



Australian Energy Market Commission

RULE DETERMINATION

NATIONAL ELECTRICITY AMENDMENT (SHORT TERM FORWARD MARKET) RULE 2020

PROPONENT

Australian Energy Market Operator

5 MARCH 2020

RULE

INQUIRIES

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ABOUT THE AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

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SUMMARY

1 On 20 December 2018, the Australian Energy Market Operator (AEMO) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission). The request related to the introduction of a voluntary short term forward market (STFM) for electricity derivatives, which would operate alongside the national electricity market (NEM).

2 The Commission has decided not to make a final rule as it considers that a STFM is unlikely to contribute to the National Electricity Objective.

Details of the rule change request

3 In the Commission's 2018 Reliability Frameworks Review, the AEMC suggested a European-style shorter-term trading market may be beneficial in providing participants with more options to manage price risk, especially for demand side participants who would be able to lock in greater price certainty ahead of dispatch. This could in turn promote greater reliability in the system. European-style short term trading markets are typically voluntary markets which facilitate participant-to-participant trade in hedging contracts.

4 As such, the Commission recommended that AEMO submit a rule change request to the Commission on how a STFM could be developed that would facilitate participant-to-participant trading of financial contracts closer to real time.

5 In response, AEMO submitted a rule change request that proposed a STFM for electricity derivatives, on the basis that a liquid STFM could:

- contribute to the reliable and secure supply of electricity by addressing potential barriers to demand side participation, and creditworthiness and collateral requirements for smaller participants—providing more avenues for participation could lead to more efficient spot market outcomes and long term investments
- improve short term operational decisions of market participants in the face of volatile market conditions, e.g. holding a swap contract incentivises generators to be available when needed to earn revenue in the spot market to fund payouts on their contract positions
- support long term contracting by providing signals of market expectations of future spot prices, lowering the cost of financing investment in generation capacity and underwriting retailers' fixed price offers to end-customers.

6 The proposed STFM for electricity derivatives would operate alongside the NEM and the existing financial contracts market. It would use a model similar to that of the AEMO-operated Gas Supply Hubs (GSH) including using the same platform (Trayport), and processes for clearing, settlement and prudential arrangements. Specific market characteristics should include:

- voluntary and anonymous trading
- exchange trading of standardised short term electricity derivative contracts
- contracts traded daily on a rolling basis for the following day and up to seven days in advance

- transaction prices and quantities published on the AEMO website.

Assessment criteria

7 For any of the benefits to participants' commercial risk management identified in the rule change proposal to be realised, and thereby in the long term interests of consumers and contribute to the National Electricity Objective (NEO), the voluntary STFM for electricity derivatives would need to be liquid and actively traded on. As such, the Commission has sought to answer three questions, namely:

1. Is there demand for short term hedging products?
2. Are there barriers to industry undertaking short term trades?
3. If there is demand for short term hedging, and material barriers to trade exist, what is the best way to address these barriers?

8 The Commission also separately considered any potential benefits that a voluntary STFM for electricity derivatives could have in improving the reliability and security of the electricity market.

Demand for short term hedge contracts

9 In the rule change proposal, AEMO identified three participant groups that would likely benefit from trading financial derivatives on a STFM, namely intermittent renewable generators, demand response providers and gas peaking generators.

10 To understand the way that these and other participants currently manage their risk and determine the underlying level of demand for short term hedge contracts, the Commission consulted widely, receiving 23 submissions and hosting meetings with 23 organisations including small renewable participants and new entrants, established vertically integrated participants, brokers, exchanges, and industry bodies.

Intermittent renewable generators

11 Intermittent renewable generators could potentially use a STFM by selling financial contracts for otherwise uncontracted generation or purchasing short term firming contracts.

12 The Commission considers that there would likely be little demand for participants purchasing uncontracted renewable generation. This is because there is a high coincidence between renewable generation in each region, so when one solar unit is generating, it is likely that others are also generating. This leads to a lower wholesale price and lower incentives for the seller and buyer to contract. Further, some smaller renewable generators would be cautious about selling firm financial contracts in the short term, as there will always be some delivery risk.

13 Discussions with renewable generators revealed that there was mixed demand for short term financial firming products. Two larger participants stated that short term hedging products may be useful for optimising within their diversified generation portfolio. However, most other participants stated they preferred to manage their price risk on a longer term basis. Other products such as power purchase agreements, proxy revenue swaps and longer term solar and wind firming products were more attractive as they further reduced investors' exposure

to risk and do not require an active trading desk.

Demand response participants

- 14 Demand response participants also showed little interest in short term financial hedging products. Participants noted that the likely clearing price of a short term derivative before a high priced event, would be relatively high, reducing the effectiveness of the product.
- 15 Additionally, participants suggested a targeted wholesale demand response mechanism would incentivise additional demand response capacity more effectively than a STFM for electricity derivatives could. Ultimately, the Commission notes that moving to a two-sided market would be the most effective method of encouraging both small and large customers to engage in demand response.

Gas peaking generators

- 16 Almost all participants that own open cycle gas turbines (OCGTs or gas peakers) did not support the introduction of a STFM for electricity derivatives. As all OCGTs in the NEM today are owned by participants with a portfolio of generation, optimisation of these assets is largely managed through short term physical commitment decisions and longer term financial contracts. However, the Commission notes that this may change in the future.
- 17 Stakeholders told the Commission that, if required, short term portfolio optimisation can and does take place through trading on the Australian Securities Exchange (ASX). If participants want to buy or sell hedging in the short term, they will trade in and out of a cap contract for the current quarter. Participants noted that this only works as the quarterly contract market is the most liquid of all listed products. Further, one participant noted that it had tried to sell short term products on the OTC market in the past, but underlying demand had been too bespoke and sporadic to be profitable on its own.

Barriers to trading short term contracts

- 18 The Commission has identified two broad areas where barriers to trading potentially exist for participants, namely:
- finding a willing counter-party with whom to trade short term contracts (search costs)
 - negotiating and executing the contractual transaction, including the price, quantity, timing, settlement and prudentials (negotiation and prudential costs).
- 19 While there is currently limited public visibility of all over-the-counter (OTC) financial contracts, including short term contracts, the Commission notes that there is work currently under way to address this. In November 2019 the COAG EC tasked the AEMC and AER to work with the Australian Financial Markets Association (AFMA) to improve the visibility of OTC trades and to consider how to enhance the AER's contract market monitoring powers. While these processes may lead to improved financial contract price discovery for participants, and therefore increase participant confidence in agreeing to contract terms, they will not address the task of finding a counter-party.
- 20 Brokers can also be used to facilitate trades of short term contracts, however their fees are designed around trades in quarterly and strip contracts. Some adjustment to the current

incentive structure may be required to incentivise them to facilitate trades in shorter term products.

- 21 Negotiating and executing a financial hedging contract varies between the type of market on which the trade occurs. On a financial exchange such as the ASX, terms and prudentials are all standardised and centrally determined. On the OTC market, most trades are executed under the International Swaps and Derivatives Association (ISDA) master agreement electricity addendum. Some stakeholders noted that the margining requirements on the ASX and the work required to establish an ISDA can be prohibitive for smaller participants. However, these requirements serve an important purpose in managing default risk, which has implications for participants, the market operator and the broader economy. Further, an AEMO-operated STFM for electricity derivatives would also have prudential requirements which may be just as onerous as those in other financial markets.

Market-led financial product development

- 22 The Commission also notes that market-led processes for establishing new financial products appear to be working. Typically, before an exchange lists a new product, there is evidence of that product trading more frequently on the OTC market. For it to trade frequently on the OTC market, generally there needs to be some standardised elements of the product and multiple users in different regions.
- 23 Recently, ERM Power and broker Renewable Energy Hub (a subsidiary of broker TFS Australia) worked to develop new solar shape and inverse solar shape swap contracts. After testing and developing the new products it has started to trade with several participants and on several broker services. This is a useful example showing that if there is demand for a new product, the market can develop a product to meet that need. The Renewable Energy Hub also recently received \$845,000 in grant funding from the Australian Renewable Energy Agency to further develop new financial products specifically targeted at renewable generators.
- 24 Further, ERM Power has suggested if demand for short term products was identified, it could potentially foster a trial market to test or develop the product. Additionally, the Financial and Energy Exchange (FEX), that aims to enter the market in 2020, told the Commission it would consider introducing short term products if there was sufficient demand.

Conclusion on risk management benefits of a STFM for electricity derivatives

- 25 The conclusion from the consultation and market analysis is that there is currently limited demand for short term hedge products in the market and that demand is sporadic and bespoke. Therefore, if introduced, the Commission considers a STFM for electricity derivatives unlikely to attract trading sufficient to boost investment signals, or materially improve short term operational decisions, and thus is unlikely to generate any material benefit to consumers. Further, if additional demand for short term hedging products develops in the future, existing market mechanisms seem capable of developing and facilitating such products.

Addressing barriers to trading short term products

- 26 While the Commission's analysis did not find material levels of unmet demand for a STFM for electricity derivatives, or material barriers to trading in short term financial contracts by existing market mechanisms, it nevertheless considered options to address barriers to trade short term products.
- 27 The Commission identified a range of options that could be used to address barriers to short term financial trading, including the proposed AEMO-operated STFM for electricity derivatives. Each of these options have respective benefits and drawbacks.
- 28 An AEMO-operated STFM for electricity derivatives has potential benefits that include:
- potential synergies with gas transportation and commodity markets run by AEMO on the Trayport platform, allowing better coordination of short term gas and electricity trades
 - some efficiencies from introducing centrally coordinated prudentials with the NEM
 - AEMO is not-for-profit and would only need to recover its establishment and operating costs.
- 29 However, an AEMO-operated STFM for electricity derivatives also comes with potential drawbacks:
- the financial market operator risks would ultimately be borne by consumers. For example, if there was little trade on the market, AEMO would need to recover the establishment and operating costs through market fees, which would be passed onto consumers.
 - it could impact existing financial contract markets, by reducing the trade of spot quarterly contracts currently used to optimise risk
 - it may create an uneven playing field for both emerging and existing brokers and exchanges.
- AEMO's operation of financial markets
- 30 In further consideration of an AEMO-operated STFM for electricity derivatives, two key questions arise:
- Should AEMO's functional role be extended from operating the physical power system and administering a settlement function to operating a financial derivatives market?
 - If AEMO's functional role is expanded to include the operation of a financial services market, should standard financial market licensing requirements apply to AEMO or should it be exempt from some or all of the requirements?
- 31 Several stakeholders raised concerns over AEMO's role in operating a market for financial derivatives. While AEMO was initially established to operate and administer the physical wholesale exchange, it also operates some markets that have financial characteristics, such as the settlement residue auctions (SRAs). Given some ambiguity over any proposed role for AEMO in operating a market with financial characteristics in the future, there are some characteristics that could be considered, including whether:
- the operation of the market or function is a by-product of, or incidental to, AEMO's existing function in operating the electricity system and settlement, e.g. SRAs are incidental to the inter-regional settlement calculations in the NEM

- the market or function could not be operated by a third-party or it is inefficient for a third-party to do so, e.g. it would be inefficient for a third party to conduct SRAs given AEMO already has all relevant information and cash flows
- the operation of the market or function creates no systemic risk, e.g. SRA's creates no systemic risk, in that the payout to the auction winners is capped by the settlement residues that accrue as a result of price separation between regions.

These characteristics distinguish AEMO's role operating markets, such as the SRAs, from the operation of broader financial services. In the event that a decision is required on whether AEMO's function should be expanded to include the operation of financial services markets, then factors such as those noted may be useful to that consideration.

32

If AEMO were to operate a financial derivatives market there are three licences it may be required to hold, namely; an Australian Financial Services Licence, an Australian Market Licence, and an Australian Clearing and Settlement Facility Licence. These licences assist in protecting the participants, the operator and broader economy from systemic financial risk. However, in the absence of legal exemptions, the Australian Securities and Investment Commission would determine what level of regulation would apply to an AEMO-operated STFM for electricity derivatives. Given similar exchanges for financial products such as the ASX and FEX have to hold the relevant licenses, unless there is a strong rationale for exemption, these requirements are also likely to apply to AEMO, as it would be carrying out the same function as these commercial exchanges.

Will a STFM for electricity derivatives materially improve commercial risk management options for participants?

33

Given:

- the limited demand for short term hedging products by market participants
- the available means of trading short term financial products and the capability of industry to develop and deliver additional financial hedging products
- the potential regulatory hurdles and drawbacks of an AEMO-operated STFM, the Commission considers a STFM for electricity derivatives would be unlikely to deliver any material benefits to participants or consumers, and would not contribute to the NEO.

Reliability and security impacts of a STFM for electricity derivatives

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The Commission separately considered whether a STFM for electricity derivatives would have any impact on improving reliability or security of the NEM. It decided any such benefits would be unlikely to be material. The characteristics of the proposed STFM for electricity derivatives that limit its effectiveness in improving system security and reliability include:

- For reliability—long term investment decisions are preferably based on longer term contracts. A STFM for electricity derivatives can only ever be a short term optimisation option rather than a foundation component of a participant's risk management position and may not facilitate regular and liquid trading—therefore, there would be no material impact. In relation to short term commitments, the voluntary nature of the market means

there could be very limited reliance on a STFM for electricity derivatives as a reliability mechanism.

- For security—due to the voluntary participation in the market and limited visibility of the exact generating unit used to defend the financial contract, a STFM cannot be relied on to materially improve system security. For AEMO to be able to rely on improvements to system security because of short term financial contracts, it would need visibility of all contract positions (including ASX and OTC contracts) and an understanding of their firmness.

35 The benefits of a STFM for electricity derivatives on system security and reliability are considered limited and best addressed through other more targeted mechanisms.

Other processes to improve the operation of the NEM

36 Although the Commission does not consider that a STFM for electricity derivatives should be introduced into the National Electricity Rules as it would not enhance efficient operation and investment, reduce costs or improve reliability or security, it notes there are several work-streams that are being progressed by the market bodies that are targeted at improving market participation options, market efficiency and reliability and security.

37 The Commission is currently:

- considering a rule change to implement a wholesale demand response mechanism in the NEM. The Commission considers that a targeted mechanism is likely to be a better mechanism to facilitate demand response participation and to improve reliability than a voluntary STFM for electricity derivatives.
- conducting a review into system strength frameworks and primary frequency control, to determine the best options to incentivise the provision of, or procure, required system security services.
- completing a review into the coordination of generation and transmission investment, to facilitate more efficient market pricing as a signal for investment, and improved risk management options for generators to manage congestion.

38 The Commission is also working with the Energy Security Board and other market bodies on projects related to the post 2025 market design. There are a number of projects within this context, including a number of projects to improve participants' ability to manage their risks, improve market efficiency and strengthen operational reliability and security. These include :

- designing a two-sided market, to achieve greater demand-side participation in the wholesale market, which should have consequent benefits for market efficiency, reliability, and consumer outcomes.
- developing a dedicated physical ahead mechanism for improving system security, which may be an efficient mechanism for providing security services in a market with a large number of intermittent generators and more responsive demand.
- exploring a series of short term measures to improve AEMO's ability to gain and use additional information to manage the system.

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1 AEMO'S RULE CHANGE REQUEST

On 20 December 2018, the Australian Energy Market Operator (AEMO) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission) seeking to introduce a market for trading short term financial derivative contracts for electricity in the national electricity market (NEM). The proponent suggested the proposed short term forward market (STFM) could improve short term spot price risk management for a range of participants including intermittent renewable generators, gas fired generators, wholesale consumers and demand response participants.

This chapter provides some background to, and an overview of, the rule change proposal.

1.1 Background

This section outlines some background information to the rule change proposal, including an overview of:

- the risk management tools used in the NEM
- short term forward markets that occur in Europe
- previous advice received on similar proposals in the past.

1.1.1 Risk management in the NEM

The NEM operates as a gross pool market, where generators bid in different quantities of generation at different prices. AEMO then clears the market by balancing supply and demand every five minutes at the price of the marginal generator. As demand and supply vary continuously throughout the day, so does the electricity price. The fluctuations between the market floor price (-\$1,000/MWh) and the market price cap (\$14,700/MWh) create cash flow risks for wholesale and retail participants. For instance, if there was an extended extreme weather event resulting in a significant increase in demand, and a resulting increase in the wholesale price of electricity, a retailer may suffer financial stress. Alternatively, if there was a period of low, stable prices, a peaking generator may find itself under financial pressure if it is not making enough revenue to recover its fixed costs. The market has responded to managing these risks through:

- vertical integration
- financial hedging contracts
- other risk management products.

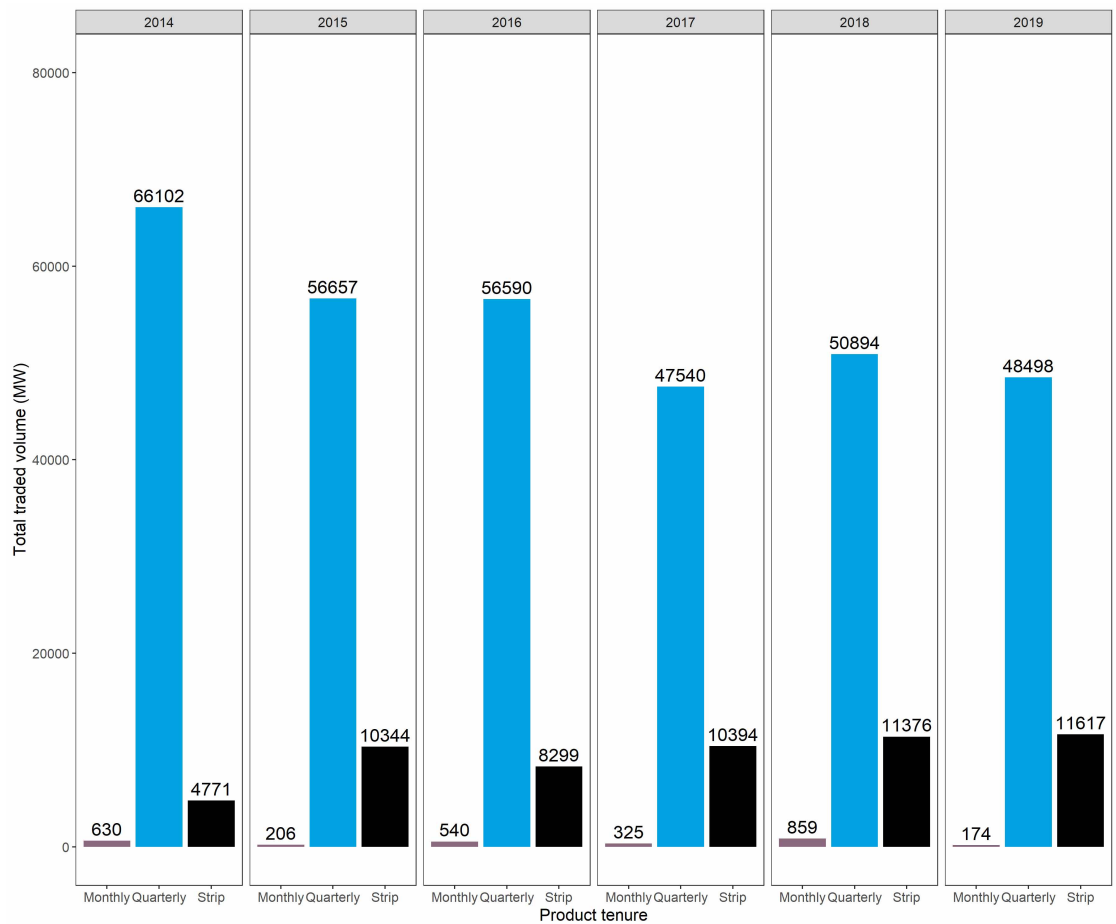
Vertical integration involves investment in both the generation and the retail ends of the market. This commercial structure allows the participant to balance the negative cash flow risk on the generation side (low wholesale electricity prices) with the negative cash flow risk on the retail side (high wholesale electricity prices). While this can be an effective method of risk management, investing in assets on both sides of the market is a long-term strategy that requires significant capital reserves. Nevertheless, over the past 10 years, vertical integration has become an increasingly popular form of risk management in Victoria and New South Wales.

Financial hedging contracts are a common way for participants to hedge against the cash flow risk associated with volatile spot prices. Financial hedges allow counterparties to agree today to a fixed price for a financial transaction in the future based on the price of an underlying asset or commodity, such as the NEM spot price. As the value of the financial product is *derived* from the value of the underlying asset, these products are called 'derivatives'.¹ There are broadly two markets for financial derivatives: The Australian Securities Exchange (ASX) and the bi-lateral or over-the-counter (OTC) contracts market.

Contracts traded on the ASX are standardised and anonymous. Traded volumes and prices are listed on the exchange, providing valuable information to the market about the current value of different products. The ASX offers a range of products, such as swaps and options, for a range of tenures including annual (strips), quarterly, and monthly. Figure 1.1 shows the trades of electricity products currently listed on the ASX by tenure. Historically, quarterly products have been the most common tenure traded, and monthly products are the least traded.

¹ For the purposes of regulation of financial products, derivative is defined under Chapter 7 of the Corporations Act 2001 (Cth) — See section 761D(1) of the Act.

Figure 1.1: ASX electricity futures traded



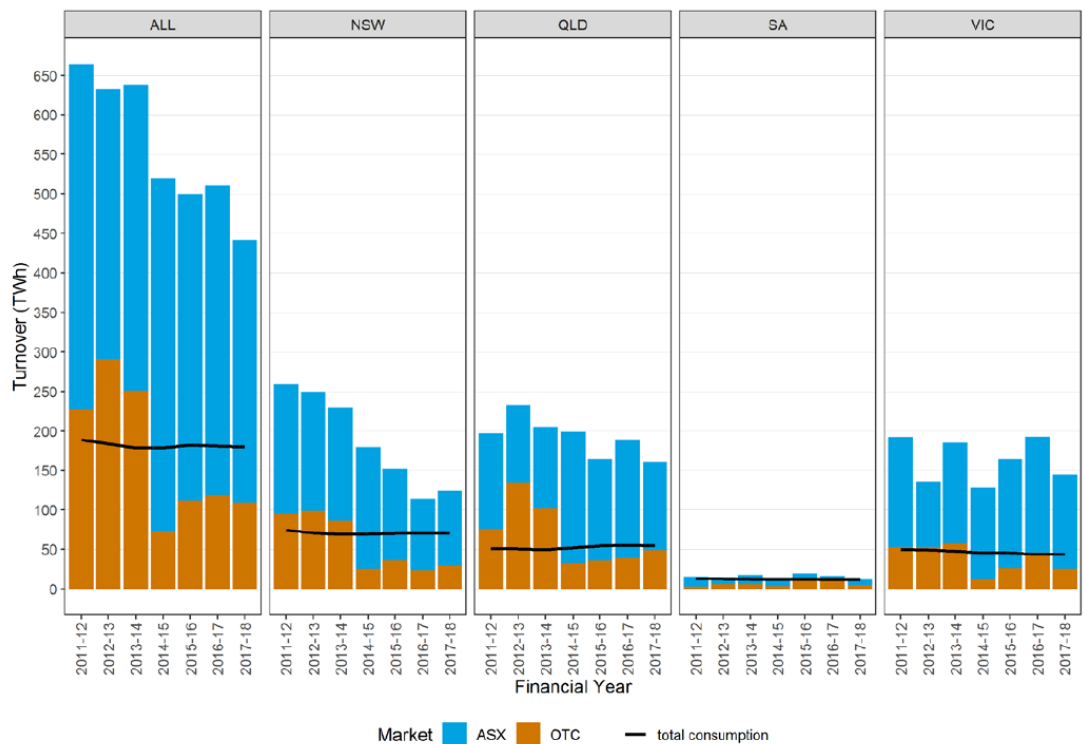
Source: AEMC analysis of ASX data

Note: Data includes all electricity futures products traded in all regions on the ASX. 2019 data incomplete and is current as of 4/11/2019.

Over-the-counter (OTC) electricity contracts are bi-lateral agreements between generators and retailers/market customers. While OTC contracts can have a similar general structure to ASX contracts, they are negotiated directly by the two counterparties, and can include bespoke conditions. There is less publicly available information on OTC contracts. However, the Australian Financial Markets Association (AFMA) conduct an annual survey of participants and report the volumes of OTC contracts traded in each region.

Figure 1.2 below illustrates the turnover of both ASX and OTC electricity contracts over time. Generally, ASX electricity products trade higher volume than OTC products, however these proportions change from year to year.²

Figure 1.2: ASX and OTC turnover for electricity derivatives



Source: AEMC analysis of AFMA 2018 survey data

Power purchase agreements (PPAs) are a common type of OTC contract used by renewable generators. PPAs are an agreement between a generator and another party (usually a retailer or market customer) where the retailer/consumer agrees to purchase some or all of the electricity exported to the grid by the generator for a fixed dollar amount per megawatt hour. These agreements are generally longer term and very popular with wind farms and solar plants where there is little control over the electricity that is generated. This uncertainty or intermittency in generation means that PPAs generally trade at discounted prices to swap or option contracts.

Other risk management products, such as weather derivatives or proxy revenue swaps, are offered by parties outside of the energy industry such as insurance companies. Weather derivatives hedge against the risk of specific weather characteristics such as temperature, precipitation, and wind, which can impact the ability to generate electricity or its price. For

² For example, during 2015-17 in South Australia there was higher trade in OTC contracts than ASX contracts.

example, this could be used by a wind generator to hedge against the negative cash flow risk of calm days, or by a retailer to hedge the demand peak on exceptionally hot days.

Proxy revenue swaps (PRS) are relatively new to the energy industry, and have been used by several renewable generators in the past few years. These swaps have been offered by some insurance/reinsurance companies and overseas they have been offered by financial institutions. A PRS essentially involves a generator receiving a fixed lump-sum amount per quarter, regardless of the amount of electricity generated or the price the electricity is cleared at through the market. In return, the generator passes all revenue through to the counterparty. These products are similar to a contract-for-difference. However, they are the supply-side version of a load following hedge as they hedge a supplier's volume and price risk.³

1.1.2 Short term markets in practice

There are several short-term markets in operation around the world today, most notably in America, Europe and in Western Australia. Noting the considerable differences in the design and scope of these markets, all of these markets operate for the day before dispatch. The short term markets in America and Western Australia are quite different to that considered in the rule change proposal, and not considered further in this final determination.

American short term markets

American short term markets typically operate as a participant-to-system operator day ahead market, run by the system operator to schedule efficient and reliable operations. These markets generally involve mandatory, and physical commitments of generation to the market operator for the next trading day, which are financially binding. It has the following objectives:

- To provide generation and pricing information to the system operator in the form of financially binding operating schedules and physical resource operating parameters for the day. This allows the system operator to schedule plant to meet expected demand of the system the following day and evaluate operational conditions on high stress days.
- To provide market participants with financially binding schedules to support physical unit commitments including fuel scheduling.
- To provide information to system operators to schedule cross-border flows between different regional markets for the following day (which is not a relevant consideration in the NEM).

Day ahead markets operate in all of the restructured electricity markets in the United States, including the PJM and the Electric Reliability Council of Texas (ERCOT) markets.

³ For more information see: <https://projectfinance.law/publications/2018/june/proxy-revenue-swaps-for-solar>

European short term markets

Short term markets in Europe facilitate participant-to-participant trading of contracts ahead of dispatch. These contract markets are typically voluntary trading exchanges where participants trade simple price-quantity bids to meet the following objectives:

- To concentrate trading liquidity at a certain point in time. This is because trading is defined around a specified period, e.g. the day-ahead or hour ahead. In contrast, contract trading in the NEM is continuous and is not forced to occur at a specific period ahead of time. This potential for greater liquidity may provide greater confidence to market participants that the price signals observed properly reflect the underlying demand supply balance. In turn, because there may be greater confidence in prices observed in the market, this might provide better investment and operational signals to participants.
- To allow market participants to fine-tune previous traded positions ahead of real time and/or to hedge against volatility in the real time market.
- To provide information to the market ahead of the real time market as to the likely supply of generation relative to expected demand over the coming 24-hour period. In turn, this may influence individual plant operating decisions.

In essence, this European-style, participant-to-participant market is a 'trading tool' that provides price signals and a risk management facility to market participants.

Some markets that currently operate European-style ahead markets include the United Kingdom, France and Germany.

Western Australian Wholesale Electricity Market (WEM)

Finally, the wholesale electricity market (WEM) in Western Australia also has a short term market currently in operation. The Short Term Energy Market (STEM) is a daily forward market for energy that allows market participants to trade around their bilateral energy position, producing a net contract position. A STEM auction is run for each trading interval of the next trading day, determining a STEM clearing price and clearing quantities. The combined net bilateral position and STEM position of a market participant describes its net contract position. The Short Term Energy Market (STEM) operates similarly to American markets. However, participation is voluntary for customers and only represented around four per cent of the total WEM trades in 2017-18.⁴

Whilst the STEM and the WEM are currently operated by AEMO, there are a number of differences between this market design and the NEM. First, the WEM includes a capacity mechanism. Generators receiving capacity credits in the capacity market must offer all of their available capacity for which they have received credits into the STEM and balancing market, preventing the physical withholding of capacity. Second, the WEM rules require suppliers to provide energy at their reasonable expectation of short-run marginal cost. This and the ex-post monitoring and investigation of bidding behaviour seek to mitigate the

⁴ AEMO, Summary of WEM prudentials and STEM: presentation to AEMC.

misuse of market power in the WEM. This is necessary because of the lack of effective competition in the wholesale energy market.

1.1.3

Previous consideration of a short term forward market

The introduction of a short term forward market has been considered several times by the AEMC and other bodies since the NEM's inception. When the NEM was originally being designed, the introduction of a short term forward market was proposed to be introduced in the Electricity Code. However, the ACCC blocked this decision at that time.⁵

In 2002, the Parer review (Review) also looked at the development of short term hedging market. The Review engaged KPMG to look at the state of short term trading and whether any interventions were necessary. The study noted that the short term trading that does take place is restricted to managing variations in load that occur primarily on the retailer front. The prices that a counterparty will ask for any short term cover will generally be high as the expectation is of increased spot price volatility. Further, the report noted that "no support has been provided for the view that a compulsory market would advance a deep and liquid market and there is the danger that an enforced short term market could stifle market based innovation, particularly the increased participation of financial intermediaries, and could encourage undesirable behaviour in the physical markets such as retailer load shedding and restriction of generator supply".⁶ The Review concluded that no action needed to be taken, and market conditions should be monitored.⁷

In its submission to the AEMC's demand side participation review, the Ethnic Council of NSW appended a 2004 report by Charles River Associates, commissioned by the South Australian Government for the Parer review.⁸ The report noted:⁹

At the time the NEM was being developed, consideration was given to introducing a multi settlement design. This was rejected by the ACCC on the basis of concerns about a centrally operated scheme potentially "crowding out" other providers and the potential conflict of interest that NEMMCO would face if it was both market operator and was to take a position in the short-term contracting. In practice, no external providers have emerged to establish a short-term contracting exchange, although there have been a number of schemes for longer-term contracting. Whether NEMMCO has a conflict of interest or not is dependent on the detailed design of the regime, which could be arranged to ensure that conflicts do not arise.

Chapter nine of the report discussed the option of a STFM and its benefits. The authors noted:¹⁰

5 COAG Energy Market Review, Towards a truly national and efficient energy market (Parer Review), December 2002, p. 160. Available at: <http://www.efa.com.au/Library/ParerFinRpt.pdf>.

6 COAG Energy Market Review, Towards a truly national and efficient energy market (Parer Review), December 2002, p. 166.

7 *ibid*, p. 170.

8 Charles River Associates, Short-term Forward Market, June 2004, available at: <https://www.aemc.gov.au/sites/default/files/content/96644883-9a4f-4bed-84e8-0e8e5d5716b9/Ethnic-Communities-Council-of-NSW-Appendix.PDF>

9 *Ibid*, p. 2.

10 *Ibid*, p. 37.

...the degree to which these improvements will eventuate is highly dependent on participation and this is a behavioural issue. We are aware that previous attempts by SFE [Sydney Futures Exchange] and ASX to offer additional contracting opportunities have been at best marginally successful. A short-term forward market would be targeting a different part of the contracting arena but success cannot be assured.

In 2007, the AEMC undertook a review of demand side participation in the NEM. As part of its review, the Commission commissioned a report from Charles River Associates.¹¹

The report included discussion of a listing service (Bulletin Board) and both a voluntary and compulsory forward market as options to boost demand participation in the NEM. On these options, the report concluded:¹²

Before a centralised forward market is created, whether it be voluntary in the form of simple facilitation of existing opportunities or a mandatory arrangement, it would be necessary to examine the benefits and costs that might be achieved. Although a multi-settlement market would improve the prospects for [demand side participation] (DSP), the changes could be profound and it is not intuitively obvious that the dislocation would be warranted if facilitation of DSP was the primary motivation.

Finally, in 2016, AEMC and AEMO staff prepared a short paper on the design features and benefits of a STFM for Senior Committee of Officials (SCO). This led to further consideration of a STFM in the Reliability Frameworks Review, discussed in section 1.4.

1.2 Rationale for the rule change request

AEMO described the market context for the rule changes as:

- high levels of intermittent generation and growing demand for flexible generation
- potential barriers to demand side participation and significant creditworthiness and collateral requirements for smaller participants.

It suggested a range of participants could potentially benefit from the introduction of a STFM as it could provide:

- another risk management option for intermittent generators closer to the trading day when these generators have greater certainty of what they will be generating
- greater short term price visibility and certainty for gas-powered generators to better coordinate between generating electricity and selling gas into gas markets
- more price visibility and risk management options available for end users, and those able to offer wholesale demand response

11 AEMC, *Review of Demand Side Participation in the National Electricity Market*, Review of Demand Side Participation in the National Electricity Market, available at: <https://www.aemc.gov.au/sites/default/files/content/4a7f4251-4e24-42a8-a71d-aa2693547314/Report-on-The-Wholesale-Market-and-Financial-Contracting-AEMC-Review-of-Demand-Side-Participation-in-the-NE-M-by-CRA-International.pdf>.

12 Ibid, p. 76.

- lower barriers to market participation from clearing systems and settlement that isn't fully integrated with existing risk management tools
- stronger investment signals for investors.¹³

1.3 Solution proposed in the rule change request

The rule change request proposes that a short term forward market (STFM) be established to operate alongside the NEM and the existing contracts market. The market could follow a similar model to that used in the Gas Supply Hubs (GSH), using the same platform and processes for clearing, settlement and prudential arrangements. The specific characteristics of the proposed market include:

- being operated by AEMO using the existing Trayport platform used for the GSH and pipeline Capacity Trading Platform (CTP)
- using NEM settlement, clearing and prudential frameworks where practicable
- voluntary participation by market participants
- anonymous, exchange trading of standardised short term financial electricity contracts with bids and offers matched continuously based on price and linked to each regional reference price in \$/MWh
- contracts traded daily on a rolling basis for the following day and up to seven days in advance (D+1 to D+8)
- contract specifications developed with industry with the potential for contracts over daily, hourly, peak or shoulder block contract durations
- transaction prices and quantities published on the AEMO website.¹⁴

1.4 Trigger for the rule change

In 2018, the AEMC released the final report of its Reliability Framework Review (RFR). To address a recommendation from the Independent Review into the Future Security of the National Electricity Market (the Finkel review), the RFR assessed "the suitability of a 'day-ahead' market to assist in maintaining system reliability".¹⁵ The assessment of ahead markets explored the suitability of both participant-to-operator (American-style), and participant-to-participant (European-style) ahead markets, and gathered a range of stakeholders submissions on the possible options.

The Commission suggested a European-style shorter-term trading market may be beneficial as it is similar to current market arrangements, with limited barriers to the introduction of such a market in the NEM. These benefits include providing market participants with more options to manage price risk and more price certainty to market participants. Increasing price certainty could facilitate more demand response in the wholesale market. Consequently, the Commission recommended that AEMO undertake work to submit a rule change request to the

¹³ AEMO, Short term forward market rule change proposal, p. 3.

¹⁴ AEMO, Short term forward market rule change proposal, p. 4.

¹⁵ Finkel Panel, Independent Review into the Future Security of the National Electricity Market: Blueprint for the Future, June 2017, p. 23.

Commission on how a STFM could be developed that would facilitate bi-lateral trading of financial contracts closer to real time.

1.5 The rule making process

On 11 April 2019, the Commission published a notice advising of its commencement of the rule making process and consultation in respect of the rule change request.¹⁶ A consultation paper identifying specific issues for consultation was also published. Submissions closed on 23 May 2019. The Commission received 17 submissions as part of the first round of consultation.

On 12 December 2019, the Commission published a draft rule determination. Submissions on the draft rule determination closed on 6 February 2020. The Commission received six submissions on the draft rule determination. In making the final rule determination, the Commission has considered all issues raised by stakeholders in the first and second consultation rounds. Issues raised in submissions are discussed and responded to throughout this final rule determination.

¹⁶ This notice was published under s.95 of the National Electricity Law (NEL).

2 FINAL RULE DETERMINATION

2.1 The Commission's final rule determination

The Commission's final rule determination is to not make the proposed rule.

The Commission's reasons for making this determination are set out in section 2.4.

This chapter outlines:

- the rule making test for changes to the NER
- the assessment framework for considering the rule change request
- the Commission's consideration of the proposed rule against the national electricity objective

Further information on the legal requirements for making this rule determination is set out in Appendix A.

2.2 Rule making test

2.2.1 Achieving the NEO

Under the NEL the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the national electricity objective (NEO).¹⁷ This is the decision-making framework that the Commission must apply.

The NEO is:¹⁸

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.

The Commission has identified that the relevant aspects of the NEO are *the efficient investment in, and efficient operation of, electricity services with respect to the price and reliability of supply of electricity.*

2.3 Assessment framework

In assessing the rule change request against the NEO the Commission has considered the following:

- **Is there demand for short term hedging products?** Participants generally manage their own risk. Therefore, to introduce a new market to help short term risk management, underlying demand by market participants is a prerequisite. If a market was introduced and there is no underlying demand, the market would not trade, and no benefits would accrue to consumers.

¹⁷ Section 88 of the NEL.

¹⁸ Section 7 of the NEL.

- **Are there barriers to the industry facilitating short term trades?** If there are no or few barriers stopping the industry providing these services, it suggests that the case for intervention is weak.
- **If there is demand for short term hedging, and barriers to trade occurring, what is the best way to address these barriers?** If there is a need for intervention, what is the best way to address the issues in the market, and maximise the overall benefits for consumers.

2.4 Summary of reasons

Having regard to the issues raised in the rule change request and during consultation, the Commission is not satisfied that the proposed rule will, or is likely to, contribute to the achievement of the NEO for the following reasons:

- There appears to be limited demand for short term financial hedging derivatives. After extensive consultation and analysis, the Commission concluded that there was limited actual demand for short term hedging products. Intermittent renewable generators, demand response participants and gas powered generators were all identified as potential beneficiaries of a STFM. For there to be any benefit to consumers, or improvements in reliability from a STFM, the STFM needs to be utilised by participants.
 - Except for two more diversified participants, intermittent generators revealed limited appetite to purchase short term hedging products. Further, due to the correlation of intermittent generation within a region, there would likely be limited demand to purchase excess generation sold on a STFM.
 - Demand response service participants also showed little interest in short term hedging products. Participants noted that the clearing price of a short term product before a high priced event, would be relatively high, reducing the attractiveness of the product. Finally, participants suggested a targeted wholesale demand response mechanism would have a considerably larger impact on assisting demand response, over a short term forward market.
 - Almost all participants that own open cycle gas turbines (OCGTs or gas peakers) did not support the introduction of a STFM. As all OCGTs in the NEM are owned by vertically integrated participants, if these plants were to sell short term contracts, it would be as part of a broader portfolio optimisation. One participant noted that it had tried to sell short term products in the past, however underlying demand was bespoke and sporadic.
- If demand were to develop, industry can facilitate the trade of short term hedging products. There is a small amount of short term trading that occurs currently on the ASX, where participants would trade in and out of the current quarterly cap products to achieve additional hedging when required. Further, there is evidence of brokers and participants recently working together to develop new standardised hedging products. If there was sufficient demand for short term products, it is likely that these participants would develop new hedging products to meet this demand.

- If introduced, the market is unlikely to be actively traded, and would not accrue any meaningful benefit to consumers, whilst incurring some costs to establish and operate. As noted above there is limited demand for short term products. If the market were to be introduced, it would not likely be particularly liquid. This would result in a notably longer period required to recover the establishment costs, and minimal benefits from improved hedging practices being passed on to consumers.

Accordingly, the Commission's final rule determination is to not make a final rule. The proceeding chapters present the detailed analysis that supports this decision.

3 DEMAND FOR A SHORT TERM FORWARD MARKET

This chapter explores the suppliers and users of short term hedging products, and includes an assessment of the attractiveness of a STFM for these participants. To understand the current way that these and other participants manage their risk and determine the underlying level of demand for short term hedge contracts, the Commission consulted widely, hosting meetings with over 23 bodies including small renewable participants and new entrants, established vertically integrated participants, brokers, exchanges, and industry bodies.

The conclusions from this consultation and market analysis are that there is currently limited demand for short term financial hedging products in the market, and the limited demand that does exist is sporadic and bespoke. Therefore if introduced, the Commission considers a STFM would not be actively traded on and hence would not provide any investment signals, or materially improve short term operation decisions, and thus would not generate any benefit to consumers.

3.1 AEMO's view

In the rule change proposal, AEMO identified three groups of users that may use and benefit from the introduction of an exchange for short term products. These groups are:

- intermittent generators — may benefit from shorter contracts that trade closer to real time
- gas powered generators — may benefit from increased short-term coordination between physical gas and electricity contracts.
- demand side response participants — may benefit from being able to sell short term contracts for their demand response.¹⁹

In its submission to the consultation paper, AEMO reiterated the above examples, also noting that variable renewable energy generators may be able to offer contracts in a STFM as wind forecasts improve closer to real time.²⁰

AEMO also stated that it looked forward to hearing from participants in the rule change process how intermittent generators and demand side response participants currently manage their short term price risk.²¹

3.2 Stakeholder views on the consultation paper

The majority of stakeholders — including retailers and generation businesses — stated that they do not believe there is sufficient demand to support a STFM.²² The AER noted that the effectiveness of the proposed STFM will depend on the demand for it, and it is currently unclear to them whether that demand exists.²³

¹⁹ AEMO, rule change proposal, pp. 8-10.

²⁰ AEMO, consultation paper submission, p.1.

²¹ AEMO, consultation paper submission, pp. 1-2.

²² Submissions to the consultation paper: Powershop/Meridian, p. 2; AEC, p. 4; ERM Power, p. 4; Energy Queensland, p. 1; ENGIE, p. 1; AFMA, pp. 1-2; AGL, pp. 1-5; Stanwell, pp. 1, 5; Enel X, p. 1; Snowy Hydro, p. 1; EnergyAustralia, p. 1.

AGL argued that as the dispatch date approaches, more information becomes available and there is less forecast variance.²⁴ This makes it less likely that parties have complementary risks and are able to agree on a price.

Powershop/Meridian, ERM Power, ENGIE and EnergyAustralia all stated that short term hedging products are already being traded on the OTC market.²⁵ However, these trades are irregular and at small volumes, which is representative of the sporadic underlying demand.

Powershop/Meridian went on to state that the ASX and OTC contracts are sufficient to manage financial exposure in the NEM, and adding a subset of these products through a STFM will increase complexity with limited benefit.²⁶ ERM also stated that participants already have means of contracting short term hedge products, which "while still very useful, this represents a minor part of contracting behaviour".²⁷

AEC stated that the need for additional risk management options is not apparent, and agreed that a STFM may only add complexity.²⁸ It went on to note that there is no need for it because:

- new intermittent generation:
 - installation has been declining
 - are using technologies to mitigate their risk. For example Acciona's Mortlake wind farm is installing a battery energy storage system, and AGL's Barker Inlet is dual fuels.
- existing intermittent generators:
 - are partnering with other generators to offer firmer products
 - prefer long term PPA's because they have lower risk and are better for financing.

Mondo and Shell were conditionally supportive of the proposal.²⁹ However, neither they nor any other stakeholder stated that their business currently has any large or unmet demand for short term hedging products.

Infigen was also supportive of the proposal, noting that it would allow them to buy and sell firming products. Infigen suggested that a liquid STFM would allow parties to optimise their long and short positions ahead of dispatch.³⁰

ERM Power made mention that the mere existence of a market is not enough to attract a sustainable volume of trades.³¹ It also mentioned that short term hedging products were traded in the beginning of the NEM, which has since disappeared.³² Recently, ERM has

23 AER submission to the consultation paper, p. 1.

24 AGL submission to the consultation paper, pp. 1-2.

25 Submissions to the consultation paper: Powershop/Meridian, p. 1, ERM Power, pp. 1-2; ENGIE, p. 2; EnergyAustralia, p. 1.

26 Powershop/Meridian submission to the consultation paper, p. 2.

27 ERM Power submission to the consultation paper, p. 2.

28 AER submission to the consultation paper, p. 2.

29 Submissions to the consultation paper: Mondo, pp. 1-3; Shell, pp. 1-2.

30 Infigen, consultation paper submission, p. 2.

31 ERM Power submission to the consultation paper, p. 3.

32 Ibid, p. 1.

offered some day-ahead OTC products, which attracted sporadic interest. ERM stated that there are only a few participants who are active and willing to trade these products and that their activity has not attracted any new participants. These products, traded through the OTC market, include daily call options, demand or temperature activated swing options and metered load contracts.

3.3 Draft determination analysis

The rule change proposal identified three groups of users that may benefit from the introduction of a STFM, namely intermittent renewable generators, demand response participants and peaking gas generators. Section 3.4 to 3.6 explore the likely benefits and risks these participants would face from trading of short term financial contracts. This is followed by section 3.7 on the use of short term trading in other electricity markets.

3.4 Intermittent renewable generators

The rule change proposal makes the case that intermittent renewable generators — namely wind generators — may benefit from a market of short term contracts. This is because such a market would enable these generators to use the latest weather information to estimate their likely generation. For example, wind forecasts are around 95 per cent accurate 24 hours ahead of dispatch and around 80-90 per cent accurate six days out from dispatch.³³

On this basis, renewable generators could, in principle, use short term contracts in two ways:

1. selling short term contracts for previously uncontracted generation if the generator is likely to generate
2. purchasing short term contracts to firm longer term contracts sold on the ASX or OTC markets, if the generator isn't likely to generate.

3.4.1 Selling short term contracts for uncontracted generation

Over the last few years there has been a shift in how renewable energy projects are financed. Traditionally, large-scale wind and solar generation were predominantly financed through debt from Australian banks. These domestic debt investors had a relatively low risk appetite, who required a power purchase agreement (PPA) in place before providing finance for the project. These PPAs were typically in the form of off-take agreements with electricity retailers who purchased all the electricity produced at the site, primarily to fulfil obligations under the large-scale renewable energy target. Retailers currently account for 58 per cent of all Australian renewable energy project capacity either operating or under construction.³⁴

Demand for PPAs from retailers has slowed down over the last couple of years, with corporate businesses becoming the main off-taker for new renewable projects. Additionally, there has been an increase in the proportion of equity finance in renewable generation projects. These equity-financed projects generally have a higher risk appetite compared to the traditional debt-finance projects. To date, 18 solar and five wind projects have reached

³³ AEMO, Short term forward market rule change proposal, p. 8.

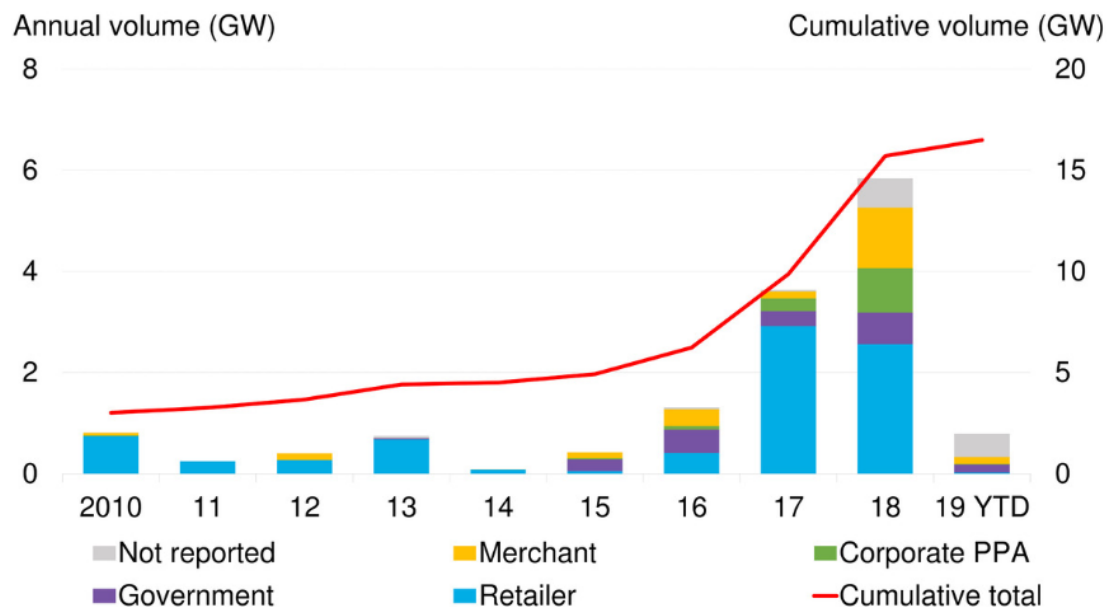
³⁴ BNEF, Australian Power Purchase Agreement Dataset, May 2019.

financial close on a fully merchant basis, representing 1.5GW and 0.87 GW of capacity respectively.³⁵

Further, the demand for traditional full coverage PPAs from retailers has reduced with growing use of augmented PPAs or other contracting offers such as PRS (see *Firming of longer term contracts* section for more details). There are now also several projects that have a proportion of their capacity exposed to the spot price. This is known as merchant spot exposure and currently represents 0.65GW of cumulative NEM capacity.³⁶

Figure 3.1 below illustrates the changing dynamics of renewable financing, including the growing merchant spot exposure.

Figure 3.1: Large-scale wind and solar project off-take structure by financing date



Source: Bloomberg New Energy Finance, Australian Power Purchase Agreement Dataset, May 2019.
Note: Data as of May 2019, Data does not include projects which have no secured financial close.

Therefore, it is possible that a participant with merchant exposure could contract excess generation it has forecast in short term hedge products. The incentive to contract with another party in shorter terms requires a convergence of complementary needs or a difference in expectations of what will occur. However, there are three factors that limits a renewable generator from being able to easily and confidently contract short term hedge products. These are the:

³⁵ BNEF, Australian PPA Market Primer, 2019.

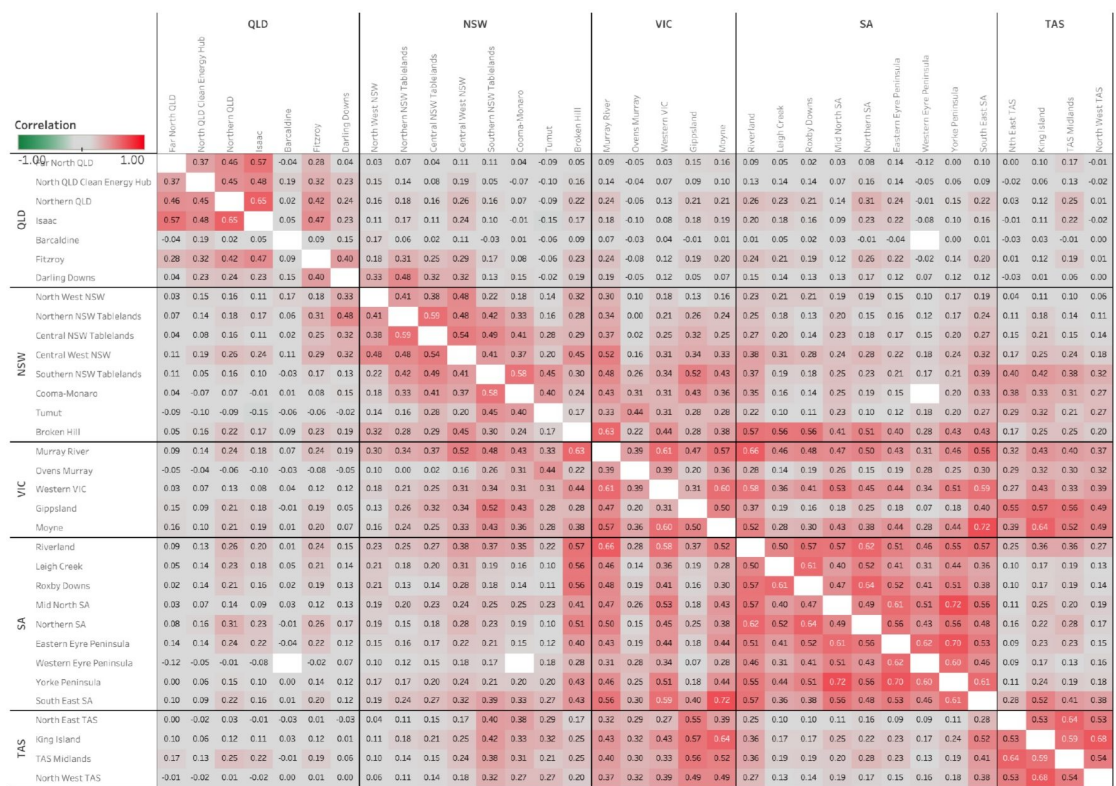
³⁶ *ibid.*

1. high coincidence of renewable generation in a region and the effect this has on the spot price
2. high visibility of expected demand and generation forecasts, which reduces the incentives for counterparties contracting short term hedge contracts
3. risks renewable generators are exposed to when selling short term firm hedge contracts.

High coincidence of renewable generation

There is a relatively high level of coincidence between renewable energy by each type of generation across each region. For example, when one wind farm is generating in a region, it is likely that most other wind farms are generating in the region. In South Australia the average correlation between all wind generating units is 55 per cent. Figure 3.2 below illustrates the correlation between wind speed by each renewable energy zone in the NEM. For solar generation there is a strong correlation between both large-scale solar and behind the meter solar, as illustrated in Figure 3.3.

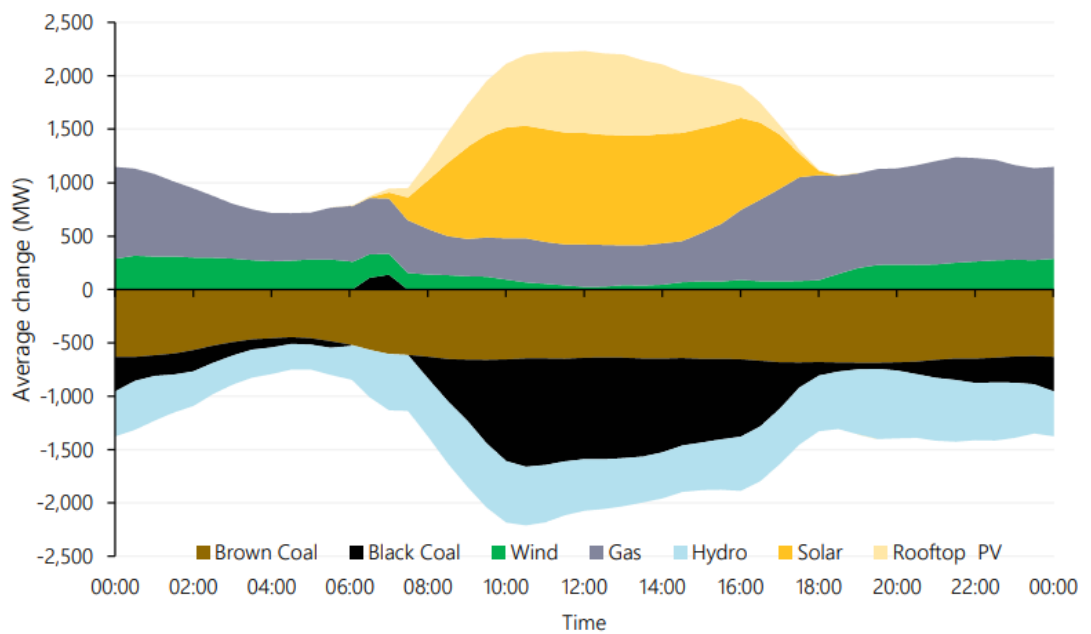
Figure 3.2: Wind speed correlation by Renewable Energy Zone



Source: Global Roam/Greenview, Generator Report Card 2018, published 31 May 2019.

Figure 3.3: Increased solar changing the shape of the generation profile

Change in supply – Q3 2019 versus Q3 2018 by time of day



Source: AEMO, Quarterly Energy Dynamics: Q3 2019, p. 8.

High visibility of expected demand and generation forecasts

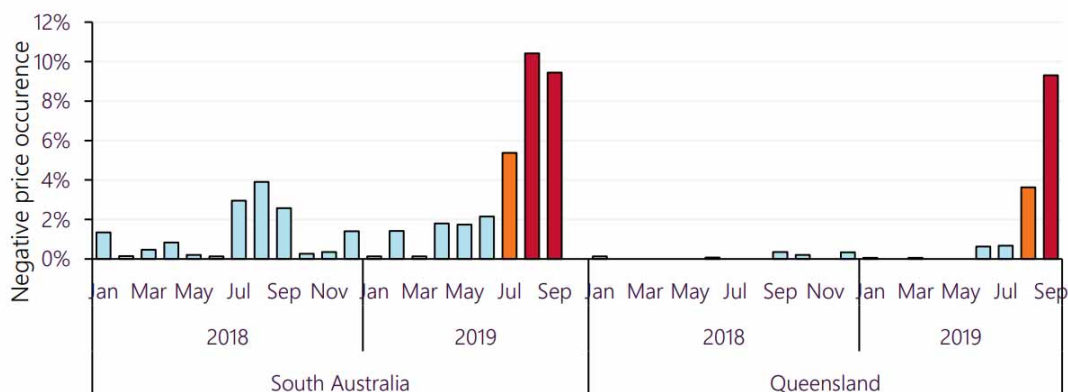
With high levels of coincident generation, when a renewable generator is able to sell its uncontracted generation to the market, other participants will also be selling into the spot market. As all participants will have access to the same forecasts and renewable generation tends to have a low short run marginal cost, the incentives to purchase a hedging contract for generation that would otherwise be sold into the spot market is low.

For example, in the third quarter of 2019, Queensland experienced record negative prices, with prices zero or negative 4.5 per cent of the time, as illustrated in Figure 3.4. This increase in negative pricing was partially due to a 60 per cent year-on-year increase in large-scale solar penetration and lower operational demand, also partially caused by increased household solar.³⁷

³⁷ AEMO, Quarterly Energy Dynamics: Q3 2019. November 2019, p. 3, 12.

Figure 3.4: Negative price occurrences in South Australia and Queensland

Frequency of negative or zero spot prices in South Australia and Queensland.



Source: AEMO, Quarterly Energy Dynamics, Q3 2019, November 2019, p. 16.

This has reduced the incentives to purchase a short term contract from a renewable generator that will be generating over the same intervals.

Value and risk of offering short term contracts

In discussing the attractiveness of a generator with high levels of uncontracted generation selling short term contracts, one smaller independent renewable participant noted that, although the accuracy of forecasts improve up to 24 hours before dispatch, it is still not 100 per cent reliable, and there remains some element of delivery risk. Delivery risk refers to the chance that the generator will fail to deliver the underlying asset or cash value of the contract and therefore not fulfil its side of the contract.

Given this and the likely low contracting price driven by the high levels of coincidence generation, selling generation on the wholesale spot market would be more attractive than underwriting a short term contract. A participant may sell a short term contract if it is confident that its forecasts are better, and different, from those of the general market, such that it can agree on a price for a particular product.

Alternatively, if an intermittent generator is to offer non-firm short term contracts, similar to a PPA, then this contract would be valued less than a firm contract would be by the market. This would mean that it may be more valuable for the generator to go take that capacity to the spot market.

3.4.2

Firming longer-term contracts with short term hedging products

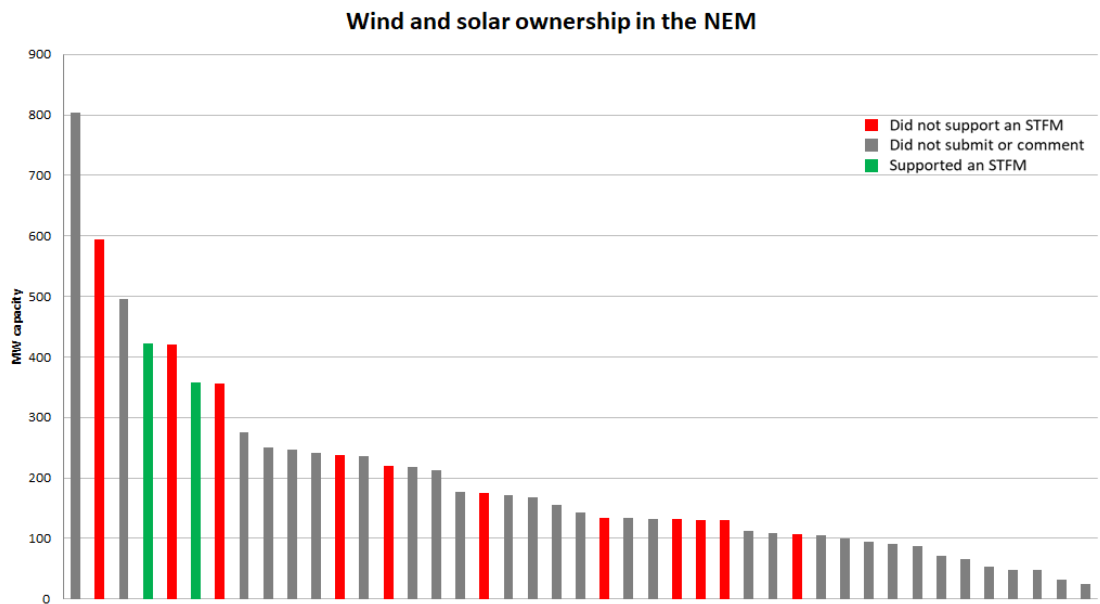
The other potential method for intermittent generators to extract value from a short term forward market is by selling longer term contracts in another market and purchasing short term firming products when it is unlikely their renewable generation will be able to fulfil the

longer term contract. Consultation with stakeholders revealed renewable generators were generally divided on the relative benefits of this approach.

Many of the smaller, independent participants suggested they did not prefer to actively manage their risk through these shorter term products. Few of these participants had trading desks, and most commented they preferred longer-term risk management of their renewable portfolios. Other products such as longer term (e.g. quarterly, strip or multi-year) solar firming products and proxy revenue swaps were more attractive than the active trading of short term products.

However, other participants such as Infigen and Tilt Renewables advocated for the potential benefit of short term contracts. These participants suggested that with a well diversified portfolio they could write longer term products, and having the capability to purchase short term firming products could be a useful tool. Both of these participants were agnostic whether these products were sold through a STFM or through another market. Figure 3.5 illustrates the various positions of different renewable participants on the value of a STFM to their business.

Figure 3.5: Solar and wind capacity ownership in the NEM



Source: AEMC analysis

Note: Support for a STFM taken from the respective stakeholder's submission to the consultation paper or conversations with the AEMC.

3.5 Demand response

The rule change proposal suggested demand response providers may benefit from a short term forward market, as it would enable demand response participants to make a financial

commitment on their response decisions ahead of time.³⁸ This could be beneficial where actions to respond to demand reduction take a few hours to implement.

Submissions to the consultation paper from demand response participants were limited. As noted above, Enel X suggested that there was no immediate need for a short term trading mechanism. Enel X went on to note that a STFM would only be valuable if a wholesale demand response mechanism were to be introduced. However, even under this scenario a STFM would need to develop sufficient liquidity for efficient transactions, which is uncertain in a voluntary market.³⁹ Discussions with Flow Power suggested that retailers facilitate demand response in the market today, and the additional benefits of a STFM may be limited.

Conversations with Flow Power also revealed that there may not be a risk appetite to underwrite short term contracts, such as that facilitated by a STFM, and it would be easier to reduce demand and avoid wholesale costs. Additionally, from the perspective of a seller of short term contracts, demand response participants would get no additional benefits from selling a short term contract, over a longer term contract. Either way, a decision is required on whether to respond to a foreseen price spike or not.

Finally, the Commission is currently considering a change to the rules to introduce a wholesale demand response mechanism.⁴⁰ A targeted wholesale demand response mechanism is likely to have a greater role in encouraging demand response in the NEM, compared to a STFM. The Commission is also of the view that a move to a two-sided market will create the optimal environment to encourage demand response to enter the market. A two-sided market would enable all generation and load to bid in the price and quantity for every MWh, sharpening the price signal for demand response at both the industrial and small customer levels.

3.6 Gas powered generators and short term position optimisation

The rule change proposal identified gas generators as another beneficiary of a short term forward market. The rationale was that a gas powered generator could better coordinate decisions to purchase physical gas and generate electricity. For example, they could purchase a weekly gas contract on the GSH and sell a corresponding short term electricity contract on a STFM.⁴¹ However, ERM Power noted in its submission that gas supply has never been a barrier to generation for gas powered generators, as most participants have 'park and loan' arrangements with gas pipelines.⁴²

Almost all participants that own peaking gas generators or open cycle gas turbines (OCGTs) did not see the need for a STFM as illustrated in Figure 3.6 below.

38 AEMO, Short term forward market rule change proposal, p. 10.

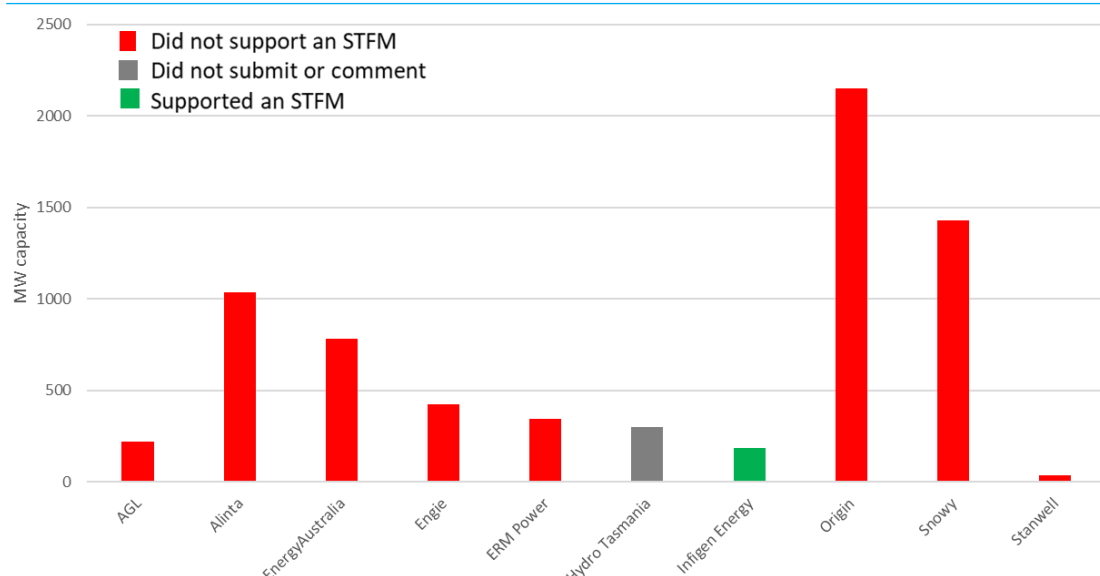
39 Enel X, Consultation paper submission, p. 3.

40 For more information see: <https://www.aemc.gov.au/rule-changes/wholesale-demand-response-mechanism>.

41 AEMO, Short term forward market rule change proposal, p. 9.

42 ERM Power, consultation paper submission, p. 2.

Figure 3.6: OCGT ownership in the NEM



Source: AEMC analysis. Support for a STFMs taken from the respective stakeholder's submission to the consultation paper and discussions with participants.

Generally, OCGTs tend to earn their revenue through a combination of selling quarterly or strip cap products on the ASX or OTC markets and selling excess generation directly in the wholesale spot market. In discussions with EnergyAustralia, they noted that selling these longer-term contracts is critical for OCGTs to recover their fixed costs. As short term products would trade as a reaction to expected high prices, the revenue generated from short term products would be dependent on the frequency of high priced events. The uncertainty of the frequency of high priced events introduces an element of risk for these plants to recover their fixed costs, as there is a large variation in the number of these events in a year. Therefore, as longer term risk management underpins investment and operational decisions, short term hedges can only be used as an optimisation around these positions.

Additionally, ERM Power noted that for an OCGT to sell contracts during a period of forecasted spot price volatility would transfer the spot price risk to the OCGT, which, depending on its age and status, may be unwilling to accept this risk for a short term return. ERM Power went further to note that OCGTs need greater certainty in contracting than a STFMs can provide to remain economically viable.⁴³

Finally, the introduction of an actively traded STFMs is unlikely to substantially affect commitment decisions for gas powered generators. Whether they are contracted under a quarterly cap or a short term cap, they will need to decide either way whether they will generate or not. OCGTs currently manage their gas commodity requirements and decisions

⁴³ ERM Power, consultation paper submission, p. 2.

on a 5-minute basis, and will be seeking to optimise their generation and profit regardless of the length of the contract they are defending.

3.6.1 Short term position optimisation

Almost all participants will be either short or long in their hedging position in any region, at any point in time. This means the generation they own, or the contracted hedging they have will either be slightly more or less than the consumption of their customers at any point in time. As such, participants use the spot market to balance their positions by either selling or purchasing electricity to match their portfolio positions.

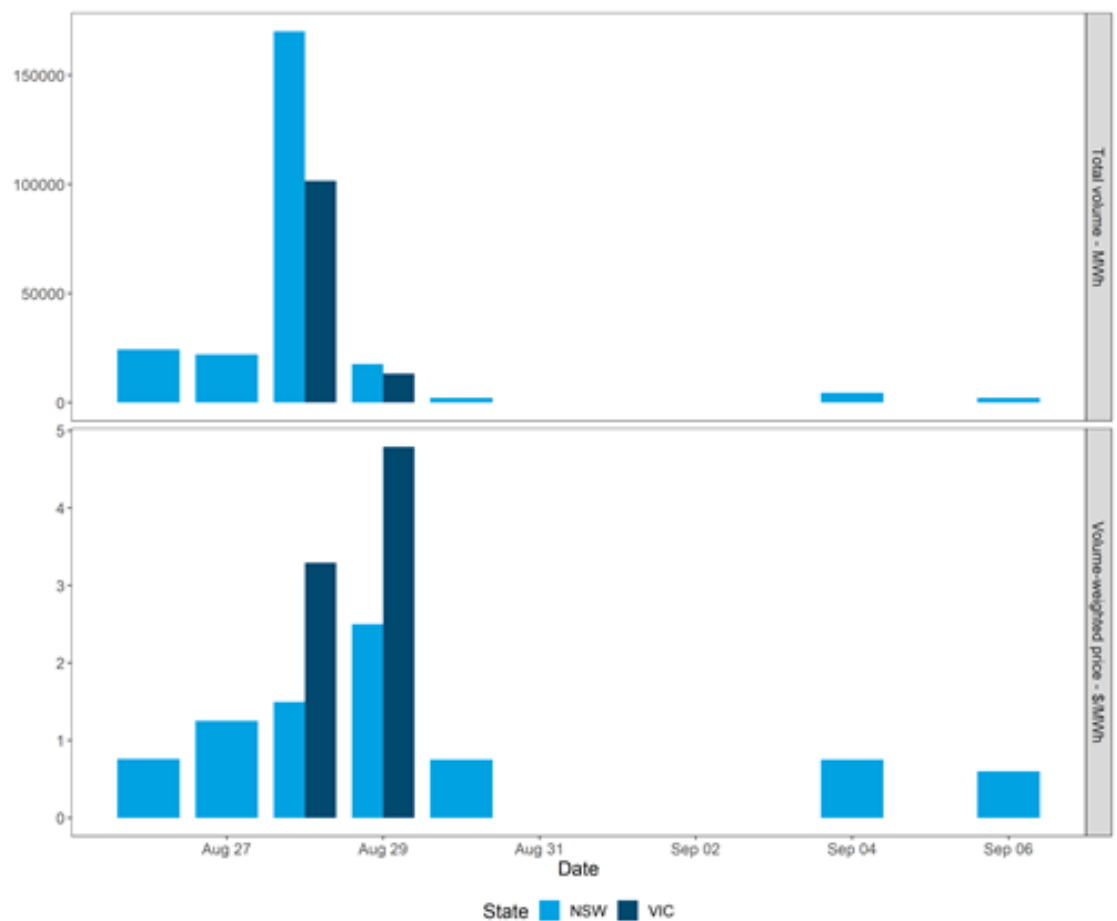
A STFM could assist participants in optimising these positions, by trading the short tenure contracts and reduce their spot market exposure. However, both AGL and EnergyAustralia noted that in the case of an expected high price event, the price for short term contracts will likely converge towards the expected spot prices, suggesting there would be minimal value for buyers.⁴⁴

Some participants currently optimise their short term positions through the ASX. Discussions with participants and brokers revealed, it is common for participants to trade in and out of ASX contracts for the current (spot) quarter if they need to purchase or sell additional hedging. Participants generally do this to respond to a foreseen high price event in the future. As the ASX quarterly market is the most liquid contract market in the NEM, participants will purchase the spot quarter contract, in advanced of the high price event and then sell out of that position after the event.

For example, on 28 August 2019 pre-dispatch prices for the next day showed sustained periods of over \$10,000 in NSW and Victoria. This led to a spike in trading of spot quarter cap contracts, as illustrated in Figure 3.7.

⁴⁴ Consultation paper submission: AGL, p. 3; EnergyAustralia, p. 2.

Figure 3.7: ASX spot quarter cap contract reaction to pre-dispatch prices



Source: AEMC analysis of ASX data

AEMC analysis suggests that this reaction to high pre-dispatch prices occurs sporadically throughout the year, but when it does happen it is highly valuable to the market. Participants also commented that being able to leverage an existing, liquid market is important for this occasional optimisation.

While there may be some barriers for smaller participants without the capital requirements to trade these products, if a STFM is introduced it would likely cannibalise this trading, and remove liquidity from this existing ASX market. One broker suggested that smaller participants who may not have access to the ASX market, tend to be less sophisticated and unlikely to actively manage their hedging, preferring products such as load following hedges instead. That said, there may be a small group of participants on the cusp between not actively optimising their risk, and unable to afford to participate in the ASX for which a STFM might be attractive.

Several submissions noted that where short term contracts trade on the OTC market, they are generally bespoke and infrequent.⁴⁵ ERM Power noted that they had tried to sell short term contracts on the back of their gas OCGT in Queensland, but there was limited demand. In conversations, they noted that if demand was to develop, they would be willing to foster a trial market for short term products through the regular financial market processes.

Finally, several stakeholders noted the introduction of an actively traded STFM is unlikely to substantially affect commitment decisions for gas powered generators.⁴⁶ This is because whether they are contracted under a quarterly cap or a short term cap, they will need to decide either way whether they will generate or not. OCGTs currently manage their gas commodity requirements and decisions on a 5-minute basis, and will be seeking to optimise their generation and profit regardless of the length of the contract they are defending.

3.7 Demand for short term trading in other markets

As outlined in chapter 1, voluntary short term markets are traded regularly in both Western Australia and Europe. This section explores these markets in more detail and the reasons why demand could be different to the proposed STFM.

3.7.1 Understanding the European energy markets

European electricity markets operate power exchanges with a market design that induces greater levels of short term trading than the levels that occur in the NEM. In contrast to the NEM and American markets, dispatch in European energy markets is the output of net forward trades between market participants.

The energy market in Great Britain (GB) is an example of a European-style power exchange, where trading short term contracts occurs independently of the system operator. The GB energy market relies predominantly on self-dispatch system where buyers and sellers contract their positions ahead of time either through bilateral contracts or the futures market.

Market participants in the GB energy market have access to day-ahead power exchanges, which begin trading 48 hours before dispatch. There are two power exchanges run by APX (owned by European Power Exchange SE) and N2EX (owned by Nord Pool Group). Through the EU Third Energy Package, these exchanges are also coupled with North-Western Europe, South-Western Europe, and the Baltic energy markets.⁴⁷

Market participants are also able to continuously amend their positions through the APX exchange until an hour before dispatch. At that time (known as 'gate closure'), the market is closed and market participants submit their expected generation production and demand consumption profiles over the forthcoming trading period to the National grid electricity system operator. They can also submit bids and offers to vary their positions to the system operator, who can call upon them to correct any imbalances and manage congestion (the balancing mechanism).

⁴⁵ Consultation paper submissions: AGL, p. 3; EnergyAustralia, p. 1; Engie, p. 2; ERM power, p. 1; Stanwell, p. 3.

⁴⁶ Consultation paper submissions: EnergyAustralia, p. 2; ERM Power, p. 2; Snowy Hydro, pp. 2-3.

⁴⁷ FTI-CL Energy, *Review of potential electricity wholesale market design changes for the NEM*, 16 January 2018, p. 36.

If a market participant generates or consumes more or less electricity than the net position they have contracted for, they are exposed to the imbalance price, or 'cash-out', for the difference. The cash-out price is the (negative) incentive on market participants designed to minimise the amount of balancing the system operator must perform and ensure demand is met.

3.7.2 Differences between European markets and the NEM

There are several differences between European markets and the NEM that could impact the demand for short term hedging products. These differences are both structural and behavioural in nature.

European energy markets are all net pool, while the NEM is a gross pool market. In net pool markets, participants can make commitment decisions ahead of time, and trade around their positions in the shorter term via intra-day markets and products. In gross-pool markets, all consumption and generation is traded separately through the physical spot exchange. Net financial contract positions are traded outside of the physical market, so they are not known by anyone but the parties themselves before, during or after dispatch. Additionally, the commitments made in bids ahead of dispatch can be (and are) changed relatively freely in the NEM, which reduces the attractiveness of short term trades. In both gross and net pool markets, the physical wholesale spot market acts as a balancing market.

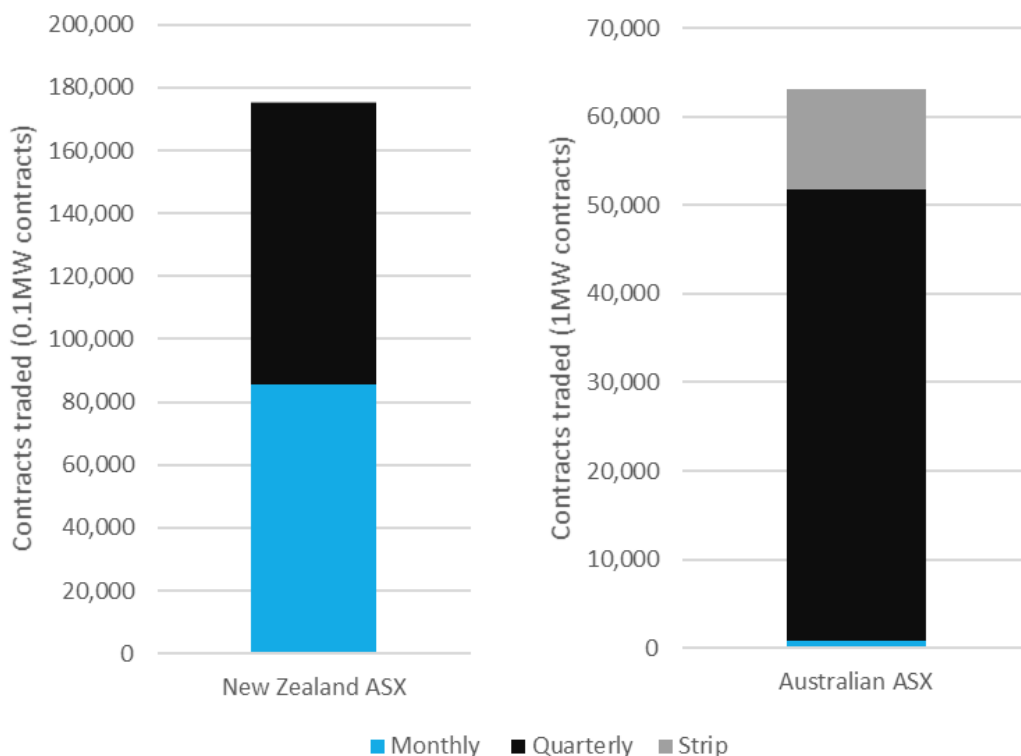
A further difference is that European markets operate through an interconnected grid, where numerous participants in various countries trade with each other. This level of demand and participation can support many products with sufficient liquidity to add value to participants. For example, in France there are 17 day ahead products (e.g. baseload, night, rush hour, etc.).⁴⁸

There are also differences in trading behaviour that would impact the demand for short term products in the NEM, compared to European markets. The trading behaviour associated with net pool arrangements and the higher disincentive for imbalanced positions appears to encourage significant turnover and liquidity of short term bilateral trades. These same incentives do not exist in the NEM, and NEM participants manage their risk in different ways (via physical commitment, vertical integration, longer term contracts).

Stakeholders in this rule change process also indicated limited demand for short term products. This suggests caution in assuming that overseas market experience is at all assured in the NEM. A useful example is the New Zealand electricity market, where monthly electricity derivatives are traded frequently. Based on this success, the ASX launched a monthly product in the Australian market. However, despite similar incentives existing across both markets, the monthly products have not been widely traded. Figure 3.8 below illustrates the differences in traded products in the New Zealand ASX and the Australian ASX.

⁴⁸ For the latest data on the day ahead products on the epex spot exchange see: <http://www.epexspot.com/en/market-data/dayaheadauction>.

Figure 3.8: ASX electricity contracts traded in 2018 in New Zealand and Australia



Source: ASX Energy data; New Zealand Electricity Authority

Note: In New Zealand the standard ASX contract size is 0.1 MW, whereas in Australia the standard ASX contract size is 1 MW.

Therefore, given the structural and behavioural differences across markets, it could not be assumed that, if a voluntary STFM were to be introduced, it would trade in the same way as these other markets.

3.8 Stakeholder views on draft determination

Six stakeholders made submissions on the draft determination. Of these, five submissions from market participants agreed with the position proposed in the draft determination — that there was currently limited demand for short term hedging products in the market.⁴⁹ However, AEMO stated that there could be demand for these products, and this demand would further develop in the future.⁵⁰

⁴⁹ Draft determination submissions: AGL, p. 1; Energy Queensland, p. 1; ERM Power, p.1; Snowy Hydro, p. 1; Stanwell, p. 1.

⁵⁰ AEMO, draft determination submission, p. 1.

Energy Queensland noted that there would be no material benefits to consumers from an STFM.⁵¹ Snowy Hydro noted that market participants already hedge pricing risk using financial derivatives under the current frameworks and a voluntary STFM would make immaterial differences to the status quo.⁵²

AGL noted that short term contracts are harder to clear, as more information is available, with less forecast variability, which make it harder for counterparties to agree on a mutually beneficial price.⁵³

ERM Power stated the extensive consultation and analysis that occurred in the rule change process led to the accurate conclusion that the proposed STFM is unnecessary. ERM also agreed that a demand response mechanism or two-sided market may be more beneficial to the market than a STFM.⁵⁴

In its submission, AEMO noted several aspects of the draft determination that warranted reconsideration. AEMO suggested that, despite STFM prices being relatively high before a high priced event, an STFM would still be beneficial to participants as it would assist buyers to smooth volatility in spot prices. AEMO noted that average prices in the day-ahead STEM and WEM differ by less than \$2/MWh, but the standard deviation in balancing prices in the WEM was nearly 50 per cent higher than the standard deviation in STEM prices.⁵⁵

AEMO also stated that, unlike a STFM, the wholesale demand response mechanism currently being considered by the AEMC does not lock-in price certainty ahead of the regular spot market process. AEMO noted that evidence from a joint AEMO-ARENA demand response trial showed that some demand response service providers require notice to vary their demand and may benefit from a mechanism to lock-in prices.⁵⁶

Finally, AEMO cautioned the 'point-in-time' observations about the lack of demand from gas peakers, noting that the Commonwealth Government's Underwriting New Generation Investment Scheme has underwritten two gas peakers for two independent operators that do not have larger generation portfolios and might benefit from a STFM.⁵⁷

3.9

Analysis of submissions to the draft determination

AEMO's submission to the draft determination, suggested demand for short term hedging products could develop with potential growth of wholesale demand response and the entrance of two gas peakers into the market. The Commission does not disagree that demand could develop in the future. However, extensive consultation with a broad range of participants, and analysis presented in the draft determination revealed limited demand for short term hedging, which would lead to an illiquid market if the STFM were introduced in

51 Energy Queensland, draft determination submission, p. 1.

52 Snowy Hydro, draft determination submission, p. 1.

53 AGL, draft determination submission, p. 1.

54 ERM Power, draft determination submission, p. 1.

55 AEMO, draft determination submission, p. 2.

56 AEMO, draft determination submission, p. 3.

57 AEMO, draft determination submission, pp. 3-4.

the short to medium term. This position was supported by all submissions to the draft determination received from market participants.

Further, AEMO noted that participants in the AEMO-ARENA demand response trials may benefit from short term hedging and the ability to lock-in prices. However, five of the eight participants of these trials submitted through this rule change process, stating that the introduction of a STFM is not necessary.

3.10 Commission decision

The rule change proposal identified three groups of participants that would benefit from the introduction of a STFM, namely intermittent renewable generators, demand response participants and gas powered generators. The majority of market participants submitted that there was currently limited demand for short term hedging products, and while there is some trading of these products on the OTC market, it is largely bespoke and sporadic.

In the draft determination, the Commission analysed the potential users of a STFM and remains of the position that in the current market, demand for short term hedging products is limited and bespoke. Further, where there is demand for additional hedge protection from expected high priced events, participants use the ASX spot quarterly contracts.

While there is potential for demand to develop at some point in the future, given the limited demand for short term hedging products, the Commission's view is that if introduced, the STFM would not be actively traded on, and hence would not materially improve risk management for participants, or enhance reliability or security of supply. As such, the Commission considers that a STFM would contribute to the NEO and be in the long term interests of consumers, and should not be introduced.

4 BARRIERS TO SHORT TERM HEDGE CONTRACT TRADING

In considering the rule change request, the Commission sought to determine if the current market mechanisms are sufficient, or efficient, in providing short term risk management products. This chapter assesses potential barriers to trading short term contracts; specifically:

- search costs — relates to costs involved in finding a counterparty, that is aligning a buyer and a seller of a particular product
- negotiation and prudential costs— relates to the time and money spent on aligning the details of a trade including the price, quantity, timing, settlement and prudentials.

The chapter then provides an overview of the typical process of financial product development, before concluding that:

- while there are some barriers to short term trading that can be overcome, others (for example prudential requirements) exist for a reason
- the traditional process of developing financial products appears to be operating well and should be able to facilitate short term trades if demand increases.

4.1 AEMO's view

AEMO stated in the rule change request that integrating settlement and clearing systems across a STFM and spot market could reduce barriers to market participation.⁵⁸

AEMO expects the search and negotiation costs involved in short term trading may be reduced by a STFM.⁵⁹ This comes from reducing the costs associated with searching for counterparts, agreeing contract specifications and arranging separate collateral for each short term bilateral trade. The efficiencies that may be gained by a STFM, when compared to OTC trading, is it may increase market participation by smaller generators and demand side participants.

Regarding prudential obligation costs, AEMO noted that collateral requirements would be expected to be lower in a centrally managed STFM compared to maintaining collateral with many potential counterparts. Additionally, there would be lower transaction costs for participants through:

- a single invoice and net payment
- the ability to offset settlement exposures between the two markets
- potentially the ability to make a single security payment that covers both markets.⁶⁰

Additionally, AEMO noted that depending on the eventual design and products on the STFM, financial licences or exemptions under Chapter 7 of the Corporations Act 2001 (Cth) may be required to operate a STFM, given it includes the provision of financial services—operating a

58 AEMO, Short term forward market rule change proposal, p. 3.

59 AEMO, Consultation paper submission, p. 3.

60 AEMO, Short term forward market rule change proposal, p. 3.

financial market and a clearing and settlement facility.⁶¹ To include the maximum number of participants and to provide regulatory certainty, AEMO considers it worthwhile considering a market wide financial services licence exemption for AEMO, the products and participants.

4.2 Stakeholder views on the consultation paper

A number of retailer and generator submissions to the consultation paper stated that a well-developed financial market currently exists and that the existing market mechanisms are sufficient to meet demand and enable participants to manage spot price volatility.⁶² Stanwell and Enel X also questioned what issue within the market the rule change proposal was attempting to solve. They went on to state that the need for additional risk management options, such as a STFM, is not apparent.⁶³

Enel X did note that prudential obligation costs, by their nature, tend to be a barrier to entry for smaller participants.⁶⁴ Mondo and Enel X also stated that at the user level the need for an Australian Financial Services Licence (AFSL) could present an impediment to operating in a STFM.⁶⁵ However, Mondo also stated that financial regulatory oversight may be needed to protect the interests of users and a STFM in the long-term.

EnergyAustralia, the AFMA and ERM Power also noted that a centralised STFM could be developed by the market in time if participants saw sufficient demand and value in one.⁶⁶ EnergyAustralia urged the Commission to not reduce any financial barriers to entry for participants. These barriers exist to protect customers, and other participants, in a volatile and risky market.

No submissions commented that there were unreasonably high search costs due to difficulties dealing with brokers or their costs as reasons why the current market mechanisms are inefficient or insufficient to meet the current level of market demand.

4.3 Draft determination analysis

The draft determination analysed the nature and extent of barriers to short term trading mentioned above. The analysis included:

- search costs, including visibility and broker incentives for short term trading
- negotiation and prudentials requirements, including financial market regulations, ISDA requirements and margining
- financial product development.

61 *ibid*, p. 5.

62 Submissions to the consultation paper: Powershop/Meridian, p. 2; AEC, p. 2; ERM Power, pp. 2-4; EnergyQueensland, p. 1; Engie, p. 2; AGL, pp. 1-2; Stanwell, p. 3; SnowyHydro, p. 1; EnergyAustralia, p. 1.

63 Submissions to the consultation paper: Stanwell, p. 3; Enel X, p. 1.

64 Submission to the consultation paper, p. 4.

65 Submissions to the consultation paper: Enel X, p. 4; Mondo, p. 2.

66 Submissions to the consultation paper: EnergyAustralia, p. 1; AFMA, p. 2; ERM Power, pp. 1-2.

4.4 Search costs

Additional to exchange traded products, market participants can trade short term products bilaterally (directly trading with another business) or through brokerage services. These methods of trading will incur some form of search costs, which is explored further below.

4.4.1 Visibility of short term hedge contract trading

There is little public visibility of the quantity of short term hedge contract trading that occurs today.

The annual AFMA *Electricity Derivative Turnover Report* is a voluntary survey compiled from 'the principal participants in the OTC electricity derivatives market.'⁶⁷ To date, this report has not provided any information, quantitative or qualitative, on short term trades occurring in the OTC market (bilateral or brokered trades).

Noting that no participants raised issues with search costs in their submissions, in general participants would have higher search costs finding a counterparty for an OTC bilateral trade compared to an exchange trade. This could be more significant for a short term contract which is more time-sensitive than a longer term product.

In November 2019 the COAG EC tasked the AEMC and AER to work with the Australian Financial Markets Association (AFMA) to improve the visibility of electricity OTC trades and to consider how to enhance the AER's contract market monitoring powers. Similar work is being undertaken in the gas market by COAG Energy Council, where all OTC trades with tenure less than a year are to be reported on the gas bulletin board.⁶⁸ Better market visibility would assist participants to understand the types of products available and the pricing of those products. This would be of most value to small participants or prospective investors, as these groups are less likely to have subscriptions to brokerage services, relationships with brokers, or broad and established industry relationships.

4.4.2 Brokerage services and their incentives to trade short term products

Traditionally, market participants reduce their search costs for OTC contracts by using a broker, and this includes short term products. A broker finds a willing counterparty for a particular contract at an agreeable price. Brokerage services have large networks and, in theory, will be able to find a counterparty more effectively and efficiently than a market participant, especially smaller participants who typically have fewer relationships with participants.

The Commission has found that the typical energy brokerage model would need to adapt to facilitate a significant volume of short term trade. Currently, energy brokers earn a small amount for each megawatt of energy sold in each transaction. This is understood to be typically around \$0.03 per MWh for a quarterly swap contract trade, working out to be around \$65 for a 1 MW base quarterly contract.

⁶⁷ See: <https://afma.com.au/data>.

⁶⁸ COAG EC, *Measures to Improve Transparency in the Gas: Market COAG Regulation Impact Statement for consultation*, p. 56. Available at: <https://www.aemc.gov.au/rule-changes/market-making-arrangements-nem>.

If the same transaction fee were applied for a short term contract, the broker would earn considerably less due to the smaller volume of energy sold in a week-ahead or day-ahead contract compared to volume of energy sold in a quarterly or yearly contract. For example, 1 MW daily and weekly base contracts would have commissions of \$0.72, and \$5 respectively. As such, there are currently poor financial incentives for brokers to facilitate short term trades. A price in the order of \$3 per MWh would be required for a broker to facilitate a short term trade and earn the same commission as quarterly swap contract trade. Understandably, some brokers told the Commission that they facilitate short term trades as part of a wider commercial relationship with clients, rather than any financial incentives.

However, new brokerage models can and have evolved, including subscription fees based services and a fixed fee per transaction. For example, one participant noted they have used a flat brokerage fee in the past when trying to sell short term products such as week-ahead swap products.

4.5 Negotiation, prudential and regulatory requirements

The time spent on negotiating the terms of the contracts, verifying the creditworthiness of the counterparty and complying with regulatory requirements are all factors that need to be met to engage in short term trading. This section discusses each of these elements and whether they are inefficient barriers to short term derivative contract trading.

4.5.1 Negotiation and ISDA agreements

All bilateral and brokered trades require some level of negotiation — be it regarding price, quantity, and delivery terms, or the legal conditions, prudentials and settlement details. As the legal, prudential and settlement aspects are similar across trades with the same counterparty, it is common for participants to establish standardised contracts that simplify these aspects of the trade. Most participants use the International Swaps and Derivative Association (ISDA) Master Agreement electricity addendum to do this.

The ISDA Master Agreement sets out standard terms and treatment of prudentials that apply to all the transactions entered into between those parties. The terms of the master agreement do not need to be re-negotiated and apply automatically each time that a transaction is entered into with that specific trading partner. As such, the process of establishing an agreement with a counterparty is an important due diligence process for each business to complete before trading with one another.

The Commission notes that establishing an ISDA master agreement with each trading partner can be time-consuming and expensive. This is especially true for smaller businesses who require external legal advice to establish these agreements.

However, the materiality of this barrier depends on how widespread bilateral trading arrangements needs to be. That is, if participants generally trade with only a limited number of participants — as the Commission currently understands is current practice in the industry — then there are one-off set up costs that serve the majority of participants' trading needs. As market participants grow their market share, they can then add other ISDAs to the ones they have already set up.

4.5.2 Risk management in markets

Default risk refers to the risk of a party being unable to fulfil its payment or debt obligations under a contract. Participants must be satisfied with the level of default risk presented in completing the trade before a trade can take place. Prudential requirements exist to provide the counterparty with confidence that, in the event a party defaults, they will be able to partially or fully recover the debt owed. These prudential processes are mandated by regulation and are at the core of financial operations of the market.

The way this risk is managed differs between a formal exchange platform, the OTC market and the markets operated with AEMO, notably the NEM and the Gas Supply Hubs (GSH). These approaches are set out below.

ASX market

The ASX uses a portfolio-based risk assessment (standard portfolio analysis of risk [SPAN]) to calculate its margining (prudential requirements). SPAN does this by assessing the maximum potential loss for a portfolio of derivatives, and matches the initial margin to cover this risk. The clearing house used by the participant to trade on the ASX would hold the required credit for trading. The total margin is made up of two components: the initial margin and the variation margin.

- The initial margin covers the maximum probable three-day move in the price of the futures contract, as assessed by the ASX.⁶⁹ The three-day initial margin parameter is set to allow sufficient time for the clearing house to trade out of the outstanding contracts of the defaulting party. This three-day initial margin parameter was established following calls from the Reserve Bank of Australia for the ASX's processes to align with international standards.
- The daily variation margin is an amount that is paid by a trader to cover an unfavourable move in their futures position. Each day futures positions are revalued, or settled to market.⁷⁰

OTC market

Participants using OTC contracts often rely on the credit rating of the counterparty and the bilateral relationship to account for default risk. For example a company may trade with an 'AA' rated counterparty, but not a 'BBB' rated company. This decision would effectively be binary in nature and based on the parties' internal risk policies. This process is generally aided using a standard ISDA contract with the AFMA electricity addendum. The ISDA sets out a framework and can facilitate the details of dealing with default risk.

- In the instance of a default, the contract should allow legal recourse to recover any outstanding debt, however the non-defaulting party would join other debtors in the recovery of liabilities.
- A core difference between an OTC contract and an ASX contract is that it generally does not have daily variation margining. Rather, depending on the specifics of the contract, the

⁶⁹ See: <https://www.asx.com.au/products/index-derivatives/futures-margins.htm>.

⁷⁰ Ibid.

contract amount can accumulate with the liable participant paying the counterparty the full amount at the end of the settlement period.

NEM

Prudentials in the NEM are calculated on a probability basis using a maximum credit limit. The maximum credit limit (MCL) is defined as participant's outstanding limit plus their prudential margin and must not exceed the prudential standard which is currently set at two per cent probability of exceedance (PoE).⁷¹

- A participant's **outstandings limit** is the level of credit support needed to cover liabilities for all trading periods that have occurred but not yet been paid for. The purpose of this is to ensure that the NEM is not exposed to a prudential risk inconsistent with the prudential standard during the outstandings limit time period, which is 35 days.
- The **prudential margin** reflects the credit buffer to cover accruing liabilities in the NEM during the reaction period (the seven days it takes to curtail any further liabilities accruing from a failing market participant). The purpose of this margin is to ensure that the NEM is not exposed to a prudential risk inconsistent with the prudential standard during the period of suspending a defaulting market participants from the NEM.

Gas Supply Hubs

Prudentials for the GSH are calculated based on the value of each trade. The counterparty is compensated at 25 per cent of the trade value should a buyer or seller default during the forward period. This amount is intended to compensate the counterparty who may then have to go back to the market at short notice to either sell/buy the gas because of the failed transaction. The buyer then needs to pay 100 per cent of the transaction value six days before the gas day, while the seller provides 80 per cent of the value of the trade at two days before delivery.

4.5.3

Prudential requirements as a barrier to trading

Prudential requirements can act as a barrier to trading any financial product because the initial margin required for ASX trades and the credit rating or ISDA requirements for OTC trades can be material for market participants, especially smaller participants. The internal risk management policies of larger businesses may also preclude it trading with small businesses due to the higher default risk, or may require greater credit assurances than those from other larger businesses.

The current practice of trading quarterly hedge products for a small portion of the spot quarter has higher margining requirements than a specific weekly or daily product would have. This is because a participant must pay the amount of collateral equal to trading for the entire quarter rather than for the period that the participant will hold the contract for. This is potentially a barrier to some smaller participants wanting to use these contracts for short term hedging requirements.

⁷¹ PoE is a statistical measure used to describe the probability that a particular value will be met or exceeded, in this case set to be in two per cent of cases.

However, the prudential requirements are an important system safeguard, particularly in relation to smaller participants. Smaller participants that are less established are generally more likely to default than larger participants — evidence of this is that the four most recent retailer of last resort occasions had fewer than 3,000 customers.⁷²

4.5.4 Prudential requirements under a STFM

If introduced, a STFM would require some form of appropriate prudential mechanism to deal with default risk. Additionally, regardless of how the market is integrated with existing AEMO markets, or if another business was to operate a STFM, prudential requirements may act as a barrier to entry for smaller market participants.

In its rule change proposal, AEMO suggested that there would be unspecified efficiencies from having centrally managed prudentials with the NEM. However, the Commission questions the materiality of any efficiencies from pooling prudentials of AEMO-operated wholesale and STFM markets. For example, existing prudential credit provided for a participant's NEM obligations can only be leveraged if the collateral provided to AEMO exceeds the collateral required for NEM operations. This would be unaltered if participants traded contracts on an AEMO-operated STFM.

Finally, while there are several options on how these prudentials are calculated, which can be more or less onerous on market participants, the requirements would likely need to be similar to those used on the ASX, which hosts similar products and protects against similar risks.

4.5.5 Financial market regulatory barriers

Additional to prudential requirements, there are a number of regulatory processes that financial markets and clearing facility operators, products and participants have to comply with under Chapter 7 of the Corporations Act 2001 (Cth). These are important measures that protect other market participants, consumers and the broader economy.

An Australian Financial Services Licence (AFSL) is one of these protections and is granted by Australian Securities and Investments Commission (ASIC). Gaining an AFSL may be challenging for some smaller retailers, generators and demand side participants, as noted above by Enel X. This is because ASIC takes a necessarily rigorous and detailed approach to assessing AFSL applications, which is costly in both time and money.

Conversations with brokers revealed that they often trade on behalf of smaller participants to assist them in overcoming the requirements of holding an AFSL. The challenge of obtaining an AFSL would apply to participants trading in a STFM, as much as it does already on exchanges or via the OTC market.

The Commission agrees with EnergyAustralia that these licences, together with the other important financial regulation under the Corporations Act 2001 (Cth), should not be varied for the implementation of a STFM regardless of the operator of such a market.⁷³ These

⁷² Urth Energy in February 2017 had 2,000 customers, COZero in 2 July 2018 had no customers, Go Energy in April 2016 had 2,200 customers and Flow Systems in February 2019 had 2,000 customers at the time the AER revoked their licences and transferred their customers under the retailer of last resort arrangements.

⁷³ EnergyAustralia, submission to the consultation paper, p. 3.

regulations are required to safeguard the proper function of any financial market. They also check that businesses have the appropriate compliance and processes in place prior to it engaging in trades that may impact the confidence or function of the market. This guards consumers against any operator, participant or broker participating in a financial market without proper risk management safeguards.

The role of financial market regulation and its application to AEMO is discussed further in section 5.5 and 5.6 of this final determination.

4.6 Financial product development

AEMO noted in its rule change request that specific brokered products such as AGL's wind firming product and the ERM solar firming product are examples of standardised OTC products that are adapting to changing market conditions.⁷⁴ In the Commission's view, market-led financial product development is preferable to regulators designing financial products, especially in instances where there is a potential for overlap with existing commercial markets.

For a product to be listed on an exchange service, such as the ASX, both the ASX and ASIC require evidence of a well-established product with proven demand. The typical development pathway for a hedging product to gain these two characteristics and be able to be listed on an exchange service is:

1. A market participant develops the basic product contract terms and conditions, such as a set strike price.
2. That market participant sells the contract bilaterally to test its viability, with any requisite changes to its contract terms and conditions made as required.
3. That market participant hosts the product with a broker who begins selling the product with other participants in the OTC market on their behalf.
4. The product gains some interest and a standard contract is made, typically through an AFMA working group, to allow faster and more regular trading in the OTC market.
5. The market asks an exchange service to standardise and list the product as part of their suite of products, to reduce transaction costs now that the contract has been traded enough times that there is a known level of demand and the product's contract terms and conditions are well-established.
6. The product is listed and traded on the exchange service.

An example of this process occurring in the marketplace is set out in Box 1 below.

BOX 1: SOLAR SHAPE FIRMING HEDGE PRODUCT

In 2018 ERM Power identified an opportunity to introduce a hedging product that facilitated the management of risks associated with firming solar assets. It worked collaboratively with

⁷⁴ AEMO, Rule change request, p. 7.

the brokerage service Renewable Energy Hub (part of TFS Australia) to develop and promote the basic product contract. This included determining the time and subsequent amount of electricity produced by solar generators during the day, also known as the solar shape.

With an initial product contract, ERM Power began to trade solar firming hedging contracts through the Renewable Energy Hub, who hosted the product for them.

As of end of September 2019, TFS has traded 81 Solar Shape and Inverse Solar Shape swap contracts. The total volume of these contracts transacted to date (not time weighted) has been 510MW. These have consisted primarily of quarterly contracts, but 10 trades have been in calendar year contracts (across calendar years 2019, 2020, 2021 and 2022).

This product has traded numerous times now with approximately 10 parties having contracted this product with ERM Power through the Renewable Energy Hub. This product now trades more broadly throughout the OTC contracts market with growing interest in these contracts. Additional to this, new contract types linked to variable and dispatchable clean energy are under development by Renewable Energy Hub due to the success of the solar shape firming hedge product. The Renewable Energy Hub also recently received \$845,000 in grant funding from the Australian Renewable Energy Agency to further develop new financial products specifically targeted at renewable generators.

The Commission understands that both the AFMA and ASX quarterly product development working groups have begun discussions about the standardisation of the solar firming hedge product.

This is seen as being a successful innovation in the electricity contracts market with the market leading the way on the types of risk management products that are required. Allowing the market to develop the product over time ensures it meets market needs and risk management profiles and policies.

Source: Commission discussions with TFS and ERM Power.

A number of bespoke short term products that have been discussed as part of this rule change. These include intra-day swap hedges, week to day long swap and cap products, hour long swap products, energy-only (a swap minus the cap) and \$100-\$300 gap products in the week- to day-ahead period. Some of these products are already being traded sporadically and in low volumes. If more demand was to emerge, as discussed in previous chapters, then the products that the market demands could follow a similar process to that observable with the solar firming hedge product.

Further, as noted in chapter 3, in discussions with the Commission, ERM Power suggested that if demand were to develop, it would be willing to foster a trial for short term hedging products to test and develop this product. Additionally, the Financial & Energy Exchange (FEX) has told the Commission that they would consider the introduction of weekly products if there was sufficient demand.

4.7 Stakeholder views on the draft determination

Of the six submissions received on the draft determination, the five received from market participants agreed with the Commission's draft determination that there were no material barriers to the market developing short term hedging products, should sufficient demand arise.⁷⁵

Snowy Hydro noted there were not sufficient issues in the market to warrant a STFM.⁷⁶ AGL noted that under the current market arrangements there is no need for a specific short term forward market, and should changes in the benefits of short term hedging products occur, they are confident the market will meet these requirements through new products offered on energy exchanges or brokerages.⁷⁷ Similarly, Energy Queensland noted that a well-developed financial risk management framework already exists in the market to enable participants to manage spot price volatility.⁷⁸ Stanwell stated that it was the role of the private sector, rather than the market operator to provide financial markets for market participants and other financial players.⁷⁹

In its submission, AEMO did not identify any specific barriers to the private sector introducing and facilitating the trade of short term hedging products.

4.8 Analysis of submissions to the draft determination

In submissions to the draft determination, no submissions raised any material barriers for the existing exchanges and brokers from delivering short term hedging products, if sufficient demand were to develop.

4.9 Commission decision

The Commission remains of the view presented in the draft determination that the financial contracts market is generally operating sufficiently and efficiently, and allows market participants to manage its risk appropriately.

It remains in both the longer and shorter term contracts markets that some participants may not be able to buy or sell certain products at price points that it considers advantageous. This is a function of a market and not a failure of its function or development. A participant not being able to buy or sell a product because something has suddenly changed in its portfolio or circumstances is a natural part of business and should be accounted for in its risk management processes and practices.

The introduction of a STFM by regulatory intervention at this time is inappropriate given the ability and evidence of the current market developing innovative products to more effectively manage its risks as the wholesale market evolves. Therefore, the Commission is of the view that an introduction of a STFM would not contribute to the NEO, as it would be addressing an

⁷⁵ Draft determination submissions: AGL, p. 1; Energy Queensland, p. 1; ERM Power, p. 1; Snowy Hydro, p. 1; Stanwell, p. 1.

⁷⁶ Snowy hydro, draft determination submission, p. 1.

⁷⁷ AGL, draft determination submission, p. 1.

⁷⁸ Energy Queensland, draft determination submission, p. 1.

⁷⁹ Stanwell, draft determination submission, p. 1.

issue that is not material and achieving any benefits, whilst incurring some establishment and operating costs and therefore is not in the long term interests of consumers.

5 ADDRESSING BARRIERS TO TRADE

In chapter 3 and 4, the Commission determined that the case to introduce a STFM is weak, and would not likely contribute to the NEO because:

- there is limited demand for a new mechanism to provide short term hedging products, so if introduced the market would create costs with limited benefit
- there are limited barriers to using existing risk management tools, or for industry to introducing a similar market.

Without active trading none of the benefits of the STFM can be passed on to consumers, and if the market is capable of facilitating this trading, intervention may not be warranted.

However, both of the points made above could possibly change in the future, depending on market conditions. As noted in section 1.1.3, the idea of a STFM has been considered many times since market start. As such, this chapter explores the different options to address barriers to trading short term hedging products, and the respective benefits and drawbacks of an AEMO-operated STFM. The chapter concludes that while there are some benefits to an AEMO-operated STFM, the Commission would have some concerns about AEMO's operation of a financial market such as a STFM.

5.1 AEMO's view

In the rule change request, AEMO suggested the best way to improve short term trading was to introduce an AEMO operated STFM, that would be linked to existing NEM settlement and clearing processes.

AEMO stated that a STFM will provide an exchange platform to trade anonymous, standardised electricity contracts up to one week ahead of the trading day. The STFM would complement the existing suite of hedging options by adding short term (weekly, daily, hourly, half hourly) electricity hedge contracts as an option for market participants and support management of longer term contract positions.⁸⁰

It noted that National Electricity Law (NEL) changes may be required to establish an AEMO-operated STFM.⁸¹ Further, AEMO identified it may need the following licences or exemptions to operate a STFM:

- the business of providing financial services; which includes dealing in financial products, providing financial product advice or making markets in financial products (section 911A)
- operating a financial market (section 791A)
- operating a clearing and settlement facility (section 820A).⁸²

⁸⁰ AEMO, Rule change request, p. 3.

⁸¹ AEMO, Consultation paper submission, p. 2.

⁸² AEMO, Rule change request, p. 4.

AEMO suggested to include the maximum number of participants and to provide regulatory certainty, it may be worthwhile to consider the path in which a market wide exemption is obtained for AEMO, the market, the products and participants.⁸³

AEMO stated that integrating settlement and prudential requirements between the STFM and the NEM spot market could lower transaction costs for participants through:⁸⁴

- a single invoice and net payment
- the ability to offset settlement exposures between the two markets
- the ability to potentially make a single security payment that covers both markets.

Collateral requirements would be expected to be lower in a centrally managed STFM compared to maintaining collateral with many potential counterparts. AEMO also noted that if a party other than AEMO were to operate the STFM, that any incentive offered to a third-party to operate the market would need to result in lower overall cost as compared to an AEMO-operated STFM.⁸⁵

5.2 Stakeholder views on the consultation paper

The Commission included questions specifically on this topic in the consultation paper regarding the possible design of a STFM should it be deemed appropriate to introduce such a market. While the Commission did not receive answers to all the questions posed in the consultation paper, eleven stakeholders made submissions questioning the role of AEMO as operator of a STFM.

A number of retailers, network businesses, industry bodies and the AER noted that, should the rule change proceed, AEMO should not be the operator of a STFM.⁸⁶ Rather, they suggested that a specialist, independent financial market business (like the ASX or FEX) should be the operator of the STFM.

The Australian Energy Council (AEC) further stated that AEMO's role is to operate and administer the NEM and that its activities should not extend to operating a forward market.⁸⁷ This is because there "are significant financial licence and markets issues to be overcome [and,] while there may be minor synergies from AEMO operating the market, there is no unique requirement for AEMO to be the operator".

The AER also stated that the development of a STFM should, where possible, avoid unnecessarily impacting incentives for commercial development of market products.⁸⁸ Similarly, Enel X argued that it was telling that the ASX has the ability to offer STFM products but has not done so and consequently recommended "the AEMC define a clear case for change before considering a regulatory solution".⁸⁹

83 AEMO, Rule change request, p. 5.

84 *ibid*, p. 11.

85 AEMO, Submission to the consultation paper, p. 4.

86 Submissions to the consultation paper: Powershop, p. 2; AEC, p. 3; EnergyQueensland, p. 2; AFMA, p. 2; AGL, p. 3; Stanwell, pp. 4-5; Enel X, p. 3; SnowyHydro, pp. 2-3; EnergyAustralia, pp. 2-3; AER, p. 4.

87 AEC, Submission on the consultation paper, p. 3.

88 AER, Submission on the consultation paper, p. 4.

AGL and EnergyAustralia had reservations about AEMO operating a STFM due to its role as the operator of the underlying physical market, and the subsequent allocation of credit risk to customers.⁹⁰ For financial trades the counter party credit risk is typically managed by a clearing house who uses prudential requirements to cover the potential losses of each trader. AEMO's risk exposure is unclear from its proposal, and consequently it is unclear what residual risk exposure customers and market participants would face. EnergyAustralia believed that the STFM would essentially shift price risks from the prospective trading parties to AEMO, and therefore consumers or other market participants.

Both AGL and Energy Australia also noted that although AEMO does manage some trading platforms, such as the gas Short-Term Trading Market (STTM) and the interregional Settlement Residue Auctions (SRAs), these products are incidental to the operation of the physical market. In contrast, a STFM would likely host standalone financial products.⁹¹

Stanwell stated that the licensing required to operate a financial market and trade financial products is necessarily "an onerous and time-consuming process which aims to ensure the integrity of Australian financial markets [but it] supports this rigorous licensing approach".⁹² Stanwell also stated that the Council of Australian Governments (COAG) "may have the power to intervene in the licensing approvals process and offer an exemption for a body such as AEMO", but Stanwell did not support this approach as it undermines the licensing process and gives special treatment to AEMO at the expense of private initiative.

The Department for Energy and Mining of the Government of South Australia and Shell were most supportive of an AEMO-operated STFM noting its experience operating, and possible integration with other wholesale energy markets.⁹³

Infigen and Mondo both noted that there a range of parties that could operate a STFM.⁹⁴ Mondo went on to list these options as AEMO, a private company (e.g. the ASX or an existing overseas ahead market provider), a new government owned company, or a private company with mixed government and private ownership.⁹⁵

5.3 Draft determination analysis

The following sections explore:

- possible mechanisms to address barriers to trading short term hedging products
- benefits and drawbacks of an AEMO-operated STFM
- AEMO's role in operating financial markets
- the role and impact of financial licensing requirements.

⁸⁹ Enel X, Submission on the consultation paper, p. 3.

⁹⁰ Submission on the consultation paper: Energy Australia, p. 3; AGL, pp. 3-4.

⁹¹ Ibid.

⁹² Stanwell, Submission on the consultation paper, p. 4.

⁹³ Submissions on the consultation paper: Department for Energy and Mining of the Government of South Australia, p. 1; Shell, pp. 1-2.

⁹⁴ Submissions to the consultation paper: Infigen, p. 5; Mondo, p. 3.

⁹⁵ Mondo, Submission on the consultation paper, p. 3.

5.4 Possible mechanisms to facilitate short term trading

As discussed in chapter 4, there are two potential areas where barriers to trading short term products could eventuate, namely difficulties in:

- finding a willing counterparty (search costs)
- negotiating the terms of the contract and the required prudentials (negotiation and prudential costs).

These barriers to trade could be overcome through a range of mechanisms, each with relative strengths and weakness. This section explores three possible mechanisms—a contract listing service, an expanded reallocation mechanism, and incentivising a third-party to facilitate a market. The following section then explores the relative benefits and drawbacks of the proposed AEMO-operated STFM as a mechanism.

The ability to implement each of the below options in the Rules would require further consideration of potential legal issues, including: whether the Commission has sufficient rule making power to implement the relevant option in the Rules; whether consequential changes would need to be made to the NEL; if additional functions or powers would need to be conferred on any of the market bodies under the relevant option and if AFSL requirements would apply to AEMO, another market body or market participants under any of the options.

5.4.1 Contract listing service

A contract listing service could be introduced to address search costs for short term trades. This model could operate as a simple website where participants would post bids and offers for various short-term electricity products. If a participant identifies a match or the potential for a match, the listing service would provide contact details of the counterparty. Then the participant would make contact with the counterparty to carry out their own negotiations on terms and conditions, prudentials, settlement and execution of trade, outside the listing service.

This model would be similar to the voluntary book build (VBB) mechanism proposed by AEMO to assist participants find willing counterparties for qualifying contracts under the Retailer Reliability Obligation (RRO).⁹⁶ This mechanism is explained in more detail in Box 2 below.

BOX 2: VOLUNTARY BOOK BUILD

AEMO is currently developing the book build procedures for the VBB, which outlines terms and conditions of participation in the VBB, including the steps for how a counterparty to a qualifying contract can make an offer in a VBB. The mechanism is designed to assist participants to secure qualifying contracts if a T-3 reliability instrument is made in a region with a forecast reliability gap.

The contract offer is likely to include the following contractual information:

⁹⁶ See Part H – Voluntary Bookbuild of Chapter 4A of the NER.

- contracting period (e.g. 1 January 2023 to 28 February 2023)
- region (e.g. NSW)
- offer validity period (e.g. offer available until 15 July 2020)
- gap trading intervals (e.g. 16:00 – 19:00 weekdays)
- qualifying contract type and firmness factor (e.g. Standard, 100% load following, 1.0 firmness factor)
- MW volume per trading interval (e.g. 10MW)
- project/capacity type
- reserve price (e.g. \$80/MWh).

Initially, AEMO proposes to allow registered market participants to post offers for contracts on the site, and prospective buyers would notify AEMO, who would match the potential buyer and seller. The book build will be an introduction service only and parties will complete negotiation, contracting and prudentials off-market.

Final procedures for the VBB are due to be published in December 2019 and the service is likely to become available in 2020.

Source: AEMO, Book Build draft determination. For more information, see: <https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Book-Build-Procedure>

In addition to the VBB, in the contract listing service participants could have visibility of recent trades executed through a de-identified 'report of trades' published regularly by AEMO or AER.

One of the benefits of an AEMO-operated listing service is it would be very low cost to implement, as it could leverage the VBB system when it is created. While the listing service model does not address any of the negotiation and prudential costs, it could be a low cost way to provide visibility to the market for changes in demand for short term contracts.

5.4.2 Expanding reallocations to include prudentials

Another potential mechanism that could encourage short term trades is to expand AEMO's current reallocation process to include an established methodology to calculate OTC contract prudentials, reducing some prudential and negotiation costs.

The gross pool nature of the NEM, in conjunction with hedging arrangements in place between market participants, gives rise to circular cash flows. The reallocation arrangements under the Rules can be used to avoid circular cash flows, and therefore minimise the associated settlement risk, between the market participants and AEMO by allowing the off-market commitment (for example, a OTC hedging contract) to be netted against NEM pool settlement. It can also lower credit support of a market participant who has an existing hedge contract in place.⁹⁷ This is then accounted for by AEMO in calculating the daily

⁹⁷ AEMC 2016, application of offsets in the prudential margin calculation, final rule determination, 22 September 2016, Sydney, p. 8.

prudential requirements for participants. In general, a contract processed through the reallocation mechanism has two elements:

1. notification of the reallocation to AEMO, which is then taken into account in calculating the NEM settlement amount and NEM daily prudentials of each of the transaction parties
2. the consideration payable between the transaction parties outside the NEM. This may include a payment for use of the counterparty's credit, payments based on the NEM spot price or a payment for the MWh reallocated.

At present, AEMO is involved in the first part of the transaction, but has no visibility of the second. An expanded reallocation model could extend the current mechanism to allow for:

- participants to find and negotiate a reallocation agreement with a counterparty off-market, assuming the contract would be for delivery using any existing reallocation mechanisms (physical or financial).
- AEMO's reallocation mechanism would be used to handle the prudentials/credit risk in a way that limits risk to counterparties.

For example, the participants would notify AEMO of the reallocation amounts or quantities, and of the right to receive or obligation to pay the consideration under the bilateral reallocation agreement so that this agreement could be taken into account in settlement and for the calculation of prudentials.

In discussions, AEMO suggested that the expanded mechanism would likely have similar implementation cost as an AEMO-operated STFM.

5.4.3 **Incentivise a third-party to operate a market**

Another possible mechanism to facilitate short term trading is for AEMO or the AER to incentivise a third-party to operate a short-term hedging market. As noted in chapter 3 and 4:

- FEX noted in discussions that they would consider introducing a weekly product if there was some underlying demand for the product
- ERM Power suggested they could trial a market for OTC contracts if there was sufficient demand.

However, if demand eventuated but for some reason these markets did not develop, an incentive scheme could be run to encourage a third-party provider to host and market the product. The AER or AEMO could run a reverse auction to contract out the market at lowest cost. Potential operators for the market could include the ASX, the FEX, electricity brokers or other OTC exchanges such as Mercari.

This approach would leverage existing expertise and systems from participants whose core business involves trading financial derivatives, such as those proposed to be traded under a STFM. While this model would have an explicit cost associated with incentivising the third-party, the relative cost of operating the market is likely to be low as it would leverage existing systems and processes. If this option were adopted, it could be used as an interim measure

to develop demand to the point where the market would operate like other electricity contract markets, and no longer require incentives.

5.5 The case for an AEMO-operated STFM

The rule change proposal makes the case that an AEMO-operated STFM would be an easy way to encourage trades of short term hedging contracts. While there are some benefits of an AEMO-operated STFM, there would also be some drawbacks. These are explored below.

5.5.1 Benefits of an AEMO-operated STFM

There are a number of benefits to having a STFM run by AEMO. In its submission to the consultation paper, AEMO suggests it would be able to run a STFM at lower cost and higher benefit than a third-party provider because:

- AEMO can draw on its operation and design experience from the gas markets which it operates
- many participants already have Trayport, reducing set up costs
- trade on a STFM could be integrated with NEM prudential and settlement systems, which may assist in collateral management
- AEMO is not for profit, and would not make a profit on trades.⁹⁸

These benefits should be considered relative to other options, such as a third-party operator model. For example, while AEMO does have experience operating markets for physical gas commodity and transportation contracts, other parties such as the ASX and brokers have extensive experience hosting financial contract markets. Similarly, most participants have as much, if not more experience using ASX and broker systems as Trayport. However, as noted in the consultation paper, there could be some synergies for participants that are purchasing gas commodity, transport and electricity on the same platform.

In terms of prudentials, both the rule change proposal and AEMO's submission to the consultation paper note that there could be benefits in integrating with NEM prudentials and settlement systems. As discussed in section 4.5.4, these efficiencies may not be significant. The Commission is of the opinion that, if introduced, the risk created from trading short term contracts should not be socialised to the market and should remain with the respective counterparties. This means a separate prudential calculation would need to be conducted for the new market. Sharing collateral between the NEM and a STFM would only occur if a participant had provided too much collateral for the NEM settlement account, and the excess was not required, in which case the excess collateral could be pooled to a STFM account.

Finally, there are likely to be benefits from a not-for profit organisation operating a STFM. Once the initial establishment costs are recovered, participation fees would only need to recover the marginal operation costs.

⁹⁸ AEMO, consultation paper submission, p. 4.

5.5.2 Drawbacks of an AEMO-operated STFM

There would also be some potential drawbacks from an AEMO-operated STFM, namely the risk introduced from the market, and the impact on existing markets.

Unlike an industry-led market, the risks introduced by a STFM will ultimately be borne by consumers. If the market does not trade, or the trade in the market is low, AEMO will be unlikely to recover the implementation costs through the STFM's participation fees. Alternatively, participation fees will have to increase, further dissuading trade. These costs will then be recovered from market participants, who will pass on the cost to consumers. While an AEMO-operated STFM is not motivated by profit, it is a good incentive to innovate and encourage trade. For example, the profit motive induces the ASX to dedicate resources focussed on working with participants and brokers to promote further trading on its exchange. Over the last year, these resources at the ASX have worked to develop trade on its ASX Victorian gas products. In an AEMO-operated STFM, this incentive to drive trade may be missing.

An AEMO-operated STFM would also have an impact on existing contract markets. As noted in section 3.6.1, some short term trades do occur on the ASX. Introducing an AEMO-operated STFM could reduce the trading of spot quarterly products. The Commission estimate that there was up to \$42 million worth of short term trades in NSW on the ASX in 2018-19.⁹⁹ An AEMO-operated STFM could cannibalise some trades in these existing markets, which may have repercussions for the rest of the existing contract market.

Stakeholders also raised concerns that the operation of a financial market would be outside of AEMO's remit, particularly if AEMO is exempt from financial market regulations as it would create an uneven playing field with existing exchange operators. These ideas are explored in section 5.6 and section 5.7 below.

5.6 Financial licensing requirements

In the rule change proposal, AEMO suggested that it be exempt from financial services license, market licence and clearing and settlement licences that may be required to operate a STFM.¹⁰⁰ However, as noted above, some stakeholders disagreed that AEMO should be exempt from these requirements.¹⁰¹

There are three potential licensing regimes that could apply to the operation of a STFM:

- Australian Financial Services Licence (AFSL)—which is required if (among other things) you provide financial product advice, or deal in a financial product
- Australian Market Licence—which is required if you operate a financial market, whether it be a traditional exchange or a non-exchange venue
- Australian Clearing and Settlement Facility Licence—which is required if you operate a clearing and settlement facility

⁹⁹ Estimate based on the sum of the face value of trades in NSW spot quarterly caps in 2018/19, when trading spiked about 44 GWh.

¹⁰⁰ AEMO, rule change proposal, p. 5.

¹⁰¹ Consultation paper submissions: AGL, p. 4; Stanwell, p. 4.

Each of these licences exist to protect participants, the market operator and the broader economy. These reasons are summarised in the Table 5.1 below.

Table 5.1: Australian financial licences

LICENCE	PURPOSE OF LICENCE
Australian Financial Services Licence*	<ul style="list-style-type: none"> • ensure those providing financial advice or dealing in financial products do all things necessary to ensure that the financial services covered by the licence are provided efficiently, honestly and fairly • ensure licence holder has adequate arrangements in place to manage your conflicts of interest • ensure licence holder and representatives complies with licence conditions, financial services laws and are competent to provide financial services • ensure licence holder has adequate dispute resolution system where financial services are provided to retail clients; have adequate risk management systems; and have compensation arrangements where financial services are provided to retail clients.
Australian Market Licence ^a	<ul style="list-style-type: none"> • ensure price formation on the market reflects genuine supply and demand • ensure the market is able to operate as intended with controls for undue aberrations or extreme volatility • ensure access to facilities and services is provided in a fair, transparent and non-discriminatory manner, including as to commercial terms • ensure sufficient information is available to enable informed use of the market, including about how the market operates • ensure operators have rules and practices so that admission of participants, users and products is designed to achieve high-quality outcomes—and apply appropriate ongoing expectations and transparency about when discipline, removal or suspension may occur • ensure operators have capacity and arrangements to administer and oversee the market so that market integrity outcomes are achieved
Australian Clearing and Settlement Facility Licence ¹	<ul style="list-style-type: none"> • maintain financial system stability so that existing and potential facility users can be confident that it will be available in the future and the risk of existing and potential facility users, operators of markets or other clearing and settlement facilities

LICENCE	PURPOSE OF LICENCE
	<p>being adversely affected by any failure of the facility is also minimised</p> <ul style="list-style-type: none"> • reduce systemic risk, counterparty risk, market risk, liquidity risk and operation risk so participants can be confident clearing and settlement obligations will be met promptly and properly in case there is a default; the risk of operators of the market or participants being adversely affected by a default are minimised; and systematic risk to the Australian financial system is reduced • ensure clearing and settlement services are provided in a fair and effective way so that participants can understand their obligations and the operation of the facility, and can identify, understand and evaluate the financial risks and costs associated with their participation in the facility • protect investors dealing in financial products and users of clearing and settlement facilities so participants have confidence in the operation of the facility are not disadvantaged by breaches in the operating rule and the facility has a good reputation.

Source: *ASIC, Regulatory guide 36—Licensing: financial product advice and dealing, June 2016, p. 33. ³ASIC, Regulatory guide 172—Financial markets: Domestic and overseas operators, May 2018 p. 10. ¹ASIC, Regulatory guide 211—Clearing and settlement facilities: Australian and overseas operators, December 2012, pp. 4-6.

ASIC has different levels of licensing for each of these frameworks, with more stringent requirements applying, where ASIC sees higher risks. Alternatively, the Minister can grant exemptions to these licences under particular circumstances.

ASIC will ultimately determine what level of regulation will apply and whether an exemption should be granted or not. However, noting that similar exchanges for financial products such as the ASX and FEX have to hold the relevant licenses, unless there is a strong rationale for exemption, these requirements could also apply to AEMO, as it would be carrying out the same function as these private exchanges.

5.7 AEMO's operation of financial markets

An issue raised by several participants was whether AEMO's role should extend to operating a market for financial derivatives.¹⁰² Since AEMO (then NEMMCO) was initially established, its primary function has been to operate and administer the physical wholesale exchange.¹⁰³ As the NEM was originally designed with the principle that the financial market should operate independently, but alongside the NEM, for AEMO to adopt a role of operating a purely financial market—particularly one that is similar to an existing financial market—would represent a notable shift in the design and operation of the NEM.

102 Consultation paper submission: Powershop, p. 2; AEC, p. 3; EnergyQueensland, p. 2; AFMA, p. 2; AGL, p. 3; Stanwell, pp. 4-5; Enel X, p. 3; SnowyHydro, pp. 2-3; EnergyAustralia, pp. 2-3.

103 National Electricity (South Australia) Act 1996, Part 5, Division 1, 49 (1) (a) - Historical version 1.7.2005 to current.

That said, AEMO does currently operate some markets or functions, related to the NEM, that have financial characteristics, including:

- Settlement Residue Auctions (SRAs)—running auctions for the right to settlement residue created by distortions by exporting electricity to a region with a different settlement price.
- Reallocation mechanism—matching debits and credits to participants settlement positions, usually represents an off-market financial contract.

While SRAs were established at the start of the NEM as a way to deal with cash imbalances and provide a means for participants to manage risks introduced with inter-region trade,¹⁰⁴ the other markets/functions were added to AEMO's function over time. Given some ambiguity over AEMO's role in operating a market with financial characteristics, there are some implicit qualities that could be considered.

- The operation of the market or function is a by-product of, or incidental to, AEMO's existing function in operating the electricity system and settlement, e.g. SRAs are incidental to the inter-regional settlement calculations in the NEM.
- The market or function could not be operated by a third party, or it is inefficient for a third party to do so, e.g. it would be inefficient for a third party to conduct SRAs given AEMO already has all relevant information and cash flows.
- The operation of the market or function creates no systemic risk, e.g. auctions SRA's creates no systemic risk, in that the payout to the auction winners is capped by the settlement residues that accrue as a result of price separation between regions.

These characteristics distinguish AEMO's role operating markets, such as the SRAs, from the operation of broader financial services. In the event that a decision is required on whether AEMO's function should be expanded to include the operation of financial services markets, then factors such as those noted may be useful to that consideration.

5.8 Stakeholder views on the draft determination

In its submission, AEMO suggested an AEMO-operated STFM would be relatively 'low-regrets' and low cost to implement.¹⁰⁵ Additionally, AEMO suggested that greater availability of short-term contracts would enhance risk management within monthly and quarterly products, and would not detract from these existing markets.¹⁰⁶

As noted in section 5.8, submissions from market participants suggested there was no need for an AEMO-operated STFM, suggesting existing risk management frameworks were adequate.¹⁰⁷

104 COAG Energy Market Review, 2002, Towards a truly national and efficient energy market (Parer Review), p. 130.

105 AEMO, draft determination submission, p. 2.

106 AEMO, draft determination submission, p. 4.

107 Draft determination submissions: AGL, p. 1; Energy Queensland, p. 1; ERM Power, p. 1; Snowy Hydro, p. 1; Stanwell, p. 1.

5.9 Analysis of draft determination submissions

As noted in the draft determination, while an AEMO-operated STFM may have some merit, it would also have some drawbacks. In its submission, AEMO did not present any new or additional evidence, and hence the Commission considers that the introduction of an AEMO-operated STFM would not be the best way to address barriers to trading short term hedging contracts.

5.10 Commission decision

In earlier chapters, the Commission establishes that the introduction of a STFM would likely not contribute to the NEO. However, as the STFM has been considered several times since market start, the Commission has looked at its potential benefits and drawbacks, alongside other ways that barriers to trade short term products could be addressed if demand for short term hedging and barriers to trading were to emerge. While there could be some benefits from an AEMO-operated STFM, the Commission note there would also be some drawbacks. Further, there are some potential legal and regulatory hurdles for AEMO to operate an STFM, for example several licences would be required to operate an STFM, and as with other parties that operate markets similar to an STFM, these requirements could apply to an AEMO-operated STFM, in lieu of a strong rationale for exemption.

6 IMPROVING THE RELIABILITY AND SECURITY OF THE SYSTEM

The 2018 Reliability Frameworks Review and the rule change proposal both note the primary benefit of introducing a STFM for electricity derivatives would be an improvement in commercial risk management for participants by providing market participants with more options to manage price risk and more price certainty. However, it could also indirectly assist in promoting reliability of the system. In addition, the Commission noted that a benefit of increased price certainty is that it may facilitate more demand response in the wholesale market.

Both the rule change proposal and AEMO's submission to the consultation paper suggest a STFM could also have some benefits for security. The Commission recognises that additional tools may assist AEMO to manage reliability and security. This chapter assesses the relative value a STFM might have on improving reliability and security.

For reliability to be meaningfully improved by the introduction of a STFM, it requires additional capacity (demand side or generation) to be built or bid into the NEM. For security to be improved, contracts or positions on the STFM need to be used by AEMO for short term coordination of resources.

This chapter briefly explores these issues and concludes that a voluntary STFM for electricity derivatives will likely have a negligible impact on reliability or security, particularly as there is currently little demand for short term hedging. Finally, the chapter briefly explores some enduring reforms to improve reliability and security in the NEM.

6.1 Improving reliability through additional generation

If a STFM attracts generation or demand response that would not otherwise have been bid into the market, it could improve reliability in the NEM at that particular time. For example, if a participant moves from contracting under a PPA or quarterly contract to a short term contract, then it would not improve reliability as there would be no change in physical generation or response being provided to the system—instead, there is simply a switch in contracting behaviour.

The AEMC's 2018 Reliability Frameworks Review initially suggested a STFM should be explored as it could facilitate trading of hedging products between participants in the short term and so may bring additional demand response capabilities to the market, promoting reliability.

Since this recommendation, the Commission has received three separate rule change requests to introduce a targeted wholesale demand response mechanism into the NEM. The Commission is currently considering these rule changes.

Given the Commission's draft determination supporting the introduction of some form of targeted wholesale demand response mechanism, the additional costs and benefits of a STFM for increasing reliability in the NEM should be measured relative to this likely change.

That is, would the introduction of a STFM incentivise any additional demand side resources to become available beyond those that will be enabled by a targeted wholesale demand response mechanism?

The Commission considers this is relatively unlikely, given the relative risks to participants of using each mechanism.

Although the design of a targeted wholesale demand response mechanism is not finalised, the intention is for participants to be directly rewarded for their demand response participation. In contrast, a participant selling contracts on a STFM would be liable for any shortfall that resulted if it was unable to meet the contractual commitments. This suggests a STFM for electricity derivatives would likely only incentivise larger and more sophisticated participants to participate in it, as they could manage individual contractual risks across their portfolio. These participants have indicated through submissions that they do not need a STFM for electricity derivatives to manage their risk.¹⁰⁸

Therefore, it seems unlikely a STFM would provide any additional reliability benefits, such as those from additional demand response.

Additionally, as discussed in chapter 3, a STFM is unlikely to bring in any new gas or renewable generation capacity, as the short term nature of the market and uncertain contribution that it would make to longer term risk management will not help participants finance new investment. Rather, if it was introduced and used by participants, it would mainly be to optimise positions in the short term.

6.2 Improving security through short term coordination

Even if a STFM does not incentivise additional generation, it may still be useful in assisting AEMO to manage system security. AEMO could use information from a STFM to supplement the information it receives in the short term projected assessment of system adequacy (ST PASA), pre-dispatch and dispatch processes, to assess generation availability and so the level of, and adequacy, of security services. To do this, the Commission suggests three preconditions would need to be met, namely:

- contracts would need to be actively and consistently traded, so that it had reasonable confidence that security services could be delivered via a voluntary market mechanism
- the contracts traded on the market would need to be firm, or at least have an understood level of firmness
- AEMO would need full visibility of contracts and the generation underwriting them.

For context, the Retail Reliability Obligation, which was introduced on 1 July 2019, meets these three preconditions, but provides this information to the AER (rather than AEMO).

The rest of this section explores the likelihood of meeting these preconditions under a STFM.

¹⁰⁸ Consultation paper submissions: AEC, p. 2; AGL, pp. 1-2; EnergyAustralia, p. 1; Engie, p. 2; EnergyQueensland, p. 1; ERM Power, pp. 2-4; Snowy Hydro, p. 1; Stanwell, p. 3.

6.2.1 Active trading of short term contracts

An actively traded and liquid market is important for AEMO to be able to have reasonable confidence about the availability of resources to maintain adequate security. For example, if the STFM is not used, or contracts are only traded a few times a year, then it would be expected that it would have minimal impacts on AEMO's confidence about generators providing system security services on the day.

Given the analysis in Chapter 3 indicating the low level of unmet demand for a STFM, and the fact that the proposal is for a voluntary market, the Commission considers that if a STFM were introduced, it is unlikely there would be active trading on the platform.

Further, parallels cannot necessarily be drawn to the level of trade in short term contracts in European markets, as these markets are net pool markets. As discussed in section 3.7, short term trading is likely to have a larger role in a net pool markets as participants would want to minimise their imbalance payments.

6.2.2 Firmness of contracts

For a STFM to be useful for AEMO to manage security, the contracts traded need to have a degree of firmness. For the system operator, firmness refers to the reliance that can be ascribed to a contract or position based on the ability of the underlying generation or demand response to be dispatched when required.

For participants, firmness is quite a different concept and relates to the extent to which a contract will decrease the buyer's exposure to spot price volatility. For example, a traditional PPA (associated with an intermittent generator) would be considered to have low levels of firmness, while a traditional swap or cap (sold by a thermal generator) would have a higher degree of firmness.

Comments from AEMO and participants suggest the contracts likely to be traded on a STFM would be firm in nature, being akin to traditional cap and swap products.

6.2.3 Visibility of contracts

Finally, to be factored into pre-dispatch or dispatch considerations, AEMO would need to have full visibility of the contracts. For example, AEMO would need to know where the participant is located and the type of generation to use the data for reliability or security considerations. As participants may own several assets in a region, which they could use to defend their position, this could create some issues, despite AEMO being the party that clears the market. Discussions with AEMO, revealed that contracts in the STEM are not factored into dispatch considerations. This could be due to issues in visibility of contracts, when a single contract is defended by multiple generators.

6.3 Stakeholder views on the draft determination

Submissions received on the reliability and security impact of the STFM were mixed. ERM power noted that, given the extensive reforms to the NEM being considered at the moment through the ESB's post-2025 NEM Review, work on establishing a STFM could be in vain due

to some of the designs being considered. Further, ERM Power noted that the implementation of a demand response mechanism or a two-sided market may prove to be of more benefit to the market than a formal STFM at this stage.¹⁰⁹

Snowy Hydro noted its concern about any potential use of financial contracts to manage security and reliability. Snowy Hydro noted that this would imply that AEMO would need confidential contract information to decide if a generator intends to run or not. It went on to suggest that AEMO should rely on stated intentions of participants rather than try to infer commercial drivers from a set of contract data.¹¹⁰ Snowy Hydro also noted that AEMO should continue to explore potential enhancements to current forecasting practices and processes before consideration is given to significant market redesigns.¹¹¹

Finally, AEMO stated that a STFM could provide a foundation for further evolution of ahead markets, which is being considered by the ESB.¹¹²

6.4 Analysis and final Commission position

The Commission recognises that the possible introduction of the STFM will need to be considered in the broader market design work being considered by the ESB. That said, given the above, the Commission believes that the introduction of a STFM, as proposed in the rule change request, will not materially assist AEMO in managing reliability or security challenges in the NEM.

Notwithstanding this, the Commission acknowledges the challenges of managing reliability and security as the energy transition continues. However, it considers that a STFM is not the best tool for the task.

The Commission considers enduring reforms that bring the NEM closer to a two-sided market would be of more value to participants and AEMO with respect to reliability and security. Further, the Commission is working with AEMO and the ESB in the consideration of the role of a physical ahead mechanism for security services, which may benefit AEMO in operating the NEM safely as it goes through a period of significant change.

109 ERM Power, draft determination submission, p. 1

110 Snowy Hydro, draft determination submission, p. 1.

111 Snowy Hydro, draft determination submission, p. 2.

112 AEMO, draft determination submission, p. 4.

ABBREVIATIONS

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AFMA	Australian financial market association
AFSL	Australian financial services licence
ASIC	Australian securities and investment commission
ASX	Australian securities exchange
Commission	See AEMC
COAG	Council of Australian Governments
CTP	Capacity trading platform
DAA	Day-ahead auction
DRSP	Demand response service provider
ERCOT	Electric Reliability Council of Texas
FEX	Financial and energy exchange
GB	Great Britain
GSH	Gas supply hub
ISDA	International Swap and Derivatives Association
MCE	Ministerial Council on Energy
MCL	Maximum credit limit
NEL	National Electricity Law
NEM	National electricity market
NEO	National electricity objective
NERL	National Energy Retail Law
NERO	National energy retail objective
NGL	National Gas Law
NGO	National gas objective
OTC	Over-the-counter
OCGT	Open cycle gas turbine
PoE	Probability of exceedance
PPA	Power purchase agreement
PRS	Proxy revenue swap
RRO	Retail reliability obligation
RFR	Reliability framework review
SCO	Senior committee of officials
STEM	Short term energy market (WA)
STFM	Wholesale electricity market (WA)
VBB	Voluntary book build

A LEGAL REQUIREMENTS UNDER THE NEL

This appendix sets out the relevant legal requirements under the NEL for the AEMC to make this final rule determination.

A.1 Final rule determination

In accordance with s. 102 of the NEL the Commission has made this final rule determination in relation to the rule proposed by AEMO.

The Commission has determined not to make a final rule.

The Commission's reasons for making this rule determination are set out in section 2.4.

A.2 Commission's considerations

In assessing the rule change request the Commission considered:

- its powers under the NEL to make the rule
- the rule change request
- submissions received during first and second round consultation
- the Commission's analysis as to the ways in which the proposed rule will or is likely to, contribute to the NEO.

There is no relevant Ministerial Council on Energy (MCE) statement of policy principles for this rule change request.¹¹³

A.3 Northern Territory

From 1 July 2016, the NER, as amended from time to time, apply in the Northern Territory, subject to derogations set out in regulations made under the Northern Territory legislation adopting the NEL (referred to here as the NT Act).¹¹⁴ The NT Act provides for an expanded definition of the national electricity system in the context of the application of the NEO to rules made in respect of the Northern Territory, as well as providing the Commission with the ability to make a differential rule that varies in its terms between the national electricity system and the Northern Territory's local electricity system.

The Commission has determined not to make a rule and, consequently, has not made a differential rule in respect of the Northern Territory.

¹¹³ Under s. 33 of the NEL the AEMC must have regard to any relevant MCE statement of policy principles in making a rule. The MCE is referenced in the AEMC's governing legislation and is a legally enduring body comprising the Federal, State and Territory Ministers responsible for energy. On 1 July 2011, the MCE was amalgamated with the Ministerial Council on Mineral and Petroleum Resources. The amalgamated council is now called the COAG Energy Council.

¹¹⁴ NT Act: National Electricity (Northern Territory) (National Uniform Legislation) Act 2015. Regulations: National Electricity (Northern Territory) (National Uniform Legislation) (Modifications) Regulation.