

Market power mitigation in the WEM

The market power mitigation mechanisms required for the new WEM

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Glossary

Abbreviation

AEMO

DER

EPWA

ERA

ERB

ESS

FCESS

GPS

LFAS

NAQ

NEM

RCM

Rent

RoCoF

Rules

RTM

SESSM

SRMC

STEM

SWIS

VCR

VOLL

WEM

Stands for

Australian Energy Market Operator

Distributed Energy Resources

Energy Policy WA

Economic Regulation Authority

Electricity Review Board

Essential System Service

Frequency Co-optimised Essential System Service

Generator Performance Standards

Load Following Ancillary Service

Network Access Quantity

National Electricity Market

Reserve Capacity Mechanism

Excess or super-normal returns, or economic profits, above outcomes under workable competition

Rate of change of frequency

The WEM Rules as at 1 February 2021, made under the Electricity Industry (Wholesale Electricity Market) Regulations 2004,

The Real Time Market (for energy and ESS) defined under the Rules

Supplementary Essential System Service Mechanism

Short run marginal cost

The Short-Term Energy Market defined under the Rules

South West Interconnected System

Value of customer reliability

Value of lost load

Wholesale Electricity Market

Executive summary

Introduction

This report has been prepared to assist the Energy Transformation Taskforce with its review of whether the existing market power mitigation measures are suitable for the new Wholesale Electricity Market (WEM). Drawing on a series of relevant reviews previously conducted in the WEM, it addresses:

- The market power mitigation mechanisms required for the new WEM;
- The optimal design of these mechanisms; and
- The rationale for these recommendations.

Overview of proposed changes

The key components of the proposed changes are:

- 1) **Clear and direct participant compliance obligations.** Market power mitigation compliance obligations would be applied directly on market participants, instead of indirectly via obligations on the ERA and AEMO. The obligations would carry over most aspects of the existing market power mitigation obligations (e.g. requirements to offer and trading conduct obligations), but with further amendments, including information disclosure and compliance reporting obligations. This addresses the absence of direct compliance obligations under the current regime.
- 2) **Reduced reliance on ex-post investigations.** Adopting best practice regulatory architecture, and improving regulatory certainty and effectiveness, by imposing ex-ante obligations on market participants to monitor and report on their own trading practices through auditable internal governance mechanisms and providing improved guidance as to acceptable and unacceptable trading conduct. This is intended to increase regulatory certainty and encourage efficiency benefits from more dynamic and responsive energy trading, under the new market arrangements and energy transformation. It seeks to address some of the disadvantages with the current reliance on a small number of lengthy and costly ex-post investigations with limited scope.
- 3) **Adopting an objective measure of market power.** A pivotal supplier test could be automated in the AEMO's surveillance systems and applied to the STEM and real time energy and ESS markets, for use by ERA in identifying participants to be subject to additional market power controls. This would ensure that market power mitigation obligations and market surveillance focus on the participants that meet a threshold defined by that test. Alongside other proposed measures, this is intended to address some of the identified shortcomings with the SRMC offer rules.
- 4) **Development of a 'safe trading' envelope,** defined by ex-ante ERA guidelines for participant offer construction and trading behaviour to improve the definition of safe and not safe trading conduct. Adapted for WEM conditions, the trading behaviour guideline could draw on the ACCC Guidelines on prohibited conduct in the NEM.¹ This consists of a series of examples of conduct

¹ ACCC. (2020).

that is acceptable or not acceptable. For complex or high impact situations, market participants would have an opportunity to engage with the ERA to clarify whether trading conduct is compliant. This could for example include market participants providing information on input costs, building on the information and methodologies developed under the present SRMC offer rules. The present SRMC offer rules would be replaced with a requirement to make offers consistent with those that the participant would have made in the absence of market power. The ERA's offer construction guidance would include how the ERA would determine reasonable offers in specific situations, including the principles laid out in EPWA's SRMC Directions Report.

- 5) **Using an effects test.** In line with recent changes to national competition law, the market power mitigation regime would be more concerned with avoiding the effects of the improper exercise of market power, and less concerned with the intentions or expectations of traders. Trading conduct rules would remain but thresholds for defining unacceptable conduct would be outcomes focused and could refer to hindering or preventing competition by the extraction of material super-normal profits (or 'rents') via trading behaviour (e.g. technical or economic withholding of capacity not otherwise covered by reserve capacity obligations), or damaging competitors in ways that reflect the exercise of market power.
- 6) **Guidance on the definition of unacceptable exercise of market power.** While care needs to be taken to avoid misapplying tests from national competition law, the Rules should seek to define what constitutes an unacceptable exercise of market power, defined as trading conduct that changes prices (and margins), or competitor costs and revenues, from levels that would have arisen in the absence of market power being exercised. This is consistent with the direction of competition frameworks in other markets in Australia and internationally. This is likely to be a matter that requires further work in consultation with the ERA.
- 7) **Changes to the processes for ex-post reviews of trading conduct.** The proposed adoption of a three-part test for the definition of the unacceptable exercise of market power implies that changes are necessary to the existing guidance and processes for ex-post reviews of trading conduct by the ERA. Significant process improvements can be applied including more certainty around the triggers for full investigation, and potentially earlier and greater disclosure of the matters being contested in ERA investigations. This would improve the transparency and effectiveness of the revised market power mitigation framework.
- 8) **Market power mitigation scheme clearly articulated in the Rules.** To improve clarity and consistency, the compliance obligations would be set out in a single coherent section in the Rules. This addresses a problem in the architecture of the current rules, where there are separate and specific requirements for each of the three relevant markets (sometimes with links to RCM arrangements). The present Rules architecture reduces clarity on how the overall market power mitigation regime operates across all relevant markets.

Main components of proposed market power mitigation arrangements

We propose to retain most aspects of the existing market power mitigation regime, including RCM availability requirements and ex-post ERA monitoring with some changes. Our recommended package has six limbs:

- 1) **Trading conduct obligations for market participants**, which:
 - a) Build on existing ‘good faith’ offer obligations, with additional guidance from ERA on what constitutes acceptable trading conduct;
 - b) Provide that market submissions must be consistent with submissions that would have been made in the absence of market power, rather than directly requiring offers to be at “short run marginal cost”; and
 - c) Require participants with market power above a threshold set by the ERA to retain records to support the rationale for their offers, and internal controls to support self-monitoring of potential market power exercise.
- 2) **ERA guidance on trading conduct**, including:
 - a) *Offer construction guidelines* that set out how the ERA would determine reasonable offers, including examples of how variable costs would be incorporated in different situations.
 - b) *Trading behaviour guidelines* that provide examples of trading behaviour and whether the behaviour would comply or not comply with the relevant trading conduct rules.
- 3) **Definition of a safe trading envelope** that identifies acceptable trading activity for participants with market power, encompassing trading behaviour and optionally pre-approval of some offer parameters by the ERA.
- 4) **A three-part market power test**, incorporating:
 - a) Determining the presence of market power through a pivotal supplier test;
 - b) Considering whether the participant is operating within the safe trading envelope; and
 - c) Assessing how the market power exercise has affected market outcomes.
- 5) **Changes to processes for ex-post trading conduct investigations**, whereby the ERA’s monitoring and reporting protocol is adapted to provide clear market impact benchmarks against which to compare the total costs of initiating an ex-post investigation, and potentially providing greater transparency of ongoing investigations.
- 6) **Setting energy and ESS price limits** as a backstop mechanism, high enough that all participants can comfortably recover their variable costs, and using a mechanism that reduces the effort and frequency of adjustment.

Figure 1 below summarises the proposed market power mitigation arrangements to be discussed in the following sections.

Figure 1: Overview of proposed market power mitigation arrangements

	Trading conduct obligations	Market power test	ERA guidelines
Applied to all participants Price limits	a. General obligations	Applied according to	Monitoring and reporting protocol
	b. Specific obligations Applied to participants identified by	1. Pivotal supplier test	
Voluntary agreement between participants and ERA	c. Reference trading parameters	2. Safe trading envelope test Defined by	Trading behaviour guideline Offer construction guideline
		3. Effects test	

New trading conduct obligations would be applied to all participants. Specific obligations would be applied to participants identified by a new pivotal supplier test, which itself forms part of a new three-part market power test. Reference trading parameters could be developed by way of voluntary agreement between participants and ERA. Trading obligations would be framed around a new three-part market power test, with the first threshold being a pivotal supplier test. ERA guidance on trading behaviour and offer construction would jointly define a safe trading envelope test. The final market power test is an effects test. There would be consequential changes to ERA guidelines.

Rationale for the proposed changes

The rationale for the proposed changes is a problem definition relative to a set of proposed policy objectives and interim outcomes necessary for the achievement of the policy objectives. The problem definition centres on the following.

- The market structure of the WEM and the adverse impacts where market power is exercised.
- The effectiveness of the current market power mitigation arrangements.
- The combined impact of changes to the WEM market design and the energy transformation, resulting in new opportunities for exercising market power, alongside an increase in the value of regulatory certainty.
- The contrast between the current market power mitigation regime and a standard regulatory framework applied for example in generator performance standards, national greenhouse gas emissions reporting and cyber security for critical infrastructure.

A summary of the problem definition with respect to the current market power mitigation rules is set out in the table below. Our overall assessment is that the present market power mitigation regime will not achieve the proposed intermediate policy objectives.

Intermediate policy objectives	Problem
Trading behaviour constrained but efficient dynamic competition is supported	Anti-competitive behaviour may not be effectively constrained under the new market design, while dynamic pro-competitive behaviour, enabled by the new market design, may be deterred due to regulatory uncertainty
Market participants directly responsible for ensuring compliance and reporting breaches	Market participants currently have no direct market power mitigation compliance responsibilities, or self-reporting obligations and may therefore more likely to be confused as to their trading conduct obligations.
Exercise of market power is deterred	Weaker than otherwise due to the previous two points, as well as the lengthy delay between a participant engaging in illegal conduct and remedies being delivered to other participants
Proportionality and performance evaluation	Limited transparency and available timely information make performance evaluation more challenging than otherwise

As a result of not achieving the intermediate policy objectives, the proposed principal policy objectives are unlikely to be achieved.

- There are increasing risks that, over the medium to long term, market wide prices may not more or less equal efficient supply costs or reflect cost trends, consistent with the long-term interests of consumers.
- Investors considering market expansion, or entry, may not have a reasonable expectation their investments are protected from unfair competition in the relevant markets in a timely and effective manner.
- The regulatory burden of market power mitigation arrangements may not be proportionate to the cost of the risks from the exercise of market power. A significant portion of the potential benefits from improved competition and efficiency under the new market arrangements are likely to be foregone.

The architecture of the present market power mitigation rules does not provide adequate ex-ante guidance and supporting information processes on what constitutes a safe trading envelope, within which participants may vigorously compete without breaching prohibitions on the exercise of market power. This is very likely to result in inefficient outcomes that are contrary to the objective of constraining anti-competitive behaviour, while at the same time discouraging more dynamic and active trading, with associated efficiency benefits.

This architecture may also reduce the likelihood that any improper exercise of market power is detected and reported to the ERA. Once reported, there may be insufficient information recorded in AEMO market systems and compliant participant trading systems to facilitate an efficient and timely

investigation by the ERA. The reliance on lengthy, complex ex-post investigations weakens the deterrence value of the mitigation regime and weakens confidence on the part of investors that protection from unfair competition is timely.

Regulatory burden and optimal design

The proposed arrangements may entail some increase in the regulatory burden for the ERA, those market participants with market power, and possibly AEMO. However, many activities currently undertaken ex-post would be undertaken ex-ante, or continuously, limiting the incremental cost from the status quo. The benefits from improved transparency would comfortably exceed the costs of publishing material that is currently not published in the normal course of business. The expectation is that any incremental costs are more than outweighed by the benefits from improved opportunities for market participants to respond to more dynamic trading conditions and compete vigorously, and by improved and more timely compliance with market power mitigation obligations. There are also likely to be significant avoided costs from lengthy ex-post investigations, and from the reduction in effort around frequently setting price limits, due to more effective ex-ante regulation. There would nevertheless be some ongoing ex-post actions, depending on market conduct.

The proposed arrangements can be graduated to avoid an excessive regulatory burden. For example, market participants that do not meet the pivotal supplier test, and which are unlikely to be active energy traders (for example a single small to medium renewable energy facility), would not bear an increased regulatory burden.

Periodic review of the effectiveness of market power mitigation mechanisms will form part of the Coordinator of Energy's new function to review market effectiveness. Such reviews can modify the new market power mitigation arrangements, as required, to ensure benefits comfortably exceed costs.

1. Introduction

1.1 Purpose

This report has been prepared for the Energy Transformation Taskforce to assist its comprehensive review of whether the existing market power mitigation measures are suitable for the new Wholesale Electricity Market (WEM). Drawing on a series of relevant reviews previously conducted in the WEM, it addresses:

- the market power mitigation mechanisms required for the new WEM;
- the optimal design of these mechanisms; and
- the rationale for these recommendations.

1.2 Process

The project was constrained by the reporting timeline. In the available timeline, the following activities were undertaken:

- Desktop review. This included consideration of previous reviews of market power mitigation measures in the WEM and similar markets. It also considered best practice in regulation in other parts of Australia and for similar markets internationally.
- Workshops with Energy Policy WA (EPWA) to develop and test an initial set of proposals.

1.3 Report structure

The structure of the remainder of this report is as follows:

Section 2 sets out relevant background regarding the existing market power mitigation regime and the market power impacts of market design changes in the new WEM.

Section 3 develops a set of proposed policy objectives for market power mitigation, and intermediate outcomes to achieve these objectives. These objectives and outcomes are used to develop a problem definition statement regarding the existing market power mitigation arrangements.

Section 4 sets out the detailed proposals for change to the market power mitigation regime to address the problem defined in section 3.

Section 5 briefly discusses consideration of other options and the risks from possible unintended consequences of proposed changes to market power mitigation arrangements.

2. Background

In large, diverse electricity markets, where there are dozens of similarly sized and geographically diverse participants, competitive forces are the main mechanism that drive economically efficient market outcomes. However, even in highly competitive markets, market designs include elements to mitigate market power exercise.

The WEM is a highly concentrated market, with a handful of large suppliers and purchasers, and market power is likely to be present in the WEM on a consistent and ongoing basis. As a result, competitive forces between market participants cannot be relied upon to deliver efficient market outcomes at all times. An effective suite of market power mitigation measures is required.

This chapter describes the market power mitigation measures in the current WEM, and how they will change under the rules for the new WEM gazetted in December 2020.

2.1 Summary of market power mitigation measures used internationally

Market power mitigation measures are applied in contestable wholesale electricity markets around the world. They all have similar but not identical policy objectives – to avoid or minimise the economic costs of anti-competitive conduct on the part of participants that have market power. This objective is consistent with regulating against anti-competitive conduct in any significant market.

2.1.1 Common characteristics of policy interventions seeking to prevent market failure

Typical market power mitigation measures include limits on mergers and acquisition to avoid excessive market concentration. They may also include removal of barriers to entry and expansion, for example in relation to transmission connections and access.

The regulatory arrangements for addressing market power in electricity markets draw on frameworks that can be applied for any policy intervention seeking to prevent market failure. These frameworks typically include:

- (a) Liable entities are defined and an obligation to comply with the relevant regulatory framework is created.
- (b) A regulator role is established to ensure compliance with the regulatory framework.
- (c) Liable entities are obliged to put in place a comprehensive compliance program, including additional information disclosure and reporting requirements.
- (d) For certain strategic or high-risk liable entities, higher reporting or conduct obligations may be applied.
- (e) Liable entities are obliged to report any breaches of compliance obligations, provide an explanation, and undertake remedies.
- (f) Contraventions of the relevant obligations are subject to escalating sanctions, with the objective of deterring non-compliance.

2.1.2 Key components in international market power mitigation

Even where market structures limit opportunities to exercise market power, market power remains a risk in electricity markets. This reflects the unique dynamics of electricity supply:

- Supply and demand must be in balance in real time across a transmission grid, but there is often a significant lead time before some types of generation can be available.
- Supply can be subject to unexpected, large, and abrupt change.
- Even where demand response mechanisms are present, these may have limited capacity to respond to changes in offer prices or supply.
- Demand forecasts are subject to error, and the widespread adoption of distributed energy resources (DER) is increasing uncertainty over demand in future trading intervals.

The details of market power mitigation arrangements vary depending on various factors, including the market structure and degree of concentration. The design of the market is itself an important part of market power mitigation. Mitigation measures may therefore vary depending on market design characteristics, such as: a capacity or energy only design the formation of deep and liquid forward contract markets, the presence of a day ahead market; gate closure thresholds; centralised commitment or self-commitment; and other features of the market design.

Common features of market power mitigation arrangements, internationally, include the following.²

1. A legal framework placing obligations on market participants to conform to that framework. While this framework may draw on broader competition laws, it may also be developed and extended to address the specific characteristics of electricity markets.
2. Support for, or mandating, the creation of forward markets and day ahead markets. Forward markets may limit opportunities for suppliers to exercise market power in real time markets. On the other hand, the effect of any exercise of market power in real time markets may be amplified in forward markets.
3. A set of ex-ante rules and other guidance defining trading conduct requirements and prohibitions on various forms of market manipulation, including misleading offers and collusion. Guidance may also include obligations to offer/constraints on withdrawal of capacity; as well as obligations to remain within price bands.
4. In some situations / markets, there may be provisions for participants to volunteer additional information and enter a dialogue with the relevant regulator regarding whether proposed trading conduct would be within the relevant regulations.
5. Ex-ante definition of one or more tests for the presence of market power, trading conduct and the materiality of competition impacts.
6. Ex-ante application of limits on trading, in the event a test for market power is triggered, such as offer caps.
7. A market surveillance framework and accompanying information systems and processes to detect and record breaches of ex-ante rules. This is often tied in with market wide trading platforms and may include publication of all offer price information.

² Houston Kemp (2018)

8. A process whereby ex-post measures may be triggered, in response to alleged breaches of the relevant rules and regulations, drawing on market surveillance and the ex-ante conduct rules, and the defined market impact tests.
9. If serious breaches are proven, this would be followed by enforcement action including the application of financial sanctions, with the aim of deterring similar behaviour in the future by any market participant.
10. An appeal process in the event the regulator decisions are contested.

A review of international market power mitigation measures in electricity markets³ for the 2018 ACCC Retail electricity price inquiry highlighted variations in the extent to which market power mitigation rules are prescriptive or leave a high degree of discretion with the relevant regulator. The review found that the United Kingdom, New Zealand, Alberta, and the European Union tend to be less reliant on ex-ante measures. They instead rely on wider competition (anti-trust) frameworks and ex-post enforcement, including substantial sanctions.⁴

Another group of jurisdictions tends to be more reliant on ex-ante measures. These include: North American markets such as the Energy Reliability Council of Texas (ERCOT); the PJM Regional transmission organisation; Singapore and the Australian National Electricity Market (NEM). Ex-post measures are nevertheless in place and are applied from time to time.

2.2 Market power mitigation measures in the current WEM

The current WEM includes a range of design elements intended to mitigate the potential for participants to exercise market power.

At market start in 2006, the focus was the state-owned generation company Verve, which produced around 80% of market generation. New, market specific measures were introduced in 2012 with the new Balancing and Load Following Ancillary Service (LFAS) markets, but the overall form of the arrangements remained the same. In 2014, Verve was merged with Synergy, the state-owned retailer, and its share of total generation had reduced to around 55%. In 2019, the share of generation from facilities directly owned by Synergy was just over 40%, though its net contract position is higher due to bilateral contracts with other generators.

2.2.1 Ex-ante price caps

Each year, the ERA determines maximum and minimum price limits for the Short Term Energy Market (STEM) and Balancing Markets under section 6.20 of the WEM Rules. These function to limit prices in times of extreme system conditions (extreme high or low load), and to restrict market participant offer prices.

³ Houston Kemp (2018).

⁴ See page 8-9 Houston Kemp (2018).

Two price caps are defined, based on the Short Run Marginal Cost (SRMC) of a proxy for the most expensive facility in the generation fleet – a 40MW Open Cycle Gas Turbine peaking plant:

- The Maximum STEM Price assumes the facility will be fuelled by gas.
- The Alternative Maximum STEM Price assumes the facility will be fuelled by liquid fuel.

Participants may only offer at the Alternative Maximum STEM Price if their facility is actually using liquid fuel.

These price caps restrict the ability of participants to push prices up in times of shortage.

The Minimum STEM Price was previously hardcoded in the rules at -\$1000, but in 2020 was amended to be set based on the principles that it should:

- Be low enough that the market clears above it in most circumstances;
- Limit exposure to prices that threaten the viability of a prudent market participant; and
- Be set at a level that would incentivise a facility with high cycling costs to decommit in a low load situation.

Some submissions are required to be made at the price limits (e.g. expected Ancillary Service quantities and commissioning test quantities), and participants also make submissions at the price floor (cap) to indicate a desire for a facility to run (not run). There are no explicit price limits in the LFAS market.

2.2.2 Availability rule

Participants holding Capacity Credits must make the associated capacity available in both the STEM and the Balancing Market. In particular:

- The quantity in a participant's STEM submissions must match the quantity of Capacity Credits held, with adjustments for bilateral contracts and capacity expected to be used for Ancillary Services (4.12.1(a)).
- The quantity in a facility's Balancing Market submissions must match its Reserve Capacity Obligation Quantity (4.12.1the).

Participants who do not meet these obligations face capacity refunds.

This mechanism restricts participants' ability to increase prices by withholding capacity.

2.2.3 SRMC offer rules

Participants are not allowed to make:

- STEM submissions with prices 'that do not reflect the Market Generator's reasonable expectation of the short run marginal cost of generating the relevant electricity when such behaviour relates to market power' (6.6.3).
- Balancing Submissions with prices that exceed 'the Market Participant's reasonable expectation of the short run marginal cost of generating the relevant electricity ... when such behaviour relates to market power' (7A.2.17).

- LFAS Submissions with prices ‘in excess of the Market Participant’s reasonable expectation of the incremental change in short run marginal cost ... when such behaviour relates to market power’ (7B.2.15).

These requirements are intended to ensure that, when participants have market power, their offers reflect SRMC. This metric is used with the assumption that participants recover fixed costs through the capacity mechanism.

These requirements are the primary ‘ex-ante’ controls on participant exercise of market power and are subject to ex-post investigation and enforcement by the ERA (2.16.9(b)).

In 2020, EPWA’s Directions Report – Clarifying Short Run Marginal Cost and market offer requirements in the Wholesale Electricity Market⁵ (SRMC Directions Report) proposed amendments to the SRMC definition to encompass a greater variety of variable costs and move away from the textbook definition of the cost of the next small increment of supply.

2.2.4 Good faith offer rules

The current Balancing and LFAS market rules include requirements for participants to make submissions in ‘good faith’. When making submissions in the Balancing and LFAS Markets, participants must (7A.2.13, 7B.2.11):

- Make submissions in good faith, meaning that there is a genuine intention to honour the submission based on understanding of market conditions at the time (7A.2.14, 7B.2.12).
- Not act in a manner that is intended or likely to mislead other participants, including having reasonable grounds for the parameters in its submission (7A.2.16(a), 7B.2.14(a)).
- Not try to influence constrained payment outcomes.

These requirements apply to all participants, not just those with market power. There are no similar requirements for the STEM.

2.2.5 Record keeping requirements

Participants are required to retain evidence of the grounds for their Balancing and LFAS Submissions (7A.2.16(b), 7B.2.14(b)), and to keep internal records of the reasons for any changes to their Balancing Submissions (7A.2.7).

These requirements apply to all participants, not just those with market power. There are no similar requirements for the STEM.

These records will be available to support a possible future market power investigation by the ERA, when requested under market rule 2.16.6.

⁵ EPWAA. (2020).

2.2.6 Gate closure

Participants can only change Balancing and LFAS submissions for a trading interval until the 'gate closure' for that interval. The gate closure for the Balancing Market is currently 150 minutes for Synergy (7A.2.9(d)) and 90 minutes for others (7A.1.17). The gate closure for the LFAS Market is 210 minutes (with a four-hour bidding block) for all participants (7B.2.2(c), 7B.2.4(aA)).

The differential gate closure for Synergy allows other participants to respond to Synergy's position without Synergy being able to respond in turn.

2.2.7 AEMO market surveillance data

The Australian Energy Market Operator (AEMO) compiles and analyses data in the Market Surveillance Data Catalogue and provides that information to the ERA (2.16.1).

This mechanism ensures that the ERA has the data and analysis it needs to carry out its market monitoring functions.

2.2.8 ERA market monitoring

Ex-post monitoring of market participant behaviour is the fundamental market power mitigation mechanism in the WEM.

The ERA undertakes market monitoring as required by the rules (2.15). The rules require that the ERA must maintain and implement a monitoring protocol in a WEM procedure (2.15.1). The current procedure is set out in *Market Procedure; Monitoring protocol*, ERA, effective 27 July 2020.

ERA market monitoring uses the information in the Market Surveillance Data Catalogue to identify potential inappropriate and anomalous market behaviour, including (2.16.9(b)):

- Offer prices that do not reflect the participant's reasonable expectation of the SRMC of generating the relevant electricity (in either its portfolio or balancing submission offers); or
- Offer prices that do not reflect the participant's reasonable expectation of the incremental change in SRMC in providing the relevant LFAS; and
- Participants misrepresenting the capability and characteristics of their facilities, through incorrect availability declarations, ancillary service declarations and fuel declarations.

Participants can also raise matters with the ERA for investigation (2.16.8). There is no explicit reference to the good faith offer requirements discussed in section 2.2.4.

The Monitoring procedure sets out the current ERA investigation process.⁶ This follows the identification of possible breaches via market monitoring (led by AEMO) and/or breach reporting. The

⁶ ERA (2020a), section 4.

types of information provided by AEMO for monitoring purposes are set out in a separate ERA procedure document.

Where the ERA forms the view that a matter identified through monitoring is an alleged breach of the rules or procedures, then, upon becoming aware of this, the ERA is required to investigate the matter (2.13.10 of the rules). The investigation process typically follows the following phases and steps.

- **Preliminary phase.** Before entering the assessment phase, the ERA may undertake detailed analysis, including examining available data and seeking further information from participants.
- **Assessment phase.** The matter is recorded in the ERA's compliance monitoring register. The ERA undertakes an initial compliance risk assessment to determine the priority of the investigation. This includes consideration of the potential consequence and the likelihood of re-occurrence.
- **Investigation phase.** Among other things, this includes notification of the ERA's preliminary findings to the participant alleged to be in breach and information gathering from that participant; and preparation of an internal report documenting the investigation.
- **Outcome phase.** The parties are notified of the outcome of the investigation, including any actions that may be required by the parties. Where the outcome depends on a decision about the interpretation of a term that is undefined by the market rules, a process for defining that term will be commenced.

At the conclusion of the investigation under 2.169B, the ERA determines whether it reasonably believes that a breach has occurred. Where the ERA determines a breach has occurred, it will consider the appropriate compliance action in response to the breach. The ERA has statutory compliance responses available to it, including penalty notices or the commencement of proceedings before the Electricity Review Board (under 2.169G). It may also consider administrative responses, including seeking a voluntary compliance program.

If the ERA finds that offer prices do not reflect a participant's reasonable expectation of SRMC, and that this behaviour relates to market power, the ERA may bring proceedings before the Electricity Review Board (ERB) (2.16.9G). The ERB functions as a legal tribunal, where the ERA and the market participant present evidence and arguments to support their cases.

The ERA is obliged to report on proceedings brought by the ERA to the ERB, alongside any penalty notices issued by the ERA for certain types of breaches.

Where a finding is subject to potential review by the ERB, there is typically limited information made available publicly, at the conclusion of the ERA investigation, to avoid pre-empting any ERB review process. As a result, other market participants and observers may not be aware of the conduct found to be in breach by the ERA investigation, until consideration by the ERB has been concluded.

2.3 Market power impacts of design changes in the new WEM

The Energy Transformation Task Force's reforms are expected to reduce barriers to workably effective competition⁷ in the WEM, thereby contributing further to downward pressure on wholesale prices and costs. Among other things, this reflects the:

- Introduction of facility bidding for Synergy;
- Introduction of security constrained co-optimised dispatch in a new Real-Time Market (RTM) with minimal gate closure;
- A new essential system services (ESS) framework;
- New arrangements for storage facilities;
- New generator performance standards (GPS);
- New reliability standards, and a new regulatory architecture and governance framework;
- Changes to the Electricity Network Access Code;
- The Network Access Quantities framework; and
- Whole of System Planning and new arrangements for DER.

Together, these changes to the WEM design are intended to deliver a market that is fit for purpose to enable WA to navigate the energy transition, while also increasing the overall efficiency of market outcomes and power system operation, and supporting the efficient entry of new participants and technologies.

While the changes increase the opportunity for efficient market operation, they also have potential to increase the opportunity for participants to exercise market power.

2.3.1 Gate closure and rebidding

At commencement of the new WEM, gate closure will be reduced from 90 minutes to 15 minutes. After six months it may be further reduced, with the intention to move to as close to zero as possible. The differential gate closure for Synergy will also be removed, so Synergy will be able to make RTM submissions until the same deadline as other participants.

This gives participants the opportunity to respond to changing market conditions (including the expected demand, timing of facility outages, expected facility run times) right up until real-time, maximising the opportunity to find the most efficient market outcome, by updating their RTM Submissions or 'rebidding'.

Allowing rebidding is efficient and pro-competitive, but this effective removal of a gate closure time creates potential opportunities to engage in strategic rebidding, as the new pre-dispatch schedules will give participants a much more accurate view of whether or not their facilities will set the price.

⁷ Consistent with usage by Australian and other economic regulators, we use the phrase 'workably effective competition' to acknowledge the fact that real markets typically do not correspond to perfectly competitive markets in economic theory.

Rebidding inside any gate closure is allowed, but only to reflect unexpected changes to facility capability such as outages which affect quantities that the facility can provide. Rules and market monitoring are necessary to ensure that opportunistic rebidding outside gate closure does not constitute exercise of market power.

2.3.2 Dispatch interval and trading interval length

In the new WEM, the dispatch interval will be reduced from 30 minutes to five minutes. AEMO will recalculate facility dispatch positions for each five-minute interval and determine marginal market clearing prices for each interval for energy and each Frequency Co-optimised Essential System Service (FCESS). In contrast, settlement processes use a 30-minute Trading Intervals until 2025, when five-minute meter data will become available.

This means that time-weighted average energy settlement trading prices will differ from the five-minute energy market clearing prices. The misalignment may create opportunities for generators to engage in opportunistic bidding behaviour (enabled by the reduced gate closure) until settlement and dispatch intervals are aligned. Energy price caps may mitigate opportunistic bidding to some extent but will not remove the incentive for disorderly bidding.

2.3.3 Synergy dispatch

In the new WEM, Synergy will make separate submissions for each facility, rather than the portfolio submission it makes today. AEMO will move from having discretion to dispatch facilities in the portfolio as needed (though with reference to Synergy's preferences), to generating dispatch instructions for each individual facility using the same process as for other participants.

Facility bidding for Synergy will give other market participants much clearer visibility of the implied costs at each individual facility, enabling them to better respond to Synergy activities, and the ERA to better monitor Synergy's pricing. However, it also gives Synergy significantly more control over the operation of its facilities, and the opportunity to exercise market power.

2.3.4 Capacity credit assignment

In the current WEM, each year each facility receives capacity credits based on its sent-out capacity at 41 degrees Celsius (scheduled generators) or output in peak periods (non-scheduled generators), without accounting for likely network congestion. Facilities receive a price based on the fixed costs of an open cycle gas turbine facility (notionally the peaking unit with the lowest capital costs per MW), with a linear adjustment for the presence of over- or under-capacity in the South West Interconnected System (SWIS).

From 1 October 2021, participants holding capacity credits will receive a reserve capacity price that is more steeply discounted (inflated) when there is over-capacity (under-capacity) in the SWIS. From 1 Oct 2024, the number of capacity credits held will depend on the ability of the network to accommodate injection at times of peak demand, with incumbent facilities guaranteed to receive the same allocation as the previous years as long as they continue to provide the same level of capacity.

The SWIS currently has more capacity than required by the WEM planning criterion (market rule 4.5.9). Capacity prices are expected to reduce, meaning that capacity revenue will no longer be sufficient to recover the fixed costs of the benchmark new entrant peaking unit. This means that all participants are likely to be more reliant on the energy markets to recover their fixed costs in full. It will be harder for new entrants to get capacity credits, meaning that incumbents will have relatively less pressure to compete for energy revenue.

2.3.5 Essential System Service procurement

In the current WEM, the LFAS market is open to all capable facilities, but is cleared in advance of the energy market. Other ancillary services are provided mostly by Synergy with revenue determined by an administered revenue requirement calculation, supplemented with a small number of bilateral contracts between AEMO and other suppliers.

In the new WEM, ESS dispatch will be considerably more efficient, with open participation in real-time markets covering all frequency control services, and co-optimised with energy. Synergy will offer its facilities individually for all services and will receive a market price rather than an administered price. Increased opportunity for participation improves competitive pressures, but also provides for participants to have more control over their operations, with the associated potential to exercise market power.

Under the new arrangements, if the ERA observes and demonstrates inefficient market outcomes in the real time ESS markets, it will be able to trigger a longer-term mechanism for providing ESS: the Supplementary Essential System Services Procurement Mechanism (SESSM). If the ERA triggers the SESSM, it can mandate SESSM submissions from specific Market Participants, allowing it to examine the operating costs of facilities participating in FCESS markets to assure itself that market power is or is not being exercised in a way that raises the FCESS market price above its economically efficient level. If a new entrant can provide services at a lower cost than existing facilities, it may receive a SESSM award that contributes towards its fixed costs.

The presence of the SESSM provides a credible threat of new entry to temper market power exercise by incumbents, however there could be considerable time between identifying undesirable market outcomes and the entry of a new SESSM Facility, so there is potential for sustained inefficient market outcomes in the interim.

2.3.6 Dispatch and network congestion

The current WEM was designed based on generation facilities having unconstrained access to the transmission network, on the assumption that Western Power would build out the network to remediate network congestion. As a result, market clearing processes do not consider network limitations. Where network limitations mean that market dispatch outcomes cannot be physically implemented, affected participants are asked to generate or curtail output 'out of merit', and receive constrained on and off payments based on their offers.

A core change in the new WEM is to move from unconstrained dispatch to constrained dispatch⁸. This recognises that some level of network congestion is likely to be optimal, and allows more explicit consideration of the balance between energy market outcomes and the costs of network expansion. This will remove a substantial barrier to entry for new generators that would otherwise be required to fund very large, but uneconomic transmission upgrades by Western Power. Constrained on and off payments will be eliminated (though the new uplift payments function similarly to constrained on payments in some situations), removing a feature that, in markets around the world, has generally been considered to provide opportunities for gaming or inappropriately exercising market power⁹.

However, the expected increase in transmission congestion means that the incidence of *locational* market power will also increase. The use of energy uplift payments (and in particular the use of a negatively mispriced facility's marginal offer price to make it whole relative to the 30-minute Reference Trading Price) could result in opportunistic bidding behaviour during times of sustained congestion. If, due to network constraints, load in a particular location cannot be met without running a particular facility, the facility will face limited competition, and may even be a local monopoly. Such a facility would likely be paid uplift payments based on its offer price rather than the system-wide reference trading price (set at Perth Southern Terminal), and could potentially inflate its offer price to capture unreasonably high uplift payments.

Increases in future transmission congestion may mean that facilities in less congested parts of the SWIS face reduced competition from those in more congested parts. This is particularly salient for marginal facilities at the Reference Trading Node during periods of high congestion that prevent lower cost energy from other locations reaching the Reference Trading Node.

Elevated prices due to congestion are generally accepted as an efficient outcome, signalling that marginal costs differ by location. Where elevated prices may also include an element of the exercise of market power by the marginal facility at the Reference Trading Node, during sustained periods of congestion, prices cannot be assumed to be efficient.

2.3.7 Short Term Energy Market

Changes to the STEM are consequential to the introduction of constrained real-time dispatch. Currently, participants must offer sufficient energy in the STEM to cover their capacity credits but are not required to offer energy from capacity that is expected to supply ancillary services. Participants with insufficient generation to cover their bilateral contract position must purchase energy in the STEM. In future, STEM offers must cover all capacity credits, regardless of whether participants expect to be dispatched for ESS, but participants will be able to leave a position open until the RTM rather than closing it in STEM.

STEM positions influence the contract position of market participants, and hence their exposure to RTM prices, but these changes are unlikely to have significant effect on ability to exercise market power.

⁸ Changes to the RCM also incorporate consideration of network congestion.

⁹ Ontario Energy Board Market Surveillance Panel (2016).

2.3.8 Capacity Refunds

In the current market, a participant pays capacity refunds when:

- It does not make sufficient capacity available in STEM.
- A capacity-credit-holding facility suffers a forced outage – including where it has not responded to a dispatch instruction.
- A capacity-credit-holding facility takes too many planned outages.

In the new WEM, participants will also face refunds when they do not make sufficient capacity available in the RTM. However, the new Dispatch Algorithm will not clear a facility unless either:

- Its owner has indicated in RTM submissions that the facility will be 'In-Service'; or
- Its owner has indicated in RTM submissions that the facility will be 'Available' if called on in time to start up, and the time before the facility will be required is greater than the facility's start-up time.

This gives rise to an opportunity for participants to withhold capacity from the RTM without facing immediate refunds, by not changing the offered status of a facility from Available to In-Service, even where the pre-dispatch schedule indicates that the facility would be dispatched.

2.3.9 Record keeping and information publication

In the new market, the existing record keeping obligations will be maintained (though the rules as gazetted focus on changes to submissions rather than the rationale for all submissions). In addition, participants will be required to provide reasons for deviation from standing data technical parameters.

The new market will also increase information transparency, with AEMO publishing more market data including:

- The cleared energy and FCESS dispatch levels for each facility in each dispatch interval of each pre-dispatch schedule. This information is not currently published.
- Unredacted RTM submission data, including offer prices, the day after real time.

Greater transparency increases the likelihood that market power exercise will be identified and remedied, which reduces incentive for participants to exercise it.

2.3.10 ERA monitoring and compliance powers

In the current WEM, to enforce findings of market participant non-compliance, the ERA can issue penalty notices for Category A breaches (the lowest category), and for other cases must refer the results of its investigations to the ERB. In future, the range of remedies will be expanded to allow the ERA to directly impose financial penalties in all civil penalty categories, and to allow ERA to issue infringements to Rule Participants for breaches that do not warrant a civil penalty response. An infringement can be a fixed dollar value or a proportion of the associated civil penalty. This more flexible set of enforcement options should increase the ERA's ability to respond to market power exercise and deter improper behaviour.

This change moves the WEM closer to a standard regulatory approach where the regulator has full responsibility to investigate non-compliance and impose penalties, and its decisions can be appealed to another body which does not make original penalty assessments.

3. Policy objectives and problem definition

3.1 Purpose

This section sets out proposed policy objectives to guide the design of changes to the existing suite of market power mitigation measures in the WEM. The proposed policy objectives are subsidiary to the WEM objectives, and seek to apply the WEM objectives to a package of measures seeking to constrain market power exercise in the relevant markets.

Along with a problem definition statement, a statement of policy objectives forms the policy rationale or case for change. The problem definition assists with the identification and assessment of the benefits from regulatory proposals, including changes to the WEM rules that seek to mitigate market power. It therefore supports a comparison of benefits with the associated regulatory burden for both market participants and the market regulator.

3.2 Proposed objectives for market power mitigation mechanisms

3.2.1 Setting the scene

Market power mitigation measures seek to constrain opportunities for market participants to extract super normal economic profits, or economic rents, from the exercise of market power or deter participants from exercising market power when they have it. In a perfectly competitive market, no participant will be able to exercise market power, yet perfect competition is seldom observed in the real world. The proposed objective of market power mitigation is therefore workably effective competition.

Under workably effective competition, prices may exceed efficient costs, reflecting transitory market power, but this is not substantial, persistent, or systemic. Transitory market power should not always be discouraged. Where it arises from innovation, transitory market power, and the associated economic profits, are a key driver of dynamic efficiency and the long-term interests of consumers.

Defining the boundary for what does and does not constitute acceptable transitory market power is challenging and is not attempted in this report. In developing proposed changes to the existing market power mitigation arrangements, we propose drawing on the expertise developed under the National Competition and Consumer Law (Cth), 2010, and supporting regulations, guidelines, and case law. We recognise that care needs to be taken in applying national competition law approaches in the WEM. For example, the ACCC noted that its Draft Guideline under Part XICA of the National Competition Law has limited potential application in the WEM.¹⁰ This is discussed further in Chapter 4.

Improper market power exercise is not only manifested through prices persistently above efficient market costs. Market power can also be improperly exercised to depress prices in the expectation this

¹⁰ See paragraph 1.6 of ACCC (2020)

reduces future competition. Losses from depressed prices over a period can then be recouped via higher than efficient prices in the future.

3.2.2 Principal policy objectives

It is proposed that market power mitigation arrangements should contribute toward three principal policy objectives:

1. Wholesale market competition outcomes are consistent with static efficiency (productive and allocative). Over the medium to long term, market wide prices more or less equal efficient total supply costs, and reflect cost trends, consistent with the long-term interests of consumers. More efficient than average suppliers may be able to generate economic profits, while less efficient suppliers may not recover their risk adjusted cost of capital. Suppliers with average efficiency should not be able to generate economic profits on a sustained basis and should merely recover their risk adjusted cost of capital.
2. Confidence for new private investment contributes to dynamic efficiency. Investors considering market expansion or entry¹¹ have a reasonable expectation their investments are protected from unfair competition in the relevant markets.
3. The regulatory burden of market power mitigation arrangements is proportionate to the cost of the risks from the exercise of market power. Benefits from improved competition (or avoided reductions in competition) should comfortably exceed increases in regulatory burden costs.

On their own, even a well-designed package of market mitigation measures may be necessary, but not sufficient, to achieve these objectives.

3.2.3 Intermediate outcomes to achieve principal objectives

Achievement of the principal policy objectives implies that the market power mitigation package of measures has the following features and intermediate outcomes in the relevant markets.

- a) Current participants and prospective investors have reasonable regulatory certainty under a clearly documented 'safe trading envelope', with supporting good faith trading guidance, reporting processes, and associated information systems. This requires that wholesale trading participants have clear, practical, and measurable guidelines for their trading behaviour (ex-ante), while at the same time being encouraged to compete vigorously within these.
- b) Effective participant and AEMO/ERA market surveillance and monitoring. Any improper exercise of significant market power has a high chance of being detected by a combination of participant self-reporting, and market surveillance by AEMO/ERA. The intent and impact of conduct can be tested ex-post with data that is required to be recorded in AEMO and participant trading systems.

¹¹ For present purposes, barriers to expansion is more relevant than barriers to entry (capacity supply being managed by the RCM rather than STEM and RTMs).

- c) The market power mitigation arrangements should deter market participants from improperly exercising market power. Any improper exercise of significant market power that is proven should result in penalties to deter similar behaviour in the future.
- d) The effectiveness and proportionality of the market power mitigation arrangements should be subject to performance evaluation and review. Any emerging shortcomings in the new arrangements are identified and potential remedies assessed. Remedies may not necessarily relate to the market mitigation measures themselves.

3.3 Problem definition

3.3.1 Market structure in the WEM

In large, diverse electricity markets, where there are dozens of similarly sized and geographically diverse participants, competitive forces are the main mechanism that drive economically efficient market outcomes. However, even in highly competitive markets, market designs include elements to mitigate market power exercise.

The WEM is a highly concentrated market, with a handful of large suppliers and purchasers. In its 2020 review of market effectiveness¹² the ERA found that, at the end of 2019, the WEM had a Herfindahl Hirschman index (HHI) market concentration score of just over 4500, indicating that it is highly concentrated.

The ERA also analysed the presence of pivotal suppliers in the WEM. The test assesses whether a supplier is needed to clear the quantity of demand in a given trading interval. In intervals where a supplier or group of suppliers are pivotal, suppliers have an opportunity to influence market clearing prices through economic or physical withholding of capacity.

While Synergy has historically been the major pivotal supplier, in future, others could also become significant pivotal suppliers.

3.3.2 Adverse impacts where market power exercised

It is not possible to avoid situations where participants find themselves in the position of having market power. Without deterrence from effective regulatory and other constraints, some market participants may be tempted to exercise market power on a sustained basis. The exercise of market power if unchecked, poses substantial risks to workable competition in the WEM.

Participants with market power can deter market entry and/or market expansion by existing or would-be participants. High marginal costs and prices may reflect workably competitive markets and typically encourage market entry (and/or additional transmission capacity investment). However, where regulatory settings or the exercise of market power deters efficient entry, then inefficient market outcomes may not be self-correcting.

¹² ERA. (2020c), p12

A possible outcome is that observed wholesale costs and prices may remain well above the efficient supply cost curve (which is dynamic) in ways that are systemic, persistent, and material. At other times, however, offered prices may be well below efficient costs and then recouped through higher prices in other periods or market services (such as ESS).

Where market power deters entry or expansion, it also creates opportunities for market participants to extract structurally higher than efficient, risk-adjusted, returns on capital invested. Where they can be attributed to the exercise of market power, such excess returns may be described as super-normal, monopoly or economic profits. This recognises that highly efficient firms may be able to earn economic profits from time to time.

Market outcomes that are inconsistent with workably effective competition are detrimental to economic efficiency. These outcomes can include:

- Electricity not being supplied at the lowest overall cost over say a year (productive inefficiency);
- Consumers reducing demand and substituting higher cost alternatives (allocative inefficiency); or
- Investment in more efficient and effective capacity and other innovation being deterred, reduced, subscale, and/or delayed (dynamic inefficiency).

Such outcomes would be inconsistent with the relevant objectives under the legislation under which the WEM is regulated – Section 122 (2) of the *Electricity Industry Act 2004* (WA). Inefficient market outcomes that deter or delay entry by renewable resources would not minimise the long-term cost of electricity (122(d) or reduce greenhouse gas emissions (122(the.

Economic rents may also take the form of avoided, reduced, or deferred write downs to otherwise stranded assets, under international accounting standards.¹³ Any reduction in stranding risk may also represent excess returns and an exercise of market power.

Market power mitigation measures should not have the effect of protecting high-cost suppliers from competition from low-cost suppliers. At the same time, market power mitigation measures alone are unlikely to be sufficient to drive entry of more efficient supply options.

3.3.3 Effectiveness of current market power mitigation measures

While there have been several projects identifying proposed improvements to the current market power mitigation arrangements,^{14 15} a performance evaluation of the effectiveness of these arrangements has not been undertaken. This report does not seek to provide a comprehensive review of the effectiveness of the current market mitigation measures relative to the proposed policy objectives (or the WEM objectives). Nevertheless, some observations can be made from recent commentary and decisions from the ERA, the ERB and EPWA's 2020 review of the SRMC offer rule.

¹³ See IAS 36 Impairment of assets and the recoverable amounts test under International Financial Reporting Standards.

¹⁴ Public Utilities Office (2016).

¹⁵ The Brattle Group. (2020).

As noted by the ERA, the WEM's current market power mitigation mechanisms are largely reactive (ex-post) rather than pro-active (ex-ante).¹⁶ The ERA acknowledges its investigations are complex, resource intensive and time-consuming. The adverse outcomes for other market participants and consumers may persist for extended periods before the behaviour is identified and remedied.¹⁷ We note that the requirement for the ERA to refer investigation findings to the ERB has restricted the ERA's ability to be transparent about the content and progress of market power investigations.

The ERA notes its investigation into Synergy's pricing behaviour relates to events in 2016-17 and the review process will not be complete until sometime in 2021.¹⁸ We note that, if remedies are required, they would not take effect until after the process is complete, more than five years after the alleged trading breaches.

During this time, there is limited transparency over the course of pricing behaviour investigations since the matters may be subject to litigation. While understandable, this means that other participants may not readily be able to draw any conclusions regarding their own behaviour or the application of the market power mitigation regime, or the expectations of the regulator.

The ERA has observed on several occasions that ancillary service prices in the WEM are high relative to comparable jurisdictions, and that lack of competition is a key driver.^{19 20 21} These findings may imply that overall LFAS prices may represent the exercise of market power, which may not have been constrained under the current market power mitigation regime. The limited publicly available information on the ERA's investigation into Synergy's pricing behaviour does not suggest that the scope of the investigation included ancillary services.

A previous ERA investigation regarding trading behaviour by Vinalco in 2014 was not resolved until 2017.²² In that case, the ERB concluded that Vinalco had breached Rule 7A.2.17 (the SRMC offer rule). However, the minimal penalties applied in that decision appear to imply that the Board did not conclude that the breaches resulted in the extraction of economic rents by Vinalco. The minimal penalties are likely to have been exceeded many times over by the total cost of the investigation to the ERA, IMO, ERB and Vinalco/Synergy. The costs also include legal advice and expert testimony.

The Vinalco outcome highlights challenges with the SRMC offer rules. The SRMC offer rule is central to the current market power mitigation regime.^{23 24} The Vinalco outcome also highlights difficulties in applying the SRMC offer rule to the supply of ESS. The breaches of the SRMC offer rule occurred when Vinalco facilities were providing system security services (or ESS) under dispatch instructions from AEMO, following sustained transmission outages.

¹⁶ ERA. (2020c) p15

¹⁷ ERA. (2018), p13

¹⁸ ERA, (2019a),

¹⁹ ERA. (2020c), p67

²⁰ ERA. (2016), p37

²¹ ERA (2019a), p44

²² Western Australian Energy Disputes Arbitrator. (2016).

²³ EPWA. (2020).

²⁴ The Brattle Group. (2020).

EPWA retained Brattle to undertake a review of the SRMC offer rule in 2020. The Brattle report highlighted two key issues:

- As the market for natural gas in the WEM is not very transparent, it is very difficult to identify an appropriate gas price to calculate the marginal cost of fuel.
- The concept of SRMC includes start-up costs. As there is, ex-ante, uncertainty over how many intervals a generator may be dispatched, the estimation of efficient start up and shut down costs, over a given set of trading intervals, may be challenging.

Upcoming changes to the Reserve Capacity Mechanism (RCM) add further challenges to applying the broader SRMC offer rule. As described in section 2.3.4, depending on whether the RCM is in surplus or shortfall, the price received for each capacity credit is valued higher or lower. As RCM supply currently exceeds the required level of supply, the capacity price is discounted from the benchmark price. This means that market participants may need to recover an increased portion of their total costs from energy and ESS markets, including fixed costs, and new entrants even more so as they may receive fewer capacity credits in the first place.

On a narrow interpretation, the SRMC rule assumes that, during most trading intervals, a large portion of the generation fleet is already operating, and the marginal cost is extremely short run. On this interpretation, the SRMC offer rule can be breached based on a handful of trading intervals or even a single trading interval taken in isolation.²⁵

EPWA has already recognised that a broader interpretation of the SRMC offer rules is necessary.^{26 27} In the presence of price caps in the WEM RTM, unlike in the east coast's National Energy Market (NEM), significant economic profits are unlikely to be extracted from exerting market power in a small number of trading intervals. Suggested improvements to the interpretation of SRMC include clarification and amendments to the SRMC offer rules and inclusion of a definition of SRMC in the Chapter 11 of the WEM Rules.²⁸

The current market power mitigation regime, centring on ex-post investigation of conformity with SRMC offer rules, has been in place in the STEM since 2006, and in the Balancing and LFAS markets for almost a decade. The regime has proven difficult to navigate for both the ERA and participants, resulting in an ongoing, high level of regulatory uncertainty, with ex-post action taking a long time and coming at a significant cost.

Despite the proposed improvements, the application of the SRMC offer rule may become increasingly challenging because of the ongoing transition to lower cost, low emissions generation and large-scale storage, including from DER. The new more dynamic market environment provides more opportunities to exercise market power, and, as a result, the mitigation regime needs to evolve to provide clearer mechanisms to prevent, identify and penalise inappropriate exercise of market power in a timely fashion.

²⁵ EPWA. (2020), p5

²⁶ EPWA. (2020).

²⁷ ERA. (2018).

²⁸ EPWA. (2020).

3.3.4 Impact of the energy transformation

One of the signs of the energy transformation in Western Australia is the increasing volume of renewable energy capacity and output. Residential solar output continues to rise and, other than one small landfill gas fuelled facility, all new facilities registered in the WEM since 2012 have been renewable. This reflects the rapid reduction in total renewable costs compared with thermal generation, inclusive of system integration costs, new transmission, and storage capacity.²⁹

The new WEM introduces new design features to address the technical challenges in a market with a growing proportion of renewables, but market dynamics will continue to change:

- Renewable and hybrid renewable and storage facilities can be expected to be price setters for an increasing portion of trading periods, spanning both energy and ESS markets.
- Frequent negative wholesale prices are likely to continue for as long as relatively inflexible thermal generation retains a significant presence. Controllable facilities face large cycling costs and may seek to pay negative energy prices to stay on in these periods rather than shutting down and starting again later.
- A small number of higher cost facilities which have capability to firm supply will become more important, and an increasing portion of their revenue will come from providing ESS.
- Spot price volatility is likely to increase, as low or negative prices in off-peak periods rapidly increase, and as operational demand rises through to the peak, and high-cost facilities recover start-up costs over shorter run times.
- RTM clearing based on offered prices will still give the most efficient use of the facilities available in real-time, but volatile spot energy prices could cause difficulties for overall cost recovery, and cause participants to shift focus towards efficient outcomes in contract markets, capacity payments, and ESS revenue.

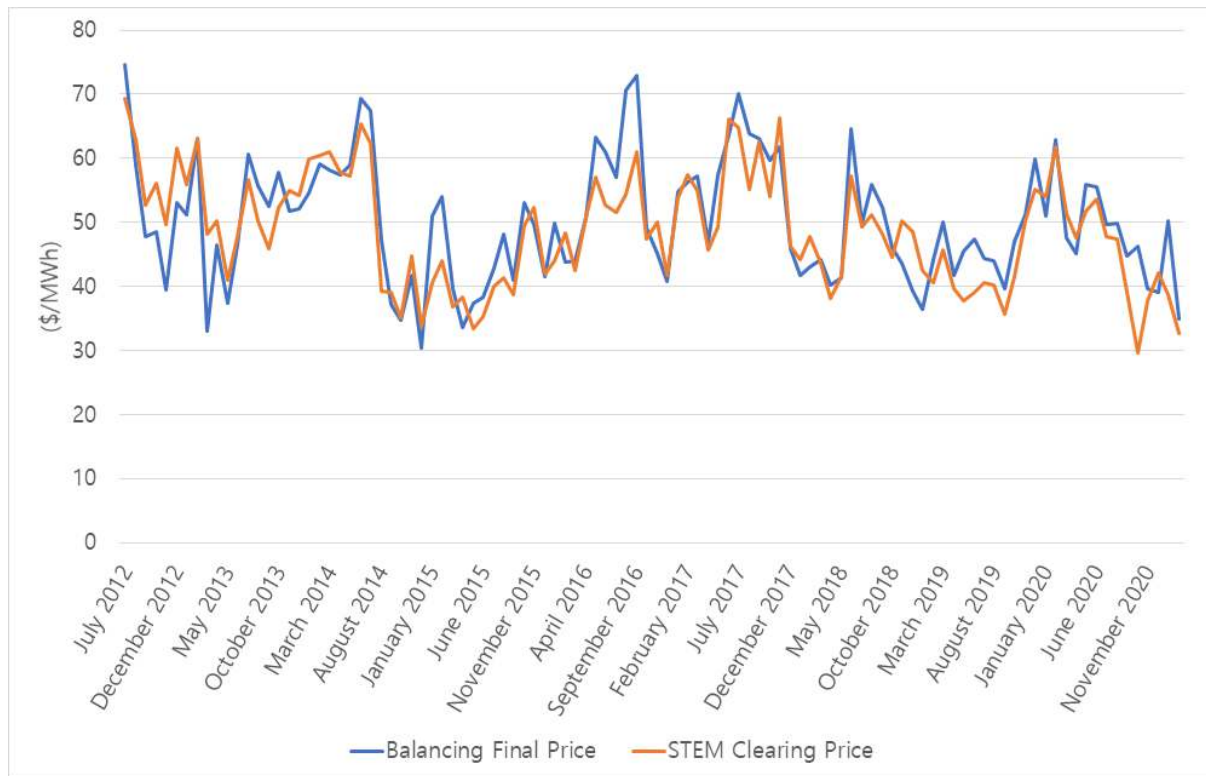
Renewable energy facilities typically have very low marginal costs. In addition, some or all of the already low marginal cost may be funded from the sale of renewable energy certificates, alongside voluntary purchase of renewable energy via bilateral contracts.

The impact of lower cost generation is evident from recent balancing price trends reported by the AEMO.³⁰ Figure 2 shows monthly average market prices since Balancing Market Start.

²⁹ CSIRO. (2020, December 11).

³⁰ AEMO (2020), page 4.

Figure 2: Monthly average STEM and Balancing prices since July 2012³¹



While there is as yet limited evidence of a long-term trend, the quarterly balancing price trend in the WEM for the quarter ending December 2020 was the lowest quarterly average balancing price since 2015, with a significant increase in negative and low-price intervals. Alongside mild weather in November, this reflected the entry of new renewable capacity, with renewable capacity contributing 35.3 per cent of total generation in the quarter. Operational demand decreased by six per cent (-118MW) compared with the same quarter in 2019. The entry of new generation contributed to a decline in output from the Synergy balancing portfolio. This in turn meant that Synergy offers set balancing prices less than 50 per cent of the time, for the first time.

Applying an SRMC offer rule to ESS is likely to be more challenging than applying it to the energy markets. The transition means that, during very low operating demand periods in the middle of mild sunny days, only a small number of controllable facilities will be required to provide reserve, regulation, and rate of change of frequency (RoCoF) control services. Where energy prices are negative in such intervals, commercial losses on any energy supplied will need to be recouped through ESS revenue or in other trading periods.

Further, there is likely to be significant competition for the provision of controllable supply during low demand periods, but once a supplier or set of suppliers have been selected to supply ESS for a given set of trading intervals, they will likely be pivotal suppliers with opportunities to exercise market power.

³¹ Source: RBP analysis based on data published by AEMO

Interest in investment in energy storage – including Synergy’s proposed battery on the site of the former Kwinana power plant and piloting of community storage solutions – point to the future importance of storage facilities in providing ESS, energy and RCM services. Marginal costs for storage facilities mostly take the form of energy purchases and round-trip losses. Matching energy purchase costs with output (and output prices), and possibly associated variations in round trip losses, may not always be straightforward. This suggests that applying the SRMC offer rules to the bundle of services offered by storage may become more challenging in future.

The wider implications of the energy transition on market dynamics are outside the scope of this review. Nevertheless, some observations can be made in relation to market power mitigation:

- Any regime for mitigating market power in the WEM must be sufficiently flexible to manage an increase in RTM price volatility.
- There is a (well recognised) risk that a strict SRMC offer rule may constrain the recovery of efficient costs.
- Benchmarks for generator offer behaviour must provide a reasonable opportunity for participants to recover efficient costs, which can include a wide range of factors.
- A workably competitive market does not necessarily allow high-cost (but otherwise efficient) suppliers to recover their costs in full.

3.3.5 New opportunities for exercising market power

As discussed in section 2.3, the new market arrangements, while pro-competitive, create new opportunities or enhance existing opportunities for the exercise of market power. Examples could include:

- Following removal of gate closure, rebidding at changed prices/volumes/profiles once pre-dispatch indicates a generator is a pivotal supplier.
- Increasing offer prices above reasonable cost to increase the market price and thereby increase revenue.
- Decreasing offer prices below reasonable cost to decrease the market price with the effect of crowding out competitors, and then recovering losses through high prices later, or through inflated prices for other services.
- Using ESS minimum enablement constraints to avoid decommitment
- Withholding capacity – either by taking planned outages, or just not offering – to increase the market price and increase revenue.
- Offering facilities as ‘Available’ when they are not, in order to avoid reserve capacity refunds.
- Using position behind a constraint to increase energy uplift payments.
- Using position in physical markets to drive outcomes in contracts markets.
- Using electricity market activity to trigger outcomes in the gas market and vice versa.

Alongside the changes outlined above, existing sources of market power will remain for the foreseeable future.

- While there is a long-term reduction in its capacity to set balancing market prices, Synergy retains its position of owning or having long term contracts with the largest portion of the WEM generation fleet. It also retains a statutory monopoly in small retail markets.
- Gas generation will continue to be the marginal price setter in the WEM in higher demand and price periods. Alinta Energy's competitive gas generation fleet, and strong dual fuel retail market presence may create opportunities for it to exercise market power especially during late afternoon and evening.

Synergy remains the largest participant in the WEM (41% of generation in 2019) but is no longer the only participant with a portfolio large enough to be able to control prices. At times, Alinta Energy (19% of generation in 2019) and Summit Southern Cross (approx. 30% of generation in 2019) will also have sufficient capacity to be able to unilaterally determine the market wide energy price.

3.3.6 Increased value of regulatory certainty

The more dynamic market conditions caused by the ongoing energy transition require more active and agile competitive energy trading, especially by the participants that are pivotal for a given set of trading intervals. However, as discussed above, under more volatile conditions, participant uncertainty over the application of the SRMC offer rules could result in risk averse trading behaviour. This could lead to inefficient outcomes that are not consistent with the proposed policy objectives above.

Regulatory certainty is, however, difficult to implement given the current reliance on ex-post surveillance and enforcement, in the design of market power mitigation arrangements. With the changes to gate closure, the ex-ante components consist of:

- Ex ante price caps;
- The availability rule;
- The SRMC offer rules;
- Good faith offer rules; and
- Record keeping requirements.

The high-level thresholds for competitive vs. anti-competitive trading conduct in the present rules do not appear to be specified clearly, or to provide a clear basis for the definition of thresholds set out elsewhere (e.g. ERA Guidelines). The thresholds are either highly mechanistic (price caps) or heavily reliant on trader expectations, with limited guidance on how these expectations are documented in submissions made to AEMO's market systems and supported with further information in compliant participant trading systems.

There is no single section within the rules (e.g. in Section 2.12-16) setting out what constitutes 'improper' energy trading conduct with the purpose or effect of exercising market power. Current rules governing market power mitigation-related obligations for participants are instead embedded within sections describing the roles of: the ERA (e.g. 2.13.2 and 2.16.9); AEMO, (e.g. 2.13A); or in sections on the operations of each specific market – e.g. 6.6 for STEM, 7A.2 for balancing and 7B.2 for LFAS.

The current rules frame ex-ante participant obligations indirectly in terms of ex-post market monitoring by the ERA (e.g. 2.16.9) and ex-post provision of information by market participants (e.g.

2.13.12). The direct ex-ante obligations are set out separately for each of the three relevant markets (e.g. 7A2.17).

There do not appear to be ex-ante obligations, across the relevant markets, for market participants to establish systems and processes to comply with and prevent breaches of the relevant market power mitigation rules, to report on and explain any breaches, or to provide a full suite of contemporaneous information in the event a formal investigation is triggered (e.g. under 2.16.9G). Instead, the obligation to establish monitoring systems and processes rests with the ERA, with support from AEMO, not with the participants.

The ERA guideline for balancing market offers is a significant move toward setting out expectations of market participant behaviour, ex ante. The introduction of the co-optimised RTM for energy and ESS in 2022 means this guideline needs to be extended from real-time energy to apply also to the STEM and ESS.

The proposed amendments to the SRMC offer rules would be a significant improvement compared with current arrangements. It is, however, unlikely they can significantly reduce the current level of regulatory uncertainty under more dynamic trading conditions, following the changes to gate closure rules and the growing impacts of the energy transformation.

3.3.7 Contrast with standard regulatory framework approaches in other sectors or matters

The current architecture of the rules for market power mitigation does not create obligations directly on market participants not to exercise market power. Similarly, it does not impose obligations on market participants to monitor their own compliance with trading conduct obligations and to report any breaches to the ERA for potential further investigation. This is inconsistent with best practice regulatory design, due to the absence of ex-ante obligations on the regulated entities, and reliance on ex-post activities such as investigations.

A simplified outline of a standard regulatory architecture, with a strong emphasis on ex-ante information disclosure and behavioural obligations is summarised in Section 2.1.:

The standard approach summarised earlier is broadly like regulatory approaches applied in the WEM, for example in the Generator Performance Standards, and elsewhere such as in national greenhouse gas emissions reporting and under proposals for critical infrastructure cyber security regulation by the Australian government.

3.4 Problem definition summary

A summary of the problem definition with respect to the current market power mitigation rules is set out in the table below. Our overall assessment is that the present market power mitigation regime will not achieve the proposed intermediate policy objectives.

Intermediate policy objectives	Problem
Trading behaviour constrained but efficient dynamic competition is supported	Anti-competitive behaviour may not be effectively constrained under the new market design, while dynamic pro-competitive behaviour, enabled by the new market design, may be deterred due to regulatory uncertainty.
Market participants directly responsible for ensuring compliance and reporting breaches	Market participants currently have no direct market power mitigation compliance responsibilities, or self-reporting obligations, and may therefore be less informed as to their trading conduct obligations.
Exercise of market power is deterred	Weaker than otherwise due to the previous two points, as well as the lengthy delay between a participant engaging in illegal conduct and remedies being delivered.
Proportionality and performance evaluation	Limited transparency and available timely information make performance evaluation challenging and costly.

As a result of not achieving the intermediate policy objectives, the proposed principal policy objectives are unlikely to be achieved.

- There are increasing risks that, over the medium to long term, market wide prices may not more-or-less equal efficient supply costs or reflect cost trends, consistent with the long-term interests of consumers.
- Investors considering market expansion, or entry, may not have a reasonable expectation their investments are protected from unfair competition in the relevant markets in a timely and effective manner.
- The regulatory burden of market power mitigation arrangements may not be proportionate to the cost of the risks from the exercise of market power. A significant portion of the potential benefits from improved competition and efficiency under the new market arrangements are likely to be foregone.

The architecture of the present market power mitigation rules does not provide adequate ex-ante guidance and supporting information processes on what constitutes a safe trading envelope, within which participants may vigorously compete without breaching prohibitions on the exercise of market power. This is very likely to result in inefficient outcomes that are contrary to the objective of constraining anti-competitive behaviour, while at the same time discouraging more dynamic and active trading, with associated efficiency benefits.

This architecture may also reduce the likelihood that any improper exercise of market power is detected and reported to the ERA. Once reported, there may be insufficient information recorded in AEMO market systems and compliant participant trading systems to facilitate an efficient and timely investigation by the ERA. The reliance on lengthy, complex ex-post investigations weakens the deterrence value of the mitigation regime and weakens confidence on the part of investors that protection from unfair competition is timely.

Even with a proposed set of amendments clarifying their meaning and application, the SRMC offer rules no longer appear fit for purpose. They do not provide sufficient regulatory certainty, ex-ante, under more dynamic market conditions, or where fixed costs are not fully captured through reserve capacity payments. While SRMC offer rules apply to the LFAS market, no investigations of their application in that market appear to have been conducted. The Vinalco investigation outcome (where the services supplied under dispatch instructions were more akin to contingency reserve or a dispatch support service than energy provision) suggests that, even as amended, they are likely to be very challenging to apply to the new ESS.

The SRMC offer rules focus on the expectations of participants. This contrasts with a broader trend toward market power tests that also consider the effect of market power on competitors and market outcomes and whether similar market outcomes would occur in the absence of market power being exercised (counterfactual testing).

To avoid becoming significantly less effective, applying the SRMC offer rules through ex-post investigations is likely to become increasingly onerous and challenging, and deter participants from responding to changes in market conditions. This outcome would not be consistent with the proportionality objective.

The problem definition is consistent with retaining many important aspects of the existing market power mitigation arrangements and supporting processes, as outlined in the following section. The main ex-ante components and analytical methods of the current market power mitigation arrangements would be retained under the proposals.

4. Change proposals

4.1 Introduction

This section sets out our proposals for changes to the market power mitigation framework. The proposals seek to tackle the shortcomings with current arrangements, as set out in the previous section. Most of the section is concerned with changes to ex-ante guidance. There is also a brief discussion of the implication for ex-post investigative processes undertaken by the ERA, in response to an alleged breach of the market power mitigation framework.

4.2 Overall approach to market power mitigation

Before discussing the proposals in detail, it is useful to set out the key components of the proposed changes.

- 1) **Clear and direct participant compliance obligations.** Market power mitigation compliance obligations would be applied directly on market participants, instead of indirectly via obligations on the ERA and AEMO. The obligations would carry over most aspects of the existing market power mitigation obligations (e.g. requirements to offer and trading conduct obligations), but with further amendments, including information disclosure and compliance reporting obligations. This addresses the absence of direct compliance obligations under the current regime.
- 2) **Reduced reliance on ex-post investigations.** Adopting best practice regulatory architecture, and improving regulatory certainty and effectiveness, by imposing ex-ante obligations on market participants to monitor and report on their own trading practices through auditable internal governance mechanisms and providing improved guidance as to acceptable and unacceptable trading conduct. This is intended to increase regulatory certainty and encourage efficiency benefits from more dynamic and responsive energy trading, under the new market arrangements and energy transformation. It seeks to address some of the disadvantages with the current reliance on a small number of lengthy and costly ex-post investigations with limited scope.
- 3) **Adopting an objective measure of market power.** A pivotal supplier test could be automated in the AEMO's surveillance systems and applied to the STEM and real time energy and ESS markets, for use by ERA in identifying participants to be subject to additional market power controls. This would ensure that market power mitigation obligations and market surveillance focus on the participants that meet a threshold defined by that test. Alongside other proposed measures, this is intended to address some of the identified shortcomings with the SRMC offer rules.
- 4) **Development of a 'safe trading' envelope,** defined by ex-ante ERA guidelines for participant offer construction and trading behaviour to improve the definition of safe and not safe trading conduct. Adapted for WEM conditions, the trading behaviour guideline could draw on the ACCC Guidelines on prohibited conduct in the NEM.³² This consists of a series of examples of conduct that is acceptable or not acceptable. For complex or high impact situations, market participants

³² ACCC. (2020).

would have an opportunity to engage with the ERA to clarify whether trading conduct is compliant. This could for example include market participants providing information on input costs, building on the information and methodologies developed under the present SRMC offer rules. The present SRMC offer rules would be replaced with a requirement to make offers consistent with those that the participant would have made in the absence of market power. The ERA's offer construction guidance would include how the ERA would determine reasonable offers in specific situations, including the principles laid out in EPWA's SRMC Directions Report.

- 5) **Using an effects test.** In line with recent changes to national competition law, the market power mitigation regime would be more concerned with avoiding the effects of the improper exercise of market power, and less concerned with the intentions or expectations of traders. Trading conduct rules would remain but thresholds for defining unacceptable conduct would be outcomes focused and could refer to hindering or preventing competition by the extraction of material super-normal profits via trading behaviour (e.g. technical or economic withholding of capacity not otherwise covered by reserve capacity obligations), or damaging competitors in ways that reflect the exercise of market power.
- 6) **Guidance on the definition of unacceptable exercise of market power.** While care needs to be taken to avoid misapplying tests from national competition law, the Rules should seek to define what constitutes an unacceptable exercise of market power, defined as trading conduct that changes prices (and margins) or competitor costs and revenues from levels that would have arisen in the absence of market power being exercised. This is consistent with the direction of competition frameworks in other markets in Australia and internationally. This is likely to be a matter that requires further work in consultation with the ERA.
- 7) **Changes to the processes for ex-post reviews of trading conduct.** The proposed adoption of a three-part test for the definition of the unacceptable exercise of market power implies that changes are necessary to the existing guidance and processes for ex-post reviews of trading conduct by the ERA. Significant process improvements can be applied including more certainty around the triggers for full investigation, and potentially earlier and greater disclosure of the matters being contested in ERA investigations. This would improve the transparency and effectiveness of the revised market power mitigation framework.
- 8) **Market power mitigation scheme clearly articulated in the Rules.** To improve clarity and consistency, the compliance obligations would be set out in a single coherent section in the Rules. This addresses a problem in the architecture of the current rules, where there are separate and specific requirements for each of the three relevant markets (sometimes with links to RCM arrangements). The present Rules architecture reduces clarity on how the overall market power mitigation regime operates across all relevant markets.

The proposed arrangements entail an increased regulatory effort for market participants, the ERA and possibly AEMO. However, our expectation is that these costs are more than outweighed by the improved opportunities for market participants to respond to more dynamic trading conditions and compete vigorously. There are also likely to be significant avoided costs from lengthy ex-post investigations, and savings from setting price caps less frequently. In addition, the proposed arrangements can be graduated so that for example market participants that seldom meet the pivotal supplier test, and which are unlikely to be active energy traders (for example a single small to medium renewable energy facility), would not bear a regulatory burden.

Figure 3 below summarises the proposed market power mitigation arrangements to be discussed in the following sections.

Figure 3: Overview of proposed market power mitigation arrangements

	Trading conduct obligations	Market power test	ERA guidelines
Applied to all participants Price limits	a. General obligations	Applied according to	Monitoring and reporting protocol
	b. Specific obligations Applied to participants identified by	1. Pivotal supplier test	
Voluntary agreement between participants and ERA	c. Reference trading parameters	2. Safe trading envelope test Defined by	Trading behaviour guideline Offer construction guideline
		3. Effects test	

New trading conduct obligations would be applied to all participants. Specific obligations would be applied to participants identified by a new pivotal supplier test, which itself forms part of a new three-part market power test. Reference trading parameters could be developed by way of voluntary agreement between participants and ERA. Trading obligations would be framed around a new three-part market power test, with the first threshold being a pivotal supplier test. ERA guidance on trading behaviour and offer construction would jointly define a safe trading envelope test. The final market power test is an effects test. There would be consequential changes to ERA guidelines.

In the sections below, we set out our recommended approach under the following six areas:

- 1) Trading conduct obligations for market participants;
- 2) ERA guidance on trading conduct (including offer construction with 'reasonable costs', and prohibited and acceptable trading behaviour);
- 3) Definition of a safe trading envelope;
- 4) A three-part market power test;
- 5) Changes to processes for ex-post trading conduct investigations; and
- 6) Energy and ESS price limits.

4.3 Trading conduct obligations

Trading conduct obligations require market participants to act in a certain way when trading in energy markets.

EPWA's SRMC Directions Report noted that the relevant consideration for efficient market outcomes is that participants should not exploit market power to raise prices above competitive levels. This approach to setting expectations for market participants holding market power is used in many

jurisdictions³³. Similarly, best practice regulatory designs increasingly include a framework for self-monitoring and compliance, requiring suppliers with market power to put in place internal controls to mitigate inappropriate market power exercise.

We recommend that overall trading conduct obligations for participants are included in Chapter 2 of the WEM Rules, with three key components:

1. General trading conduct obligations applicable to all participants (amending the existing good faith offer rules);
2. Submission information obligations for holders of market power; and
3. Internal controls for holders of market power.

4.3.1 General trading conduct obligations

General trading conduct obligations on all participants provide for a base level of conduct for all participants, whether or not they have market power:

- Participants must not engage in conduct that has the purpose, effect, or likely effect, of preventing or hindering competition.³⁴
- Participants must not take actions which are misleading or deceptive.
- Where a market participant makes a STEM submission or RTM submission, that submission must be consistent with the submission that the participant would have made if no participant were pivotal (see section 4.6.1) at the relevant time or location.

These are analogous to the good faith offer requirements in the current WEM rules. The requirement to make submissions as if no participant were pivotal should supersede explicit requirements to 'offer at the participant's reasonable expectation of SRMC.'

4.3.2 Submission information obligations

Information retention requirements in the new chapter 7 are designed to ensure that ex-post review has access to records of why participants changes their submissions, and the reasons for any differences from standing data, but do not include require participants to keep records of the underlying rationale for the values included in submissions. They are currently drafted to apply to all participants but could reasonably be relaxed to apply only to those with market power.

We recommend that where a participant is identified as pivotal by the ERA (see section 4.6.1), it be required to:

- Keep records of the underlying rationale for any submissions used in a Pre-Dispatch Schedule (48 hours ahead of real-time), including the method by which it determined its submissions and any

³³ The New Zealand Electricity Authority posed the question as "when consumers are reliant on one or a few suppliers to meet their demand, does the behaviour of these suppliers support the long-term benefit of consumers?", and recently proposed to adopt a requirement that participant offers must be consistent with those that they would have made in the absence of market power at that time and location.

³⁴ See discussion under section 4.6.3 on the effects test.

assumptions it made as input into that method (such as expected run time, fuel cost, load forecast, and presence or absence of congestion).

- Include information in revised submissions (similar to that captured in NEM rebidding) about the reason for revision:
 - The event which prompted the resubmission (which may be the release of a new pre-dispatch schedule);
 - If a technical limitation of the facility, a brief, verifiable and specific explanation of the condition;
 - The time the event occurred; and
 - The time the participant became aware of the event.

This information will support ex-post review, both internally by the participant and externally by the ERA.

Participants should be able to show how and why they have constructed their market submissions, and we would expect participants to maintain a consistent approach to the methodology for constructing their offers and be able to demonstrate it to the regulator if asked.

Restricting record keeping requirements for pivotal participants to submissions that apply in the pre-dispatch timeframe ensures that records are not required to be continuously updated in timeframes where key market forecasts (e.g. load, intermittent generation, some outages) may be significantly less certain. In practice, because the relevant consideration is not when the submission was made but when it was used as input to market processes, participants who regularly have market power may choose to keep records for all submissions, particularly where doing so forms part of their internal governance processes. Others (those who rarely have market power) may choose to keep records for internal purposes.

The ERA may provide guidance on the types of records that it expects participants to keep, including the type of evidence it may wish participants to provide in relation to different types of event.

4.3.3 Internal control obligations

In the current WEM, participants have obligations that are intended to mitigate the potential for market power exercise, but the responsibility for determining whether they have complied sits fully with the ERA (supported by AEMO).

We recommend that the new WEM include requirements for suppliers with market power to put in place internal controls to mitigate inappropriate market power exercise. Specifically, we recommend that:

- The rules set out high-level compliance obligations for participants who are regularly pivotal (as determined by the ERA) to:
 - Establish internal rules, systems, and processes to avoid the exercise of market power, such as trader training and resubmission approval reviews.
 - Establish governance processes and data systems necessary to identify and test for improper exercise of market power, including reporting up to senior executive or board level.

- Certify to the ERA that they have established appropriate internal controls.
- Report any identified non-compliance to the ERA.
- Pivotal participants can optionally:
 - Seek ERA pre-approval for the methodology used to determine submission prices and quantities, potentially including key input parameters or even reference price bands within which it expects to offer the facility.
 - Seek ERA input on contracts that will affect offer pricing (such as fuel supply and transport) before they are signed
 - Proactively provide submission rationale to the ERA on an ongoing basis.
- The ERA can impose penalties on pivotal participants who do not implement internal controls.
- Participants not meeting the threshold can still choose to have controls in place.

As part of new WEM implementation, market participants are likely to be implementing new or significantly changed energy trading risk management governance, procedures, platforms, internal reporting, and data systems. These market power mitigation processes should be able to be accommodated in such systems.

These measures increase transparency for the ERA and contribute to forming the safe trading envelope discussed in section 4.4.2.

4.4 ERA guidance on trading conduct

The trading conduct obligations discussed in section 4.3 will oblige market participants to offer as they would in the absence of market power. While the rules will not explicitly set out detailed definitions of reasonable costs, it is still necessary for the market as a whole to have a clear view on what reasonable costs are. This means that the ERA will need to document and publish considerations that were previously internal to its ex-post monitoring processes. ERA will need to provide guidance in two aspects:

- Offer construction
- Trading behaviour

In developing these guidelines, ERA will be codifying processes that it will need to perform its functions under the new rules, including in assessing ESS market outcomes to determine whether they are consistent with efficient operation, and to consider whether market outcomes are consistent.

4.4.1 Offer construction guideline

As noted in section 4.3.1, while including an explicit SRMC offer requirement in the rules is problematic, the concept is well accepted as an appropriate benchmark for competitive market outcomes, although definitions of specific cost components that are reasonable included is constantly in flux. Instead of entrenching a specific definition in the rules, ERA guidance can provide a clearer and more descriptive approach to how it may apply to the WEM.

EPWA's SRMC Directions Report considered that a reasonable definition of SRMC should include "those costs that a supplier without market power would include in its profit-maximising offer", and that a participant should be able to include all of its non-fixed costs in its offers. The ERA's current Balancing Submission Guideline³⁵ recognises this with reference to the 'average variable cost', which includes start-up costs. We agree that:

- The relevant costs are those which a supplier without market power would include in a profit maximising offer.
- It is reasonable that such an offer would generally include all costs which could have been avoided by not running.

The SRMC Directions Report noted the difficulty of including a list of specific cost components in the rules, given that the short run costs of each generator depend on the circumstances in the market at the time, and that fuel prices and other parameters in the WEM change over time. The rules should include explicit acknowledgment that participants can reasonably include all variable costs (such as start-up costs, enablement losses, and opportunity costs), but we agree that it is appropriate for the Rules to omit specific definitions of cost components, noting that debates over which specific costs are fully or partially variable continue to evolve in electricity markets around the world.

Nevertheless, it is reasonable for the ERA to provide more guidance outside the rules, where it can be reviewed, consulted on, and amended from time to time to reflect evolving national and international practice. Every day, participants trading in the electricity markets have to determine market submissions that account for and balance all the relevant considerations. It is reasonable to have guidance from the regulator ex-ante so any differences in understanding can be identified and dealt with ahead of any problematic occurrence.

In our view, offer construction guidelines should include sufficient detail for a participant or potential investor to understand how the ERA would determine reasonable offers in specific situations, which is more detail than is included in the current Balancing Submission Guideline. Detailed guidance that sets out what the ERA would expect in reasonable offers provides reciprocal transparency to market participants, who will be making more information available to the ERA on request, and may be voluntarily providing additional information ex-ante.

The guideline would ideally cover:

- Reasonable cost components in various situations:
 - The core of a reasonable energy offer price remains the variable costs of supply, e.g.:
 - For thermal generators: fuel value* expected heat rate.³⁶
 - For energy storage: expected cost to charge (or for bids, the expected price received for discharging), adjusted for round trip efficiency.

³⁵ ERA. (2019b).

³⁶ We use the term "value" instead of "price" because the spot gas price corresponding to a given electricity trading interval may not reflect the value of that gas time shifted using for example the Tubridgi and Mondarra gas storage facilities and linepack.

- For intermittent renewable generators: expected value of foregone renewable electricity certificates.
- Variable operating and maintenance costs.
- Guidance on relevant fuel value, recognising the source of that fuel. While some participants may be able to purchase some quantity of fuel at short notice at a notional spot price, many purchase fuel on long-term contracts as required by Reserve Capacity Mechanism processes. While contract prices should not automatically be assumed efficient (otherwise participants could impose costs of poor contracting decisions onto customers), they may differ substantially from spot prices, and take-or-pay considerations may give rise to opportunity costs to generate or not generate.
- Circumstances in which energy offers would reasonably account for opportunity cost of using fuel for electricity generation rather than another use, and for the opportunity cost of using the fuel (or generating) now vs. later.
- Approach to inclusion of maintenance costs, with the expectation that maintenance activity that is tied to running hours would reasonably be included.
- Circumstances in which energy offers would reasonably include start-up costs, amortised over the participant's expectation of run time.
- That ESS offers can account for any enablement losses recovered over the participant's expected ESS provision.
- Circumstances in which STEM and RTM offers would reasonably include allowance for uncertainty of things like:
 - Load forecast error;
 - Output of intermittent generation (particularly including rooftop solar PV);
 - Length of run for peaking and mid-merit facilities (which may increasingly include formerly baseload coal facilities during the middle of the day);
 - The possibility of energy output being constrained; and
 - Projected charge/discharge prices paid/received by storage facilities.

based on information reasonably available to the participant, including AEMO market schedules.
- That technical parameters (ramping etc) would reflect the actual capability of the unit and would usually be expected to be consistent with standing data.
- Examples, with example data, showing reasonable offer construction for different kinds of facilities, including baseload, mid-merit, peaking, renewable (with near-zero marginal cost), and storage facilities.
- Start-up cost metrics for different technology types.

Such a guideline would contribute to clear ex-ante understanding of acceptable market participation.

We note that under the new rules, the ERA will monitor ESS outcomes in the RTM so that it can trigger the SESSM where market outcomes are not consistent with efficient operation. The ERA will need to develop methodologies and tools to enable it to carry out this function including to inform its view of

what efficient ESS market outcomes would be. Given that ERA will need to have a view on efficient ESS market outcomes, publishing a benchmark 'efficient cost' would provide additional transparency to participants on the ERA's expectations. The benchmark cost could be updated after each biennial expression of interest processes for new entrants (under new section 3.15B), or more frequently if market conditions change. Care would need to be taken to avoid or minimise unintended effects from the publication of a point in time price, perhaps by referring to an indicative band, or a trend toward a long term average cost above a given level.

4.4.2 Trading behaviour guideline

To increase regulatory certainty and effective compliance, a trading behaviour guideline should be developed and would be applicable to the STEM and RTM. This should draw on development of similar guidance in the NEM, although this would need to be subject to significant modification for the WEM market design.

The AER's *Rebidding and technical parameters guideline*³⁷ is likely to be useful, especially in relation to a series of issues arising from 5-minute dispatch and 30-minute settlement. It is also useful in identifying the information capture capabilities of AEMO market systems for the purpose of trading conduct reporting and surveillance. These capabilities could be adapted for WEM conditions by AEMO.

To give effect to the AER guideline, AEMO market systems require market participants to report a set of information for each instance of rebidding. This includes identifying the time the event occurred, and when the event was registered. This ties in with the prohibition on delaying rebids. Most importantly, traders must provide a rebid reason for the change, for example a revised forecast produced by AEMO. Market participants must also prepare contemporaneous records to substantiate and verify the reason for a rebid made in a defined 'late bidding period'. In addition to the timing, the records must refer to the material conditions and circumstances giving rise to the rebid. Section 4.3.2 sets out our recommendations in this regard for the WEM.

The proposed WEM trading behaviour guideline could also usefully draw on section 4 of Guidelines issued by the ACCC.³⁸ This extends the content in the AER guideline on bidding and rebidding. It clearly states prohibited conduct (section 4.2).

It also develops a series of examples of trading conduct in spot markets, and whether the conduct would comply or not comply with the relevant trading conduct rules. Some of these examples could be applied in the WEM. Other examples cover behaviour that may be compliant in an energy only market but would be non-compliant in the WEM due to the presence of capacity payments. Other examples could be constructed for the WEM. The examples are summarised in Table 1.

³⁷ AER. (2019, November 27). *Rebidding and Technical Parameters Guideline*.

³⁸ ACCC. (2020). *Guidelines on Part XICA-Prohibited conduct in the energy market*

Table 1: Trading conduct examples from ACCC guideline

Example #	Summary	Relevant in WEM?
23	Late rebid well after change of circumstances adduced (contravention)	Yes
24	Rebidding to take advantage of higher prices (contravention)	Yes, though WEM contracts market is different from NEM contracts market
25	Discretionary maintenance during periods of high demand (contravention)	Unlikely, as participant would face capacity refunds
26	Required maintenance during periods of high demand (no contravention)	Unlikely, as participant would face capacity refunds
27	Utilising a reasonable portfolio optimisation strategy (no contravention)	Yes
28	Utilising a reasonable portfolio optimisation strategy (no contravention)	Yes, but may be contravention when holding capacity credits in WEM
29	Rebidding in response to an unplanned outage (no contravention)	Yes, but original offer may be contravention when holding capacity credits in WEM
30	Late rebidding to manipulate prices (contravention)	Yes
31	False technical withdrawal of capacity (contravention)	Unlikely, as participant would face capacity refunds

Additional examples of contravention specific to the WEM context could include:

- Overestimating facility capability in RTM submissions to avoid reserve capacity refunds
- Late rebidding to manipulate uplift payments
- Using a controllable component of a Semi-Scheduled Facility to respond to prices without adjusting RTM submissions

4.5 Safe trading envelope

In order to unlock the efficiency improvements inherent in the new market design, participants must be able to confidently adjust their market submissions in response to changing market conditions.

With this in mind, we propose that the WEM Rules include the concept of a 'safe trading envelope', where, provided participants are operating in a particular way, they are deemed to be not exploiting market power, and an ERA investigation will not be triggered.

A safe trading envelope would apply with reference to the ERA guidelines discussed in section 4.4, and the rules would provide that entities operating within the defined safe trading envelope are presumptively compliant with their trading conduct obligations. The ERA's Trading Behaviour Guidelines would provide the delineation between permitted and prohibited trading conduct. The ERA's Offer Construction Guidelines would define an acceptable approach to considering and including variable cost components in market submissions. Participants who do not construct their offers in accordance with the Offer Construction Guideline may still be found to not have inappropriately exercised market power, but would not be able to claim presumptive compliance by being within the safe trading envelope.

A safe trading envelope could also include reference to the outcome of any more specific guidance from the ERA in relation to the definition of efficient costs and associated trading conduct for a particular set of circumstances and a specific market participant. Examples might be the allocation of start-up and shut down costs over multiple trading intervals for a large generator that is cycling its output on a regular basis. It might also include the allocation of costs between energy and ESS services for a major generator that generates a significant share of its revenues during minimum demand periods from the provision of ESS rather than energy. This is discussed further under 'individual dimensions' below.

Consistent with proportionality and ongoing performance evaluation approaches, the detailed definition of a safe trading envelope should be expected to undergo evolution, drawing on experience, ongoing evaluation, and consultation between the ERA and market participants. Any initial shortcomings, or omissions should be remedied in a timely manner.

4.5.1 Common and individual dimensions of a safe trading envelope

A safe trading envelope could have common and individual dimensions:

1. Common dimensions, applicable generally to all participants with market power, including that:
 - a. The participant has made offers into the relevant market for the full capacity available from each of its Scheduled Facilities (over and above its reserve capacity obligations).
 - b. The participant has revised submissions as soon as reasonably possible after the event that caused the need for the resubmission (as recorded in submission data).
 - c. Where AEMO's pre-dispatch schedule has shown a facility as cleared for energy, and that Facility is identified in RTM submissions as 'Available', the participant has revised its submissions to identify that the Facility will be 'In-Service'.
 - d. Offer prices and quantities for the period in question are consistent with offers for the same Facility in similar periods, particularly in similar periods where the participant is not a pivotal supplier.
 - e. Offer prices for the Facility are consistent with offer prices for similar Facilities.
 - f. Participant submission activity is consistent with the Trading Behaviour Guideline.
2. Individual dimensions, applying to the operations of a particular participant with market power, such as:

- a. The participant has certified to the ERA that it has established appropriate internal controls (see section 4.3.3).
- b. The ERA is satisfied that the participant's internal controls are appropriate and are being used. ERA could confirm this itself, engage an independent reviewer, or rely on a review conducted as part of the participant's internal governance processes – as long as it was carried out by an independent party.
- c. That the participant's submissions have complied with any reference trading parameters approved by the ERA (see below).

A participant would need to be operating within **all** dimensions to be within the safe trading envelope. For example, a participant may have constructed offers according to the Offer Construction Guideline, but if it has not defined and applied internal controls, it will be outside the safe trading envelope, and may be subject to further investigation.

Through the market surveillance data catalogue, and the submission information recorded by participants and available on request, the ERA would have all the information it needs to identify whether a participant is operating inside the safe trading envelope. The onus to show that a participant is outside the safe trading envelope would rest with the ERA.

Operating inside all dimensions of the safe trading envelope would avoid further ERA investigation of market power exercise. Operating outside one or more dimensions of the safe trading envelope would not necessarily mean that a participant was exercising market power inappropriately, but the ERA could choose to investigate further.

4.5.2 Reference trading parameters

While the common dimensions should be sufficient in most cases, participants may want to seek additional clarity on expectations for a particular pivotal facility. In such cases, the participant could opt to seek ERA's approval of reference parameters for some aspects of offer construction for that facility (item 2c above). This determination would function as an ex-ante approval for that aspect of offer construction, analogous to the way a tax ruling provides clarity of interpretation for commercial operation.

More work is needed on which parameters could be reasonably approved in advance, but could potentially include:

- A reference trading band for a facility determined according to the offer construction guideline (setting a band wide enough to cover most reasonable operating conditions);
- Reference start-up costs; or
- Reference fuel costs (recognising that efficient long-term contract prices may be a relevant consideration).

The determination process would need to involve participants providing cost information to the ERA in advance. The resulting parameters would need to be accepted by both parties. Neither the participant nor ERA would be forced to agree. Parameters could be reviewed periodically, or adjustment requested by either party following a change to the participant's circumstances (such as a facility upgrade or a new fuel contract).

Offering in accordance with the reference parameters (for example being inside the reference trading band or using the reference start-up cost in offer construction) would be necessary but not sufficient to remain inside the safe trading envelope – the participant could still be outside the envelope if one of the other dimensions was breached, or if market circumstances changed and the participant did not respond.

Determining appropriate parameters may be challenging, but it would contribute to certainty for participant operations and ERA monitoring. We recommend that EPWA and the ERA explore this area further, to determine how this concept can be incorporated into the rules, including potential methods for cost recovery of ERA effort in agreeing tailored parameters for a specific participant.

4.6 Market power tests

In order to support a balanced and transparent approach to market power monitoring, investigation, and enforcement, we propose that the ERA develop and use a three-part test to identify undesirable market power exercise:

1. A pivotal supplier test, to identify the presence of market power.
2. A safe trading envelope test, to check whether participant actions complied with ERA guidance and agreed controls.
3. An effects test, to determine whether market outcomes have been affected.

The three-part test would be defined ex-ante and thereby contribute to regulatory certainty. Each stage is discussed in the following sub-section. Section 4.7 discusses the application of the three-part test in ERA processes for initiating ex-post investigations.

Candidates for the tests can be identified by the ERA, through its regular market monitoring, by participants, through their internal compliance programmes, or by anyone else alleging potential inappropriate market power exercise.

Effective operation of the market power monitoring and compliance regime is part of the Coordinator of Energy's new review function under rule 2.16.13A and 2.16.13B and will include monitoring the effectiveness of the market power mitigation regime.

4.6.1 Pivotal supplier test

The first step is to determine whether a participant has market power, as a screening test for further investigation or ex-ante measures. A pivotal supplier test is an objective standard by which a market participant can be said to have market power. It is more specific than a market concentration test, and effectively tests whether there would still be surplus capacity if a participant was to withdraw all of its capacity.

A participant is a pivotal supplier if the total demand for a service could not be met if the participant did not submit offers for any or all of its facilities. The participant therefore has the ability to unilaterally raise prices above competitive levels (or depress them below competitive levels)³⁹.

The pivotal supplier test would ideally be automated in AEMO market systems (as it is in markets in North America). For each relevant service (STEM energy, RTM energy, and each FCESS), in each Trading Interval or Dispatch Interval, calculate a Supplier Factor for each participant i , giving the proportion of the demand for the service that could be met without that participant (by all participants p). Where the factor is less than 1, the supplier is pivotal.

Equation 1: pivotal supplier calculation

$$\text{SupplierFactor}_i = \frac{(\sum_p \text{Supply}_p) - \text{Supply}_i}{\text{Demand}}$$

Where transmission congestion occurs, there may be more than one applicable energy service. In that case the relevant set of participants is those who have facilities that can relieve the relevant binding constraint. For example, if only one participant is capable of serving load in a particular location due to a network constraint, that participant will be the only one who can relieve the constraint, and will be a pivotal supplier.

A participant may not be pivotal in the forecast but can still be pivotal once dispatched. For example, the owner of a facility providing RoCoF control service may be pivotal for the period it would take for another facility to start up and commence providing the service.

The ERA would regularly (e.g. quarterly) review pivotal supplier data as calculated for the STEM and RTM, to track how often each participant is a pivotal supplier. Applying market power mitigations to a participant who is pivotal in a single interval would be disproportionate, so the ERA would need to set a threshold for the proportion of pivotal intervals that trigger the application of the mitigation mechanisms and the safe trading envelope test. In setting a threshold, the ERA would need to consider the potential impact on market outcomes of a pivotal supplier exercising market power in that proportion of intervals.

The ERA analysed pivotal suppliers in the WEM in its review of market effectiveness in 2018/19, finding that Synergy is pivotal in the balancing market around 28% of the time⁴⁰. It is likely that other suppliers are also pivotal at times of high demand, and in the ESS markets. We recommend that EPWA and the ERA conduct further analysis of how often participants other than Synergy are pivotal, as this will inform the level at which the threshold should be set.

While some markets (such as New Zealand and ERCOT) use a single pivotal supplier test similar to that described above, some markets in North America use a 'three pivotal supplier' test, which determines whether demand could be served in the absence of the two largest suppliers plus the supplier being tested, and may restrict the consideration of other suppliers to those within a margin of the expected

³⁹ The short term return from manipulating STEM and RTM outcomes is muted by contract positions (a participant with market power who holds contracts for 90% of its supply can only affect its revenue for the remaining 10% of uncontracted volume), but over the long term, contract market outcomes will be influenced by STEM and RTM outcomes

⁴⁰ ERA (2020c), p51

clearing price. A three pivotal supplier test in the WEM would be overly stringent and could identify every participant as having market power. For simplicity, we recommend that the ERA uses a single pivotal supplier test at market start and consider extension to a two-supplier test later if the single supplier test has proven problematic.

If a participant is not a pivotal supplier, ERA would not need to investigate further.

4.6.2 Safe trading envelope test

The second step is to determine whether the participant has operated according to ex-ante definitions of acceptable trading behaviour at times when it has market power. This is a screening test to apply agreed ex-ante boundaries.

The ERA would compare participant activity to the various considerations defined in the safe trading envelope, including checking that trading conduct conforms with trading conduct obligations:

- Analysing submission data to check that:
 - The Participant has offered its full non-outage capacity.
 - Facilities switch from 'Available' to 'In-Service' when cleared in the pre-dispatch Schedule.
 - Offers are consistent between situations where the participant is pivotal and not pivotal and market conditions are similar.
 - Offers are similar to other similar facilities.
 - When there is a material change in circumstances, submission changes are made reasonably soon after the event.
- Asking for supporting evidence to show that rebidding was in line with other aspects of the Trading Behaviour Guideline.
- Asking for records of how the participant constructed its offers and confirming that it was in line with the Offer Construction Guideline.
- Reviewing compliance with the participant's internal compliance controls, seeking independent audit thereof, or reviewing independent audits conducted as part of the participant's internal governance.

Much of this step could also be automated, but the ERA will need to supplement automated data analysis with regular manual assessment to confirm whether the participant is inside or outside the safe trading envelope.

If a participant is conducting its trading activities within the safe trading envelope, ERA would not investigate further. If the ERA is concerned that activity within the envelope is problematic, it may seek to change aspects of the safe trading envelope or introduce new guidance.

4.6.3 Effects test

Where a participant has passed through the two screening steps (it has market power, and has not operated within the ex-ante safe trading envelope), then the ERA would investigate the effect of the participant's activity on market outcomes. While the proposed trading conduct obligations do refer to

participant intent, in line with the goal of providing clarity, we recommend an outcomes-based test rather than a test of intent.

Although market power can exist and be exercised in a single trading interval, isolated instances of market power exercise generally do not have material effect on market outcomes. The ERA should focus on situations where participant activities result in sustained and substantial hindrance to, or prevention of, competitive market outcomes.⁴¹

To determine whether a breach of an effects test has occurred, the ERA will need to compare market outcomes to a counterfactual scenario in which there was no market power exercise:

- For intervals where there is rebidding without a material change in circumstances, a simple test may be whether market prices are lower or higher following rebidding:
 - If lower, that could indicate rebidding is pro-competitive (though regularly artificially depressing market prices can also be anti-competitive).
 - If higher, that could indicate (if sustained) the improper exercise of market power.
- For intervals where conditions change, higher prices may still be efficient, and the ERA will need to conduct analysis to determine, according to its offer construction guideline, what efficient offers for the relevant time periods would have looked like, and what market outcomes would have been in the presence of those offers.

While determining an appropriate counterfactual can be challenging, it is a core function of ex-post regulatory oversight. Counterfactual tests require access to data regarding plant availability, submissions during related or similar periods, and potentially participant offer construction methodologies.

Where the ERA identifies that the market power exercise had a substantial and sustained effect on market outcomes, it would require corrective actions and apply sanctions in accordance with the magnitude of the effects.

4.7 Changes to processes for ex-post trading conduct investigations

The previous section discussed the design of proposed new market power tests for use ex-ante, including in market monitoring systems. This section discusses the application of the proposed new market power tests, ex-post, in the context of ERC ex-post investigations into alleged misconduct.

⁴¹ Language used in the Competition and Consumer Act 2010 refers to a 'substantial lessening of competition', which is to be read to include references to 'preventing or hindering competition' (s4G). In the WEM, where market power is ever-present, market power mitigation measures are aimed at increasing the base level of competition rather than precluding a lessening of competition.

4.7.1 Three-part test to replace SRMC offer rules

The current process for ex-post investigation is set out in an ERA Market Procedure; *Monitoring Protocol*.⁴² The compliance risk assessment in the assessment phase addresses the threshold for undertaking an investigation. The critical threshold for initiating an investigation is whether offer prices exceeded SMRC (or incremental change in SRMC in relation to LFAS) and that behaviour related to market power.

The three-part market test and supporting arrangements recommended above would replace the current threshold for the ERA to initiate an ex-post investigation. It would address concerns with the current threshold by increasing certainty for all parties as to the conditions under which an ex-post investigation may be initiated by the ERA, following the assessment phase. The proposed new trading conduct obligations, applicable directly to market participants, address concerns about both over- and under-pricing by participants with market power.

It is therefore recommended that the requirement to offer at the participant's reasonable expectation of SRMC should be removed from the rules. Nevertheless, SRMC continues to be a useful benchmark for assessing pricing decisions, including changes in pricing decisions. This benchmark is consistent with economic theory, which holds that SRMC corresponds to the price which would be offered in a fully competitive market where no participant is able to exercise market power, and is the lowest sustainable price required to ensure the ongoing viability of cost-competitive market participants.

SRMC and related methodologies would continue to be applied in the offer construction guideline and elsewhere, as appropriate for the STEM and the RTM (both energy and ESS). The adoption of the proposed new approach to market power mitigation implies revisions will be required to the ERA's Market Procedure; *Monitoring Protocol*. In these revisions, the ERA would set out clear expectations on how it will monitor and investigate whether participant activity reflects non-exploitative market behaviour.

The pivotal supplier test indicates the potential frequency and impact of market power-related trading conduct on RTMs. Because it is an objective measure of market power, without the measurement difficulties associated with the SRMC offer rules, adoption of the pivotal supplier test should greatly simplify and expedite the assessment phase, prior to an ex-post investigation being launched.

The safe trading envelope test should enable clear conclusions to be drawn by the ERA in its pre investigation (or assessment) phases, as to whether the alleged breach involved conduct that was prohibited under the rules, as set out in offer construction and trading behaviour guidelines. The investigation would be supported by increased data and information capture from the proposed improvements to ex-ante information processes and systems. The provisions of the safe trading envelope, including the opportunity to develop reference trading parameters, may also provide an avenue for alleged exercises of market power to be addressed other than via a full ex-post investigation.

⁴² See summary in section 2.2.8.

The development of an effects test by the ERA is an opportunity to provide clearer guidance to market participants and others as to the materiality threshold for initiating an ERA investigation. This should improve the assessment phase of the current ERA market monitoring procedure by providing a clear market impact benchmark against which to compare the total costs of initiating an ex-post investigation, inclusive of risks arising from uncertainty over the eventual outcome. This also assists in assessing the benefits of deterrence associated with avoiding similar outcomes in the future. An effects test could be developed either as part of a revised ERA market monitoring procedure, or in other guidance.

In developing an effects test, the ERA may at its discretion wish to consider the possible spill over effects for related markets, in particular bilateral contract markets. This reflects the possibility that a motivation for exercising market power in STEM and RTM is to influence outcomes in long term bilateral contract markets.

4.7.2 Opportunity for earlier and greater disclosure of ERA investigations

In developing a new market monitoring procedure using a three-part test, the ERA may consider the opportunities and benefits from providing expanded and more timely disclosure to all WEM participants and stakeholders regarding its investigations, and prior to any reference to ERB. Improved disclosure is possible because the three tests, alongside the additional ex ante data support, should enable the ERA to publish more information regarding alleged breaches of market power mitigation rules, as the revised market monitoring and compliance framework reduces the concern that publication could pre-empt ERB decisions.

Breaches of the first two tests are more readily identifiable using objective criteria and evidence. It is also possible the scale of any adverse effects (under the effects test) may also be more readily measurable than under current arrangements. This is because outcomes under the alleged breaches may be compared with outcomes in the absence of pricing power (using the pivotal supplier test to identify when, and the offer construction guideline to construct counterfactual offers).

Earlier and more extensive publication of ERA investigation into alleged breaches of the market power mitigation rules could have significant benefits in terms of improving market understanding of the regime and the ERA's interpretation of that regime. This could increase confidence on the part of market participants that outcomes contrary to the objectives of that regime could persist for many years, until matters are finally resolved in an ERB decision.

4.8 Price limits

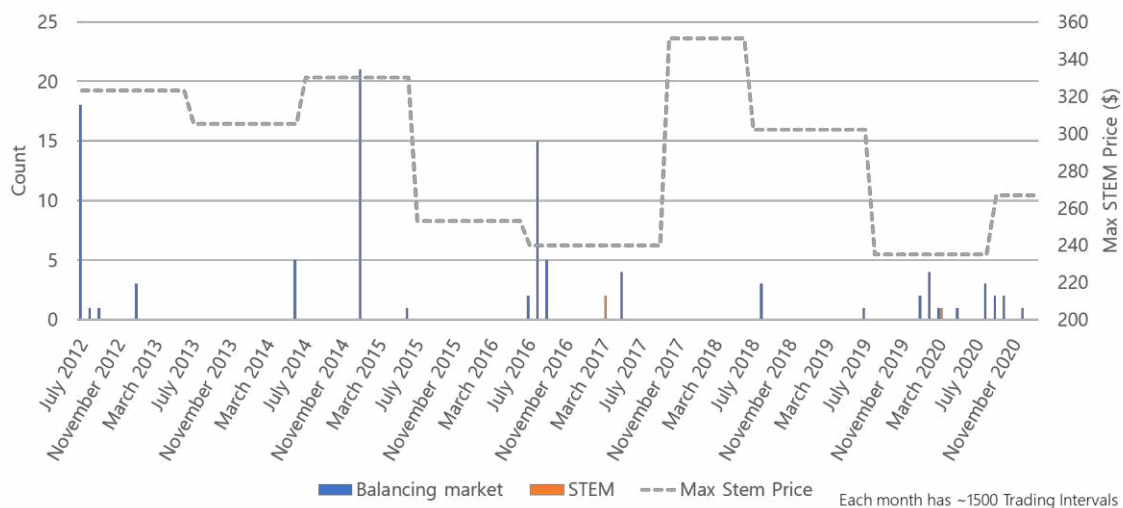
Price limits are a blunt instrument for market power mitigation, which can only ever be a backup to other market power mitigation mechanisms. Price limits alone cannot ensure that overall market outcomes are efficient, but price caps can provide a brake on transient price spikes and set a value to be used in case of scarcity.

4.8.1 Energy price limits

As noted in section 2.2.1, the WEM has two energy price caps. The Maximum STEM Price is the lower of the two and is based on the SRMC of a gas-fired peaker. The Maximum STEM Price in the WEM binds infrequently, and the number of intervals at the price cap has reduced over time. Before balancing market implementation in July 2012, the STEM clearing price exceeded the Maximum STEM price frequently in some years. Since balancing market start, the Maximum STEM price has been reached 96 times in the balancing market (0.06% of Trading Intervals), and 3 times in the STEM (0.002%). The balancing market price has never exceeded the Maximum STEM Price.

Figure 4 shows the number of 30-minute trading intervals with prices at the Maximum STEM Price in each month since Balancing Market Commencement.

Figure 4: Count of trading intervals with balancing price or STEM price equal to the Maximum STEM Price⁴³



In recent years, the level of the price cap is correlated with the number of intervals in which the price cap is hit, implying that the price cap may limit recovery of actual costs in those few intervals.

In view of the low number of intervals in which the price reaches the cap, we propose that the WEM remove the overhead involved in specifying two price caps, and instead use a single, fuel-independent price cap.

In a perfectly competitive market, price limits are not necessary – the market price will always represent an efficient exchange of value. In a workably competitive market, price caps are only required to reflect limits on the value of market activity. In energy-only electricity markets, this is usually the value of lost load (VOLL) or value of customer reliability (VCR) – a price at which it is more efficient to trigger involuntary load shedding than seek more supply. These extreme prices signal the need for new investment, by identifying a significant revenue opportunity for a new entrant to capture.

⁴³ Source: RBP analysis based on [AEMO data](#)

Capacity mechanisms reduce the need to allow high and volatile energy prices to signal the need for new entry. This is especially the case in an administered price regime like the WEM, where capacity revenue can be significantly higher than under an auction regime. In the WEM, scarcity in the energy market signals that either:

- The RCM has failed to ensure sufficient capacity is available. This should be addressed by adjusting capacity mechanism settings, not by providing an alternate mechanism to signal scarcity.
- Energy demand is outside the planning criterion. The planning criterion is a quantity analogous to the price represented by VOLL – it is the pre-defined level at which the benefit of encouraging more supply is outweighed by the cost of doing so.

In the WEM, the RCM is where scarcity is signalled. The energy market needs to allow recovery of running costs, so it remains reasonable to reflect the highest expected short run variable costs in the fleet in both the offer price cap and, subject to interactions of energy price with ESS price in some circumstances, the scarcity price⁴⁴. At the same time, the limited incidence of binding maximum prices indicates that the cap can be loosened somewhat, and with the other measures proposed above it is not necessary to frequently revisit and recalculate the price limits.

In line with a desire to reduce unnecessary processes, while ensuring the limit is set high enough to allow recovery of actual running costs, we recommend replacing the current approach (frequent calculation of SRMC for specific equipment according to a calculation specified in the rules) with a less mechanistic approach conducted less frequently as follows:

- The ERA determines the maximum energy price based on its estimate of the highest short run variable costs of facilities on the power system, plus a margin of say, 10%, and rounded up to the nearest \$100/MWh.
- The assessment acknowledges and includes the range of factors that can be accounted for in reasonable costs, as set out in offer construction guidelines, including the potential for recovering start-up costs over a very short timeframe.
- The ERA reviews the maximum energy price every three years, with the methodology to be published in a WEM Procedure.
- In between reviews:
 - the price could be indexed to a key fuel price input, but only changes where the fuel price has increased by at least 10% since the last time the maximum energy price was set.
 - Participants can submit evidence to the ERA that their variable costs have changed such that they are now higher than the maximum energy price, and the ERA can review the maximum energy price accordingly.

⁴⁴ When the system is nearing an energy shortage, energy prices may increase beyond the offered prices, where the FCESS price limit flows through to the energy price due to co-optimisation. This must be allowed to occur, as if the energy price is capped at less than the price that could be FCESS, it could result in a situation where participants would prefer to provide FCESS rather than energy, resulting in disorderly bidding that turns a potential ESS shortage into an actual energy shortage.

This aligns with the principles-based approach recently introduced for the Minimum STEM Price and reduces the need for regular reassessment.

Energy storage facilities are unlikely to represent the highest cost facility on the power system, as to do so would imply they are charging at times of extreme system peak demand.

4.8.2 ESS price limits

As for energy, ESS price limits are only a backstop to other market power mitigation measures. ESS offers should be subject to the same trading conduct obligations as energy, and participants have the option of asking ERA to approve reference trading parameters for FCESS provision.

While the RCM is designed to ensure sufficient *energy* capacity is available, it may not provide sufficient incentive for participants to build facilities that are capable of providing ESS. The SESSM can provide additional incentive for investment in ESS-capable facilities and provides a backup market power mitigation mechanism, but procuring new entry is not instant. A Real-Time FCESS market with no price cap or a price cap based on VOLL or VCR risks exposing consumers to extreme ESS pricing for the time it takes to run the SESSM and commission a new facility.

In our view, it is reasonable to set ESS price caps using a similar approach to energy price caps, recognising that at times ESS market clearing prices may need to be higher than the energy price limits to ensure participants can recoup costs of providing services.

Because Regulation and Contingency Reserve are co-optimised with energy, FCESS prices are linked with energy prices. At times of high demand, the marginal cost to provide ESS will be the opportunity cost of not generating energy. The maximum ESS price must therefore be at least enough to cover the maximum opportunity cost that could be present – the difference between the maximum energy price and the minimum energy price⁴⁵.

At times of low demand and low energy prices, FCESS prices will delink from energy prices, because the cost to provide ESS will no longer be the opportunity cost of not generating energy. Instead, ESS prices will be driven by the cost of running high-cost generation at a time of low prices. ESS price caps must be high enough to allow participants to recover these costs.

We recommend that the ERA determines maximum FCESS prices by considering these two factors. A high-level approach would be that:

- The maximum price is based on the higher of:
 - The maximum opportunity cost of providing raise ESS at times of high energy demand or lower ESS at times of low energy demand, being the maximum energy price less the minimum energy price; or
 - Amortised costs not recovered in the energy market for a representative facility starting up and running at minimum generation to provide raise ESS. For example, this could be derived as:

⁴⁵ This consideration is already in the gazetted rules.

Per-interval amortised start-up costs: Start cost divided by an estimate of expected run time for ESS-only service provision;
plus

Enablement losses: (the maximum energy offer price less the minimum energy offer price) multiplied by the minimum stable generation level;
the sum divided by

Maximum ESS capability: assuming that the facility would provide either RoCoF control service, or a combination of regulation and contingency reserve.

Plus a margin of say, 10%, and rounded up to the nearest \$100/MWh.

- The ERA reviews the maximum ESS price every three years, with the methodology to be published in a WEM Procedure. In between reviews, participants can submit evidence to the ERA that their costs have changed such that they are now higher than the maximum ESS price, and the ERA can review the maximum ESS price accordingly. The inclusion of the energy price limits would allow ESS prices to be indexed to fuel costs along with energy prices.

ESS price limits calculated in this way would be sufficient to cover the reasonable costs of energy storage facilities, as they do not face the same start-up costs or minimum running levels as other technologies.

Example calculation of maximum price for Regulation and Contingency Reserve (all values example only)

Reference facility: 40MW Open Cycle Gas Turbine

- Maximum energy price: \$500/MWh
- Minimum energy price: -\$1000/MWh
- Maximum opportunity cost: \$1500/MWh

- Start-up Cost: \$10,000
- Minimum stable generation level: 18MW
- Maximum reserve and regulation capability: 22MW
- Expected runtime: 1 hour
- Amortised start-up costs: \$10,000/hr
- Enablement losses: \$27,000/hr
- Start-up costs plus enablement losses, divided by remaining capability: \$1681.82/MWh

- Take higher of \$1500 and \$1681.82 = \$1681.82
- Add 10%: \$1850
- Round up to nearest \$100: \$1900/MWh

5. Other matters considered

This chapter briefly discusses other matters considered in developing the proposals discussed in the previous chapter. This is to document the consideration of other options and the risks from possible unintended consequences of proposed changes to market power mitigation arrangements.

5.1 Options noted but not actively explored

While this review considered a range of market power mitigation mechanisms implemented in other electricity markets for possible use in the WEM, some approaches to market power mitigation were not considered in scope. We did not consider, for example:

- Changes to contract market mechanisms, including the standard products Synergy is required to offer, or other market making approaches. We note that the required buy-sell spread for the standard products (20%, reduced to 15% for 2020) are significantly higher than required under other market making schemes, such as New Zealand (3%, mandatory and uncompensated⁴⁶) and Singapore (the lower of 2% or \$1/MWh, compensated⁴⁷).
- Separation of Synergy into multiple competing generator-retailers, either as different companies or as internal virtual portfolios.

We also deemed more severe regulatory interventions were not a feasible first step, including:

- A power for the ERA to retroactively change market prices (as used in New Zealand's Undesirable Trading Situation regime). With the changes to the WEM, the ERA has a graduated set of remedies it can apply, and if a participant is penalised, the proceeds will be distributed to affected participants.
- Requiring pivotal suppliers to use a single pre-calculated short-run-cost-based offer price as used in PJM and other North American markets. This is not workable in the WEM, given the large number of facilities expected to be caught by a pivotal supplier test, and the fact that the PJM offer calculations are based on centralised commitment while the WEM has single part offers where participants need to consider start-up costs and minimum running levels.

5.2 Consideration of possible unintended consequences

The proposed changes to market power mitigation mechanisms are not without risk. In particular:

- The very low marginal costs of renewable generation could collapse RTM prices, with infrequent running of more expensive non-renewable generation. If price caps (section 4.8) assumed too long a run time for such generation to recover start-up/shut down costs, some

⁴⁶ Electricity Authority Te Mana Hiko (2020).

⁴⁷ Energy Market Authority. (2019). Development of the Electricity Futures Market: Second Phase of the Futures Incentive Scheme.

facilities necessary for system security may not have reasonable opportunity to recover efficient costs. Price caps should allow recovery of cycling costs over short periods.

- If participants were to gain ERA approval of reference trading parameters (section 4.5.2) higher than reasonable costs, they could have opportunity to exercise market power and over-recover while being exempt from sanction. ERA will need to continue to review the appropriateness of any agreed parameters.
- If pivotal supplier thresholds for application of market power mitigation measures are set:
 - Too low, the compliance burden on small participants could outweigh the marginal benefits of mitigating their minimal market power.
 - Too high, key participants would not face an effective deterrent to misuse of market power.

The ERA can reach a view on the appropriate balance by conducting the additional pivotal supplier analysis discussed in section 4.6.1.

- The adoption of new terminology for market power tests reduces the ability to refer to legal precedent established around the previous terminology. Precedents developed in relation to the NEM may not be suitable for application in the WEM, requiring new judicial analysis where ERA decisions are appealed by participants. The precedent around previous WEM terminology is not extensive, so we do not consider this will be a major factor.

These aspects should be considered by the Coordinator of Energy in its regular review of market effectiveness under market rule 2.16.3A. There could be a scheduled review within say three years of the new arrangements coming into effect, but earlier identification of any unintended consequences should not be ruled out.

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About Sapere

Sapere is one of the largest expert consulting firms in Australasia, and a leader in the provision of independent economic, forensic accounting and public policy services. We provide independent expert testimony, strategic advisory services, data analytics and other advice to Australasia's private sector corporate clients, major law firms, government agencies, and regulatory bodies.

'Sapere' comes from Latin (to be wise) and the phrase 'sapere aude' (dare to be wise). The phrase is associated with German philosopher Immanuel Kant, who promoted the use of reason as a tool of thought; an approach that underpins all Sapere's practice groups.

We build and maintain effective relationships as demonstrated by the volume of repeat work. Many of our experts have held leadership and senior management positions and are experienced in navigating complex relationships in government, industry, and academic settings.

We adopt a collaborative approach to our work and routinely partner with specialist firms in other fields, such as social research, IT design and architecture, and survey design. This enables us to deliver a comprehensive product and to ensure value for money.

About Robinson Bowmaker Paul

Robinson Bowmaker Paul (RBP) is an energy market consulting firm, based in Wellington New Zealand. Our team is specialist and highly experienced in energy market design, operations, assurance, and intelligence.

We are **passionate** about delighting our clients. We deliver tailored, personalised solutions for our clients ensuring they have access to our most experienced staff.

We are **focused**. We are energy market specialists, from policy all the way through to operations.

We are **experienced**. Our team has been at the forefront of energy sector development and operations since the late 1990s - we not only understand the economic fundamentals underpinning the sector; we understand the operational details – the processes, the systems, and the risks – both regulatory and technical.

We are **inventive**. We bring together multiple disciplines to deliver unconventional solutions in engineering, information technology, risk management, economics, and operations research.

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