission laws to its counterparties.

The carbon price that was in place when the EGRC scheme began in 2014 rendered carbon liabilities at the point of emissions. If introduced by government, a new carbon price or tax would be expected to increase generation costs and be reflected in the final balancing market price. This pass through of costs would not create any additional risk for Synergy or influence the buy-sell spread Synergy requires to have a reasonable chance of making a profit on standard product transactions.

[264] *Electricity (Standard Products) Wholesale Arrangements 2014* - 6.4 Specific Requirements (d)

[265] Synergy Standard Product agreement. Clause 7.2 Change in Tax or Change in Law (online) [accessed 14 December 2021].