Australian Energy Market Commission

RULE CHANGE

DRAFT RULE DETERMINATION

Potential Generator Market Power in the NEM

Rule Proponent

Major Energy Users Inc.

Commissioners

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Spalding

7 June 2012

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For and on behalf of the Australian Energy Market Commission

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About the AEMC

The Council of Australian Governments (COAG), through its then Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005. In June 2011 COAG announced it would establish the new Standing Council on Energy and Resources (SCER) to replace the Ministerial Council on Energy. The AEMC has two principal functions. We make and amend the national electricity and gas rules, and we conduct independent reviews of the energy markets for the SCER.

Summary of draft rule determination

The Commission's draft determination

On 23 November 2010, the Major Energy Users' Inc. (MEU) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission) in relation to the potential exercise of market power by generators in the National Electricity Market (NEM).

In accordance with section 99 of the National Electricity Law (NEL), the Commission has made this draft rule determination in relation to the rule proposed by the MEU.

The Commission has determined not to make the proposed rule.

Reasons for the Commission's draft determination

The relevant problem under consideration in the MEU's rule change request is the exercise of 'substantial market power' by generators in the NEM, where that market power is exercised with the purpose or effect of increasing wholesale spot and contract prices.

Based on the AEMC's analysis, consultant analysis and stakeholder feedback to the consultation paper, directions paper, public forum and technical paper, there is insufficient evidence of the existence of substantial market power to warrant the introduction of a rule that restricts the dispatch offers of generators in the NEM.

Efficient wholesale prices[1], averaged over time, can be expected to be at the level required to recover the cost of building new generation or transmission capacity to satisfy growth in consumer demand. The Commission acknowledges that prices above this level for a sustained period of time may be more than is necessary to compensate for the various costs and risks borne by generators. If a generator(s) is able to increase average wholesale spot or contract prices above an efficient level for a sustained period of time, those prices are likely to flow through to retail prices and increase the costs to electricity consumers.

However, wholesale prices will not reflect an efficient level at every moment in time and variations in price are an outcome of the dynamic conditions of supply and demand in the NEM. In order to be useful in a real world setting, particularly in the context of a sector like electricity that requires 'lumpy' non-divisible capital investments, a time dimension needs to be recognised.

In addition, for short periods of time, transient but significant increases in the wholesale price of electricity may occur. A generator's transient ability to significantly increase prices for short periods should not be considered a basis for a rule change unless that power is exercised to such an extent or with sufficient frequency that it causes long term average prices to be above the efficient level for a sustained period of time. Therefore, there is an important distinction to be made between 'substantial market power' and 'transient pricing power'.

Evidence of substantial market power

[1] Unless specified otherwise wholesale prices refer to wholesale spot and contract prices

In order to assist in determining evidence of the existence of substantial market power by generators in the NEM, the Commission engaged NERA Economic Consulting (NERA) to undertake analysis to determine if generators had historically increased wholesale prices above that which could be expected in an efficient and reasonably competitive market and sustained those prices for an extended period of time.

NERA's analysis shows that annual average prices have on occasion risen above the efficient level but have not been sustained for a sufficiently long period that would warrant a rule change.

Variations in the wholesale price of electricity are to be expected due to variations in the underlying conditions of supply and demand. Wholesale prices that are higher than in previous years should not be considered a cause for a rule change unless those prices are significantly above the efficient level and are sustained at that level for an undue period of time. This can equally be applied where wholesale prices are significantly below levels seen in previous years.

In consideration of NERA's analysis, supply and demand conditions have existed in the NEM in previous years that, for short periods, may have supported some generators' ability to increase prices significantly above their costs. These conditions of supply and demand have resulted in wholesale annual average prices rising above NERA's estimates of the long run efficient level. Although, there have been consistent trends across multiple regions that strongly support the existence of factors external to the market influencing prices rather than generator behaviour necessarily being the principal cause. Based on the NERA analysis, more recent years have shown some expansions of capacity above the underlying demand growth rate and less time spent at periods of high demand across NEM regions resulting in a reduction in annual average spot prices to levels significantly below the long term efficient price level.

NERA found that in the NEM as a whole, annual average spot prices were above the range of LRMC estimates in 2006-07, moving back to within the range in 2007-08 and 2008-09, and below the range in 2009-10 and 2010-11.

Therefore, NERA's observations are consistent with its expectation that wholesale prices may vary over time according to supply and demand conditions but that, measured over a sufficiently long time frame, will trend towards the long run efficient price level.

While the results from NERA's analysis support the conclusion that substantial generator market power has not been evidenced in the NEM to date, the Commission's determination has also considered the extent to which substantial market power could be sustained in the future.

The entry of new competitors to the generation market is an important constraint on incumbent generators exercising substantial market power. Therefore, the Commission engaged the Competition Economists Group (CEG) to assess evidence of structural, strategic or legal factors that would prevent or inhibit new competitors efficiently investing in new generation in the NEM.

CEG found that in New South Wales, Victoria and Queensland there were no matters of significance prohibiting new generators from entering the market. However, they noted that in South Australia, there was evidence that meant that ongoing monitoring of

prices against the long run efficient level may be warranted. They also noted that there were alternative explanations for their results in South Australia such that a definitive conclusion of whether new competitors were being inhibited from entering the South Australian market could not be made.

CEG's assessment of factors inhibiting new entrants in South Australia is not inconsistent with the findings by NERA that there is no evidence of the existence of substantial market power.

The MEU's proposed rule

By restricting the ability of some generators to price above their short term efficient level the proposed rule would act as a disincentive for new generators to enter the market or for existing generators to expand their capacity.

In the long-term, a generator must have an expectation that it will likely be able to recover its efficient costs, both for that generator to remain solvent and to encourage further investment and injections of capital to the NEM.

Any rule that seeks to constrain or limit the bidding of generators, in the manner proposed by the MEU, or a similar manner, is likely to diminish incentives in the current investment environment. Lower levels of investment are likely to reduce the long-term reliability of supply to consumers and increase prices as supply fails to keep pace with the growth in demand.

Wholesale prices and retail prices

The commission has considered the implications of NERA's results on consumers.

There is some similarity between the long term efficient price levels calculated by NERA and those determined by state based regulators for the purposes of jurisdictional retail price determinations. However, there are some significant differences between the methodologies used by NERA and those used by the jurisdictional regulators and therefore stakeholders should be cautious about drawing conclusions from the comparison.

Despite a finding that there is insufficient evidence to support the existence of substantial market power, retailers and large users exposed to the wholesale market must be aware of the inherent volatility of wholesale electricity markets, the risks of participation in those markets and the risk management mechanisms available.

Background to the MEU's rule change request

The stated purpose of the MEU's proposed rule change is to prevent or constrain the exercise of market power by generators in the NEM. In particular, the MEU considers that during periods of high demand, some large generators do not face effective competition and have the ability to use their market power to increase the wholesale spot price, with flow on effects on contract prices.

To address this perceived problem, the MEU proposes amendments to the National Electricity Rules (Rules) that would:

- require the Australian Energy Regulator (AER) to assess which generators in each NEM region have market power and declare each of those generators to be a 'dominant generator' when regional demand exceeds a specified level; and

- impose restrictions on the dispatch offers that may be submitted by a 'dominant generator' so that when regional demand exceeds the level at which the generator has been declared to be a dominant generator, the dominant generator must offer all of its available capacity for dispatch at a price that does not exceed the administered price cap (APC), which is currently set at $300 per megawatt hour (MWh).

Future rule change requests

Careful consideration and extensive consultation has informed the framework adopted for the consideration of this rule change request. The Commission considers it is the appropriate methodology for considering potential generator market power in the NEM. The framework can be used by stakeholders to assess whether they consider there is evidence of substantial market power in the NEM in the future. In receiving any new rule change proposals in the future that relate to this subject matter, the Commission intends to use the same set of assessment factors to determine whether the new rule change will, or is likely to, contribute to the achievement of the National Electricity Objective (NEO).

Before making any rule change in the future to address the existence of substantial market power it would also be important to understand the causes of the substantial market power. If the cause related to the industry structure of the wholesale electricity market in a particular region then a rule change may not be the most effective way to address the issue.

Invitation for public submissions and final rule determination

In accordance with the notice published under section 99 of the NEL, the Commission invites submissions on this draft rule determination by 20 July 2012.

In accordance with section 101(1a) of the NEL, any person or body may request that the Commission hold a hearing in relation to this draft rule determination. Any request for a hearing must be made in writing and must be received by the Commission no later than 15 June 2012.

Submissions and requests for a hearing should quote project number "ERC0123" and may be lodged online at www.aemc.gov.au or by mail to.

Australian Energy Market Commission
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SYDNEY SOUTH NSW 1235

Where practicable, submissions should be prepared in accordance with the Commission's guidelines for making written submissions on rule change requests.[2] The Commission publishes all submissions on its website, subject to a claim of confidentiality.

All enquiries regarding this project should be addressed to Mark Allen on (02) 8296 7800.

2 This guide is available on the AEMC website.

Contents

1 The Major Energy Users' rule change request

On 23 November 2010, the Major Energy Users' Inc. (MEU) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission) in relation to the potential exercise of market power by generators in the National Electricity Market (NEM).

The stated purpose of the MEU's proposed rule change is to prevent or constrain the exercise of market power by generators in the NEM. In particular, the MEU considers that during periods of high demand, some large generators do not face effective competition and have the ability to use their market power to increase the wholesale spot price, with flow on effects on contract prices.

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- impose restrictions on the dispatch offers that may be submitted by a 'dominant generator' so that when regional demand exceeds the level at which the generator has been declared to be a dominant generator, the dominant generator must offer all of its available capacity for dispatch at a price that does not exceed the APC), which is currently set at $300 per MWh.

More information on the MEU's rule change request, the rule making process, and the consultation process prior to this draft determination are provided in Appendix A. The MEU's rule change request including supporting evidence can be found on the AEMC's website[3].

This paper sets out the Commission's assessment of, and draft determination for the MEU's proposed rule.

The Commission has sought to define the problem that the proposed rule is seeking to address, and to test for the existence of that problem in the NEM.

The Commission considers that the problem that the MEU's proposal is seeking to address is the exercise of substantial market power by generators in the NEM, where that market power is exercised with the purpose or effect of increasing wholesale spot or contract prices.

The long term the efficient price level should reflect the long-run marginal cost (LRMC) of construction or expansion of generation capacity. However, for any particular shorter term period, spot and contract prices can be substantially higher or lower than the LRMC. This is because spot and contract prices in any particular shorter term period will reflect the short run marginal cost (SRMC) of balancing the supply and demand of electricity. The SRMC represents the marginal value of supplying electricity, including scarcity value at times of high demand.

3 www.aemc.gov.au

The ability of a generator, either unilaterally or in coordination with other generators, to increase the spot price in a particular half hour period is not evidence of substantial market power. In this draft determination we describe this behaviour as "transient pricing power". It is the ability of a generator(s) to increase the wholesale price above LRMC on a sustained basis that is evidence that substantial market power may be being exercised.

This definition of 'substantial market power' has allowed the Commission to test for its existence in the NEM and whether the current market environment justifies the making of the MEU's proposed rule or a more preferable rule.

2 Draft rule determination

2.1 Commission's draft determination

In accordance with section 99 of the National Electricity Law (NEL), the Commission has made this draft rule determination in relation to the rule proposed by the Major Energy Users Inc.

The Commission has determined not to make the proposed rule.

The Commission has given significant consideration to the rule change request proposed by the MEU. The Commission recognises the importance of the issues raised by the MEU's proposed rule and the significance of the issues with regard to acheiving efficient outcomes in the NEM, consistent with meeting the NEO. Electricity is a vital input to the economy and an efficient market outcome is crucial for both consumers and producers of electricity. However, based on careful consideration of the evidence provided through consultant analysis and stakeholder feedback to the consultation paper, directions paper, public forum and technical paper, the Commission considers the problems raised by the MEU were not substantiated to a standard that would justify the making of a rule.

In the long-term, a generator must have an expectation that it will likely be able to recover its total efficient costs, both for that generator to remain solvent and to encourage further investment and injections of capital to the NEM.

A market design that does not provide a generator with a reasonable opportunity to recover its total efficient costs will fail in attracting the necessary investment to maintain supply availability in line with the level of demand.

In light of the Commission's analysis, and the lack of evidence supporting the existence of substantial generator market power in the NEM, the Commission considers that any rule that seeks to constrain or limit the bidding of generators, in the manner proposed by the MEU, or a similar manner, is likely to diminish incentives for efficient investment, thereby potentially reducing the long-term reliability of supply to consumers.

While the Commission has determined not to make the MEU's proposed rule or a more preferable rule, this does not imply that there are no laws that currently regulate the bidding behaviour of generators in the NEM. Like companies in other parts of the economy, generators are subject to the provisions of the *Competition and Consumer Act (CCA)*. The National Electricity Rules (NER) also contains provisions requiring generators to bid in good faith.

2.2 Commission's considerations

In assessing the rule change request, the Commission considered:

- the Commission's powers under the NEL to make the draft rule determination;
- the rule change request;
- submissions and supplementary submissions received during first round consultation;

- submissions and supplementary submissions received during consultation on the directions paper;
- stakeholder views at the Market Power Public Forum held in Adelaide;
- submissions received during consultation on the technical paper prepared by NERA Economic Consulting (NERA);
- submissions received for the purposes of the web forum; and
- the Commission's analysis as to the ways in which the proposed rule will, or is likely to, contribute to the National Electricity Objective NEO.

There is no relevant Ministerial Council on Energy (MCE) Statement of Policy Principles that the Commission must have regard to.[4]

2.3 Rule making test

Under section 88(1) of the NEL the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO. This is the decision making framework that the Commission must apply.

The NEO is set out in section 7 of the NEL as follows:

> "The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system."

4 Under section 33 of the NEL, the AEMC must have regard to any relevant MCE Statement of Policy Principles in making a rule.

3 Commission's assessment framework

3.1 Assessment against the NEO

It is in the context of the achievement of the NEO that the Commission has investigated the existence of generator market power in the NEM and to assess the rule proposed by the MEU.

The MEU considers that there are potential benefits associated with the proposed rule. It considers there would likely be allocative and productive efficiency gains if there were stronger rule provisions to drive the dispatch of generation in a merit order based on dispatch offers that more closely reflect each generator's short run marginal cost. Generators would have greater incentive to minimise their costs, which would reduce the overall cost structure of the sector. It would follow that generation would be provided at a lower cost to consumers, thereby improving future investment opportunities.

For the rule change request, the Commission considers that the relevant aspects of the NEO are the contribution to the efficient operation and use of electricity services and the impact on efficient investment as it relates to the long-term costs and reliability of supply to consumers.[5]

Regulatory intervention to prevent or constrain substantial market power is likely to contribute to the achievement of the NEO, provided that the long term benefits of any proposed solution exceed the costs.

Substantial market power may result in:

- allocative inefficiency as prices that are persistently above an efficient level may result in an efficiency loss due to sub-optimal levels of electricity consumption and production. While the relatively inelastic nature of demand for electricity means that these impacts are likely to be small over the short-term, longer-term effects are likely to see a reduction in efficient investment in electricity services and less efficient use of those services by consumers;[6]
- productive inefficiency as plant with low short-run marginal cost (SRMC) withholds capacity on a sustained basis and is replaced by more expensive generation. A greater reliance on higher cost plant to meet demand may reduce the incentive on generators to minimise their costs, which is likely to increase the overall cost structure of the sector; and
- higher wholesale prices that are likely to flow through to retail prices and increase electricity consumer costs. Electricity is a vital input into most goods and services, and sustained high electricity prices can have a significant impact on the broader economy.

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5 Under section 88(2), for the purposes of section 88(1) the AEMC may give such weight to any aspect of the NEO as it considers appropriate in all the circumstances, having regard to any relevant MCE statement of policy principles.

6 There is also some evidence to suggest that previous estimates of the responsiveness of customers' consumption decisions to prices may be higher than previously thought. See Australian Energy Market Operator (AEMO) update to the 2011 Electricity Statement of Opportunities.

Conversely, if there is no evidence of substantial market power and a rule is made that would have the effect of reducing wholesale electricity prices then there is a risk that investors would be deterred from making investments to maintain or expand existing generation capacity or build new generation capacity. Investors who are restricted from bidding to recover their efficient costs may not be confident of making an adequate risk adjusted return. In the long run a lack of new investment may reduce or seriously endanger reliability of supply. Therefore, in assessing the proposed rule the Commission has considered whether it would risk deterring efficient investment.

3.2 Approach to the assessment

In assessing the rule change request, the Commission has included a consideration of the NEO, and section 88(2) of the NEL, which allows the AEMC to give weight to any aspect of the NEO as it considers appropriate in all the circumstances.

The assessment framework for this rule change request has considered whether:

- the proposed rule will, or is likely to, better contribute to the achievement of the NEO than the status quo; and
- having regard to the issues raised by the rule change request, there is a more preferable rule that is likely to better contribute to the achievement of the NEO than the proposed rule.

In the consultation paper the Commission proposed a three-step assessment framework.

1. Defining the problem.
2. Assessing whether there is evidence of a problem.
3. Assessing solutions to the problem.

3.2.1 Defining the problem

In order to assess the likely impact of the proposed rule on the NEO, the Commission began by defining the issue that the rule change request is seeking to address. The Commission considers that the relevant problem is the exercise of substantial market power by generators in the NEM, where that market power is exercised with the purpose or effect of increasing wholesale spot or contract prices.

The Commission has considered the definitions proposed by stakeholders as well as the definitions adopted in economic literature, competition law and other potentially relevant sources in forming its view on the appropriate definition of substantial market power in the context of the NEM.[7] The Commission considers that the definition of substantial market power that has been developed is relevant in the context of the problem that the MEU's rule change request seeks to address.

The Commission then sought to define 'market power' and what constitutes the 'exercise' of market power in the context of the NEM. The MEU's proposed rule does not contain a definition of 'market power'. Submissions on the consultation paper

7 The Commission's consideration of these definitions is outlined in Chapter 3 of the directions paper to the rule change request, which can be found on the AEMC website – www.aemc.gov.au.

demonstrated significant disagreement between stakeholders in relation to the appropriate approach to defining market power. The directions paper drew on stakeholder submissions to the consultation paper to enable the Commission to address the related issues of:

- what is the appropriate definition of 'market power';
- whether a distinction should be drawn between 'market power' and 'substantial market power';
- what is the appropriate definition of the 'exercise' of market power in the context of the NEM;
- whether 'tacit collusion' should be considered as part of the rule change process.

In consideration of stakeholder submissions to the directions paper, the Commission was able to confirm its definitions of 'market power' and the 'exercise' of market power in the context of the NEM and to test for evidence of its existence. This process provided the background and key facts against which to consider the likely effects of the MEU's rule change request on the NEO.

The Commission's findings in relation to the definition of the problem are set out in Chapter 4.

3.2.2 Assessing whether there is evidence of a problem

In order to assist with its assessment of the existence of substantial market power in the NEM, the Commission engaged NERA Economic Consulting to determine whether wholesale market prices (spot and contract) have exceeded levels necessary to encourage additional efficient investment, i.e. have annual average prices exceeded efficient wholesale prices and been sustained at that level.

NERA's analysis is an important aspect of the analytical framework. If NERA's analysis showed wholesale prices to persistently exceed efficient wholesale prices over the period of the assessment it would be strong evidence of factors pushing up prices on a sustained basis and the requirement for further investigation to determine whether the higher prices result from the existence and exercise of substantial market power. Otherwise, if the analysis showed wholesale prices to be below, or close to, LRMC, then it would be strongly indicative that substantial generator market power is not a significant problem.

The Commission also engaged the CEG to undertake an assessment of the existence of barriers to entry in the NEM, the results of which were fed into a consideration of the potential for the exercise of substantial market power to be sustained in the future. The Commission recognises that there were a number of submissions to the directions paper that stakeholders, including the Private Generators Group, Origin Energy, Alinta Energy, Loy Yang Marketing Management Company (LYMMCo), and the Australian Financial Markets Association (AFMA), have emphasised the difficulty in predicting a generator's ability to exercise substantial market power in the future and that regulatory intervention in this regard would be based on a subjective forward looking

analysis.[8] The submissions further contend that this would be highly contentious if the regulatory intervention was pre-emptive without evidence of the exercise of market power in the past.

In consideration of the lack of evidence from NERA's analysis supporting the existence of substantial generator market power, and the lack of firm evidence from CEG's analysis supporting the existence of significant barriers to entry, the Commission considers that there are insufficient grounds to conclude the existence of substantial market power and to assume the likely future exercise of substantial market power by generators in the NEM. The Commission's findings in relation to the existence of substantial market power in the NEM are set out in Chapter 5. A discussion on the existence of barriers to entry is set out in Chapter 7.

If the Commission had concluded that substantial market power existed and/or was likely to exist in the future, then it would have been necessary to consider the causes of the existence of substantial market power. This assessment would have informed the consideration of the appropriate solution, which may or may not have been a rule change, to address the issue. In particular, if the main cause of the existence of substantial market power in a NEM region was the industry structure in the wholesale electricity market then a rule change may not be the most effective way to address the issue.

The Commission considers that the assessment framework and approach adopt for this rule change request provide a framework within which market participants and other stakeholders can assess whether at any time in the future issues of substantial market power in the NEM arise. If such an analysis concluded that substantial market power existed then it would also be necessary to assess the causes of that substantial market power to help identify the most appropriate solution.

The Commission's findings in relation to the costs and benefits of the rule in its ability to contribute to the NEO and set out in Chapter 8.

8 Private Generators Group, submission to directions paper, 17 November 2011, p1; Origin Energy, submission to the directions paper, 18 November 2011, p5; Alinta Energy, submission to directions paper, 21 November 2011, p8; AFMA, submission to directions paper, 22 November 2011, p2; LYMMCo, submission to directions paper, 25 November 2011, p3

4 The Commission's definition of substantial market power

This Chapter provides a summary of the Commission's conclusions on the meaning of substantial market power and the exercise of substantial market power in the context of the NEM.

4.1 Defining the concept of market power

A clear definition of 'market power' and the 'exercise of market power' is important to define the problem that the MEU's proposal is seeking to address and to allow assessment of whether the MEU's proposed rule, or a more preferable rule, is likely to contribute to the achievement of the NEO.

Stakeholders to the determination process have expressed different views as to the appropriate definition of 'market power' and have strongly disagreed on the appropriate terminology and whether 'market power' is the correct term and concept to use in the context of the NEM.

Some submitters, primarily the Australian Energy Regulator (AER) and the MEU, considered that 'market power' is the appropriate term. However, the majority of submitters proposed that 'market power' was not the appropriate term and that it was not a useful concept in the context of the NEM. Many submitters, including the Energy Supply Association of Australia (ESAA), International Power, the NEM Generators Group, Origin Energy, TRUenergy, and AGL, drew a distinction between 'substantial market power', which requires sustained pricing above an efficient level and 'transient pricing power', which involves a transient ability to increase prices above costs for short periods of time.[9]

A distinction was also drawn between perfect competition, where firms do not incur any sunk costs, and workable competition, where firms do not have identical costs and sunk costs can be substantial. In workable competition, SRMC and LRMC will not be the same and they will both vary over time. Accordingly, an ability of a generator to sustain prices above an efficient level over a longer term is more relevant when defining and assessing market power.

4.2 Substantial market power and transient pricing power

An important distinction should be made between:

- 'substantial market power', which involves sustained pricing above the level that would prevail in a workably competitive market; and

9 ESAA, submission to consultation paper, 15 June 2011, p2; International Power, submission to consultation paper, 1 June 2011, p4; NEM Generators Group, submission to consultation paper, 29 June 2011, p6; Origin Energy, submission to consultation paper, 30 May 2011, p5; TRUenergy, submission to consultation paper, 2 June 2011, p2,4-5; AGL, submission to consultation paper; 14 June 2011, p13.

- 'transient pricing power', which involves a transient ability to increase prices above costs for short periods of time.[10]

The distinction between transient pricing power and substantial market power reflects the distinction between perfect competition and workable competition. In a perfectly competitive market, it is assumed that firms do not incur any sunk costs, which means that SRMC and LRMC will be equal.

However, perfectly competitive markets rarely, if ever, exist in practice. Workable competition is the more appropriate benchmark when defining market power in the context of the NEM and assessing the MEU's proposal.

In a workably competitive market, prices will reflect LRMC (and the underlying trend in SRMC) over the long term. In addition, in a workably competitive market with substantial fixed costs, such as electricity generation, SRMC and LRMC will not be the same and they will both vary over time. Accordingly, a longer term perspective is required when defining and assessing market power.

If a generator is able to sustain average wholesale spot or contract prices above a workably competitive level, those prices are likely to flow through to retail prices and increase the prices that users pay for electricity. Electricity is a vital input into most goods and services, and sustained high electricity prices can have a significant impact on the broader economy.

In contrast, transient wholesale spot price spikes are not likely to have the same effect on achievement of the NEO or the productivity of the broader economy. Indeed, occasional spot prices above cost are an inherent feature of an energy-only market such as the NEM and provide a mechanism for generators to recover their efficient fixed costs, particularly given that wholesale prices may be very low or negative at other times.

This approach does not mean that evidence of bidding behaviour by generators that leads to high spot prices, such as economic withholding of capacity, was ignored.[11] However, it means that a long-term perspective is required when considering price spikes, and long-term average spot and contract prices must be compared with the prices that would be expected in a workably competitive market. If a generator is able to increase spot or contract prices to such an extent and with sufficient frequency that it causes sustained average prices that exceed efficient wholesale prices, then that may constitute evidence of substantial market power.

An important underlying consideration to the methodology and findings is the nature of investment signals in energy-only electricity markets such as the NEM. The AEMC has included the following extract to explain this concept.

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10 The Commission has adopted the term 'transient pricing power'. The NERA report refers to this concept as 'temporary pricing power' and several submitters referred to a similar concept as 'transient market power', but the Commission considers 'transient pricing power' to be the most appropriate description of this concept.

11 The MEU defines 'economic withholding' as occurring where a generator offers a proportion of its capacity near the market price cap so that it is less likely to be dispatched and other generators will be dispatched ahead of it – MEU rule change request, p32. The Commission agrees with that definition.

Box 4.1: Investment signals in an energy-only electricity market[12]

The desired market outcome for consumers is to be provided with reliable supplies of electricity on an ongoing basis at efficient cost. This involves, amongst other factors, decisions regarding the construction of new generation capacity and when existing generation capacity should be retired. It also includes decisions by consumers on when and how much to consume, given that firm commitments to reduce consumption at peak times can be an alternative to building new generation capacity.

The strength of the signal for new investment is influenced significantly by regulation. The value of new generation depends on the level of expected prices, including when capacity is scarce. The maximum price in the spot market, likely to be seen most when capacity is scarce, is a regulatory setting. It is currently set at $12,500/MWh, and will increase to $12,900/MWh on 1 July 2012.

If prices were not capped, then prices at peak times could rise to unacceptably high levels for consumers and retailers. Electricity wholesale markets need to be balanced in real time, and quite often it is not feasible for consumers to respond to price spikes at very short notice. The required technology to respond is not generally available, for most consumers, although technology is changing and improving all the time, and the transactions costs can be prohibitively high. Hence, if consumers cannot reveal their willingness to avoid very high prices through their consumption decisions, then there is a case for imposing a regulated proxy to limit the maximum price that consumers are exposed to. Another important rationale for capping prices is that it limits the overall risk for market participants to manage in providing a more stable price for consumers under a retail tariff.

The choice of this regulated spot market price will affect the economics of prospective new generation investment. The specific risk from a reliability perspective is that if the price cap is set too low it may not be economic to build peaking generation consistent with meeting the desired reliability standard of 0.002 per cent expected unserved energy (USE).

The means by which spot market prices signal the efficient mix of generation capacity, and the potential impact of a regulated price cap, is illustrated in figures 4.1 and 4.2 below. They use the concept of a price duration curve. This plots how many hours in a year the spot market price is above a given level. The shape of the price duration curve depends significantly on the shape of the underlying time-profile-of-demand.

For any given pattern of demand over time, there will be an associated optimal mix of generation. Figure 4.1 illustrates this. The proportion of demand that does not change over time is most efficiently served by base-load technologies, predominately coal-fired generation to date in Australia, or intermittent technologies such as wind. Base-load technologies are characterised by high

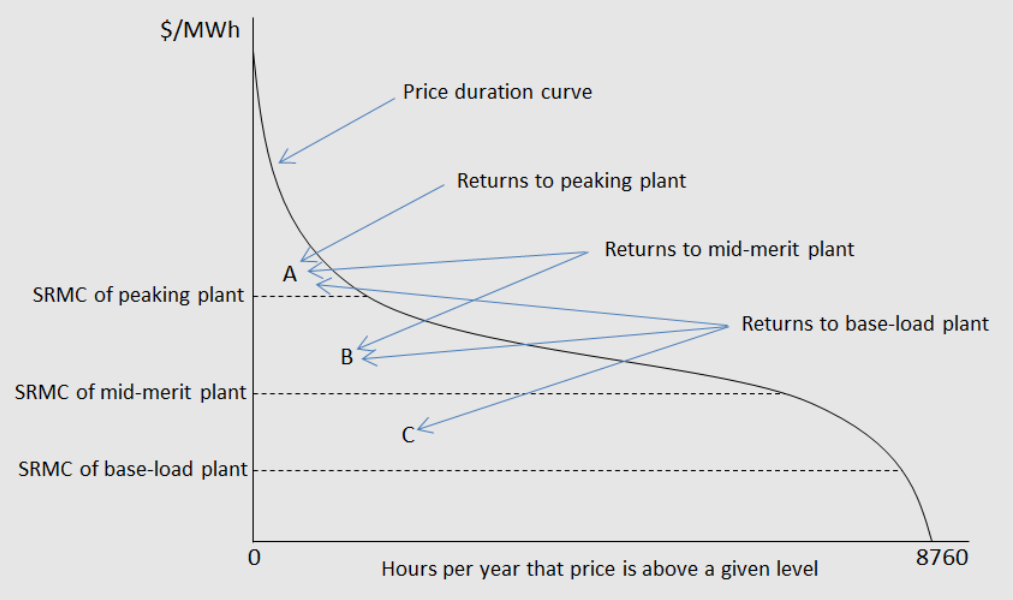
12 AEMC, Review of energy market frameworks in light of climate change policies, 30 September 2009. This report is available on the AEMC website.

initial capital costs and relatively low running costs. The proportion of demand which varies but is predictable, for example the periods of higher demand in weekday mornings and evenings, is most efficiently served by mid-merit plant such as combined cycle gas turbines (CCGT). This type of plant generally has lower capital costs and more flexibility, but higher running costs, than base-load generators. The final proportion of demand that is highly uncertain, for example the peak hours during the hottest summer day, is most efficiently served by peaking plant such as open cycle gas turbines (OCGT). This type of plant has low capital costs but high operating costs because of their relative technical inefficiency.

An efficient mix of generation is one which minimises the total cost of meeting demand. The shape of the demand profile is a key consideration. For example, a relatively flat demand profile implies a greater role for base-load generation, while a very peaky demand profile implies a greater role for peaking generation.

Whenever the price is above the immediate costs of operation (e.g. fuel, maintenance) for a particular generator, that generator is recovering a portion of its fixed costs (including a return on capital employed). The expected level of these payments over time will determine whether it is economic or not to enter the market. It will also determine what mix of base-load, mid-merit and peaking generation is most economic, i.e. minimises costs, given the underlying profile of demand.

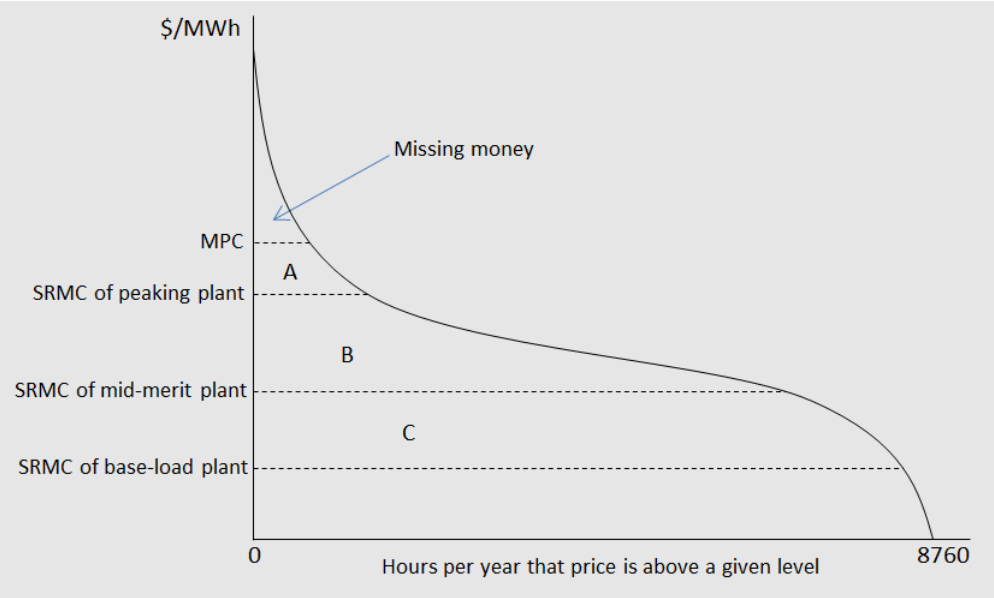
Figure 4.1 Relationship between the price duration curve and generation technology mix



The imposition of a regulated maximum price changes the signals provided through the spot market. Specifically, it constrains the potential returns to peaking plant. This is illustrated in Figure 4.2. This means that less peaking capacity will be built, or will enter later, relative to if the market price was uncapped, although the investment incentives are a very important consideration when setting the price cap. The cap also places a limit on the overall risk exposure

for the market as a whole, recognising the associated costs of managing such risks.

Figure 4.2 Effect of a regulated maximum price in an energy-only market



The challenge for the NEM is, essentially, an empirical question as to what level of price cap is likely to deliver a level of generation capacity consistent with meeting the desired standard of reliability of 0.002 per cent unserved energy. While the price cap has the effect of reducing expected revenue from the market, the objective is to set a price cap that delivers sufficient investment to meet the reliability standard.

4.3 The Commission's definition of substantial market power

After careful consideration of stakeholder submissions to the directions paper, the Commission has retained its definition of 'substantial market power' in the NEM as defined in the box below:

Box 4.2: Definition of substantial market power

Substantial market power in the context of the NEM is the ability of a generator to increase annual average wholesale prices to a level that exceeds long-run marginal cost (LRMC), and sustain prices at that level due to the presence of significant barriers to entry.

This definition of substantial market power is based on the definition set out in NERA's report for the directions paper.[13] NERA considered that a generator in the NEM has substantial market power only if it:

- has the ability to increase average spot prices to such an extent and with sufficient frequency that they exceed the LRMC of adding capacity; and

13 NERA Economic Consulting, Potential Generator Market Power in the NEM, A Report for the AEMC, 22 June 2011, p27

- is insulated from the forces of competition due to significant barriers to entry and expansion that enable it to sustain average prices at that level.[14]

The meaning of "wholesale prices" and "LRMC" are provided in more detail in section 4.4.

4.3.1 Elements of the definition

The inclusion of 'annual average' means the definition does not require wholesale spot or contract prices to be continuously above the LRMC. If a generator is able to cause price spikes to occur to such an extent and with sufficient frequency that they cause annual average spot prices to exceed LRMC, that may be evidence of substantial market power. However, transient price spikes that do not result in above-LRMC average prices do not demonstrate that a generator has substantial market power.

It is not necessary to wait for ex post evidence of several years of above-LRMC pricing before taking action. If a generator has acted in a way that has caused annual average wholesale spot or contract prices to exceed LRMC and significant barriers to entry indicate that the generator is likely to be able to sustain those prices, then that will constitute evidence of an ability to exercise substantial market power.

The definition identifies the requirement for the presence of 'significant barriers to entry'. In the absence of significant barriers to entry, the threat of new entry or expansion would be expected to prevent existing generators sustaining above-LRMC prices and therefore generators would not be likely to exercise substantial market power. Further detail of the analysis of barriers to entry in the NEM is provided in Chapter 7.

Regulatory intervention is only potentially justified if there is evidence that generators have exercised, or are likely to exercise, substantial market power. While a generator may have the ability to exercise substantial market power, it may not choose to do so. The mere ability of a generator to exercise substantial market power is not sufficient to justify regulatory intervention if that power is never exercised. Such a scenario is likely to be caused by structural factors, which may be addressed through more preferable alternatives than a change to the rules.

4.4 Relevant prices and costs

This section explains the measures of prices and costs that are referred to in the above definition of substantial market power.

4.4.1 Average annual wholesale prices

An assessment of a generator's ability to exercise substantial market power requires consideration of the extent to which annual average wholesale prices might exceed LRMC over a period of time. Both the price and the period of assessment therefore need to be defined.

Price

14 Ibid, p14

In assessing a generator's ability to affect wholesale prices, both spot and contract prices are relevant. References in the Commission's definitions and in this draft determination to 'wholesale prices' mean both spot and contract prices. Spot and contract prices are different ways of expressing the price for the same product.[15]

The MEU considered in their submission to the directions paper that contract prices should not be used as a benchmark in the assessment of market power because they are not likely to be transparent and openly available and that the mix of contract and spot volumes would be difficult to determine.[16] Submissions to the directions paper from Alinta Energy, TRUenergy, the Energy Supply Association of Australia (ESAA) and LYMMCo supported the use of both spot and contract market data in the assessment and considered that exchange traded prices would need to be used due to the difficulty of obtaining accurate information on over-the-counter (OTC) traded prices.[17]

While it is important to include an assessment of contract prices, there are information restrictions on contract prices that limit the conclusions that can be drawn from the assessment. The methodology for the inclusion of contract prices in the assessment is outlined further in section 5.2.2.

Period of assessment

The directions paper proposed a relevant timeframe of one year, or potentially two to three years, in which to assess the existence of substantial market power. This timeframe was proposed to be implemented by measuring 'annual average' wholesale prices when assessing whether a generator has substantial market power.

In addition to the use of 'annual' average prices in the first part of this definition, the second part of the definition requires that prices must be sustainable at that level due to the presence of significant barriers to entry. The definition does not set out a specific period over which prices must be sustainable. The Commission notes the MEU's proposal that the assessment of market power should be made on a period of 12 months at the longest.[18] The relevant period should reflect a sufficient time under which new entry would be expected to occur in the absence of significant barriers to entry. Several submissions to the directions paper from stakeholders, including AFMA, ESAA, TRUenergy, Origin Energy, Alinta Energy and the National Generators Forum (NGF), supported this view and noted the length of time for new entry of plant from concept development to commissioning.[19] Many of these submissions outlined new entry periods of five to six years.

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15 Contract prices reflect an expectation of future spot prices over the contract period plus a risk premium.

16 MEU, submission to directions paper, 17 November 2011, p19

17 Alinta Energy, submission to directions paper, 21 November 2011, p5; TRUenergy, submission to directions paper, 17 November 2011, p4; ESAA, submission to directions paper, 25 November 2011, p5; LYMMCo, submission to directions paper, 25 November 2011, p4.

18 MEU, submission to directions paper, 17 November 2011, p16

19 AFMA, submission to directions paper, 22 November 2011, p2; ESAA, submission to directions paper, 25 November 2011, p9; TRUenergy, submission to directions paper, 17 November 2011, p3; Origin Energy, submission to directions paper, 18 November 2011, p5; Alinta Energy, submission to the directions paper, 21 November 2011, p13, NGF, submission to directions paper, 17 November 2011, p3

For practical purposes, as explained in Chapter 5, NERA has assessed and compared LRMC and annual average prices separately for each year of its analysis. The Commission has considered the results of NERA's comparison of annual average wholesale prices with LRMC over a time-frame sufficient that new entry would be expected to occur in the absence of barriers to entry.

4.4.2 Long run marginal cost

The relevant cost measure for the purposes of the definition of substantial market power is LRMC. A detailed description of the key issues related to LRMC and how LRMC is calculated is contained in the directions paper.[20]

Fundamentally, the LRMC does not necessarily equal the capital and operating costs of constructing a new generating unit. LRMC estimates the cost (in net present value terms) of bringing forward a capacity expansion so that it occurs sooner than would otherwise be the case in order to meet a specified increase in demand.

The methodology for the calculation of LRMC and the comparison with wholesale prices is discussed further in sections 5.2.1 and 5.2.2 and is described in further detail in the NERA technical paper.[21]

20 AEMC, Potential Generator Market Power in the NEM - directions paper, 22 September 2011, p14

21 NERA Economic Consulting, Estimating Long Run Marginal Cost in the National Electricity Market, A Paper for the AEMC, 19 December 2011, p5

5 Evidence of the existence of substantial market power in the NEM

This Chapter provides a description of the tests undertaken to determine evidence supporting the existence of substantial market power in the NEM.

In order to assess whether a generator has substantial market power, it is necessary to determine the relevant 'market' in which to make that assessment. The process of defining the market helps identify the potential substitutes that impose a significant competitive constraint on a generator's behaviour.

The Commission has adopted the usual competition law approach to market definition. Under that approach, a market is defined in terms of its product, geographic, functional and temporal dimensions.

5.1 Determination of the relevant market

The Commission asked NERA to undertake analysis to inform an assessment of the relevant market.

NERA's finding that annual average wholesale prices are not sustained above LRMC, in any NEM jurisdiction or in the NEM as a whole, means it has not been necessary for the Commission to reach a firm conclusion on the appropriate market definition as part of the analysis to inform this draft rule determination.

5.1.1 Dimensions of the relevant market

A summary of NERA's findings are:

- the relevant product dimension is electrical energy supplied to the wholesale market;
- the relevant functional dimension is electricity generation only, and does not include electricity retailing;
- the relevant temporal dimension is the timeframe under which new entry would be expected to occur in the absence of significant barriers to entry; and
- the relevant geographic dimension is each state as a separate market.

5.1.2 Test to determine the relevant geographic market

NERA applied the hypothetical monopolist or 'small but significant and non-transitory increase in price (SSNIP) test commonly used in competition law to determine the boundaries of the relevant geographic market or markets.

The SSNIP test considers whether a hypothetical monopolist in the market could profitably implement a small but significant non-transitory increase in price.

A detailed description of NERA's approach to applying the SSNIP test to determine the relevant market is contained in their technical paper.[22]

22 NERA Economic Consulting, Estimating Long Run Marginal Cost in the National Electricity Market, A Paper for the AEMC, 19 December 2011, p25

Competition authorities generally apply the SSNIP test by considering whether the hypothetical monopolist could profitably implement a five to ten per cent price increase and maintain it for one to two years. If such a SSNIP was profitable in a region, i.e. increased revenue from the price rise exceeds lost revenue from substitution to suppliers in other regions, that region is the relevant geographic market. If the SSNIP is not profitable, other regions are added to the market and the test is repeated (with the hypothetical monopolist now assumed to have a monopoly in the expanded region) until the SSNIP becomes profitable.

NERA's application of the SSNIP test used a five per cent increase in the average spot price within a region over a one to two year period. The key question is therefore whether the current level of interconnector capacity allows generation in other NEM regions to act as a sufficiently strong substitute and prevent a hypothetical monopolist from profitably implementing a SSNIP, or whether there would be sufficient trading intervals where the interconnectors are constrained and a hypothetical monopolist could increase prices materially above LRMC.

5.1.3 Conclusions on relevant geographic dimensions

NERA's results from the application of the SSNIP test have pointed to the conclusion that each region of the NEM should be treated as its own market for the purposes of the comparison of wholesale price to LRMC.

The hypothetical monopolist generator for the South Australian region was shown to have the biggest difference in gross margin and was the most profitable under the scenario of a five per cent increase in price. Victoria was the least profitable under the imposed SSNIP. However, the results of the SSNIP test do not suggest that the exercise of market power has occurred or is possible. It should not be interpreted from the SSNIP test results that generators in South Australia have a greater ability to exercise market power than generators in Victoria. The test for market power is by comparing wholesale prices to LRMC in the defined regions.

It is important to note that while insufficient interconnector capacity to defeat the SSNIP may be the reason that the test points to each NEM region as the relevant market, this does not mean that the interconnector capacity is necessarily too low and needs to be upgraded. Determinations on the requirement for transmission infrastructure upgrades are undertaken through the formal consultative Regulatory Investment Test for Transmission (RIT-T) process. The purpose of the RIT-T is to identify transmission investment options that maximise net economic benefits while maintaining the relevant reliability standards.

5.2 Comparison of wholesale prices to long-run marginal cost

As noted in section 4.3 the definition of substantial market power requires that annual average wholesale prices exceed LRMC for a sustained period.

This section explains NERA's calculations of LRMC and the evaluation of wholesale prices that are referred to in the definition of substantial market power.

5.2.1 Calculation of LRMC

NERA has applied two distinct methodologies to the estimation of LRMC for the relevant markets. These are:

- an approximation approach, which estimates the least cost combination of plant to satisfy demand in a given year;[23] and
- a market modelling approach, which estimates the cost of bringing forward a new entrant capacity expansion to meet an incremental increase in demand over a future time period.[24]

The approximation method represents a relatively quick and effective means of estimating the LRMC but is generally considered to be a less precise approach than the market modelling method. It uses information on new entrant technology costs to calculate the least cost combination of generation capacity to satisfy a given load duration curve for a given region and year. The approximation method is similar to an average incremental cost approach but with some simplifying assumptions, including that existing capacity is already optimal and that demand grows at a constant rate into the future with a constant load profile.

While generally more complex and time intensive to perform than the approximation approach, the market modelling approach is generally considered to be the closest to a true approximation of LRMC. The market modelling approach develops two separate future investment profiles based on a least-cost combination of generation capacity to satisfy a future average annual demand – one to satisfy an existing expectation of future average annual and maximum demand and the other to satisfy a hypothesised incremental increase (or decrease) in demand over the same period.

Submissions to the directions paper from the NGF and the ESAA both questioned the subjective nature of estimates of LRMC in particular with regard to the complexity involved in the market modelling approach.[25] The Commission has adopted the two separate methodologies of calculating the LRMC described above to test whether there are any significant differences and to provide further confidence in the results.

In addition, the ESAA and Alinta Energy both advocated the use of a specific technology rather than a least-cost combination of generation capacity to estimate the LRMC and best represent an investor's perspective.[26] International Power GDF Suez contends that the generation sector can be quite unattractive to investors and it can be difficult to secure finance in competition with other sectors.[27] As a result, investors may tend to give preference to lower capital cost technologies such as open-cycle gas turbines (OCGT) in order to reduce their risk exposure. While the Commission accepts

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23 Note that this is referred to as the 'simple approach' in the NERA technical paper.

24 This method of estimating LRMC is also commonly referred to as the perturbation approach or the Turvey approach.

25 NGF, submission to directions paper, 18 November 2011, p1; ESAA, submission to directions paper, 25 November 2011, p8

26 ESAA, submission to directions paper, 25 November 2011, p9; Alinta Energy, submission to directions paper, 21 November 2011, p12

27 International Power GDF Suez, submission to the NERA technical paper, 2 February 2012, p3

there is some subjectivity in any method for determining a system cost, there would be similar subjectivity involved in deciding on the relevant technology to use and determining its associated costs. Further, deciding on a specific technology may risk overestimating the costs when, in reality, lower cost options exist.

NERA has used the approximation approach to estimate the LRMC range for each NEM region for each year of the period 2005-06 to 2010-11. The market modelling approach was used to estimate LRMC for the two years 2007-08 and 2010-11. Practical limitations prevent the calculation of LRMC using the market modelling approach for all years in the modelled period.

The approximation approach has proved useful in determining a range within which the LRMC may reside and to show the trend of LRMC over a longer period, and the market modelling approach, considered to be the more accurate of the two approaches, has provided a point of comparison to provide additional confidence in the results arising from the approximation approach. The close relationship between the results of the market modelling approach and the approximation approach , give some confidence that the approximation approach provides a reasonably good estimate of the results of the market modelling approach

A more detailed explanation of the methodologies for calculating the LRMC and the least-cost profile of generation investments can be found in the NERA technical paper.[28]

5.2.2 Wholesale spot and contract prices

In assessing a generator's ability to affect wholesale prices, both spot and contract prices are relevant. References in the definitions and in this paper to 'wholesale prices' mean both spot and contract prices.

Spot prices

NERA considered two approaches to the calculation of annual average spot prices, comprising:

- a time-weighted approach that takes an arithmetic average of the spot price in every half-hour over the year; and
- a volume-weighted approach that weights the spot price of each half-hour in the year by the volume of energy that was dispatched.

NERA proposed that the volume-weighted approach was the more appropriate of the two for calculating the annual average spot price and comparing against the estimated LRMC. This is because a generator's incentive for investment is based on its ability to recover its LRMC through revenue received in the market, which in turn is determined by the volume of energy dispatched at the market spot price.

This view is consistent with submissions received from the MEU and the AER who considered that generators can exercise market power to their advantage by increasing

28 NERA Economic Consulting, Estimating Long Run Marginal Cost in the National Electricity Market, A Paper for the AEMC, 19 December 2011, p5

the volume-weighted average spot price above the benchmark, but not the time weighted average spot price.[29]

The volume-weighted annual average price is calculated by summing the volume of regional energy dispatched multiplied by the spot price for each trading interval over the year and dividing by the total energy dispatched in the year.

A more detailed explanation of the methodology for calculating the volume-weighted annual average spot price can be found in the NERA technical paper.[30]

Contract prices

As noted in the directions paper, an exercise of substantial market power in the spot market may have flow on effects to the contract market. A generator's revenues are a combination of spot and contract payments. While contract prices can be viewed as a reflection of expected future spot prices with an additional risk premium, it is possible that an increase in contract prices above this level may indicate an exercise of substantial market power.

Contracts may either be purchased over the counter (OTC) or as exchange traded products via the Australian Securities Exchange 24(ASX 24). While the majority of contracts have traditionally traded as OTC, the volume of contracts traded on the ASX 24 for Queensland, NSW and Victoria has progressively increased over the last several years, suggesting that the exchange traded contracts are more likely now to be broadly indicative of NEM contract prices.[31]

Without accurate data on the prices and volumes of contracts traded as OTC by NEM participants, it is difficult to establish the relevance of prices that are observed on the ASX 24 as a measure of NEM contract prices. Nevertheless, it is worth noting that arbitrage opportunities between the two forms of trading will act to minimise gaps in price. These views are consistent with submissions to the directions paper from Alinta Energy and LYMMCo.[32]

NERA has based their approach to estimating average contract prices for a specific year on the use of publicly available ASX 24 exchange traded contracts, as reported by d-cypha trade.[33] Average contract price estimates for a given year have been based on a combination of base, peak, and cap contracts that retailers would be expected to progressively purchase over a preceding four-year period to meet the expected system demand profile. NERA recognises that there are a number of limitations associated with the methodology used, including:

- the limited publicly available information regarding contract prices and volumes of trade. This is particularly evident in South Australia where increasing degrees

29 MEU, submission to the directions paper, 17 November 2011, p15; AER, submission to directions paper, 17 November 2011, p5

30 NERA Economic Consulting, Estimating Long Run Marginal Cost in the National Electricity Market, A Paper for the AEMC, 19 December 2011, p19

31 The Sydney Futures Exchange was renamed as the Australian Securities Exchange 24 in July 2010.

32 Alinta Energy, submission to the directions paper, 21 November 2011, p5; LYMMCo, submission to the directions paper, 25 November 2011, p4

33 www.d-cyphatrade.com.au

of vertical integration have resulted in less reliance on contracts to hedge exposures to the spot market.

- the estimation of contract prices based on a system wide contract portfolio may not necessarily reflect the hedging strategies adopted by individual retailers seeking to hedge their specific load profile. Given the tailored approach to hedging adopted by the majority of retailers, a system-wide approach is likely to underestimate the contract price.
- the time lag that occurs between the spot market's impact on contract prices and the impact on a retailer's contract portfolio for any given year as it is progressively built up over a number of preceding years. This effect would likely mean that an even longer period of analysis would be needed to assess the impact than the comparison of spot price and LRMC.

The limitations regarding the contract market in South Australia and the time-lag impact of the spot market on contract prices reflect statements in the MEU's submission to the directions paper.[34] The MEU is concerned that there is a lack of liquidity in the South Australian exchange-traded markets.

The limitations discussed above may mean that the estimated contract prices are less representative of the actual contract prices for the periods considered. NERA considers that, in the absence of considerably more information about contracting strategies and timing, liquidity, individual demand profiles, and the effects of policy uncertainty on contracting positions, the conclusions that can be drawn from the comparison of LRMC with contract price estimates is limited.

Therefore, the focus of the analysis should be the comparison between weighted average spot prices and LRMC, with a comparison of contract price estimates and LRMC used to potentially provide some further insight. This is not to say that contract prices were merely developed as a check on spot prices, as NERA have provided separate comparisons of both spot and contract prices with LRMC estimates.

A more detailed explanation of the approach adopted by NERA for the determination of contract prices can be found in the NERA modelling report.[35]

A comparison of LRMC to wholesale prices

As mentioned previously, if a generator is able to increase average spot prices to such an extent and with sufficient frequency that it causes sustained average prices that exceed the LRMC of adding capacity, then that may constitute evidence of substantial market power. However, this definition cannot be applied in reverse. That is to say, wholesale prices above LRMC do not necessarily signal the existence of substantial market power. NERA supported this argument in their modelling report and stated that "observing deviations between actual prices and LRMC is not in and of itself sufficient to conclude that there is evidence of the exercise of market power. Given the

34 MEU, submission to the directions paper, 17 November 2011, p19

35 NERA Economic Consulting, Benchmarking NEM Wholesale Prices Against Estimates of Long Run Marginal Cost, A Report for the AEMC, 16 March 2012, p11

uncertainties involved, such a mechanical approach would be inappropriate. All of the circumstances affecting observed market prices should be taken into consideration"[36].

NERA furthers this argument to state that a persistent deviation of observed wholesale market prices from LRMC would require a consideration of:

- the extent to which the deviation reflects investor response to natural underlying variations in demand growth through new entrant capacity investment;
- the impact of unforeseen shifts in supply or demand caused by transmission and generator outages or extremes in weather, which are unrelated to generator bidding behaviour;
- the accuracy of the estimates of LRMC and contract market prices; or
- the potential exercise of substantial market power.

There are a number of reasons as to why spot prices may exceed LRMC quite apart from any specific pricing actions by generators. It is possible that these factors can occur with sufficient duration or frequency so as to increase the resultant annual average spot price to levels exceeding the LRMC of investment.

NERA has provided detail on a number of these factors in their technical report[37]. While there are many potential factors that could influence market prices, the broad factors listed by NERA include:

- a transmission or generator outage that affects the availability of supply or a period of extreme hot or cold weather that substantially increases demand. These effects may be sudden and short-term in nature such as might be caused by a bushfire or lightning strike or they may be prolonged such as reduced cooling water availability due to drought conditions.
- generator dispatch limitations caused by network constraints can result in sub-optimal dispatch arrangements such that higher cost plant are dispatched ahead of low cost plant.
- operational limitations for generators such as planned maintenance periods and start-up costs can reduce supply or alter the bids submitted by generators in order to cover their costs.

The Commission acknowledges stakeholder concerns, particularly from the AER, that the comparison of wholesale price to LRMC is a single 'bright line' test, i.e. a positive or negative outcome will be determined with reference to a single set of data points.[38]The Commission has considered a broader range of evidence, including evidence about barriers to entry through the report by CEG, which is discussed in Chapter 7. This analysis draws on a range of other evidence about the existence of substantial market power. NERA has estimated a range of LRMC values based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by market policy uncertainties. The presence of a range of LRMC estimates removes the

36 Ibid, p14

37 NERA Economic Consulting, Estimating Long Run Marginal Cost in the National Electricity Market, A Paper for the AEMC, 19 December 2011, p22

38 AER, submission to directions paper, 17 November 2011, p2

potential for binary outcomes and gives more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range.

In its assessment of the outcomes from the comparison of LRMC with wholesale price outcomes the Commission has had regard to the magnitude of the difference between prices and costs together with the length of the period during which average prices exceed LRMC.

These comments do not mean that a generator only has substantial market power if there is evidence of several years of above-LRMC pricing in the recent past. The definition requires that a generator has an 'ability' to sustain prices at that level. That ability can be demonstrated by a combination of evidence of past prices and behaviour, expected future prices, and an assessment of the extent and effect of barriers to entry.

The Commission acknowledges that a number of submissions have raised concern with regard to regulatory intervention that is based on a prediction of the likelihood of a generator to exercise market power based on an expectation of future behaviour. The Commission has considered the outcome of the analysis of barriers to entry in the NEM in forming a view on the potential for the likely future exercise of market power. Further detail on this analysis is provided in Chapter 7.

5.3 Interpretation of NERA's results

This section provides an overview of the results of NERA's comparison of LRMC estimates with wholesale market prices. The Commission's interpretation of the results is provided. An explanation of the implications for retail customers and large electricity users is set out in Chapter 6.

5.3.1 Results for each NEM region

A more detailed explanation of the results from the comparison of wholesale prices to LRMC for each region can be found in the NERA modelling report.[39]

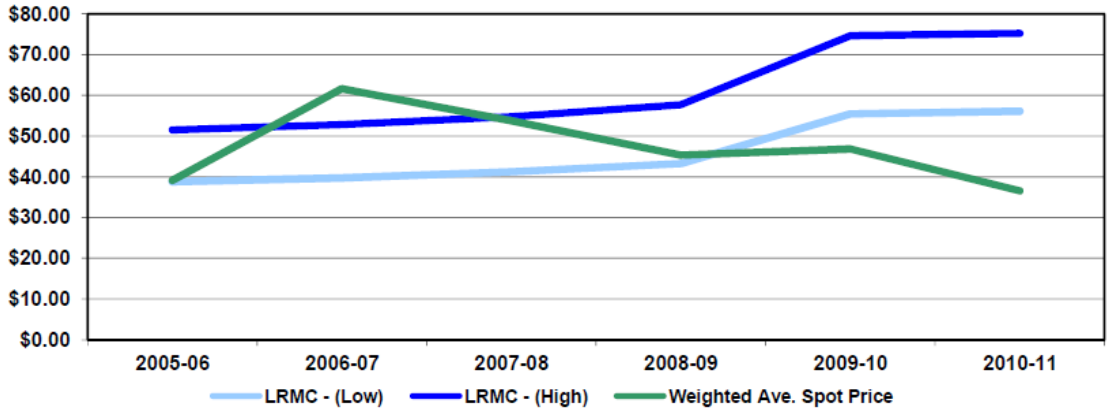
NEM

While the results of the SSNIP test undertaken by NERA have determined that each NEM region should be used as the geographic dimension for the relevant market, the Commission acknowledges that a number of stakeholders are of the view that the NEM should be treated as a single market for the purposes of assessing the existence of market power. It is within this context, and to ensure that a broad range of plausible market definitions have been tested, that NERA has undertaken an assessment of NEM-wide prices, presented in Figure 5.1.

In the NERA modelling report, the term 'perturbation approach' is used to describe the market modelling approach to estimating LRMC. The charts below draw on those in the NERA report so references to LRMC (perturbation) are references to LRMC calculated using the market modelling approach.

39 NERA Economic Consulting, Benchmarking NEM Wholesale Prices Against Estimates of Long Run Marginal Cost, A Report for the AEMC, 16 March 2012, p14

Figure 5.1 NEM weighted average prices compared with LRMC

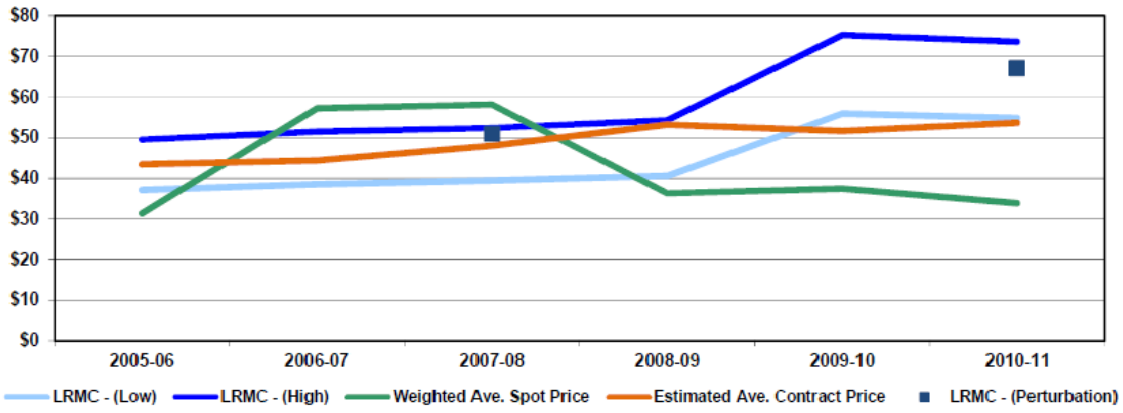


In the NEM as a whole, annual average spot prices were above the range of LRMC estimates in 2006-07, moving back to within the range in 2007-08 and 2008-09, and below the range in 2009-10 and 2010-11. A contributing factor to the high spot prices in 2006-07 is likely to be the severe drought conditions and high winter demand across New South Wales, Queensland and Victoria. Low gas prices, increasing wind generation capacity, and milder climatic conditions have likely contributed to the lower prices in subsequent years.

Queensland

NERA's comparison of LRMC to wholesale spot and contract prices for Queensland is shown in Figure 5.2. Wholesale spot prices are above the range of LRMC estimates for 2006-07 and 2007-08 and move down to below the range for the three years from 2008-09 to 2010-11. Indicative contract prices are within the range from 2005-06 to 2008-09 and below the range for the two years 2009-10 and 2010-11.

Figure 5.2 Queensland weighted average prices compared with LRMC



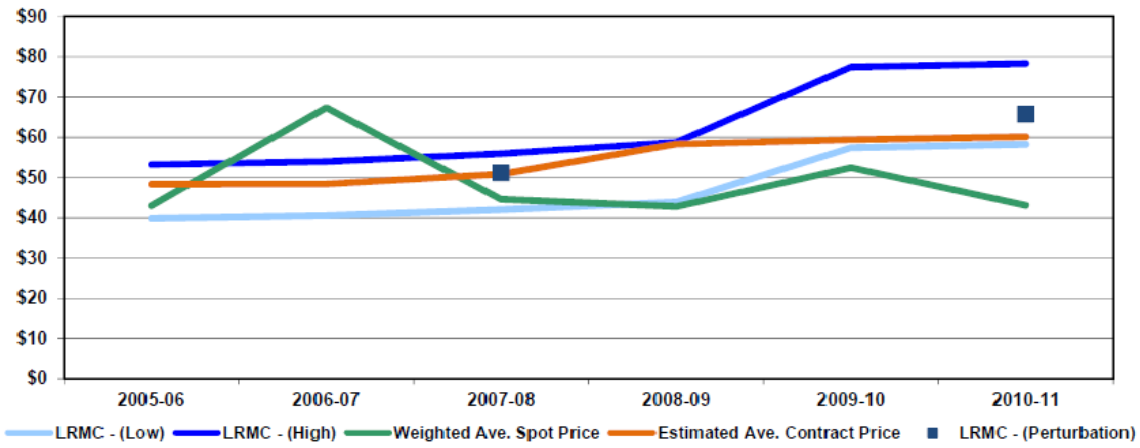
The years 2006-07 and 2007-08 had consistently higher prices than those observed in other years but the overall annual average was predominantly driven by particularly high price periods in the June quarter of 2007 and the March quarter of 2008. The high prices over this period cover an extended period of drought that restricted available capacity at a number of large generators in Queensland and New South Wales. In combination with the drought effects, the particularly high prices in the June quarter of 2007 were influenced by record high levels of demand in Queensland.

Following an easing of drought conditions, the wholesale spot price moved to levels below the range of LRMC estimates. NERA has attributed this reduction in observed spot prices in 2008-09 to a combination of lower fuel costs driven by the increased availability of ramp gas associated with the development of liquefied natural gas (LNG) facilities in Queensland and an expansion of generation capacity since July 2009 (1,031 MW of combined-cycle gas turbine (CCGT) and OCGT investment) at a rate faster than the underlying growth of state demand.

New South Wales

NERA's comparison of wholesale prices to LRMC estimates for New South Wales is shown in Figure 5.3. Similar to observations in the Queensland region, wholesale spot prices exceeded the LRMC range in 2006-07 but fell back down to within the LRMC range in 2007-08. For the three years 2008-09 to 2010-11 the comparison shows spot prices at the low end or below the LRMC range. Indicative contract prices are within the range from 2005-06 to 2010-11; at the high end of the range in 2008-09 and at the lower end of the range for the two years 2009-10 and 2010-11.

Figure 5.3 New South Wales weighted average prices compared with LRMC



NERA has attributed the high annual average spot price in 2006-07 to outcomes in the June quarter where a combination of continuing drought conditions affecting the availability of supply in New South Wales and Queensland and high winter demand led to 17 half hour periods where spot prices exceeded $5,000/MWh.

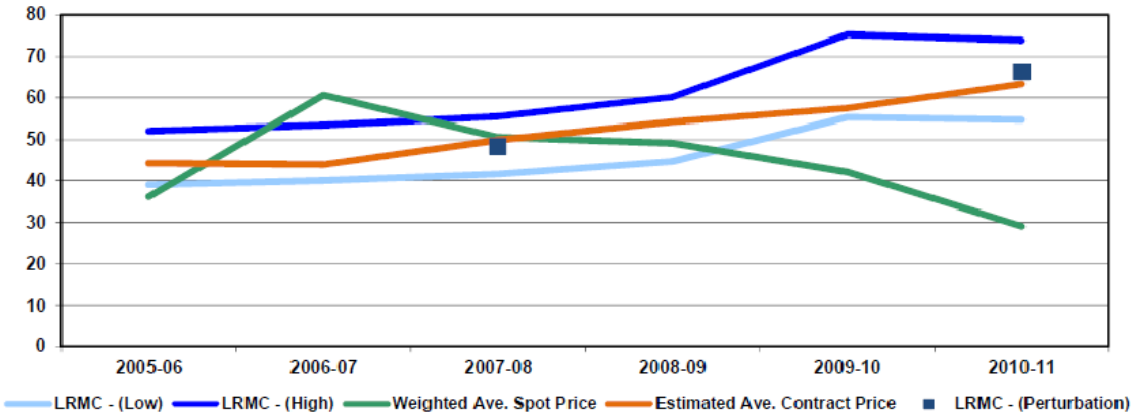
NERA notes that the considerable reduction in spot prices in 2010-11 to levels well below the range of LRMC estimates is likely to have been caused by a significant reduction in state load to levels below any of the previous five years. While spot prices for 2008-09 and 2009-10 are at the low end of the LRMC range, state load for these periods are generally consistent with previous years. NERA contends that there does not appear to be any extenuating circumstances that would give rise to a deviation of spot price from LRMC during these years.

Victoria

NERA's comparison of wholesale spot and contract prices to LRMC estimates for Victoria are shown in Figure 5.4. Similar to Queensland and New South Wales, the annual average wholesale spot price for 2006-07 is above the LRMC range. Spot prices fall back down to within the range for 2007-08 and 2008-09 and then fall below the range

for 2009-10 and 2010-11. Estimated contract prices are at the bottom of the LRMC range from 2005-06 through to 2010-11.

Figure 5.4 Victoria weighted average prices compared with LRMC



The high spot prices in 2006-07 are predominantly driven by high average spot prices in the March and June quarters of 2007. Bushfires and record demand in January 2007 and high demand in June 2007 combined with drought restrictions affecting generators in the New South Wales and Snowy regions resulted in a number of price spikes. However, while the observed wholesale spot price for 2006-07 is above the LRMC range, NERA notes that the number of half-hour prices above $5,000/MWh for this year is not abnormally high in comparison to other years, suggesting that the drought induced shortage of supply had a more evenly spread uplifting effect on spot prices over the whole period.

Similar to Queensland and New South Wales, spot prices following the drought period fell to within the range of LRMC estimates and in more recent years have shown a decline to fall below the bottom of the range. This effect is most pronounced in the Victorian region, with the annual average spot price in 2009-10 and 2010-11 at 31 and 47 per cent below the bottom of the range in respective years. NERA attributes this deviation to a reduction in state load and the commissioning of new wind generation capacity in Victoria and South Australia.

South Australia

NERA's comparison of LRMC to wholesale spot and contract prices for South Australia is shown in Figure 5.5. Unlike the other three NEM regions modelled, observed wholesale annual average spot prices for South Australia are within the range of LRMC estimates in 2006-07 but are considerably above the estimated LRMC range in 2007-08. Spot prices in 2008-09 and 2009-10 remain high but are within the LRMC range, while the spot price for 2010-11 falls considerably below the range. Indicative contract prices are at the high end of the LRMC range from 2005-06 through to 2008-09 and then at the bottom of the range for the two years 2009-10 and 2010-11.

Figure 5.5 South Australia weighted average prices compared with LRMC

The high observed spot prices in 2007-08 are predominantly as a result of the March quarter in 2008, which remains a record high quarterly price across all NEM regions. The number of high price events in 2007-08 increased considerably from previous years, driven mainly by the period between 5 and 17 March 2008 where prices exceeded $5,000/MWh for 26 half hour periods. NERA suggests that contributing factors to these high price events are an unprecedented 15-day heat wave over this period, leading to record levels of electricity demand, and unusually low levels of interconnector capability, limiting electricity imports from Victoria. In 2007-08 there were 39 half-hour periods where the price difference between Victoria and South Australia was greater than $9,000/MWh, twice the number of the next highest year in 2009-10.

Table 5.1 was taken from the NERA modelling report and shows the extent of interconnector limitations between Victoria and South Australia over the period modelled. As a result, 2007-08 was particularly affected by periods of extreme demand and limited interconnection with Victoria.

Figure 5.6 Price differences and interconnector flows between South Australia and Victoria

Price Difference	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
> $9,000						
- No. of events	0	0	39	8	21	5
- Ave. interconnector flow (MW)	-	-	356	397	413	475
> $5,000						
- No. of events	0	0	50	18	36	9
- Ave. interconnector flow (MW)	-	-	362	380	376	454
> $1,000						
- No. of events	16	8	53	25	56	14
- Ave. interconnector flow (MW)	362	388	356	373	354	404

The number of high price events fell in 2008-09, increased again in 2009-10 and fell back again in 2010-11, broadly in line with movements in the annual average price. Yet annual average prices in these three most recent years have not exceeded the range of LRMC estimates. NERA suggest that the growing impact of wind generation capacity has resulted in an increased prevalence of low and negative price periods, thereby contributing to lower annual average prices. This has been compounded in 2010-11 by generally lower levels of demand than in previous years.

Tasmania

The MEU considers that Tasmania is a special case and should be exempt from the application of the rule.[40] The MEU asserts that Hydro Tasmania always has market power as the combined output of all other sources of generation in Tasmania is almost always less than the actual demand. Therefore to constrain the bidding of Hydro Tasmania at all times would provide an unintended benefit to Victorian consumers through energy imports via Basslink. The MEU stated in their rule change request that the proposed rule should not apply to the Tasmanian region of the NEM and suggested that a derogation would be required to insulate Hydro Tasmania from the imposition of the proposed rule.

In light of the MEU's position, and the difficulty of adequately modelling the cost of hydro generation, the Commission decided not to commit the additional resources required to estimate values of LRMC for the Tasmanian region. The Commission has noted that the Tasmanian Government appointed an Expert Panel to review the electricity industry in Tasmania. The Expert Panel has considered issues regarding the market power of generators in Tasmania and made recommendations about how those issues should be addressed.[41]

5.3.2 Are these results evidence of the existence of substantial market power?

The relationship between LRMC and wholesale price must be viewed over a sufficient time such that investors are able to respond to the signals of the market. It follows therefore, as outlined in the definition, that a generator can only be considered to have exercised substantial market power if, in the presence of significant barriers to entry, it has bid in such a way so as to increase wholesale prices for sufficient duration or frequency to sustain prices above LRMC.

NERA's comparison of annual average wholesale prices with estimates of LRMC has shown that prices in each region have, on occasion, exceeded this level. In New South Wales, Victoria, and South Australia there is one year, and in the case of Queensland two years, out of the six-year period where this has occurred. In New South Wales and Victoria the two most recent years have fallen below the range. This is extended to three years in the analysis of Queensland. In all other years the annual average wholesale price in each region falls within the range of LRMC estimates. While NERA has determined that each NEM region is the relevant market for the purposes of the analysis, these observations can also be applied to the NEM as a whole were it to be considered as the relevant geographic dimension.

The Commission therefore agrees with the statement made in the modelling report by NERA that the "…analysis of LRMC compared with spot and contract market outcomes supports a conclusion that there is insufficient evidence of market power. This conclusion holds irrespective of whether the NEM as a whole, or each NEM region, is treated as a market for the purposes of the market definition"[42]. NERA's results are

40 MEU, rule change request, 23 November 2010, p50

41 http://www.electricity.tas.gov.au/news/expert_panel_delivers_final_report

42 NERA Economic Consulting, Benchmarking NEM Wholesale Prices Against Estimates of Long Run Marginal Cost, A Report for the AEMC, 16 March 2012, p14

supportive of a particular conclusion rather than being a definitive assessment of the existence of market power. This distinction is important and the Commission has therefore considered other factors in addition to NERA's test in its determination on the existence of substantial market power.

Some large generators in the NEM have, on occasion, the ability to bid their capacity so as to increase the spot price to levels considerably above their costs. Although in these cases the SRMC may be reflecting the scarcity value customers place on being able to consume electricity. Certain supply and demand conditions have existed in previous years that may have, for short periods, added to this ability and increased some generator's transient pricing power. As evidenced in NERA's analysis, these conditions were the combination of restricted interconnector flow and high demand in South Australia in 2007-08 and the combination of drought restrictions on generator capacity and high demand in Queensland, New South Wales and Victoria in 2006-07. This effect extended into 2007-08 in the case of Queensland. These conditions of supply and demand have resulted in wholesale annual average prices rising above the range of LRMC estimates in these particular years due to:

- less expensive base-load plant being withdrawn from the merit order, thereby relying on more expensive plant to be dispatched to satisfy demand; and
- a greater ability of generators still in the merit order to exercise transient pricing power.

Conversely, more recent years have shown some expansions of capacity above the underlying demand growth rate and lower demand across NEM regions. NERA's analysis has shown a reduction in annual average spot prices to levels well below the range of LRMC estimates. This is particularly noticeable in Victoria and South Australia where the Renewable Energy Target (RET) has driven the commissioning of new wind generation capacity resulting in an increase in the occurrence of low and negative half-hour prices. In addition, a recent assessment by AEMO suggests that the changing macro-economic environment, a more energy-conscious public, the impact of rooftop solar photovoltaic installations, and milder weather have all recently contributed to lower than expected levels of energy consumption across the NEM regions.[43]

The Commission recognises that in some circumstances pricing below cost can be anti-competitive behaviour. An example of this is predatory pricing, which involves a strategy to weaken the position of competitors or potential competitors with a view to being able to raise prices in the future. This is also a matter that would initially be the responsibility of the ACCC to consider under its powers. The Commission has not done a substantive investigation into whether the evidence of prices below LRMC could in some cases be due to anti-competitive behaviour. However, we would note that there are a range of other factors that appear to be plausible explanations for the current level of wholesale prices compared to LRMC, which are discussed in the previous paragraph.

The results from NERA's analysis not only demonstrate a lack of evidence of the existence of substantial market power but also that, more recently, wholesale prices have not been sufficient to recover the costs of new entry.

43 AEMO, Electricity Statement of Opportunities - Update as at 2 March 2012

The broad consistency of the relationship between LRMC and annual average wholesale prices in each NEM region also suggests that any particular generator's ability to exercise substantial market power may be quite limited. If some generators had the ability to exercise substantial market power it seems unlikely that we would see such a level of consistency in the relationship between LRMC and annual average wholesale prices.

6 Impact on electricity consumers

This Chapter outlines the interaction of wholesale prices, NERA's analysis of LRMC, and retail prices for residential and large industrial and commercial customers. It also compares NERA's LRMC results with LRMC outcomes produced by jurisdictional regulators as part of the setting of regulated retail tariffs.

6.1 What do NERA's results mean for residential retail customers?

Residential electricity consumption accounts for approximately 29 per cent of total electricity consumption in Australia, with the majority of electricity consumed by the commercial, manufacturing and mining sectors.[44] In jurisdictions that are open to full retail contestability, customers have a choice of being supplied under a 'standing offer' contract or a 'market' contract. With the exception of the Victorian market, the jurisdictional regulator sets the maximum tariffs to be offered by the incumbent retailer for electricity consumption and approves the terms and conditions of standing offer contracts. Market contracts are negotiated between the retailer and customer and generally differ from standing offer contracts with regard to price and other incentives. The proportion of customers that have moved from regulated retail tariffs to negotiated market contracts differs by jurisdiction but usually increases with higher levels of retail competition.

Jurisdictional regulators set residential electricity prices for incumbent retailers for standing contracts through retail price determinations. The length of time between retail price determinations varies by jurisdiction but is usually between two and four years. There is currently no uniform methodology utilised by jurisdictional regulators for setting retail electricity prices with each jurisdiction having evolved its own methodology over time, although some aspects of the methodologies are similar.

One of the key inputs to jurisdictional retail price determinations is an allowance to cover the costs retailers will incur for the wholesale purchase of electricity to supply the load profile of customers remaining on regulated retail tariffs. This allowance is referred to as the wholesale energy cost (WEC) and is typically based on an assessment of:

- the LRMC of electricity generation from a portfolio of new entrant generation; and/or
- the market cost of purchasing electricity from the spot market and through hedge contracts.

The LRMC of generation, as calculated by jurisdictional regulators, reflects the minimum price that new generators require to enter the market and also reflects the price that a new entrant retailer can expect to pay for wholesale electricity in the long-run. The market purchase cost approach is a more direct measure of the purchasing costs facing a retailer and can be used in preference or as a complement to the LRMC approach.

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44 A. Schultz and R. Petchery, Australian Government – Australian Bureau of Agricultural and Resource Economics and Sciences, Energy Update 2011, June 2011, p5

In New South Wales, the Independent Pricing and Regulatory Tribunal (IPART) bases retail tariffs on the higher of LRMC prices or market purchase costs.[45] The Queensland Competition Authority (QCA) typically elects to take an average of the two approaches.[46] The Essential Services Commission of South Australia (ESCOSA) provides a range for their determination that incorporates both approaches.[47]

6.1.1 A comparison of LRMC estimates in NERA's analysis and retail price determinations

Table 6.1 shows a comparison of LRMC estimates developed by NERA and those developed for input to the determination of wholesale energy costs for jurisdictional retail price determinations.

Figure 6.1 Comparison of LRMC estimates developed by NERA and jurisdictional regulators for retail price determinations

$ Nominal	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
NSW	Retail price determination 2007			Retail price determination 2011		
IPART - EnergyAustralia	$52.15	$53.12	$54.85	$68.49	$68.25	$69.43
IPART - Integral Energy	$54.34	$55.03	$56.82	$70.69	$71.61	$73.63
IPART - Country Energy	$44.31	$45.06	$46.55	$63.75	$64.17	$65.98
NERA - Low	$41.98	$43.88	$57.42	$58.19	-	-
NERA - High	$55.89	$58.68	$77.41	$78.29	-	-
NERA - Perturbation	$51.10	-	-	$65.70	-	-
QLD	Retail price determination 2009			Retail price determination 2011		
QCA - LRMC	-	$42.61	$54.91	$58.59	$66.05	-
NERA - Low	$39.35	$40.59	$55.86	$54.83	-	-
NERA - High	$52.41	$54.27	$75.23	$73.55	-	-
NERA - Perturbation	$50.90	-	-	$67.10	-	-
SA	Retail price determination 2007			Retail price determination 2010		
ESCOSA - LRMC	-	$89.43	$94.74	$93.14	$95.61	$99.07
NERA - Low	$47.79	$50.67	$63.63	$64.19	-	-
NERA - High	$64.33	$68.73	$86.95	$87.45	-	-
NERA - Perturbation	$47.40	-	-	$72.70	-	-

With the exception of South Australia, the estimates of LRMC developed for jurisdictional price determinations are generally within, or close to, the range of estimates developed by NERA. There are some differences evident in estimates for New South Wales and Queensland in 2009-10. South Australia has considerably higher estimates across all time periods.

It is important to note that the methodologies used by NERA and the jurisdictional regulators are for different purposes. There are a number of significant differences in

45 IPART, Changes in regulated electricity retail prices from 1 July 2012, Electricity - draft report and draft determination, April 2012, p5

46 The QCA is changing its approach to an annual review of regulated retail tariffs.

47 ESCOSA, 2010 Review of retail electricity standing contract price path, Final inquiry report and final price determination, December 2010, p56

the two methodologies used to calculate these figures that would suggest that they are not directly comparable.

These differences can be summarised as follows:

- while the NERA estimates of LRMC are based on the costs of generation required to meet the entire regional load, the LRMC estimates developed by the jurisdictional regulators are based on the costs of generation necessary to only meet the load of residential customers remaining on standing regulated retail contracts. Residential customers have an inherently peakier load shape than the system as a whole. The existing stock is less utilised over time and the capital costs of plant capacity are therefore averaged over less energy produced, suggesting that the jurisdictional regulators' estimates of the LRMC should be high in comparison to NERA's estimates.
- while the NERA estimates are based on an incremental approach that assumes an already existing stock of capacity with new plant built to meet an incremental increase in demand, the LRMC estimates developed by the jurisdictional regulators are determined through a "greenfields" approach that assumes that the entire generation system is built new at the outset using the most efficient combination of new plant to meet the nominated load. It is generally more expensive to build a greenfield plant than expand an existing plant, suggesting that the jurisdictional regulators' estimates of the LRMC should be high in comparison to NERA's estimates.
- NERA's methodology for the estimation of the LRMC does not explicitly include the additional revenue received by renewable energy projects under the RET. Without this subsidising effect on renewable energy projects, NERA's estimates of LRMC are likely to be high in comparison to those provided by the jurisdictional regulators.
- NERA and each jurisdictional regulator use a range of different source input assumptions to calculate LRMC, e.g. Australian Energy Market Operator (AEMO) data for the National Transmission and Network Development Plan (NTNDP), ACIL Tasman capital cost data, etc.

The intention of outlining these differences is to highlight that the methodology used by NERA and the methodologies used by jurisdictional regulators in previous retail price determination have been adopted for different purposes. The differences in methodologies would suggest that differences in results should be expected.

For the purposes of setting the majority[48] of the 2012/13 regulated retail electricity prices, the QCA has used a market based approach to estimate energy costs when estimating the wholesale electricity cost. This has replaced the previous Benchmark Retail Cost Index which required the QCA to use a 50/50 weighting of a market based approach and LRMC.[49]

The Commission compared the NERA methodology with the approach the QCA adopted under the Benchmark Retail Cost Index because it was the approach the QCA

48 The prices for Tariff 11 were removed from the 2012 ministerial delegation

49 QCA, Regulated Retail Electricity Prices 2012-13 - Draft determination, March 2012, p21

used when calculating regulated retail prices that covered the period of NERA's analysis.

6.1.2 NERA's LRMC estimates in the context of retail prices

A number of submissions to the directions paper have contended that regulated retail tariffs determined on the basis of direct spot market and contract market purchase costs are unduly influenced by generators exercising market power.[50] The majority of these submissions have specifically cited the exercise of market power in South Australia as contributing to retail price rises in that region. The submissions assert that regulated retail tariffs could be influenced if they are calculated, using the market cost purchase approach, close to or during a period where generators have exercised market power.

It is important to note that this issue does not relate to the exercise of substantial market power. Rather it relates to the ability of a generator to exercise transient pricing power, to increase prices over a short period that has an effect on the wholesale prices at the time the jurisdictional regulator is making its determination. While the generator's ability to increase prices may be transient in nature, the effect may be to increase regulated tariffs over the entire determination period. This issue only relates to the market purchase cost approach and not to the LRMC approach, which is determined independently of movements in the wholesale price.

However, transient pricing power is not the only driver of high prices during these periods. The restricted supply and high demand conditions that may provide some large generators with an increased ability to exercise transient pricing power also result in the dispatch of relatively more expensive higher merit order peaking plant in place of cheaper lower merit order generation from coal or hydro power sources or lower cost imports from other regions via interconnectors.

Further, jurisdictional regulators do not simply determine retail prices on the basis of market purchase costs without a consideration of extenuating or unusual circumstances in the market. In IPART's 2007 retail price determination for New South Wales special consideration was given to whether a continuation of the drought conditions observed in 2006-07 into later years should be included in the setting of regulated retail tariffs.[51] Ultimately, due to concerns about the longevity of the high wholesale prices, IPART decided to include an annual review mechanism of the market-based electricity purchase cost allowance during the period for which the determination applied.

A continuation of the high annual average wholesale prices in 2006-07, shown to be above NERA's range of LRMC estimates in Figure 5.3, was not incorporated into IPART's retail price determination in New South Wales in 2007 and was subsequently

50 MEU, Analysis of the impact of GMP on standing retail prices for small consumers as developed by ESCOSA for the SA region, 1 March 2012; Energy Action Group, submission to the directions paper, 15 November 2011, p2; South Australian Council of Social Service, submission to the directions paper, 21 November 2011, p1

51 IPART, Promoting retail competition and investment in the NSW electricity industry, Regulated electricity retail tariffs and charges for small customers 2007 to 2010, Electricity – Final Report and Final Determination, June 2007, p82

reviewed over the determination period to ensure that the WEC component of the regulated tariffs were in line with retailers' actual market purchase costs.[52]

6.2 What do these results mean for large commercial and industrial users?

A large user's electricity costs are determined for a set period of time through a negotiated contract, either directly with a generator possessing a retail licence or through a retailer. Similar to many large users in the NEM, retailers who do not have the backing of generation assets (i.e. are not vertically integrated) also enter into direct contract arrangements with generators for the electricity that they expect their customer base to consume.

Based on information provided by the MEU, the AEMC is aware that many large users enter into a single contract arrangement with one supplier for their entire expected load over a future period of several years.[53] The price paid for their electricity consumption is therefore often heavily influenced by the expectations of supply and demand conditions at the time of contracting. However, electricity markets face swings in the relative levels of supply and demand, and the expectations of those levels, as supply increases in discrete lumps while demand increases gradually. Extenuating conditions in the market can sometimes exacerbate supply restrictions, such as drought, or increase the peakiness of demand, such as a heat wave. It is at these times that contract negotiations may be less favourable for a large user. For example, a large user who contracted during, or soon after, the high prices of 2006-07 in New South Wales, Queensland or Victoria, or 2007-08 in South Australia, is likely to have paid a relatively high price for their expected electricity consumption. Conversely, a similar contract transacted in more recent years would likely have been agreed at a relatively low price.

Retailers face movements in the wholesale spot price, which subsequently flows through to the wholesale contract price. However, efficient retailers adopt appropriate risk management strategies to protect themselves from transient pricing power that the generator exercises in recovering its efficient costs. In recognition that a retailer may face swings in wholesale contract prices due to changes in expectations of underlying supply and demand conditions, an efficient retailer adopts an incremental approach to hedging its exposure to the spot market. A retailer that builds its contract position up by incrementally hedging its position over time avoids being overly exposed to any particular spot market event where supply and demand conditions were tight or where transient pricing power may have been exercised by generators. Some contracts will be transacted when the wholesale price is relatively high and some will be contracted when the wholesale price is relatively low. The overall outcome for the retailer will involve a trade-off between timing its transactions to obtain the lowest possible price and spreading transactions over time so as to diversify its exposure away from any individual spot market event that has a disproportionate influence on contract prices.

The Commission would expect a large user to adopt appropriate risk mitigation strategies to address the swings in the balance of supply and demand that are an

52 Ibid, p86

53 MEU, submission to NERA technical paper, 2 February 2012, p13

inherent feature of any electricity market. This would include, where appropriate, taking measures that would limit their exposure to supply and demand conditions in the electricity market at a specific point in time.

7 Evidence of the existence of barriers to entry in the NEM

This Chapter provides a description of the assessment undertaken to determine evidence supporting the existence of significant barriers to entry in the NEM.

7.1 Reasons for the analysis

A firm has substantial market power if it has the ability to sustain prices that should attract new investment because they exceed LRMC. As discussed in section 5, the Commission considers that NERA's comparison of LRMC estimates with spot and contract market prices does not support the existence of substantial market power in the NEM. However, analysis undertaken by NERA compares estimates of LRMC with historical prices rather than expected future prices. While the use of historical prices was undertaken for practical and objective reasons, the analysis leaves open the question of the ability for substantial market power to be sustained into the future.

As discussed in section 4.3, it is not necessary to wait for ex-post evidence of several years of above-LRMC pricing before taking action. If a generator has acted in a way that has caused annual average wholesale spot or contract prices to exceed LRMC and significant barriers to entry indicate that the generator is likely to be able to sustain those prices, then that will constitute evidence of an exercise of substantial market power.

Substantial market power is a product of ineffective competition between incumbent generators. Substantial market power is therefore likely to be sustained where the existing levels of competition are insufficient but no new investment occurs because it is prevented or delayed due to barriers to entry. Accordingly, if competition is at a sufficient level that generators, either independently or combined, do not have the ability to exercise substantial market power then it may not matter whether new entry is possible.

In order to determine the ability of generators to sustain substantial market power, the Commission engaged CEG to undertake an analysis of the existence of barriers to entry in the NEM.

7.2 The definition of a barrier to entry

The Commission agrees with CEG's proposed definition of barriers to entry in the context of the NEM as:

Box 7.1: Definition of barrier to entry

A **barrier to entry** is any set of conditions that give rise to the ability of incumbent generators, acting individually or in concert, to set market prices above the level required to compensate for the efficient costs of new capacity required to meet demand growth in the NEM (or in a NEM region).

CEG notes that this is a very broad definition but has purposely attempted to avoid a refined and overly theoretical approach so as not to mislead or confuse the assessment. CEG recognises that not all factors that make entry difficult should be considered as a

relevant case for regulatory intervention. More broadly, CEG have considered any set of structural, institutional and behavioural conditions that would allow incumbent generators to earn prices above costs for a sustained period of time.

Consistent with this definition, CEG have considered stand alone and combinations of factors that would amount to a significant barrier to entry.

As CEG note, some market features which raise the costs of new entrants do not necessarily create a barrier to entry that would warrant regulatory intervention. If there are high costs of new entrants but these reflect the high social costs of that entry then these costs are simply costs of entry - not inefficient barriers to entry.

In the context of the NEM, CEG believe that most barriers to entry can be usefully classified into the following three categories:

1. barriers to entry arising from socially inefficient imposts on generation in general and new entry in particular;
2. other structural features of the market that prevent entry from eliminating substantial market power; and
3. strategic barriers to entry that result from the behaviour of the incumbent generators.

The first two categories refer to barriers that relate to the fundamental structure of supply and demand conditions in the market. The third category refers to barriers that are created by the behaviour of incumbent generators that, whether undertaken intentionally or not, inhibit the entry of new generation investment.

Structural barriers to entry may include:

- sunk costs or irreversible investments that may inhibit a generator from entering the market in the first place as it knows that these costs will not be able to be recovered if it chooses to exit. Sunk costs create a difference in the price expectations between new entrant generators and incumbent generators. An incumbent generator will ignore its sunk costs and price its production as low as possible to remain operating while a new entrant generator will expect to recover both its sunk costs and other costs;
- absolute cost advantages that allow an incumbent generator to price above its costs but below the costs that would be faced by a new entrant. These include, among other things, better access to capital markets, better human or locational resources, or patents over certain technologies;
- vertical integration where access to one part of the market requires a presence in another part; and
- environmental and safety regulations that require minimum benchmark standards to be met in order to operate in the market.

Strategic barriers may include:

- over-investment in capacity that may allow an incumbent generator to price down to a lower level of marginal costs than that which is required by a new entrant generator or readily expand its own supply in the face of new entry;

- contractual arrangements used by incumbents to lock in the best customers or suppliers for long periods of time; and
- offering capacity into the market at prices below cost in order to deter new entrant generators.[54]

In relation to electricity generation, CEG has highlighted the following factors that make entry particularly risky in comparison to other industries:

- Electricity infrastructure generally has high up-front sunk costs and very long asset lives. Investors therefore may place a significant sum of money at risk that may not be recovered if circumstances do not eventuate as expected. This risk is exacerbated by long lead times prior to new entry where significant sunk costs may be incurred a long time before any cost recovery occurs;
- Many thermal generators tend to have large economies of scale relative to the market. Investments are lumpy and the relative size of the investment is likely to have a measurable impact on the market prices post-entry, which lessens the certainty that an investor may have in the ability to recover efficient costs;
- The dynamic nature of supply and demand conditions in electricity markets means that price is highly uncertain and, as a result, participants are most often unwilling to enter into long-term contracts. In the absence of long-term contracts, a potential new investor cannot hedge future market price risk to any appreciable degree prior to entry; and
- Changes in regulations that may impose additional costs or affect relative costs of generators. These regulations may impose additional costs on new entrants or may act as an incentive for new investment (although this may be restricted to a specific type of new entrant such as renewable technologies under the RET).

When investigating the existence of barriers to entry in the NEM, CEG noted the importance of identifying costs of entry that are not inefficient barriers to entry. As noted, high sunk costs, lumpy investments, long lead times, lack of availability of long-term contracts, and potential future changes in regulations are all factors that may inhibit entry but should not always be considered as barriers to entry. Many of these factors should simply be viewed as the risks necessarily borne by investors in a market designed to provide efficient returns.

7.3 Evidence of barriers to entry in the NEM

7.3.1 Levels of effective competition in NEM regions

As previously noted, ineffective levels of competition are a necessary condition for the exercise of substantial market power. CEG suggests that if conditions of competition are sufficiently effective that generators are unable to price in excess of costs over the long term, then the existence of barriers to entry is likely to be inconsequential to an efficient market outcome.

54 This form of strategic behaviour is commonly referred to as predatory pricing and is a breach of competition law.

CEG has provided a range of evidence through their analysis to suggest that levels of competition are satisfactory to prevent excessive pricing above long-term costs in Queensland and Victoria, to a lesser extent in New South Wales and South Australia, and of potential concern in Tasmania. CEG has assessed effective levels of competition through an analysis of market concentration, investment, and capacity utilisation.

Market Concentration

A high degree of concentration of market share may indicate that a generator could profitably withhold capacity in order to raise prices above LRMC without the threat of other smaller generators taking market share. CEG's analysis of individual generators' market shares in NEM regions suggests that levels are below that which is consistent with ineffective competition except for Tasmania, and to a lesser extent in South Australia.[55] Further, CEG determined that market concentration levels are below the ACCC's threshold for competition concerns except for Tasmania, and to a lesser extent in New South Wales and South Australia.[56] Although CEG have provided evidence to suggest that the level of concentration is reducing over time in these last two regions.

Investment

CEG also considered overall levels of investment in each of the NEM regions to determine if there are any significant barriers to entry preventing investment by new entrants.[57] In particular, an examination of the extent to which investment in the market has been undertaken by new entrants rather than incumbent generation firms. CEG establish that over the history of the NEM sufficient investment has taken place to ensure that capacity can meet peak demand with only a few rare exceptions. While overall investments in New South Wales and Victoria have been lower than Queensland, the level of investment by new entrants in these regions is sufficient to suggest that barriers to entry have not been significant in these regions. CEG are more cautious in relation to South Australia where most of the recent new investment has been undertaken by AGL and therefore it is difficult to draw any conclusions from the level of investment on barriers to entry in this region.

Capacity Utilisation

CEG also state that the level of capacity utilisation is a significant factor as it relates to the extent to which incumbent firms are using the capacity they have available or withholding capacity from the market as they are of the belief that their actions would not induce new entry.[58] CEG determined that there is a noticeable reduction in capacity utilisation in South Australia at prices above $250/MWh. This reduction contrasts with much smaller reductions or even increases in the other NEM regions. While there are myriad reasons as to why levels of capacity utilisation at high prices are lower in South Australia, including more frequent outages or the responsiveness of generation plant, it is of note that the primary driver of the fall in South Australian capacity utilisation when prices are above $250/MWh is AGL's operation of the Torrens Island power

55 Competition Economists Group, Barriers to entry in electricity generation - a report for the AEMC, April 2012, p26

56 Ibid, p28

57 Ibid, p52

58 Ibid, p55

station. Potential barriers to entry in South Australia are considered in more detail in section 7.3.2.

Conclusions on effective competition

CEG suggests that, with effective levels of competition in New South Wales, Queensland and Victoria, the overall evidence suggests that barriers to entry are unlikely to be a significant issue in New South Wales, Queensland and Victoria. However, in Tasmania, and to a lesser extent in South Australia, CEG suggests that there is a greater potential for less competitive outcomes. These regions are therefore more likely to provide clearer evidence of the impact of barriers to entry on the level of competition. As noted in section 5.3, Tasmania is a special case and we have not included a consideration of substantial market power in Tasmania for the purposes of this draft determination. CEG has undertaken a more comprehensive assessment of the implications for South Australia.

7.3.2 Potential barriers to entry in South Australia

CEG has provided evidence supporting elements of both structural and strategic barriers to entry in South Australia.

Structural Barriers

CEG suggests that a principal concern for South Australia is the large minimum investment size relative to the size of the market.[59] Demand is not growing at a strong rate and AEMO is not predicting the need for material new capacity. A new entrant of sufficient size may expect a material reduction in prices post-entry and may not be confident of recovering their sunk and irreversible costs. In such a situation, incumbent generators may be able to raise average market prices above the level necessary to encourage additional investment in generation without the threat of that new entry occurring.

Alternatively, CEG suggest that it is conceivable that the entry of an additional generator would destabilise the coordination of incumbent generators to a sufficient extent that post-entry prices would be materially lower. Although CEG do not provide evidence to suggest that generators in South Australia are in fact coordinating price outcomes.

Strategic Barriers

CEG suggest that incumbent generators in South Australia may be able to deliberately promote the expectation that the entry of a minimum efficient scale new entrant would materially alter the pricing strategies of the incumbents.[60] Incumbent generators may install excess capacity in order to create the conditions necessary for an independent new entrant to expect low prices. CEG suggest that expansions of existing capacity by incumbents in South Australia have so far been consistent with this theory.

Since acquiring Torrens Island Power Station, AGL has been the largest incumbent generator in South Australia and has also been the single largest investor in new

59 Ibid, p40

60 Ibid, p41

capacity. In addition, all of the announced plans for new scheduled generation in South Australia are by large incumbent generators.

However, CEG qualifies this theory by suggesting that incumbent generators likely also have the lowest cost expansion opportunities, that AGL's investments have predominantly been in wind farms to provide Renewable Energy Certificates (REC) to support its retail load, and that announced plans should not be seriously taken into consideration until investment or construction has actually commenced.

CEG also considers that another form of pre-emption by incumbent generators in South Australia may arise from the large presence of vertical integration between generators and retailers, the consequence of which may raise the costs of hedging for independent new entrants.[61] CEG refers to the recent statement by the AER that since 2007 there has been negligible investment in generation by firms that are not also present at the retail level.[62]

Vertical integration acts as a natural hedge to the wholesale market and reduces the level of participation in the market for hedge contracts. South Australia persistently demonstrates a lower level of contract market liquidity than other NEM regions.[63] A lack of liquidity in the hedge contract market has the potential to act as a significant deterrent to new entry. Long-term hedge contracts may be a material prerequisite for a potential new entrant to arrange for finance for the upfront costs of project development. The costs of financing may be substantially increased for a new entrant if they cannot obtain such a hedge contract.

However, CEG notes that businesses who are unable to negotiate hedge contracts on terms they consider to be reasonable may simply be underestimating the efficient market price for hedging. A further explanation is that vertically integrated entities have lower cost expansion opportunities and are able to undercut new entrants in the construction of infrastructure.

7.4 Implications for the future exercise of substantial market power

CEG is of the view that the analysis undertaken by NERA provides the most direct form of evidence that barriers to entry are not a regulatory concern in the four mainland regions of the NEM. The overall evidence from CEG's analysis suggest that barriers to entry are unlikely to be a significant concern in New South Wales, Queensland and Victoria, but that the evidence concerning South Australia is less clear.

While CEG has found no strong evidence to support barriers to entry in any NEM region, they have recommended ongoing monitoring with regard to South Australia. CEG suggest that the relationship between prices and LRMC in South Australia be subject to ongoing review to identify whether the historical evidence in the NERA analysis is atypical. Further, CEG propose that the impact of vertical integration and the problem of contracting for new entrants in South Australia should also be kept under review.

61 Ibid, p42

62 Australian Energy Regulator, State of the Energy Market 2011, p106

63 Competition Economists Group, Barriers to entry in electricity generation - a report for the AEMC, April 2012, p47

In consideration of the lack of evidence supporting the existence of substantial generator market power, and the lack of firm evidence supporting the existence of significant barriers to entry, there are insufficient grounds to assume the likely future exercise of substantial market power by generators in the NEM.

8 Consideration of the MEU's proposed rule

8.1 Commission's analysis

The Commission has sought to define the problem that the MEU's proposed rule seeks to address and then to determine whether evidence of that problem exists. The relevant problem is the exercise of substantial market power by generators in the NEM, where that market power is exercised with the purpose or effect of increasing wholesale spot and contract prices. The exercise of substantial market power is the ability of a generator to increase annual average wholesale prices to a level that exceeds LRMC, and sustain prices at that level due to the presence of significant barriers to entry.

This process has provided the background and key facts against which to consider the likely effects of the MEU's rule change request. The exercise of substantial market power is likely to be detrimental to the NEO. If a generator is able to sustain average wholesale spot or contract prices above a workably competitive level, those prices are likely to flow through to retail prices and increase the prices that users pay for electricity. Electricity is a vital input into most goods and services, and sustained high electricity prices can have a significant impact on the broader economy.

8.2 Rule proponent's view

The proponent considers that the proposed rule will prevent or constrain the exercise of market power by generators. The proposed rule will be in the interests of consumers of electricity because the wholesale market will be able to operate as intended by dispatching generation in a merit order based on dispatch offers that more closely reflect each generator's short-run marginal cost. This will ensure that generation in each dispatch interval is provided at least cost. It follows that consumer electricity prices will reduce, which will promote downstream investment.

In addition, wholesale price volatility will reduce, which will also reduce costs and risks faced by market participants. The main benefits of reduced volatility will be that:

- generators will view unplanned outages as less risky and will avoid the costs associated with insurance contracts on unplanned outages;
- lenders of capital will view the market as less risky and will seek lower risk premiums from investors in wholesale market infrastructure;
- retail risk management costs in the wholesale market will reduce along with prudential requirements to AEMO. Retail competition will increase and less retailers will exit the market for an inability to cover costs;
- there will be fewer occasions where consumers need to deliberately reduce their output, resulting in more productive time and less wastage; and
- liquidity in the contract and future markets will improve. With less volatility from generator market power, other generators will be more willing to enter into contracts as:
    - they face less spot price risk from an unplanned outage; and
    - they have less to gain from maintaining a large exposure to the spot market.

8.3 Assessment against the NEO

Regulatory intervention to prevent or constrain substantial market power is likely to contribute to the achievement of the NEO, provided that the benefits of any proposed solution exceed the cost in terms of achievement of the NEO.

It is in the context of the achievement of the NEO that the Commission has chosen to investigate the existence of generator market power in the NEM and to assess the rule proposed by the MEU.

8.3.1 NEO

Under section 88(1) of the NEL, the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO.

The NEO is set out in section 7 of the NEL as follows:

> "The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system."

For the rule change request, the Commission considers that the relevant aspects of the NEO are the contribution to the efficient operation and use of electricity services and the impact on efficient investment as it relates to the long-term costs and reliability of supply to consumers.[64]

8.3.2 Justification for regulatory intervention

Before the Commission can conclude that a proposed rule will potentially further the national electricity market objective, it must be satisfied that:

- a significant and sustained shortcoming with the rules has been identified that warrants regulatory intervention;
- the proposed rule change will deliver benefits by addressing the identified shortcoming; and
- the potential costs associated with the proposed rule change do not outweigh the deliverable benefits.

On the basis of the information provided in submissions, and its own analysis, the Commission is not satisfied that the proposed rule change meets these fundamental criteria.

Evidence of a problem

64 Under section 88(2), for the purposes of section 88(1) the AEMC may give such weight to any aspect of the NEO as it considers appropriate in all the circumstances, having regard to any relevant MCE statement of policy principles:

The Commission does not see evidence of a significant and sustained problem with the efficient functioning of the market. Some large generators in the NEM have, on occasion, the ability to bid their capacity so as to increase the spot price for short periods to levels considerably above their costs. Although in these cases the SRMC may be reflecting the scarcity value customers place on being able to consume electricity. There are certain supply and demand conditions that have existed in the NEM in previous years that, for short periods, may have added to this ability and increased some generator's transient pricing power. These conditions of supply and demand have resulted in wholesale annual average prices rising above the range of LRMC estimates in these particular years due to:

- less expensive base-load plant being withdrawn from the merit order, thereby relying on more expensive plant to be dispatched to satisfy demand; and
- a greater ability of generators still in the merit order to exercise transient pricing power.

Conversely, more recent years have shown some expansions of capacity above the underlying demand growth rate and less time spent at periods of high demand across NEM regions. NERA's analysis has shown a reduction in annual average spot prices to levels below the range of LRMC estimates.

Further, while CEG's analysis has shown some precursory signs that may be consistent with the presence of barriers to entry in South Australia, their findings overall do not support the existence of significant barriers to entry in the NEM. There are insufficient grounds to assume the likely future exercise of substantial market power by generators as a basis for regulatory intervention.

The Commission therefore does not support the making of a rule that seeks to limit the prices bid by generators. The Commission does not consider that sufficient evidence of a problem exists that requires a change to the rules on the basis of:

- a short period of history in each NEM region where annual average prices exceeded the competitive level due to certain supply and demand conditions, which increased the reliance on the dispatch of higher merit order plant and increased the ability of some large generators to exercise transient pricing power; and
- precursory signs of market concentration and reduced contract market liquidity in South Australia that may be consistent with the existence of barriers to entry but for which evidence is not definitive and does not suggest current significant impediments to investment.

Assessment of the proposed rule against the NEO

In light of NERA's comparison of LRMC estimates with spot and contract market prices, the Commission considers that there is insufficient evidence to support the existence of substantial market power. The Commission has therefore assessed the contribution of the rule change request to the NEO in consideration of there being

insufficient evidence of a market failure to which the proposed rule has been designed to address.[65]

In any approach to the assessment of a proposed rule against the NEO, the Commission must give regard to the long-term interests of consumers. Benefits that are realised in the short-term, while credible, will not be deemed as sufficient to justify regulatory intervention unless it is considered that these benefits are upheld in the long-term or are likely to result in other factors that are in the long-term interests of consumers.

In addition, generators who are restricted in their bidding will only be able to recover their efficient costs if there are a large number of supply shortages where the price is set to the market price cap (MPC). All things remaining the same, these additional supply shortages are unlikely to happen in the short-term as there will be sufficient generation capacity in the market to meet demand. As the MEU correctly asserts, this is likely to result in a reduction in average prices in the wholesale market. However, an inability of incumbent generators to recover their efficient costs will reduce incentives to prospective investors. As the construction of new entrant capacity fails to keep pace with the growth in demand, the frequency of supply shortages will inevitably increase. Generators will rely on increasing periods of insufficient supply capacity to drive the higher wholesale market prices that will be necessary to recover their efficient costs. In practice, this is likely to produce an unacceptably large number of outages.In the attachment to the AER's submission to the directions paper, Darryl Biggar suggests that investment incentives could be maintained by raising the level of the MPC at the same time as mechanisms are put in place to mitigate market power.[66] While an increase to the MPC would allow for a greater recovery of costs for generators at times of supply shortage, there may be considerable implications for the financial exposure of market participants at these times. These views are expressed in a recent review of the reliability settings.[67] In determining the level of the MPC, it is necessary to find an appropriate balance between allowing sufficiently strong signals to ensure that generation investment is consistent with meeting the reliability standard and limiting financial exposure for market participants and consumers.

Without evidence of wholesale prices exceeding the competitive level, a rule to limit the ability of generators to bid in a manner that seeks to recover their efficient costs would be detrimental to the NEM investment environment. Ultimately, a reduction in investment may result in an unacceptably high frequency of supply shortages, which may have implications for the reliability standard. This potential reduction in reliability is not in the long-term interests of consumers.

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65 The determination that there is insufficient evidence of substantial market power has meant the AEMC has not considered the MEU's proposed rule in the presence of substantial market power. If the existence of substantial market power had been identified, consideration of the proposed rule would include issues like the possibility that the MEU's rule change proposal could mean that most generators in each jurisdiction would be identified as 'dominant' under certain conditions and therefore have their bidding restricted. This would result in a departure from the a competitive environment where prices are determined by the balance of supply and demand.

66 AER, supplementary submission to directions paper by Darryl Biggar, 17 November 2011, p18

67 National Electricity Amendment (Reliability Settings from 1 July 2012) Rule 2011, AEMC, 16 June 2011, p10

If substantial market power were to be identified it is important that the causes of the existence of the substantial market power are understood and that any solution is focused on addressing those issues. A rule change may not always be the most effective way to address the existence and potential existence of substantial market power, particularly if it is caused primarily by industry structure. This is because the efficient price outcomes are those that reflect the interaction of demand and supply in a workably competitive market. If substantial market power exists it is possible that altering price signals will improve efficiency of the market but not as much as is likely to be gained from addressing the cause of substantial market power.

8.4 Commission's conclusions

In light of the results of NERA's analysis on the existence of substantial market power and CEG's assessment of barriers to investment in the NEM, there is not sufficiently strong evidence of a problem that justifies a change to the rules.

In the absence of substantial market power, the form of the rule to constrain or remove transient pricing power would not contribute to the achievement of the NEO.

The MEU's proposed rule would pose unacceptable limitations on the ability of NEM generators to recover their efficient costs. In the long-term, a generator must have an expectation that it will likely be able to recover its efficient costs, both for that generator to remain solvent and to encourage further investment and injections of capital to the NEM. A market design that does not provide a generator with a reasonable opportunity to recover its efficient costs will fail in attracting the necessary investment to maintain supply availability in line with the growth in demand. In light of the analysis, and the lack of evidence supporting the existence of substantial generator market power in the NEM, any rule that seeks to constrain or limit the bidding of generators, in the manner proposed by the MEU, or a similar manner, is likely to diminish incentives in the current investment environment, thereby reducing the long-term reliability of supply to consumers.

Commission's analytical methodology

In its consideration of the MEU's proposed rule, in particular in relation to the exercise of substantial market power, the Commission compared volume weighted average prices with LRMC and undertook analysis of barriers to entry in the NEM. It is the Commission's view that this represents a robust and appropriate methodology to consider these issues.

The Commission published both the technical paper and results paper from NERA outlining the methodology and source of data they used to compare weighted average prices to long run marginal costs. The Commission has also published the CEG paper outlining the definition and analysis they undertook in relation to barriers to entry consistent with the definition of substantial market power.

The publicly available information is such that it should enable stakeholders to closely reproduce the methodology that NERA and CEG used in their work. This provides a future basis for stakeholders, who suspect that substantial market power may have arisen, to undertake the same analysis that the Commission has utilised. This represents

a basis for stakeholders to engage in monitoring for substantial market power in the NEM.

Before considering making any rule change to address any future concern about the existence of substantial market power it would also be important to understand the causes of substantial market power. If the cause related to the industry structure of the wholesale electricity market in a particular region then a rule change may not be the most effective way to address the issue.

Abbreviations

AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AFMA	Australian Financial Markets Association
APC	Administered price cap
ASX 24	Australian Securities Exchange 24
CCA	Competition and Consumer Act
CEG	Competition Economists Group
ESAA	Energy Supply Association of Australia
ESCOSA	Essential Services Commission of South Australia
IPART	Independent Pricing and Regulatory Tribunal
LNG	Liquefied natural gas
LRMC	Long-run marginal cost
LYMMCo	Loy Yang Marketing Management Company
MEU	Major Energy Users' Inc.
MPC	Market price cap
MWh	Megawatt hour
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NERA	NERA Economic Consulting
NGF	National Generators Forum
NTNDP	National Transmission and Network Development Plan
OCGT	Open-cycle gas turbines
OTC	Over the counter
QCA	Queensland Competition Authority
REC	Renewable Energy Certificates
RET	Renewable Energy Target
RIT-T	Regulatory Investment Test for Transmission
RRP	Regional reference price

SRMC	Short run marginal cost
SSNIP	Significant and non-transitory increase in price
WEC	Wholesale energy cost

A The Major Energy Users' rule change request

A.1 The rule change request

On 23 November 2010, the Major Energy Users Inc. (MEU) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission) in relation to the potential exercise of market power by generators in the National Electricity Market (NEM).

The MEU's rule change request is entitled "Proposed Rule change to enhance generator competition outcomes during high demand periods in the NEM". The stated purpose of the proposed rule change is to prevent or constrain the exercise of market power by generators in the NEM. In particular, the MEU considers that during periods of high demand, some large generators do not face effective competition and have the ability to use their market power to increase the wholesale spot price, with flow on effects on contract prices.

To address this perceived problem, the MEU proposes amendments to the National Electricity Rules (Rules) that would:

- require the Australian Energy Regulator (AER) to assess which generators in each NEM region have market power and declare each of those generators to be a 'dominant generator' when regional demand exceeds a specified level; and
- impose restrictions on the dispatch offers that may be submitted by a 'dominant generator' so that when regional demand exceeds the level at which the generator has been declared to be a dominant generator, the dominant generator must offer all of its available capacity for dispatch at a price that does not exceed the administered price cap (APC), which is currently set at $300 per megawatt hour (MWh).

A.2 Rationale for the rule change request

The proponent considers that some generators in the NEM have market power. The proponent also considers that during periods of high demand, those generators have the ability and incentive to use their market power to increase the wholesale price.

In the rule change request, the proponent defines 'market power' in this context as "an ability of a generator to manipulate the spot price at a regional demand less than the maximum regional demand, by either physical or economic withholding of its capacity."[68] Physical withholding of capacity involves a generator determining not to offer a proportion of its available capacity to the market. The proponent defines 'economic withholding' as occurring where a generator prices a proportion of its capacity near the market price cap so that it is less likely to be dispatched and other generators will be dispatched ahead of it.[69]

68 MEU, rule change request, 23 November 2012, p32

69 Ibid, p37

The proponent considers that there is evidence of the exercise of market power in South Australia. The proponent also refers to potential instances of the exercise of market power by generators in other regions.

The proponent considers that the exercise of market power has significantly increased wholesale prices in South Australia. The proponent also considers that the consequences of the exercise of market power by generators include:[70]

- major energy users incurring substantial economic losses;
- an increase in prices of retail contracts and a general increase in electricity prices;
- an increase in the risk and cost of making transactions in the NEM;
- the exit from the retail market by retailers that are unable to obtain hedge contracts to manage risks; and
- the creation of barriers to new entry in generation and retail.

The proponent considers that the Competition and Consumer Act 2010 (CCA) does not effectively address the problem that this rule change request seeks to address. Section 46 of the CCA prohibits the taking advantage of substantial market power for an anti-competitive purpose. The proponent considers that the generator bidding behaviour that is the subject of this rule change proposal will not infringe the CCA because the generators' actions are not motivated by an anti-competitive purpose.

The proponent states that the NEM is unusual compared with overseas jurisdictions in leaving generator market power issues to be regulated by general competition law and not including specific provisions in the rules to prevent generators exercising market power. The proponent considers that electricity markets require additional specific provisions addressing the exercise of market power because of the unique features of electricity markets including the relative inelasticity of demand for electricity and the need to constantly balance supply and demand.

The proponent considers that the proposed rule will prevent or constrain the exercise of market power by generators and will have the following benefits:

- the wholesale market will be able to operate as intended by dispatching generation in a merit order based on dispatch offers that reflect each generator's marginal cost;
- wholesale price volatility will reduce, which will also reduce exposure of retailers to wholesale price volatility;
- liquidity in the contract and futures markets will improve; and
- retail electricity prices for consumers will reduce, which will promote downstream investment.

A.3 Solution proposed in the rule change request

The rule change request proposes to address the issues discussed above by adding additional provisions to Chapter 3 of the rules.

70 Ibid, p8

In summary, the proposed rule would impose restrictions on the dispatch offers that can be submitted by a generator that is declared by the AER to be a 'dominant generator'. The proposed rule would not impose any restrictions on the dispatch offers of generators that are not declared to be a 'dominant generator'.

The key elements of the proposed rule are as follows:

- The AER would determine which generator (or generators) in each NEM region is a 'dominant generator'. For each dominant generator, the AER would determine the level of regional demand at which that generator becomes a dominant generator.
- The proponent's draft rule amendments provide that a 'dominant generator' is any generator that has the ability to exercise market power at or above a certain level of regional demand. The AER would be required to publish guidelines on how it will determine if a generator is a dominant generator. The rule change request contains the following comments that indicate the proponent's intended tests for determining whether a generator is a dominant generator:
    - A dominant generator is a generator that "is able, at particular demand levels in a region, to set prices without any effective competition from other generators or has the ability to manipulate prices and supply in a regional market, to the extent that the actions of other competitors will have no effect in influencing the regional spot price."[71]
    - "The process by which a dominant generator would be identified is that if it can be demonstrated that the maximum regional demand at any time cannot be met without dispatch of that generator, then that generator is a 'dominant generator'."[72]
    - This assessment would be based on all generating units owned by an entity and any other generation over which the entity has dispatch control.[73]
- The AER would conduct this assessment annually. The list of dominant generators is therefore likely to change over time. More than one generator maybe declared to be a dominant generator in any region.
- If a generator is declared to be a dominant generator then:
    - when regional demand is less than or equal to the level of demand at which the generator has been declared to be a dominant generator, no additional restrictions would apply to the generator and it can offer any amount of generation for dispatch at any price (subject to the existing rules);
    - when regional demand exceeds the level of demand at which the generator has been declared to be a dominant generator, the generator would be

71 Ibid, p32

72 Ibid, p32

73 Ibid, p68. The assessment therefore would not be based on individual power stations, but would consider the combined generation output of all generating units owned or controlled by a generator in a NEM region.

required to offer all of its available capacity for dispatch at a price that is no more than the administered price cap (APC) (currently set at $300/MWh).

- The Australian Energy Market Operator (AEMO) would be required to make amendments to the dispatch algorithm to implement these restrictions.
- No new restrictions apply to generators that are not declared to be a dominant generator. Those other generators can offer any amount of generation for dispatch at any price (subject to the existing rules).
- The regional reference price (RRP) would continue to be determined as under the current rules and would apply to all generators including the dominant generator. If the RRP is set at more than $300/MWh due to dispatch offers above that level by generators that are not dominant generators, all generators including the dominant generator would receive the RRP.
- Additional investigation and enforcement powers would be conferred on the AER to ensure compliance with these new provisions. In particular:
  - the AER would have the same investigation and enforcement powers that the Australian Competition and Consumer Commission (ACCC) has when enforcing a breach of sections 46 to 48 of the CCA;[74] and
  - the rules would confer on the AER the same ability to seek or impose penalties as the ACCC has under the CCA.[75]

A.4 Commencement of rule making process

On 14 April 2011, the Commission published a notice under section 95 of the National Electricity Law (NEL) setting out its decision to commence the rule change process in relation to this rule change request. A consultation paper identifying specific issues for consultation was also published with the rule change request. Submissions closed on 26 May 2011.

The consultation paper:

- provided an overview of the MEU's rule change request and the perceived problem that it is seeking to address;
- explained the AEMC's proposed framework for assessing the rule change request; and
- identified key issues related to the rule change request and set out a number of questions for stakeholders.

74 The proponent considers that additional investigation and enforcement powers are required to ensure that a dominant generator does not engage in physical withholding of capacity in breach of the proposed rule, for example to determine whether any claimed outages were genuine. In particular, the proponent considers that additional powers similar to the ACCC's powers under section 155 of the CCA are required for the AER to effectively investigate allegations of physical withholding.

75 It appears that the proponent's intention is that the AER could seek Court imposed civil pecuniary penalties similar to the maximum penalties under section 46 of the CCA, which are the greater of $10,000,000, three times the value of the benefits obtained from the breach, or (if the Court cannot determine the value of the benefits) 10% of the annual turnover of the body corporate.

The Commission received 19 submissions on the rule change request as part of the first round of consultation. Submissions were received from a range of stakeholders with very diverse views. They are available on the AEMC website. A summary of the issues raised in submissions and the Commission's response to each issue is contained in Appendix B.

A.5 Extension of time

On 14 April 2011, the AEMC also gave notice under section 107 of the NEL that it had extended the period of time for making the draft rule determination until 30 April 2012. The Commission considered that the proposed rule change raised issues of sufficient complexity and difficulty such that additional time was necessary.

A.6 Approach proposed in the directions paper

The consultation paper set out the AEMC's proposed framework for assessing the rule change request. The assessment framework involved the following three steps:

- defining the problem;
- assessing whether there is evidence of that problem; and
- assessing potential solutions to that problem.

On 22 September 2011, the AEMC published a directions paper. The directions paper addressed step 1 of the above assessment framework - defining the problem. Before it was possible to properly assess the effect of the rule change proposal (or a more preferable rule) on the National Electricity Objective (NEO), it was necessary to clearly define the problem that the proposed rule was seeking to address, and then investigate evidence of the existence of that problem.

The stated purpose of the MEU's proposal is to prevent or constrain the exercise of market power by generators in the NEM. In particular, the MEU is concerned that some generators have market power that they are able to exercise during periods of high demand to increase the wholesale spot price to a high level that significantly exceeds their costs.

The Commission considers that the problem that the MEU's proposal is seeking to address is the exercise of market power by generators in the NEM, where that market power is exercised with the purpose or effect of increasing wholesale spot or contract prices.

The MEU's proposed rule does not contain a definition of 'market power'. Submissions on the consultation paper demonstrated significant disagreement between stakeholders in relation to the appropriate approach to defining market power.

Accordingly, the primary purpose of the directions paper was to set out the Commission's proposed approach to defining market power in the context of the NEM.

In doing so, the directions paper also addressed the related issues of:

- whether a distinction should be drawn between 'market power' and 'substantial market power';

- what is the appropriate definition of the 'exercise' of market power in the context of the NEM;
- what is the relevant 'market' for these purposes; and
- whether 'tacit collusion' should be considered as part of the rule change process.

The Commission received 16 submissions to the directions paper. As with the consultation paper, submissions were received from a range of stakeholders with a diverse range of views. Submissions by the National Generators Forum (NGF) and the AER also attached additional expert reports. The submissions are available on the AEMC website.[76]

On 12 October 2011, the Commission held a public forum in Adelaide to discuss the directions paper and to provide an opportunity for stakeholders to discuss issues raised in the directions paper.

A.7 NERA technical paper

On 22 December 2011, the Commission published a technical paper prepared by NERA Economic Consulting (NERA) that outlined the proposed methodology to address step 2 of the assessment framework – assessing whether there is evidence of a problem. Submissions to the technical paper closed on 2 February 2012.

Three submissions were received that provided comment on the approach outlined in the technical paper. These submissions are available on the AEMC website.[77]

76 www.aemc.gov.au

77 Ibid

B Summary of issues raised in submissions to the consultation paper

The tables below provide a summary of issues raised by stakeholders in their submissions to the consultation paper and the directions paper. The tables set out the Commission's responses to each of the issues.

The submissions and supplementary submissions received to both documents are available on the AEMC website at www.aemc.gov.au.

Stakeholder	Issue	AEMC Response
Should a distinction be made between 'market power' and 'substantial market power'?		
AER	Considers that high prices are part of the NEM and are important as they signal the need for investment. The AER is not concerned with periods of high prices which are consistent with underlying supply and demand conditions. However, the AER is concerned about situations where high prices reflect systemic economic withholding by generators.	The Commission agrees that periods of high prices are likely in an energy-only market such as the NEM and can provide a mechanism for generators to recover their efficient fixed costs and provide a signal for investment. If a generator is able to cause price spikes by economic withholding, that may constitute an exercise of substantial market power if it occurs with sufficient frequency to cause annual average prices to exceed LRMC. The Commission agrees that workable competition is a more appropriate benchmark than perfect competition when defining market power.
ESAA	Considers that an integral feature of the energy-only market design of the NEM is the ability to experience high priced events, which are relatively rare but necessary to provide revenue for peaking generation, enable base-load stations to bid at or under SRMC most of the time, and provide a signal for new investment. Considers that the NEM is not a perfectly competitive market by design.	
International Power GDF Suez	Considers that in an energy-only market, generators rely on intermittent high prices and situational market power to contribute to fixed costs and derive a return on capital. The MPC	

Stakeholder	Issue	AEMC Response
	limits the impact of 'situational market power', but it needs to be high enough to incentivise new entrants. In practice it may be necessary to tolerate some short term price spikes in order to encourage efficient investments.	
Origin Energy	Considers that in an energy only market, for generators to be economic, they must have an ability to recoup LRMC. . Therefore a necessary and inherent feature of the NEM is the ability of the marginal generator to occasionally bid above SRMC to recover fixed costs. Imposition by MEU's proposal means generators would be at significant risk of not being able to recover LRMC.	
AER	Considers that the exercise of market power is problematic when it significantly affects average wholesale prices, with subsequent flow on effects to retail and contract prices. Although high spot prices in the NEM are transitory, the AER is concerned about the effect on average prices over a longer time period. Suggests that the effect on quarterly average prices may be an appropriate test.	The Commission agrees that the effect on average prices is a key test for assessing the existence of substantial market power. The Commission considers that annual average prices are a more suitable test than quarterly average prices.
AER - Biggar report	Rejects the argument that the exercise of market power is necessary to ensure that generators can recover their fixed costs, and considers that any exercise of market power (defined as bidding above SRMC) is harmful to the market as it results in out-of-merit-order dispatch and inefficient demand-side response.	The Commission agrees that bidding above SRMC has the potential to result in some efficiency losses including out-of-merit-order dispatch. However, the Commission considers that in an energy-only market such as the NEM, some generators are unlikely to be able to recover their efficient fixed costs if they could never offer their capacity above SRMC, and that such an outcome would be likely to result in detrimental effects on efficient investment. The measurement of SRMC also needs to have

Stakeholder	Issue	AEMC Response
		regard to the value of serving the marginal unit of demand. As a result, the Commission considers that a distinction should be drawn between transient pricing power (such as occasional bidding above SRMC) and substantial market power. This is discussed further in section 4.2 of this draft determination.
AGL	Considers that the MEU's proposal is based on an incorrect premise that NEM outcomes should reflect a perfectly competitive market, but this does not exist and is an unreal standard against which to assess actual competitive outcomes. Considers that the MEU does not recognise that the NEM is a “workably competitive market” that will not always reflect the outcomes expected in a perfectly competitive market.	The Commission agrees that workable competition is a more appropriate benchmark than perfect competition when defining market power. This is discussed further in section 4.2 of this draft determination.
International Power GDF Suez	it is not 'perfect competition' but 'workable competition' that is important, which must be analysed on a long term basis since short term assessments are distortionary. A market should be considered to be workably competitive where new investment occurs in a timely manner in response to market signals.	
DTEI	Proposes that a key question is whether market power is a structural problem or is a transitory issue related to the generator's contract position. If the latter, it may be more appropriate to be managed under trade practices provisions.	The Commission agrees that this question is important and that a distinction should be made between structural problems (which the Commission interprets to mean persistent or ongoing problems) and transitory issues. The Commission makes the distinction between 'substantial market power' and transient pricing power (which is similar to what several submitters refer to as 'transient market power').
ESAA	Considers that competition law literature and legislation recognises that market power must be significant and durable to warrant concern.	The Commission considers that the problem that may justify regulatory intervention is the exercise of substantial market power. The Commission considers that the appropriate cost measure is LRMC

Stakeholder	Issue	AEMC Response
	'Significant' means prices exceed not only marginal cost but also long run average cost, while 'durable' means able to sustain economic profits in the long run.	rather than long run average cost.
Hydro Tasmania	Contends that the NEO could only justify intervention if annual average spot prices persistently exceed LRMC beyond the time-frame required for new entry.	The Commission's definition of substantial market power in this draft determination is similar to this proposal.
International Power GDF Suez	Concept of sustained/persistent behaviour assessed over time has been consistently applied by the Courts, while the concept of transitory market power has been expressly and consistently rejected. AGL v ACCC distinguished inter-temporal market power from a long run phenomenon having regard to the possibilities of new entry through additional generation capacity and the upgrade of interconnectors. French J also considered that 'success at gaming' in the market during limited periods of high demand does not reflect market power and that transitory market power is not sufficient under the CCA.	The Commission agrees that it is appropriate to consider behaviour over a sustained period of time when assessing whether there is evidence of substantial market power. The Commission notes French J's comments in AGL v ACCC and has had regard to those comments in reaching the views set out in this draft determination. However, the Commission notes that competition law decisions are only one relevant source of information to inform the Commission's approach, and the Commission's decisions on the MEU's proposed rule will be based on the NEO.
MEU	Disagrees with suggestions that price rises must be sustained before regulatory changes are justified. Because of the very high MPC, there only needs to be very short periods of time for the exercise of market power to achieve very large transfers of wealth from consumers.	The Commission agrees that the level of the MPC means that price spikes can have a significant effect on average wholesale prices. Price spikes may constitute evidence of substantial market power if they occur to such an extent and with sufficient frequency to cause annual average prices to exceed LRMC. The Commission notes that its assessment of the MEU's proposal will be based on the NEO, which relates to the efficient use and operation of, and efficient investment in, electricity services. The prevention of wealth transfers does not (on its own) promote efficiency.

Stakeholder	Issue	AEMC Response
NEM Generators' Group - Frontier report	Considers that the extent to which firms are subject to competitive constraints will vary in the real world from those faced under "perfect" competition. Accordingly, proposes that a market is considered "workably" competitive where no one firm can be said to have significant market power (as opposed to transient market power), i.e. where market power cannot be sustained over the long term.	The Commission agrees that workable competition is a more appropriate benchmark than perfect competition when defining market power. The Commission considers that a distinction should be made between substantial market power and transient pricing power, with the latter being similar to what several submitters refer to as transient market power.
NEM Generators' Group - Frontier report	Considers that any regulation of the market to prevent transient market power may be counter-productive, as it weakens the incentives for new parties to enter and erodes the ability of generators to exercise their transient market power.	
TRUenergy	If the AEMC is to develop a test to determine whether market power exists, this should distinguish between transient and permanent market power. The exercise of transient market power is a design feature of the NEM that signals demand response, new investment and provides an incentive to contract.	
What is the appropriate definition of market power / substantial market power?		
AER - Biggar report	Considers that a firm has market power if it can, by changing its output, affect the wholesale market price that it is paid.	The Commission's definition of 'substantial market power' is set out in section 4.3 of this draft determination. The Commission considers that the ability to affect the wholesale market price in a single trading interval is not enough on its own to constitute a substantial market power problem that justifies regulatory intervention, and it is necessary to assess whether the generator has the ability to increase the annual

Stakeholder	Issue	AEMC Response
		average wholesale price to a level that exceeds LRMC.
AGL	Considers that enduring market power should be defined as the ability of generators to act without competitive constraint in the long run, such that they are able to earn long run economic profits. Generators may earn prices in excess of SRMC in the short term, but it is the ability of the generator to earn these profits in the long run or whether these profits are reined in by new entry of generators, or expansion of existing generators, which is key.	The Commission's definition of 'substantial market power' set out in section 4.3 of this paper is similar to the definition proposed by Aurora Energy. It requires an ability to increase the annual average wholesale price to a level that exceeds LRMC, and the ability to sustain prices at that level due to significant barriers to entry. LRMC is considered to reflect the level of average prices that should exist in a workably competitive market.
Aurora Energy	Proposes that market power should be defined as the ability to raise prices above a level that is considered competitive for a substantial period, due to the absence of competition and any constraints on behaviour.	
Energy Action Group	Considers that the MEU's proposal appropriately addressed this issue.	The Commission's definition of 'substantial market power' is set out in section 4.3 of this paper. The Commission's approach differs from the MEU's proposal, which essentially asked whether any generator was 'pivotal' and must be dispatched in order to meet maximum regional demand. The Commission has assessed whether any generator has an ability to increase the annual average wholesale price to a level that exceeds LRMC, and sustain prices at that level due to significant barriers to entry.
ESAA	Proposed definition is sustainably raising prices above the LRMC.	The Commission's definition of 'substantial market power' set out in section 4.3 of this draft determination is similar to the definition proposed by the ESAA. It requires an ability to increase the annual average wholesale price to a level that exceeds LRMC, and the ability to sustain prices at that level due to significant barriers to entry.

Stakeholder	Issue	AEMC Response
Hydro Tasmania	Notes that market power has been defined in various court cases. These cases have demonstrated a number of factors relevant to the determination of market power.:	The Commission has considered competition law cases as one relevant source of information in reaching its view on the appropriate definition of substantial market power. The Commission's definition of 'substantial market power' set out in section 4.3 of this draft determination reflects the factors noted by Hydro Tasmania.
Hydro Tasmania	Proposes that assessments and definitions of market power must consider whether a firm has the ability to: • raise prices above the competitive level (in this case being long run supply cost); • sustain these higher prices beyond the time-frame needed to allow for market responses, including new entry; • profitably raise prices on a sustained basis.	The Commission's definition of 'substantial market power' set out in section 4.3 of this draft determination reflects the factors noted by Hydro Tasmania. The Commission proposes that the relevant cost measure is the LRMC of bringing forward or adding capacity to meet a specified increment in demand.
International Power GDF Suez	Proposes that a generator will not have market power unless it can behave persistently in a manner unconstrained by competitors, including the power to raise prices above competitive levels in a sustainable way.	The Commission's definition of 'substantial market power' is set out in section 4.3 of this draft determination. It requires an ability to increase the annual average wholesale price to a level that exceeds LRMC, and the ability to sustain prices at that level due to significant barriers to entry. LRMC is considered to reflect the level of average prices that should exist in a workably competitive market.
International Power GDF Suez	Considers that existing regulatory oversight measures act as a form of constraint on the exercise of market power that should be considered when assessing whether a generator has market power. Examples of regulatory oversight include sections 46 and 50 of the CCA and the rebidding restrictions in clause 3.8.22A of the rules.	The Commission has considered the application of these existing provisions when formulating its definition of substantial market power. The Commission considers that the exercise of substantial market power may potentially be detrimental to the achievement of the NEO in circumstances where the relevant conduct does not breach these existing provisions.

Stakeholder	Issue	AEMC Response
LYMMCo	Considers that the AEMC should not seek to lower or change the test under the CCA.	This rule change process cannot lower or change the test under the CCA. The Commission's role in considering the MEU's proposal is to assess whether the proposed rule changes are likely to contribute to the achievement of the NEO. The Commission considers that the exercise of substantial market power may potentially be detrimental to the achievement of the NEO in circumstances where the relevant conduct does not breach the CCA.
LYMMCo	Proposes that the analysis of long run price options is the most likely indicator of market power, but does not in itself indicate the existence of market power.	The Commission's definition of 'substantial market power' requires an ability to increase the annual average wholesale price to a level that exceeds LRMC, and the ability to sustain prices at that level due to significant barriers to entry. The Commission considers that an analysis of long run prices and costs is the preferable measure of substantial market power, but acknowledges that it is not on its own determinative of whether an individual generator possesses substantial market power for which additional analysis may be required.
MEU	If there is any generator that must be dispatched when the regional demand is less than that forecast for the next year or which has been previously recorded in a region, then that generator has the power to unilaterally set the regional spot price and has market power.	The Commission's definition of 'substantial market power' is set out in section 4.3 of this draft determination. The Commission's approach differs from the MEU's proposal. The Commission considers that a more appropriate approach is to assess whether any generator has an ability to increase the annual average wholesale price to a level that exceeds LRMC, and sustain prices at that level due to significant barriers to entry.
NEM Generators' Group - Frontier report	Defines market power as the ability of an individual firm to withhold output of its product in order to increase the price of that product. The extent to which a firm can do this depends on whether it faces competitive constraints.	The Commission's definition of 'substantial market power' is set out in section 4.3 of this draft determination. The Commission's definition requires an ability to increase the annual average wholesale price to a level that exceeds LRMC, and the ability to sustain prices at that level due to significant barriers to entry.
NEM Generators' Group - Frontier report	Proposes that, given the importance of competitive constraints in limiting a firm's ability to	

Stakeholder	Issue	AEMC Response
	exercise market power, the extent to which barriers to entry exist in a market is an important indicator of whether a firm holds significant market power. This is a more important indicator than whether prices are occasionally above costs.	
NEM Generators' Group - Frontier report	Notes that firms price above marginal cost in many industries, especially in industries with high fixed costs, such as electricity generation. It is during such times that firms are able to recover their fixed costs. Market power should therefore be identified and assessed with a longer term perspective in mind. The appropriate temporal definition reflects the time scale of decisions made by generators.	The Commission's definition of 'substantial market power' in section 4.3 of this draft determination and approach to market definition in section 4.5 acknowledge the importance of a longer term analytical perspective.
Origin Energy	Considers that it is observationally difficult to distinguish between scarcity pricing and market power. Higher prices during the former serve to signal the need for investment and all generators to recover their LRMC. The issue is whether there are persistent high prices over time that result in recovering revenue in excess of LRMC with no new entry.	The Commission's definition of 'substantial market power' in section 4.3 of this draft determination reflects these issues.
What is the appropriate definition of the 'exercise' of market power?		
AER	Considers that the AEMC should focus on whether economic withholding is of a sufficient scale to be of concern to the overall efficiency of the NEM, rather than using competition law concepts from the CCA to define whether there is an exercise of market power.	The Commission's approach to the exercise of substantial market power is set out in section 4.3 of this draft determination. The Commission has chosen not to adopt the CCA concept of 'taking advantage' to define the exercise of substantial market power in the context of the NEM. Economic withholding may be evidence of the exercise of substantial market power if it occurs to a sufficient extent and with sufficient frequency to cause annual average prices to exceed

Stakeholder	Issue	AEMC Response
		LRMC. However, the Commission considers that it is appropriate to adopt a broader definition that could also cover conduct other than economic withholding.
AER - Biggar report	Defines the exercise of market power as follows: 'A generator can be said to exercise market power when it systematically submits an offer curve which departs from its true, underlying, short-run marginal cost curve in order to influence the wholesale spot price it is paid and is therefore dispatched to a price-quantity combination which does not fall on its short-run marginal cost curve'. Considers that generators exercise market power by economic withholding of capacity.	The Commission's definition of the 'exercise' of substantial market power is set out in section 4.3 of this draft determination. The Commission considers that the ability to bid above SRMC in a single trading interval is not enough on its own to constitute the exercise of substantial market power and justify regulatory intervention, and it is necessary to assess whether the generator has the ability to increase the annual average wholesale price to a level that exceeds LRMC. Economic withholding may be evidence of the exercise of substantial market power if it occurs to a sufficient extent and with sufficient frequency to cause annual average prices to exceed LRMC. However, the Commission considers that it is appropriate to adopt a broader definition that could also cover conduct other than economic withholding.
AGL	Proposes that the appropriate test to determine whether a generator has exercised enduring market power should be whether it has been able to sustain wholesale prices in excess of its costs over the long term. The relevant cost test is LRMC.	The Commission's definition of the 'exercise' of substantial market power, as set out in section 4.3 of this draft determination, is similar to the test proposed by AGL.
AGL	Considers that the tests for determining the exercise of market power in the NEM should not rely too heavily on competition law.	The Commission has chosen not to adopt the competition law concept of 'taking advantage' to define the exercise of substantial market power in the context of the NEM.
MEU	Considers that existing CCA tests are inappropriate here. Electricity market rules used in other jurisdictions show that generator market power must be addressed within the rules due to	The Commission has chosen not to adopt the competition law concepts of 'taking advantage' or 'abuse' of market power to define the exercise of substantial market power in the context of the NEM. The Commission considers that the exercise of substantial market power may potentially

Stakeholder	Issue	AEMC Response
	the unique features of electricity.	be detrimental to the achievement of the NEO even if that market power is not 'taken advantage of' or 'abused' as those terms are defined under competition law.
NEM Generators' Group - Frontier report	Considers that the existing tests for whether market power has been exercised as defined in competition law are not appropriate. This is because the statutory regime set out in the NEL is concerned with promotion of efficiency in the market, not with competitive effects.	
TRUenergy	Considers that the current competition law tests for taking advantage of and abusing market power are the appropriate tests in the context of the rule change request.	
Energy Action Group	Considers that the MEU's proposal appropriately addressed this issue. Considers that the issue of information asymmetry also needs to be addressed. A generator's contract position also acts as a behavioural driver. Uncapped and non-transparent nature of the ancillary service payment market provides gaming opportunities. Also large scale penetration of renewable energy may favour some generators so they can exercise market power. Considers that there are inter-related issues of access and who pays for transmission extension and augmentation. Long lead times plus barriers to entry and relatively low long term profit margins for some technologies leave incumbent generators in a position to exercise market power.	The Commission's definition of the 'exercise' of substantial market power is set out in section 4.3 of this draft determination. The Commission's approach differs from the MEU's proposal. The Commission has assessed whether any generator has the ability to increase the annual average wholesale price to a level that exceeds LRMC, and sustain prices at that level due to significant barriers to entry. The Commission agrees that a generator's contract position is relevant to its incentive to exercise substantial market power, and that barriers to entry are important. Issues of access and charges for transmission extensions and augmentations are outside of the scope of this rule change and are currently being considered by the Commission as part of its Transmission Frameworks Review.
Hydro Tasmania	Considers that matters to be considered when determining whether a participant is able to exercise market power include countervailing	The Commission acknowledges that some or all of these matters may affect a generator's ability to exercise substantial market power.

Stakeholder	Issue	AEMC Response
	power and the presence or absence of constraints. Network constraints, generator availability, contract positions and co-optimisation with ancillary services can impose significant alternative costs on generators or limit their availability. Such constraints can influence a firm's ability to exercise market power.	
What is the relevant 'market'?		
AGL	Proposes that in defining the market to be analysed, the AEMC should consider all the factors that may influence a generator's decisions regarding pricing and output. The main purpose of market definition is to identify what forces act within a market and influence the decision making processes of a participant. The AEMC should err on the side of a broader market definition.	The Commission's approach to market definition is set out in section 4.5 of this draft determination. The Commission acknowledges that there is some uncertainty about the precise boundaries of some aspects of the market, particularly the geographic and temporal dimensions, but does not consider that it is appropriate to intentionally err on the side of a broader market definition.
AGL	Proposes that the product and functional dimensions of the market are the wholesale NEM, and the trading of wholesale energy within that market, consistent with the AGL v ACCC decision. The appropriate geographic market is the interconnected NEM and the temporal dimension should reflect the time necessary to earn a commercial return for their investment.	The Commission's approach to market definition is set out in section 4.5 of this draft determination. The Commission considers that the relevant product is electrical energy supplied to the wholesale market and the functional dimension is electricity generation. The Commission considers the relevant temporal dimension as the timeframe under which new entry would be expected to occur in the absence of significant barriers to entry. Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate market definition as part of the analysis to inform this draft determination.
Hydro Tasmania	Considers that a number of issues need to be considered for market definition and outline their	The Commission's approach to market definition is set out in section 4.5 and a description of the test for determination of the relevant market is

Stakeholder	Issue	AEMC Response
	views on the appropriate product, geographicfunctional and temporal dimensions:	set out in section 5.1 of this draft determination.
International Power GDF Suez	Considers that the temporal market dimension involves long run considerations and long term substitution possibilities, as shown by CCA cases. The ACCC recognises that geographic market definition needs to consider the interrelationship between NEM regions and the effect of interconnectors. The ACCC has stated that when assessing the constraint provided by generators outside of a region, it is useful to think of an interconnector as a generator with a variable marginal cost. Considers that the consistent position of the ACCC is that, but for interconnector constraints from time to time, the geographic dimension of the wholesale market would be the whole of the NEM.	The Commission's approach to market definition is set out in section 4.5 of this draft determination. The Commission's view of temporal dimension recognises that a long term approach is appropriate. Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate market definition as part of the analysis to inform this draft determination.
NEM Generators' Group - Frontier report	Proposes that market definition should reflect the factors that are likely to constrain the pricing and output behaviours of generators. Notes that market definition should not be considered an end in itself - rather, its main purpose should be to help identify the forces that operate in a market.	The Commission's approach to market definition is set out in section 4.5 of this draft determination. The Commission agrees that a purposive approach should be taken to market definition.
NEM Generators' Group - Frontier report	Considers that the interconnected nature of the NEM suggests that the appropriate geographic market should be national rather than state based and should consider the ability of generators in different regions to constrain each other's behaviour. However, binding constraints on interconnectors can limit the ability of generators in one region to supply consumers in other	The Commission's approach to market definition is set out in section 4.5 of this draft determination. The Commission's view of the temporal dimension recognises that a long term approach is appropriate. Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate geographic market definition as part of the analysis to inform this draft determination.

Stakeholder	Issue	AEMC Response
	regions, so the assessment of the geographic market should also consider the extent of these constraints. Proposes that the AEMC should err on the side of a larger market definition rather than a narrower definition, especially if minor changes in the definition of the market could lead to large changes in either arguments or conclusions.	
Origin Energy	Considers that the MEU's proposal has taken an overly narrow view of the market in terms time. The focus on spot prices also discounts the critical role of the financial contracts market in managing the effects of the NEM‘s inherent volatility.	The Commission's approach to market definition is set out in section 4.5 of this draft determination. NERA has defined the relevant temporal dimension as the timeframe under which new entry would be expected to occur in the absence of significant barriers to entry. NERA has considered the role of the contracts market in its comparison of LRMC with wholesale prices.
Origin Energy	Notes that the MEU has taken a regional view of the market in its analysis, which may reflect price separation that occurs between markets. However, views a NEM-wide view of the market is more appropriate.	The Commission's approach to market definition is set out in section 4.5 of this draft determination. Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate market definition as part of the analysis to inform this draft determination. The Commission has had regard to French J's comments in *AGL v ACCC* in reaching its views on market definition, but notes that French J's analysis was based on events in Victoria in 2000-2001 and a more comprehensive and up-to-date analysis is required to determine the appropriate geographic market.
TRUenergy	Proposes that the appropriate definition of the market should only include the wholesale exchange operated by AEMO. The geographical extent of the market is the interconnected regions in the NEM. The relevant timeframe is the time needed develop new investment that will compete	The Commission's approach to market definition is set out in section 4.5 of this draft determination. The Commission considers that the relevant product is electrical energy supplied to the wholesale market. Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate geographic market definition as part of

Stakeholder	Issue	AEMC Response
	away any excess profits.	the analysis to inform this draft determination. The Commission considers the relevant temporal dimension as the timeframe under which new entry would be expected to occur in the absence of significant barriers to entry.
Should the AEMC consider 'tacit collusion' as part of the rule change process?		
Energy Action Group	Considers that the rule change should also attempt to address tacit collusion and parallel behaviour, but notes that Australia is historically not good at prosecuting such behaviour without access to a whistle-blower and appropriate documentation.	The Commission considers that tacit collusion should not be considered as part of the rule change process. The MEU's proposal does not seek to address tacit collusion, and if tacit collusion is an issue it is likely to be more appropriate for it to be addressed by the CCA.
MEU	Notes that the MEU considered tacit collusion in its examination of potential solutions, but determined that the increased complexity of addressing an issue that might not occur (other than through the declaration of second and third generators that might have market power at times of higher demand) did not warrant the inclusion of specific rules to modify the potential for tacit collusion.	
NEM Generators' Group	Considers that the threat of tacit collusion is poorly justified. If it is an issue, it should continue to be dealt with under the CCA. There should not be a separate rule for what constitutes collusive behaviour in the NEM compared to elsewhere in the Australian economy.	
MEU	Notes that the MEU's proposal addresses the potential for tacit collusion by providing that where the AER identifies that a second generator has	Noted.

Stakeholder	Issue	AEMC Response
	market power at a higher demand it has the ability to declare a second dominant generator.	
Does the AEMC have the power to make the MEU's proposed rule?		
AFMA	Considers that there are adequate existing measures in place to address market power concerns and no requirement for, or benefit in, duplication. The AEMC needs to analyse the efficiency of the NEM and whether market signals, including price volatility, are appropriate and drive investment and meet the long term interests of consumers. The MEU proposal should be discounted as soon as possible, to remove it as a threat to the market's confidence. Any concerns entities may have with market power should be directed to the appropriate regulator and dealt with in a separate process under existing legislation. Whatever the outcome of any AEMC investigation into market power, the MEU proposal would not be a suitable solution. As such, AFMA does not support keeping the proposal on the table while any such investigation is undertaken as proposed in AEMC's assessment framework decision tree.	The Commission recognised that the implementation of the MEU's proposal would to have a significant impact on some market participants and investment incentives, and that the mere existence of the proposal may have had an impact on some participants. However, because of the significant potential effects of the proposal, the Commission considered it was appropriate to undertake a thorough consideration of the proposal before making a decision.
AGL	Argues that the AEMC is limited in its power under section 34(1)(a)(i) of the NEL to making rules in relation to regulating the operation of the "wholesale exchange operated and administered by AEMO" and the "national electricity system", and it is not empowered to make rules generally	This argument is addressed in section 4.4.1 of the directions paper. The Commission does not agree with AGL's interpretation of section 34(1)(a)(i) of the NEL. The Commission considers that the MEU's proposal relates to the operation of the 'national electricity market' as defined in section 2 of the NEL, and does not seek to regulate the behaviour of generators 'within the wider economic or wholesale

Stakeholder	Issue	AEMC Response
	regarding the behaviour of sellers and buyers within the wider economic or wholesale market.	market'.
ESAA	Considers that the issues raised by the MEU's proposal come within the CCA framework and there is no case for the AEMC to be examining issues of anti-competitive use of market power.	The Commission considers that the MEU's proposal does not relate to the anti-competitive use of market power, and have not assessed whether any generators have engaged in anti-competitive conduct. Instead, the Commission has assessed whether the MEU's proposed rule, or a more preferable rule to prevent or constrain the exercise of substantial market power by generators, will promote the achievement of the NEO. The Commission considers that the exercise of substantial market power may potentially be detrimental to the achievement of the NEO in circumstances where the relevant conduct does not breach the CCA.
International Power GDF Suez	Contends that the monetary constraint on dispatch offers imposed by the MEU's proposal may be seen as a penalty, in substance if not form, and is therefore contrary to section 36(b) of the NEL, and would not fall within item 7 of schedule 1 to the NEL (setting of prices for electricity purchased through the wholesale market, including maximum prices) or section 34(3)(d) (rules may confer rights or impose obligations on a person or class of person).	This argument is addressed in section 4.4.2 of the directions paper. The Commission does not agree with International Power's interpretation of section 36(b) of the NEL. The MEU's proposed rule does not (in substance or in form) provide for a criminal or civil penalty for a breach of the rules. It proposes that a price cap (the existing Administered Price Cap) would apply to dispatch offers in certain circumstances. The imposition of such a price cap falls within items 7 and/or 8 of Schedule 1 to the NEL.
International Power GDF Suez	Contends that the stated purpose of the MEU's proposal contravenes clause 3.1.4(b) of the rules. Considers that if the AEMC proceeds with a decision to perform or confer powers on the AER to perform functions in relation to anti-competitive market behaviour by participants, then it is going beyond section 91B(1) because such a rule is not necessary or consequential to the MEU's requested rule. Considers that if the AEMC	This argument is addressed in section 4.4.2 of the directions paper. The Commission does not agree with International Power's interpretation of sections 45 or 91B(1) of the NEL. The Commission notes that the MEU's proposal attaches a draft rule that includes an amendment to clause 3.1.4(b) of the rules. Accordingly, the Commission considers that section 91B(1) of the NEL is not relevant and an amendment to clause 3.1.4(b) of the rules is not a consequential amendment under section 91B(1). The Commission also considers that section 45 of the NEL is not relevant, particularly given that the MEU has expressly proposed an

Stakeholder	Issue	AEMC Response
	wishes to make a rule that confers on itself, the AER, AEMO or a jurisdictional regulator, powers in relation to competition issues, the AEMC is first required to conduct a review under section 45 of the NEL and provide a report to the MCE.	amendment to clause 3.1.4(b) of the rules. Division 3 of Part 7 of the NEL clearly authorises the AEMC to make a rule change that is proposed in a rule change request.
International Power GDF Suez	Considers that the AEMC should separately, and prior to contemplating any rule change seeking to further erode generators' ability to achieve revenue adequacy, conduct a holistic review of the entire NEM trading arrangements in the context of recent international experience.	The AEMC is required by the NEL to make a determination whether to make the MEU's proposed rule or a more preferable rule. The AEMC does not consider that there is currently a justification to self-initiate a wide-ranging review of the entire NEM trading arrangements prior to making that determination.
LYMMCo	Considers that the AEMC is not the appropriate body to consider the issues raised by the MEU's proposal because it includes issues regarding competition laws and policies outside the AEMC's remit. Considers that the existing competition law framework provides the appropriate avenue for addressing such issues, and concerns regarding market power should be directed to the ACCC. The AEMC should confine any discussion to the existing provisions governing market power, and should be cautious about second-guessing the courts' approach.	Although competition law and policy may be one of several useful sources of information when considering the MEU's proposal, the MEU's proposed rule changes do not directly relate to competition law matters. The Commission's role is to assess whether the MEU's proposal is likely to contribute to the achievement of the NEO. The primary considerations when making that assessment relate to economic efficiency not competition law and policy. The Commission considers that the exercise of substantial market power may potentially be detrimental to the achievement of the NEO in circumstances where the relevant conduct does not breach the CCA.

C Summary of issues raised in submissions to the directions paper and technical paper

Stakeholder	Issue	AEMC Response
Comparison of wholesale prices with LRMC		
AER	Considers that there is no single LRMC. The LRMC of base-load is very different to the LRMC of peaking plant. The LRMC is therefore likely to depend on whether an incremental change in demand is a change in energy or a change in peak demand.	The Commission supports NERA's use of a least-cost combination of generation capacity to estimate the LRMC. The Commission considers that, while there is some subjectivity in determining a system cost, there would be similar subjectivity involved in deciding on the relevant technology to use and determining its associated costs. Further, deciding on a specific technology may risk overestimating the costs when, in reality, lower cost options exist.
AER	There is likely to be difficulty associated with measuring the level of LRMC. LRMC must consider factors such as capital costs, variable costs and various financial assumptions. All of these may lead to considerable conjecture.	NERA has estimated a range for the LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by market policy uncertainties. The presence of a range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range.
AER	The use of volume-weighted pricing would appear to be appropriate, as it would provide more weight to the periods that customers care more about and, likewise, the periods that most generators (other than pure base-loaders) care about.	The Commission agrees and considers that a volume-weighted approach is more appropriate than a time-weighted approach for calculating the annual average spot price and comparing against the estimated LRMC. This is because a generator's incentive for investment is based on its ability to recover its LRMC through revenue received in the market, which in turn is determined by the volume of energy dispatched.
AER - Darryl Biggar	A generator with market power may produce more at times of high price and less at times of low price, thereby increasing its achieved price while keeping time weighted prices relatively unchanged. Annual average time weighted spot prices are therefore not necessarily a useful benchmark against which to compare LRMC to identify the existence of market	

Stakeholder	Issue	AEMC Response
	power.	
AER	AEMC should consider whether other measures such as the Lerner Index and the Pivotal Supply Index should be used that focus more on the structure of the market. Market structure is of critical importance because it dictates the potential for market power to be exercised. These other measure may be used to complement the LRMC vs price test.	NERA has applied two distinct methodologies to the estimation of LRMC for the relevant markets - an approximation approach and a market modelling approach. The two approaches have been adopted to test whether there are any significant differences and to provide further confidence in the results. The Commission has considered both approaches in its determination.
AER - Darryl Biggar	Under the assumptions of constant returns to scale and no sunk costs, and given enough information on the available technologies, it would be possible to construct an optimal equilibrium mix of generation technologies and the corresponding price-duration curve. A comparison could be made of the actual price-duration curve and the theoretical benchmark to identify signs of market power. However, this may be difficult in practise due to the significant amount of information required and also that market power may be exercised when prices are low, not just when they are high.	Assumptions of constant returns to scale and no sunk costs are not consistent with the Commissions view of the NEM as a workably competitive market. The Commission agrees that such an approach would be highly theoretical and would require a significant amount of information.
AER - Darryl Biggar	Wholesale electricity prices are cyclical – they can be high in periods of strong economic growth and low at other times. If a few years of below-average growth is anticipated, should firms be allowed to exercise market power in those years, bringing the annual average price just up to the LRMC threshold? This may deny customers the benefit of lower prices in these years.	The Commission has considered the extent to which wholesale prices have deviated both above and below the estimated values of LRMC. The results of NERA's test do not show there to be a need for further investigation.
AFMA	The Commission’s acknowledgement that “there will be a degree of estimation required when calculating	The Commission has incorporated the results of NERA's analysis and CEG's analysis into its considerations on the rule change request in the

Stakeholder	Issue	AEMC Response
	LRMC" may understate the difficulties and potential for error involved in calculating LRMC. Correctly calculating the LRMC is critical to the approach proposed by the Commission and it is essential that the inherent difficulties are clearly acknowledged.	context of the NEO. A result from NERA's analysis that showed wholesale prices to persistently exceed the competitive level over the period of the assessment would indicate the possibility of a problem and would be viewed as strong evidence of the need for further investigation. In addition, NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by policy uncertainties.
AFMA	Timeframe for assessment of two to three years should be included in the definition of substantial market power – "annual average wholesale prices" may not be sufficient to ensure that this is read as long-term. The proposed timeframe of two to three years may be on the low side considering the need for higher than LRMCs to be observed for a period of time by an investor before a decision could be confidently made to invest on the scale required and for the extra capacity to be implemented.	The Commission's definition of substantial market power refers to the ability of a generator to increase annual average prices to a level above LRMC for a sustained period of time. The Commission considers that the necessary period of time should reflect the timeframe required for new entrant capacity.
AFMA	The use of derivatives should form part of the assessment of the rule change. Derivatives play a fundamental role in managing price risk in the electricity market. A user which chooses not to utilise them is making a conscious decision to remain exposed to price risk. This should not lead to a major restructuring of the way in which the electricity industry operates.	The comparison of annual average wholesale prices to LRMC has included a consideration of both spot and contract price data. A discussion of the impacts of substantial market power and transient pricing power on consumers is provided in sections 6.1 and 6.2 of this draft determination. The methodology adopted by NERA is contained in their technical paper available on the AEMC website and the NERA report accompanying this draft rule determination.
Alinta Energy	Contract market data is readily available through the futures market. Arbitrage opportunities between futures and bilateral trades would be expected to bring prices broadly into equilibrium. Consideration should be given to the implications of drought, transmission constraints, etc when analysing	

Stakeholder	Issue	AEMC Response
	contract prices.	
Alinta Energy	Determining a system wide LRMC to meet a marginal change in demand is likely to be difficult given the variability of demand forecasts, capacity factors and system reserves, options value in the face of policy uncertainty, competitors' action, risk appetite of investors, and rates of return on capital. All of these are likely to have a significant bearing on the value of the LRMC.	NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by market policy uncertainties. The presence of a range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range. A further explanation of the methodologies adopted by NERA is contained in their technical paper available on the AEMC website. NERA's sources for input capital costs can be found in their report on the comparison of wholesale prices to LRMC on the AEMC website.
Alinta Energy	A system LRMC that considers all available options including new generation, retirements, transmission and demand-side is not likely to be informative as why investment has or has not occurred. Irreversible expenditures which form large sunk costs are best delayed in the face of uncertainty. The LRMC used by an investor is likely to be higher than the one proposed by NERA. An investor considers the LRMC of their proposed project, not the LRMC of the market. In the current investor climate, gas turbines are favoured due to their low initial capital costs. A gas project, given its capacity factor is likely to be notably above the LRMC proposed by NERA. The LRMC that should be used is the levelised cost of investment in a single gas-fired peaking plant.	The Commission supports NERA's use of a least-cost combination of generation capacity to estimate the LRMC. The Commission considers that, while there is some subjectivity in determining a system cost, there would be similar subjectivity involved in deciding on the relevant technology to use and determining its associated costs. Further, deciding on a specific technology may risk overestimating the costs when, in reality, lower cost options exist. NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by policy uncertainties.
Alinta Energy	The fact that investment occurs in lumpy increments means that at any one point in time there might be a sustained over-supply or under-supply of capacity.	The Commission has considered the results of NERA's comparison of annual average wholesale prices with LRMC over a time-frame sufficient that new entry would be expected to occur in the absence of barriers to

Stakeholder	Issue	AEMC Response
	Even if wholesale prices are in excess of LRMC new entry, this does not imply that the market is not working properly. Potential new entrants may not be able to capture enough demand at the required price to justify entry. Investors will not respond to a LRMC of the market in a 1 to 3 year timeframe. A period of 5 to 10 years would be more consistent with the nature of electricity consumption and the asset base.	entry.
ESAA	There are a number of different methods that can be used for calculating LRMC and so there is an element of subjectivity in determining which one to use. In addition, regulatory decisions must then be made about the data inputs to be used. There is unlikely to be a "right answer" for many assumptions. The Turvey approach requires forecasts about when future investment should optimally occur to establish the reference point for bringing forward the capacity expansion, which is difficult to do. Further, the Turvey method measures system-wide cost. It would appear to be more relevant to use a specific technology/plant rather than system LRMC to best represent an investor's perspective.	The Commission supports NERA's use of a least-cost combination of generation capacity to estimate the LRMC. The Commission considers that, while there is some subjectivity in determining a system cost, there would be similar subjectivity involved in deciding on the relevant technology to use and determining its associated costs. Further, deciding on a specific technology may risk overestimating the costs when, in reality, lower cost options exist. NERA has estimated a range for the LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by policy uncertainties. The presence of a range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range. A further explanation of the methodologies adopted by NERA is contained in their technical paper available on the AEMC website. NERA's sources for input capital costs can be found in their report on the comparison of wholesale prices to LRMC on the AEMC website.
ESAA	Do not consider that the test's proposed comparison between a measure of annual average wholesale prices and a measure of LRMC is an appropriate way to diagnose the competitive condition of the electricity market. The AEMC's proposed test requires a regulator to form an opinion on when new	The Commission has incorporated the results of NERA's analysis and CEG's analysis into its considerations on the rule change request in the context of the NEO. A result from NERA's analysis that showed wholesale prices to persistently exceed the competitive level over the period of the assessment would indicate the possibility of a problem and would be

Stakeholder	Issue	AEMC Response
	investment should occur, i.e. based on prices being greater than LRMC for the requisite period. A single dimensional test that compares LRMC with average prices will not pick up all factors germane to an investor's decision-making and as such, the test could easily misdiagnose the state of competition in the market. Bureaucrats should not be determining optimal investments. This was a rationale behind the cessation of industry planning and the liberalisation of the electricity market.	viewed as strong evidence of the need for further investigation. In addition, NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by policy uncertainties.
EUAA	The task of constructing and maintaining a credible and robust analysis of the market LRMC will be difficult and costly and open to dispute given the level of assumptions that will be required on the wide variety of inputs. A more credible analysis would need to use data on fuel costs and maintenance costs from generators. However, the generators will have incentive to encourage the Commission to construct an analysis that shows as high a LRMC as possible so as to reduce the prospect that the Commission will conclude that there is a market power problem to be solved.	NERA has estimated a range for the LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by policy uncertainties. The presence of a range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range. A further explanation of the methodologies adopted by NERA is contained in their technical paper available on the AEMC website. NERA's sources for input capital costs can be found in their report on the comparison of wholesale prices to LRMC on the AEMC website.
EUAA	The AEMC's approach in the directions paper implies that generators should be allowed to exercise market power as long as annual average prices are below the Commission's calculation of LRMC. This suggests that generators (acting alone or in collusion) should be allowed to abuse a dominant position, as long as annual average prices are below LRMC. Spot prices that rise above variable production costs to reflect scarcity allow generators to recover their fixed costs and are not	The Commission has considered the extent to which wholesale prices have deviated both above and below the estimated values of LRMC. The results of NERA's test do not show there to be a need for further investigation. The Commission's analysis was testing for the exercise of substantial market power and barriers to entry. That is any wholesale market activity that could result in inefficient prices being paid by consumers in the long run. This includes any possible strategic behaviour that may be undertaken by generators acting alone or in collusion. This is the subject of

Stakeholder	Issue	AEMC Response
	problematic as long as they reflect genuine scarcity rather than withholding of capacity.	analysis in the CEG report on barriers to entry.
EUAA	One suggested approach to the assessment of market power is to examine the prices that various generators have achieved in the spot market. Where generators have achieved significantly different spot prices, this might point to the possible exercise of market power. However, this does not take account of contract market outcomes and would not provide demonstrable evidence of the existence of market power. A second approach would be to undertake assessments of individual historic events where price exceeded $5,000/MWh to test whether such prices resulted from genuine scarcity or whether it resulted from the withholding of capacity from the market by one or more generators in order to raise prices.	The Commission does not consider the exercise of transient pricing power by an individual generator to be problematic unless that bidding results in an increase in wholesale prices to such an extent or with sufficient frequency so as to increase annual average wholesale prices above the cost of new entry for a sustained period of time.
International Power GDF Suez	LRMC calculations should be considered against the expectation of whether the pattern of demand is likely to spread out over time or only during peak periods. The definitions of LRMC in the directions paper imply a time weighted price. Such a quantity would only be applicable to flat loads.	The Commission considers that a volume-weighted approach is more appropriate than a time-weighted approach for calculating the annual average spot price and comparing against the estimated LRMC. This is because a generator's incentive for investment is based on its ability to recover its LRMC through revenue received in the market, which in turn is determined by the volume of energy dispatched.
International Power GDF Suez	The two to three year period is not a suitable timeframe over which to measure the market based prices. There may be a range of factors not related to market power that contribute to a particular price outcomes, such as rainfall levels, transmission constraints, bushfires etc.	The Commission considers that the relevant period should reflect a sufficient time under which new entry (which could consist of new generation entry, expansion of existing generation or an upgrade of the relevant interconnectors) would be expected to occur in the absence of significant barriers to entry. The NERA analysis has taken into consideration exogenous factors that may have an influence on wholesale prices. These factors have been considered by the Commission in this

Stakeholder	Issue	AEMC Response
		draft determination.
International Power GDF Suez	LRMC definition proposed by NERA appears to be from a system perspective (e.g. generation, transmission, demand side response) A number of key uncertainties are not considered in the LRMC approach such as system reserves for reliability purposes and potential uncertainties facing a potential investor. Uncertainties and risks increase over time. In the face of uncertainty, investors prefer to have their returns front loaded. This approach by investors is not compatible with the currently contemplated average LRMC metric. Investors will typically give preference to lower capital cost technologies, such as open and combined cycle gas turbines in order to reduce their exposure. LRMC estimates could therefore be significantly higher in reality than LRMC costs calculated based on an optimal plant mix.	The Commission supports NERA's use of a least-cost combination of generation capacity to estimate the LRMC. The Commission considers that, while there is some subjectivity in determining a system cost, there would be similar subjectivity involved in deciding on the relevant technology to use and determining its associated costs. Further, deciding on a specific technology may risk overestimating the costs when, in reality, lower cost options exist. NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by policy uncertainties. The presence of a range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range.
LYMMCo	Given the range of assumptions necessary to forecast LRMC and - the Commission's own acknowledgment that a degree of subjectivity is required in interpreting the results - LYMMCO is concerned that the range of outcomes could be large, uncertain and open to interpretation such that the robustness of the results derived will be highly questionable and potentially unusable.	NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by policy uncertainties. The presence of a range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range.
LYMMCo	Concerned that the proposal in the directions paper to consider a period of one to three years is insufficient and may not adequately account for fluctuations in price due to, for example, climatic	The Commission considers that the relevant period should reflect a sufficient time under which new entry (which could consist of new generation entry, expansion of existing generation or an upgrade of the relevant interconnectors) would be expected to occur in the absence of significant barriers to entry. The NERA analysis has taken into

Stakeholder	Issue	AEMC Response
	events such as droughts.	consideration exogenous factors that may have an influence on wholesale prices. These factors have been considered by the Commission in this draft determination.
LYMMCo	Greater weight should be given to wholesale contract price information than spot price information in the assessment of market power due to the fact that the majority of market participants effectively manage electricity price risk directly through hedging contracts with generators. Exchange traded volumes and prices are publicly available and it is reasonable to assume that these could be used as a proxy for bilateral deals.	The Commission recognises the importance of considering contract prices in the comparison with LRMC. However, in doing so, the Commission also considers there to be a number of limitations with the availability of contract price data. The Commission discusses the role of contract prices in the analysis in sections 4.4 and 5.2 of this draft determination.
LYMMCo	It is not clear how the Commission proposes to interpret, or give weight to, the various components that may contribute to a difference between annual average wholesale prices and LRMC, i.e. whether outcomes are reasonably due to a workably competitive market, transient market power, or sustained market power.	The analysis undertaken by NERA has considered the range of exogenous factors that may have had an influence on wholesale prices. These factors have also been considered by the Commission in this draft determination.
LYMMCo	Propose instead to avoid LRMC calculations and instead: • identify any barriers to entry and whether any have changed or arisen since market start; • monitor contract market outcomes and assess if there is any enduring divergence from historical market outcomes; • establish whether the divergences, if found, are due to barriers to entry and what measures could be used to mitigate the impact.	The Commission engaged Competition Economists Group to undertake an assessment of conditions that restrict competition and create barriers to entry.

Stakeholder	Issue	AEMC Response
MEU	Comparisons should be made against annual volume weighted average spot prices rather than annual time weighted average spot prices. Annual volume weighted spot prices can be significantly increased by the actions of economic withholding.	The Commission agrees and considers that a volume-weighted approach is more appropriate than a time-weighted approach for calculating the annual average spot price and comparing against the estimated LRMC. This is because a generator's incentive for investment is based on its ability to recover its LRMC through revenue received in the market, which in turn is determined by the volume of energy dispatched.
MEU	Assessment of substantial market power should be made on a period of 12 months at the longest. The longer the duration for assessment, the less the impact each exercise of market power has, and there is an increasing diluting effect as the generator exercising market power is able to contract its capacity at high prices. Averaging the impact of the relative few price spikes resulting from the exercise of market power over a term any longer than 12 months has the potential to dilute the problem away.	The Commission considers that the relevant period should reflect a sufficient time under which new entry (which could consist of new generation entry, expansion of existing generation or an upgrade of the relevant interconnectors) would be expected to occur in the absence of significant barriers to entry.
MEU	The directions paper does not include a consideration of risk premiums added to wholesale contracts by generators and risk premiums added to retail contracts with end users by retailers. These risk premiums increase with higher spot market volatility and the threat of the exercise of generator market power.	The Commission has based its determination, amongst other considerations, on NERA's analysis which includes a comparison of both spot and contract prices against LRMC.
MEU	Contract prices should not be used as a benchmark in the assessment of market power.	The Commission notes the difficulties associated with the use of contract price data. The Commission has based its determination, amongst other considerations, on NERA's analysis which includes a comparison of both spot and contract prices against LRMC. The Commission recognises that there are certain limitations associated with the use of contract price data. These limitations are outlined in section 5.2.2 of this draft determination.

Stakeholder	Issue	AEMC Response
MEU	The AEMC must consider the periodic nature of the exercise of market power. Market power may be exercised over a two or three year period and may be dormant in the following year or two.	The Commission considers that the relevant period should reflect a sufficient time under which new entry (which could consist of new generation entry, expansion of existing generation or an upgrade of the relevant interconnectors) would be expected to occur in the absence of significant barriers to entry. The Commission has not observed evidence of substantial market power in any of the NEM regions over this period.
MEU	There is no single LRMC that could be used against which to compare wholesale price outcomes. LRMC could be calculated on the unused capacity of Torrens Island Power Station, the lowest LRMC of existing base-load generators, the LRMC of the existing generation mix, or an OCGT, gas or coal-fired plant. The LRMC of transmission augmentation should also be considered.	The Commission supports NERA's use of a least-cost combination of generation capacity to estimate the LRMC. The Commission considers that, while there is some subjectivity in determining a system cost, there would be similar subjectivity involved in deciding on the relevant technology to use and determining its associated costs. Further, deciding on a specific technology may risk overestimating the costs when, in reality, lower cost options exist.
NGF - SFS	LRMC above wholesale prices does not necessarily trigger new investment because: • investors will look at “post-entry” PDC to make a decision on investment.; • there is always an option to invest. Exercising the option is choosing to invest. There is an opportunity cost associated with this that is equal to the potential of waiting to see the resolution of uncertainty. The value of the investment must exceed its costs by an amount equal to the value of keeping the option to invest elsewhere alive – the opportunity cost of investing; • LRMC should be based on new entrant investor decisions, not on system wide LRMC. It is unclear how a system-wide LRMC estimate would be relevant to investors that are	NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by market policy uncertainties. The presence of a range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range. The AEMC is comparing the overall system LRMC with average annual wholesale prices, so a focus on a specific technology or investors decision would not be appropriate for this part of the analysis.

Stakeholder	Issue	AEMC Response
	considering investing in a specific generation technology.	
NGF - SFS	A number of factors have impacted on prices in all regions of the NEM, including extremely high temperatures, generator limitations and outages, network outages, flooding and other incidents. Many of these events had a material impact on wholesale market prices regardless of any generator bidding strategies but may be discounted away by potential investors.	NERA has considered these factors in its analysis and the Commission has incorporated these considerations into this draft determination. A discussion of NERA's results is contained in section 5.3.2 of this draft determination.
NGF - SFS	A timeframe of two to three years is likely to be too short a timeframe over which new transmission and generation investment can be commissioned. Both transmission and generation investments require significant lead times, not just for the construction of the project, but also to complete planning and approval processes. In addition, the specific characteristics of generation investments in an energy-only market, namely that investment expenditure tends to be substantial, that investment is irreversible, and that there is considerable uncertainty about future market outcomes, investors have a strong incentive to delay investments. These factors mitigate a prompt investment response as a result of high prices.	The Commission considers that the relevant period should reflect a sufficient time under which new entry (which could consist of new generation entry, expansion of existing generation or an upgrade of the relevant interconnectors) would be expected to occur in the absence of significant barriers to entry. The NERA analysis has taken into consideration exogenous factors that may have an influence on wholesale prices. These factors have been considered by the Commission in this draft determination.
NGF - SFS	Other LRMC standards such as the textbook long-run incremental cost (TLRIC) method and the average incremental cost (AIC) method may provide widely different outcomes to the perturbation (Turvey) method.	The Commission supports NERA's application of two distinct methodologies to the estimation of LRMC for the relevant markets - an approximation approach and a market modelling approach. The two separate approaches have been adopted to test whether there are any significant differences and to provide further confidence in the results.

Stakeholder	Issue	AEMC Response
Origin Energy	Any assessment process of substantial market power should take a holistic view of the NEM. Reliability and retail pricing outcomes are two tangible indicators that warrant examination. The LRMC vs average pricing analysis should form but one facet of the overall assessment framework.	The Commission has incorporated the results of NERA's analysis and CEG's analysis into its considerations on the rule change request in the context of the NEO. A result from NERA's analysis that showed wholesale prices to persistently exceed the competitive level over the period of the assessment would indicate the possibility of a problem and would be viewed as strong evidence of the need for further investigation.
Origin Energy	In many instances it would take more than three years to effect transmission build given the required time to undertake the regulatory investment test plus the actual construction. Origin does not propose an alternative time period but suggests that the AEMC exercise a degree of flexibility in its observations of high price events.	The Commission considers that the relevant period should reflect a sufficient time under which new entry (which could consist of new generation entry, expansion of existing generation or an upgrade of the relevant interconnectors) would be expected to occur in the absence of significant barriers to entry.
Private Generators Group	Limiting market outcomes over a period of between one and three years is insufficient and will likely misrepresent the structure of the market. A period of five or ten years is more informative given that the NEM has only been in existence for over a decade, which is not consistent with long-run measures given the nature of electricity supply and consumption.	The Commission considers that the relevant period should reflect a sufficient time under which new entry (which could consist of new generation entry, expansion of existing generation or an upgrade of the relevant interconnectors) would be expected to occur in the absence of significant barriers to entry.
Private Generators Group	Do not consider that there exists a single LRMC that justifies intervention. Suggest the AEMC needs to use the LRMC required by an investor in order to bring on the marginal plant in the NEM. This would effectively be the levelised cost of investment in a single gas-fired peaking plant. Forward-looking and historical models are of limited value in isolation. The identification of an issue in a past year through a historical model would not provide a basis for	The Commission supports NERA's use of a least-cost combination of generation capacity to estimate the LRMC. The Commission considers that, while there is some subjectivity in determining a system cost, there would be similar subjectivity involved in deciding on the relevant technology to use and determining its associated costs. Further, deciding on a specific technology may risk overestimating the costs when, in reality, lower cost options exist. NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by market policy uncertainties. The presence of a

Stakeholder	Issue	AEMC Response
	regulatory intervention and may just indicate that outcomes vary over time as expected.	range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range.
SACOSS	Assessment of LRMC against wholesale price outcomes is likely to result in a relatively large window into which both acceptable and unacceptable behaviour may fall.	The Commission considers that NERA's development of a range of LRMC estimates provides more weight to prices that deviate from the range, i.e. prices that are below the bottom of the range or prices that are above the top of the range carry more significance.
SACOSS	Sees the approach outlined in the directions paper as attempting to define a term (substantial market power) and then test for evidence of its existence rather than focusing on the underlying conditions that favour the exercise of market power including South Australia's high peak demand and limited interconnection. An inability to prove the existence of substantial market power does not refute that there are underlying conditions in SA that assist in the exercise of market power.	The Commission engaged Competition Economists Group to undertake an assessment of conditions that restrict competition and create barriers to entry.
TRUenergy	In assessing the length of time, consideration needs to be given to more than the time required to physically build an asset. For transmission, the potential need to upgrade or invest is identified, followed by internal development of options, and ultimately to a successful RIT-T outcome. For generation there is a considerable lead time required to identify sites, procure land options, and obtain planning permission before a final investment decision can be made. Timeframe should also be considered as a function of demand with the economic cycle leading to	The Commission considers that the relevant period should reflect a sufficient time under which new entry (which could consist of new generation entry, expansion of existing generation or an upgrade of the relevant interconnectors) would be expected to occur in the absence of significant barriers to entry.

Stakeholder	Issue	AEMC Response
	market power ability likely to be more prevalent in boom years. Recommend 5 years timeframe.	
TRUenergy	Calculation of LRMC needs to have full consideration of the actual costs and risks faced by organisations that actually invest in generation assets. The costs need to consider more than the "sum of the parts" from a physical build, but also allow for an appropriate risk adjusted return that reflects the needs of both debt providers and shareholders, as well as account for the current regulatory uncertainty prevalent in the current investment environment. The difference between LRMC approaches used by retail regulators and that proposed by NERA needs to be reconciled.	NERA has estimated a range of LRMC based on variations in input capital costs. The capital costs reflect different investors' risk premiums driven by policy uncertainties. The presence of a range of LRMC estimates removes the potential for binary outcomes and give more weight to those prices that deviate from the range, i.e. prices that are below the bottom of the range and prices that are above the top of the range. A further explanation of the methodologies adopted by NERA is contained in their technical paper available on the AEMC website. The Commission has provided a comparison of NERA's approach to the estimation of LRMC with those used by retail regulators in section 6.1.1 of this draft determination.
Substantial market power and transient pricing power		
AER - Darryl Biggar	Rather than linking the definition of market power to a price, it should be linked to the underlying action – the economic withdrawal of capacity. A generator can be said to exercise market power when it systematically submits an offer curve which departs from its true, underlying, short-run marginal cost curve in order to influence the wholesale spot price it is paid and is therefore dispatched to a price-quantity combination which does not fall on its short-run marginal cost curve. Where a generator is systematically exercising market power, and where that market power is unlikely to be eroded within a reasonable timeframe (i.e. due to barriers to entry), some additional policy measures to mitigate that market power should be considered.	The Commission considers that in an energy-only market where the maximum price is regulated, such as the NEM, some generators are unlikely to be able to recover their efficient fixed costs if they can never offer their capacity above their SRMC curve, and that such an outcome would be likely to result in detrimental effects on efficient investment. As a result, the Commission proposes that a distinction should be drawn between transient pricing power (such as occasional bidding above SRMC) and substantial market power. This is discussed further in section 4.2 of this draft determination.

Stakeholder	Issue	AEMC Response
AER - Darryl Biggar	The presence of negative prices in some intervals does not require generators to bid above SRMC in other trading intervals.	The Commission agrees that the presence of negative prices in some intervals does not prevent a generator from recovering their fixed costs at other times.
AER - Darryl Biggar	There is no necessary connection between price spikes and the presence of market power. Price spikes would have no connection to market power unless at the time of high prices, some generator was producing less than it was physically able to produce. Neither does the absence of high prices imply the absence of market power. Generators may exercise market power so as to have a substantial impact on the annual average wholesale price, even without prices ever reaching exceptional levels.	The Commission has defined substantial market power in section 4.3 of this draft determination. The Commission considers that regulatory intervention may be justified if generators exercise transient pricing power to such an extent and with sufficient frequency so as to increase the wholesale price above LRMC for a sustained period.
AER - Darryl Biggar	The directions paper refers to the MEU's draft rule as a "price cap". However, the MEU's proposal places no direct restrictions on wholesale prices. It would be more appropriate to refer to the MEU proposal as an "offer cap" – in that it places a limit on the offer curves that certain generators can submit.	The Commission agrees that the MEU's proposed rule places restrictions on generator bids rather than directly on wholesale prices.
Alinta Energy	Issue is not about whether economic withholding from time to time may influence price outcomes but rather whether such withholding illustrates systemic inefficiency. For economic withholding to have relevance within the existing debate, a generator's ability to "game" could not arise if its response to an exogenous shock (e.g. high temperature) did not give rise to any counter bids or actions which muted the impact of that gaming for the duration of the shock. Further, over the longer term, sufficient barriers to entry would need to exist to impede a	The Commission does not consider the exercise of transient pricing power by an individual generator to be problematic unless that bidding results in an increase in wholesale prices to such an extent or with sufficient frequency so as to increase annual average wholesale prices above the cost of new entry for a sustained period of time. The Commission considers that substantial market power is only possible in the presence of significant barriers to entry and, given the lack of firm evidence supporting the existence of significant barriers to entry, there are insufficient grounds to assume the likely future exercise of substantial market power by generators in the NEM.

Stakeholder	Issue	AEMC Response
	competitor entering the market to respond to exogenous factors and price spikes which form a valid market signal.	
Alinta Energy	The MEU proposal represents a desire to alter the dynamics of the market to minimise risk exposure for a specific category of participants. The introduction of a price cap would have the effect of replicating cover for price risk without large consumers needing to implement hedging strategies or enter the retail market. The AEMC should investigate the management of price risk by major loads.	The Commission has provided a discussion of the impact of movements in wholesale prices on large users in section 6.2 of this draft determination.
ESAA	Occasional price spikes are an intentional part of an energy-only market. They are essential to support sufficient generation capacity at the extreme peaks of demand and to enable more regularly dispatched generators to earn sufficient revenue to cover their fixed costs, which can be a significant proportion of their total costs	The Commission considers that in an energy-only market where the maximum price is regulated, such as the NEM, some generators are unlikely to be able to recover their efficient fixed costs if they can never offer their capacity above their SRMC curve, and that such an outcome would be likely to result in detrimental effects on efficient investment. As a result, the Commission proposes that a distinction should be drawn between transient pricing power (such as occasional bidding above SRMC) and substantial market power. This is discussed further in section 4.2 of this draft determination.
MEU	High prices are necessary to signal scarcity to the market but economic withdrawal does not signal a problem of scarcity. There is no need to artificially signal scarcity (and hence reduce the efficiency of the market) if no scarcity exists.	The Commission agrees that bidding above SRMC has the potential to result in some efficiency losses including out-of-merit-order dispatch. However, the Commission considers that in an energy-only market such as the NEM, some generators are unlikely to be able to recover their efficient fixed costs if they could never offer their capacity above SRMC, and that such an outcome would be likely to result in detrimental effects on efficient investment.
MEU	A generator economically withdrawing capacity forces the market to be dispatched out of merit order	The Commission agrees that bidding above SRMC has the potential to result in some efficiency losses including out-of-merit-order dispatch.

Stakeholder	Issue	AEMC Response
	and therefore the dispatch is not efficient. Costs are recovered by generators seeking higher prices from retailers, who in turn seek higher prices from consumers in both regulated and unregulated retail markets.	However, the Commission considers that in an energy-only market such as the NEM, some generators are unlikely to be able to recover their efficient fixed costs if they could never offer their capacity above SRMC, and that such an outcome would be likely to result in detrimental effects on efficient investment. A discussion of the impact of substantial market power on retail consumers is provided in sections 6.1 and 6.2 of this draft determination.
MEU	The AEMC approach to assessing “significant market power” does not address the longer term temporal impacts of the significant increase in retail contract market prices subsequent to the exercise of market power.	The Commission has based its determination on the an assessment of the existence of the problem that the MEU's proposed rule seeks to address - the exercise of generator market power in the wholesale market. A discussion of the impact of substantial market power on retail consumers is provided in sections 6.1 and 6.2 of this draft determination.
MEU	MEU proposal does not directly cap the spot market price. The MEU proposal does not constrain the pricing of any generator that is not a dominant generator.	The Commission agrees that the MEU's proposed rule places restrictions on generator bids rather than directly on wholesale prices.
NGF - SFS	It is not the case that prices spikes based on high generator bids necessarily imply that such bids exceed SRMC. Most generators have continuous marginal cost curves, including an emergency operating range above nominal maximum output level where marginal costs increase dramatically. Determining SRMC is therefore far more complex than simpler and more conventional measures of marginal costs such as average fuel costs and variable operation and maintenance costs would suggest. This is particularly the case when a facility is operating at or near its full output and may have to take costly measures to increase output slightly.	The Commission's definition of substantial market power is outlined in section 4.3 of this draft determination. The definition reflects the ability of a generator to sustainably increase annual average prices to a level that exceeds LRMC rather than SRMC.

Stakeholder	Issue	AEMC Response
NGF - SFS	There are other factors that should be reflected in prices beyond SRMC such as the implicit costs of demand interruptions, low operating reserves, temporary over-loading of elements of the transmission network or voltage drops, or risky system operations more generally. The fact that SRMC are both very difficult to determine in practice and that the determination of market clearing prices does not generally account for scarcity increases the risks associated with market intervention.	The Commission does not consider that pricing above SRMC is a basis for regulatory intervention unless that pricing occurs to a sufficient extent or with sufficient frequency to sustain annual average prices above LRMC.
Private Generators Group	The MEU proposal is a risk management tool, rather than a proposal to address market power. The AEMC should give consideration to the role played by the risk management decisions made by the proponent's affected members.	The Commission has provided a discussion of the impact of movements in wholesale prices on large users in section 6.2 of this draft determination.
Cost/benefit of regulatory intervention		
AER - Darryl Biggar	If the level of the MPC is a material constraint on the ability of generators to recover their fixed costs, then consideration should be given to increasing the MPC at the same time as mechanisms are put in place to mitigate any market power. In the absence of mechanisms to control market power, raising the MPC alone might allow generators to exercise higher levels of market power.	The Commission considers that, while an increase to the MPC would allow for a greater recovery of costs for generators at times of supply shortage, there may be considerable implications for the financial exposure of market participants at these times. The implications of the level of the MPC are discussed in sections 4.2 and 8.3 of this draft determination.
AFMA	Commission should not have decided to proceed with rule change assessment and should be dismissed without further investigation. The contemplation of the rule change adds to uncertainty in the market and threatens the reputation of the	The Commission recognises that the implementation of the MEU's proposed rule is likely to have a significant impact on some market participants and investment incentives, and that the mere existence of the proposal may have an impact on some market participants. However, because of the significant potential effects of the proposal, the Commission

Stakeholder	Issue	AEMC Response
	market and the continued timely investment in infrastructure.	considers that it is appropriate to undertake a thorough consideration of the proposal before making a decision.
Alinta Energy	Any assessment of the proposed rule needs to consider: • the impact on market mechanism efficiency as resources are efficiently allocated in the spot market through transparent price discovery; • the impact on outcome efficiency, which concerns societal welfare maximisation and the impact on the broader market as the primary driver of investor decision making. AEMC rule making does not universally cover the broader market even though any proposed rule regulating the operation of the NEM would impact it generally and possibly directly.	In making this draft rule determination the Commission has considered the extent to which the MEU's proposed rule would achieve the national electricity objective. The Commission considers that any rule that seeks to constrain or limit the bidding of generators, in the manner proposed by the MEU, or a similar manner, is likely to diminish incentives in the current investment environment, thereby reducing the long-term reliability of supply to consumers.
Alinta Energy	A backward looking analysis that indicates a perceived issue in a past year does not provide a basis for intervention and is likely to indicate that outcomes vary over time as expected in a dynamic market. A forward looking analysis is inherently subjective and is limited by assumptions. The analysis may be informative but should not be used as the basis for intervention.	The Commission considers that substantial market power can be demonstrated by a combination of evidence of past prices and behaviour, expected future prices, and an assessment of the extent and effect of barriers to entry. In consideration of the lack of evidence supporting the existence of substantial generator market power, and the lack of firm evidence supporting the existence of significant barriers to entry, there are insufficient grounds to assume the likely future exercise of substantial market power by generators in the NEM.
Alinta Energy	Does not support the LRMC approach as the basis for intervention. Electricity markets must be allowed to develop over time without distortion and intervention. The evidential bar for reform must be	The Commission has incorporated the results of NERA's analysis and CEG's analysis into its considerations on the rule change request in the context of the NEO. A result from NERA's analysis that showed wholesale prices to persistently exceed the competitive level over the period of the assessment would indicate the possibility of a problem and would be

Stakeholder	Issue	AEMC Response
	set appropriately high.	viewed as strong evidence of the need for further investigation.
ESAA	At a time when the market faces unprecedented levels of uncertainty from carbon policy and other influences, this rule change is an additional unhelpful factor clouding the outlook for the generation sector. The market would benefit from a quick resolution to the process.	The Commission recognises that the implementation of the MEU's proposed rule is likely to have a significant impact on some market participants and investment incentives, and that the mere existence of the proposal may have an impact on some market participants. However, because of the significant potential effects of the proposal, the Commission considers that it is appropriate to undertake a thorough consideration of the proposal before making a decision.
ESAA	. A meaningful application of the proposed test would require a forward looking assessment of electricity prices. For these forecasts, results from modelling are notoriously contestable and would be a contentious basis for regulatory intervention.	The Commission has used the results from NERA's analysis to assist in the determination of whether substantial market power has existed in the NEM in the past. The results from NERA's analysis have been considered in light of evidence regarding the existence of barriers to entry from CEG's analysis to determine the potential for the exercise of substantial market power in the future.
ESAA	All factors influencing wholesale electricity prices must be stripped out to isolate the price effects of the conduct of a particular generator. By implication, the conduct of all other generators must also be discounted. Isolating the effect of a single generator's conduct is difficult to do for historical prices and would be even more difficult to do prospectively.	The Commission does not consider that there is a need to examine the actions of individual generators to identify whether there is evidence of a problem that warrants further investigation. The Commission agrees that exogenous factors influencing wholesale electricity prices should be taken into consideration.
AFMA	The term “or is likely to be able to” is concerning as past conduct cannot conclusively imply an ongoing problem which requires intervention. A major structural change to the NEM should not be made based on predictions of future developments and their implications for the market.	The Commission considers that the term "or is likely to be able to" is relevant to the definition of substantial market power. The Commission considers that substantial market power can be demonstrated by a combination of evidence of past prices and behaviour, expected future prices, and an assessment of the extent and effect of barriers to entry. In consideration of the lack of evidence supporting the existence of

Stakeholder	Issue	AEMC Response
Private Generators Group	The definition of “able or likely to be able” would require significant foresight on the part of the assessor in order to be of any substantive value. It is also concerning in that it hints at pre-emptive intervention in the absence of actual evidence of the misuse of market power.	substantial generator market power, and the lack of firm evidence supporting the existence of significant barriers to entry, there are insufficient grounds to assume the likely future exercise of substantial market power by generators in the NEM.
LYMMCo	Considers that the term "or is likely to be able to" should be removed from the definition of substantial market power. The inclusion of this language is nebulous and would require subjective decision making on the part of the regulator. Substantial market power should be based solely on evidence of it being exercised.	
MEU	If occasional price spikes are permitted in one region because there is the ability to exercise market power frequently and persistently due to a structural problem, then why is this acceptable when, in another region where there is no such structural problem, the ability to exercise market power is limited. This implies that the AEMC accepts that less competition in one region compared to another, is acceptable, despite the principle that competition underpins the NEM market design.	The Commission's draft determination is based, amongst other considerations, on NERA's assessment of the existence of substantial market power in each region of the NEM. The Commission does not submit that it has accepted a greater ability to exercise market power in one region compared to another.
NGF - SFS	It is unclear how the Commission intends to apply the average price versus LRMC market power definition. The likelihood that a generator has market power as a rationale for intervention, even if the generator has not taken any actions to that effect in the past, represents a departure from well-established legal precedent. If the market	The Commission does not consider that a generator only has substantial market power if there is evidence of several years of above-LRMC pricing in the recent past. The Commission's definition requires that a generator has an 'ability' to sustain prices at that level. That ability can be demonstrated by a combination of evidence of past prices and behaviour, expected future prices, and an assessment of the extent and effect of barriers to entry. In consideration of the lack of evidence supporting the

Stakeholder	Issue	AEMC Response
	power definition is interpreted in this way, it defines far broader circumstances as to when regulatory intervention is merited than is the case in other markets. Second, if there is a mere likelihood or if there is some evidence of past price manipulation and an expectation that this may continue, the definition then raises questions as to the substance of the one to three year time horizon, given that any intervention would be prospective.	existence of substantial generator market power, and the lack of firm evidence supporting the existence of significant barriers to entry, there are insufficient grounds to assume the likely future exercise of substantial market power by generators in the NEM.
Origin Energy	Forward looking analysis to determine the likely exercise of substantial market power is likely to be limited due to the myriad of assumptions that would need to be taken into account in modelling future spot prices. The justification of regulatory intervention on the basis of forward looking analysis would therefore not be prudent. Backward looking analysis should be given a greater weighting than forward looking analysis.	The Commission considers that substantial market power can be demonstrated by a combination of evidence of past prices and behaviour, expected future prices, and an assessment of the extent and effect of barriers to entry. In consideration of the lack of evidence supporting the existence of substantial generator market power, and the lack of firm evidence supporting the existence of significant barriers to entry, there are insufficient grounds to assume the likely future exercise of substantial market power by generators in the NEM.
Origin Energy	Any perceived gains from market power mitigation mechanisms would be outweighed by the associated adverse impacts on investment and ultimately reliability.	The Commission agrees and considers that in light of the lack of evidence supporting the existence of substantial market power in the NEM, any rule that seeks to constrain or limit the bidding of generators, in the manner proposed by the MEU, or a similar manner, is likely to diminish incentives in the current investment environment, thereby reducing the long-term reliability of supply to consumers.
Relevant market dimension		
International Power GDF Suez	The NEM is, by intention, a single market. One of the roles of the NER is to ensure that this is maintained. A finding that a region needed to be treated separately in an investigation of potential market power would be prima facie evidence of	Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate market definition as part of the analysis to inform this draft determination.

Stakeholder	Issue	AEMC Response
	insufficient interconnector capacity provision. There are a number of reasons why interconnector capacity needs to be reconsidered (relevant to Transmission Frameworks Review). However, International Power sees this as a temporary situation brought about by a gap in the transmission planning arrangements. An indication that the relevant market should be considered as less than the full NEM should be considered as due to temporary circumstances, and hence not relevant to this investigation.	The Commission considers it important to note that while insufficient interconnector capacity to defeat the SSNIP may be the reason that the test points to each NEM region as the relevant market, this does not mean that the interconnector capacity is too low in reality and needs to be upgraded. Determinations on the requirement for transmission infrastructure upgrades are undertaken through the formal consultative RIT-T process.
LYMMCo	For the purposes of defining the boundaries of the relevant geographic market, the Commission should follow French J's decision in *AGL vs ACCC* that the entire NEM should be treated as a single market.	Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate market definition as part of the analysis to inform this draft determination.
MEU	The AEMC approach to assessing "significant market power" does not address the longer term temporal impacts of the significant increase in retail contract market prices subsequent to the exercise of market power.	The Commission has based its determination on the an assessment of the existence of the problem that the MEU's proposed rule seeks to address - the exercise of generator market power in the wholesale market. A discussion of the impact of substantial market power on retail consumers is provided in sections 6.1 and 6.2 of this draft determination.
MEU	AEMC has not considered the loss of retail competition through the exit of second tier retailers from an inability to acquire competitive hedge contract offers. In situations where the dominant generator is vertically integrated with a dominant retailer, the opportunities to exercise market power can also be observed at the retail level. The dominant generator may therefore no longer need to exercise "substantial market power". The ability and incentive to exercise market power is transferred to	The Commission has based its determination on the an assessment of the existence of the problem that the MEU's proposed rule seeks to address - the exercise of generator market power in the wholesale market. An discussion of the impact of substantial market power on retail consumers is provided in sections 6.1 and 6.2 of this draft determination.

Stakeholder	Issue	AEMC Response
	the dominant retailer.	
MEU	Retailing should not be excluded from the relevant functional dimensions of electricity production.	The Commission has provided a discussion of the impacts on consumers in sections 6.1 and 6.2 of this draft determination.
MEU	The appropriate geographic dimension is at the boundary of each NEM region due to the way the NEM is operated. Electricity markets exhibit congestion and operate of necessity in short time blocks.	Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate market definition as part of the analysis to inform this draft determination.
MEU	NERA methodology does not account for the consequences of shifting rents downstream. NERA focuses on evidence of substantial market power if there is a sustained effect on average spot prices that is likely to cause them to exceed LRMC over the long-term. However, periods of high price spikes may not necessarily result in spot and hedge contract prices exceeding the LRMC, but the effects on retail contract prices are immediate and can apply for periods up to 3 years subsequent to the actual exercise of the market power.	A discussion of the impact of substantial market power on retail consumers is provided in sections 6.1 and 6.2 of this draft determination.
TRUenergy	The relevant market is defined in the NEL. Defining an alternative view of the market is likely to create confusion. Definitions in the NEM support the concept of a single NEM-wide interconnected electricity system.	Given the results of NERA's comparison of LRMC with annual average wholesale prices, it has not been necessary for the Commission to reach a firm conclusion on the appropriate market definition as part of the analysis to inform this draft determination.
Barriers to entry		
AER	Bidding by generators to manipulate prices, be it to lower or raise prices, be it in the shorter term or medium term, and be it in energy, contract, retail or	The Commission considers that these views are supported in CEG's analysis.

Stakeholder	Issue	AEMC Response
	frequency control ancillary service markets, may raise strategic barriers to entry and competition concerns in retail and generation markets.	
Alinta Energy	The clarification of barriers to entry would illustrate that high prices are not of themselves an indication of barriers to entry and that high costs of entry, for instance building a generating unit, is not a barrier to entry.	The Commission agrees that high prices and high costs of building new capacity are not in themselves barriers to entry.
International Power GDF Suez	If substantial barriers to entry are not identified then the case for the rule change falls away. International Power asserts that there is no evidence of the existence of material barriers to entry. Conversely, introducing measures to further restrict competitive market behaviour, such as those proposed by the MEU will themselves act as a barrier to new investment.	The Commission considers that the points listed by GDF Suez are likely to assist in reducing barriers to entry but that the list is not sufficiently comprehensive to conclude that barriers to entry do not exist. The Commission agrees that a form of rule to constrain or remove transient pricing power, such as that proposed by the MEU, would pose unacceptable limitations on the ability of NEM generators to recover their efficient fixed costs. In the long-term this may jeopardise generators' ability to remain solvent and may risk further investment and injections of capital to the NEM.
MEU	The exercise of market power is not just related to increasing prices. Generators may reduce prices to force other generators out of the market and thereby increase prices in the longer term.	The Commission recognises the MEU's concerns in this regard as a form of strategic barrier to entry. CEG's considerations on strategic barriers to entry are discussed in section 7.3.2 of this draft determination.
Private Generators Group	The NEM history of new entry needs to be comprehensively considered when reviewing the issue of barriers to entry. The NEM record on new entry seems to directly undermine arguments suggesting such barriers exist.	CEG's report provides an assessment of the NEM history of investment and the implications for the existence of barriers to entry. This is discussed in section 7.3.1 of this draft determination.