Mr John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH
NSW 1235

Dear Mr Pierce

ERC0123 National Electricity Amendment Rule 2011

This submission was prepared in response to the AEMC's Consultation Paper, *National Electricity Amendment (Potential Generator Market Power in the NEM) Rule 2011*, released publicly on 14 April 2011.

The submission is made on behalf of the following generation businesses (the NEM Generators' Group) which represent more than 90% of all electricity generated in the NEM:

- AGL
- Alinta Energy
- CS Energy
- Delta Electricity
- Hydro Tasmania
- InterGen
- International Power
- Loy Yang Marketing Management Company
- Macquarie Generation
- Snowy Hydro
- Tarong Energy
- TRUenergy

The NEM Generators' Group is of the view that the MEU Rule change or a similar Rule change should not be made. We have serious doubts about whether the AEMC has the legal powers to consider or make the Rule change and we do not consider that the Rule change can be justified on economic grounds.

<u>Legal power</u>

The National Generators Forum wrote to the AEMC on 11 May 2011 asking the Commission to explain the legal basis for its decision to proceed with the Rule change given that the subject matter would seem to fall within the scope of the Competition and Consumer Act. The Commission wrote back to the NGF on 20 May 2011 stating that the Commission "expects that it would be unlikely to make a rule that has the purpose of regulating anti-competitive that is subject to the CCA". The AEMC noted that if the relevant conduct is within the scope of the CCA, a change to the Rules is unlikely to be made.

In our opinion, the AEMC has not addressed the issue. We think that:

- The relevant question is what is the source of the AEMC's powers to make the rules proposed by the MEU and can a power or authorisation be implied into the general language of the NEL? There is no express authorisation in the NEL.
- A positive power to make a Rule of this nature must be found, not just the absence of a prohibition.
- Had Parliament intended that the NEL authorise the AEMC to make unlawful anti-competitive behaviour that is not prohibited by the CCA it would have said so expressly. The NEL Second Reading Speech should be interpreted to mean that Parliament intended that the "competition regulation" would remain the province of the CCA to be enforced by the ACCC and not the subject matter of the NEL or NER.

Economic advice

The NEM Generators' Group commissioned economic advice from Frontier Economics (attached). The key conclusion of this advice is that the Rule change risks being an over-reaction to limited evidence of the exercise of transient market power by some generators at certain times and provides no evidence of material and enduring market power.

The MEU Rule change proposal seeks to prevent certain identified 'dominant generators' from making dispatch offers above the price of $300/MWh when electricity demand in the relevant region exceeds certain levels. The Proponent appears concerned that in periods of high demand, certain generators may be able to 'manipulate' the spot price of electricity by engaging in what it refers to as physical or economic withholding of its capacity.

Irrespective of which terms are used to define the manner of commercial behaviour of generators, if the AEMC is to consider whether generators do have market power, and the extent to which this is likely to compromise the achievement of the National Electricity Objective, it is important to first clarify what is meant by market power.

The essential feature of market power is that a firm possessing market power is able to act without constraint. This is the opposite of competition – where a firm is constrained by its rivals in its business activities. Market power is likely to be of more concern when it is *enduring* – where natural market forces will not serve to correct short-term increases of price above cost. It follows that evidence of prices being above costs is of less concern if there are low barriers to entry into the market. Therefore, market power in the NEM should be defined as the ability of electricity generators to act without competitive constraint in the long-run such that they are able to earn long-run economic profits.

The exercise of market power can harm economic efficiency across all dimensions – allocative, productive and dynamic efficiency. However, short term price spikes in the NEM caused by the exercise of transient market power are unlikely to result in material inefficiency, particularly given the:

- Low price elasticity of electricity demand – which limits harm to allocative efficiency.
- Similarities between the operating costs of different generators – which limits harm to productive efficiency
- Substantial influence of non-price factors on locational decisions – which limits harm to dynamic efficiency.

The reason generators have been unable to exercise enduring market power in the NEM is because of the relative ease of market entry, as evidenced by the development of over 12 GW of new capacity since the commencement of the NEM.

The proposed Rule change has a number of shortcomings. First, the operating cost of many peaking generators in the NEM is higher than $300/MWh. If such plant were 'caught' by the bidding restriction, they may be inefficiently mothballed, potentially leading to increased incidences of involuntary load shedding.

Second, as noted in the Consultation Paper, any attempt to prevent 'dominant' generators from engaging in what the Proponent describes as 'economic withholding' is likely to be met by attempts to engage in what the Proponent describes as 'physical withholding', including the retirement of plant. Preventing generators refrain from offering all their capacity to the market would not only be highly intrusive, it would be difficult to implement and may have harmful unintended consequences for the efficiency and reliability of the market.

Third, the Rule change could affect the ability of peaking generators to recover their fixed costs with the existing level of the MPC. In order to avoid deterring efficient generator entry and to ensure the NEM reliability standard continues to be met following the Rule change, the MPC may need to be revised higher. Raising the MPC has implications for the level and volatility of wholesale spot prices, and consequently, for wholesale contract prices and retail competition.

Finally, the proposed Rule change may raise the possibility that non-dominant generators who previously did not engage in strategies to increase spot prices may find it worthwhile to do so, which could ultimately result in even more generators becoming subjected to regulation.

If the Rule change is effective in preventing generators substituting a strategy of not offering all available capacity to the market for a MPC-bidding strategy, and if current market prices are too high (of which there is no evidence), the proposed Rule change could improve both allocative and productive efficiency in the short term and promote the NEO.

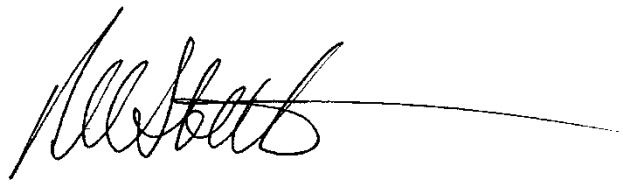
More realistically, if the Rule change does not prevent generators substituting a strategy of not offering all available capacity to the market for a MPC-bidding strategy, it will harm market efficiency and reliability compared to the status quo. Another issue is whether any improvement in short-run allocative and productive efficiency brought out by the proposed Rule is at the expense of distortions to investment signals and dynamic inefficiency. This will partly depend on whether the MPC needs to rise – and in fact is allowed to rise – to enable efficient plant to earn sufficient returns so as to enable the NEM reliability standard to be maintained. To the extent this does not occur, the Rule change could compromise dynamic efficiency and reliability. If dynamic efficiency and reliability are harmed, the Rule change would be contrary to the NEO.

Another consideration in assessing the Rule change is the element of good regulatory practice. Good regulatory practice refers to the stability, predictability and transparency of regulatory arrangements, as well as minimising regulatory intervention in market processes. In this context, the proposed Rule change would represent an unprecedented change in the NEM design philosophy. It would, for the first time, bring the involvement of NEM institutions into the question of the appropriateness of real-time participant bidding and availability decisions.

Next stages

The NEM Generators' Group will strenuously defend the current NEM design. Should the AEMC proceed with the Rule change, we will provide modelling and analysis to assess whether there is any evidence to support the claim that generators are exercising material or enduring market power. We will also be analysing and critiquing the data and observations made in other submissions to this Rule change proposal.

Yours sincerely



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CHIEF EXECUTIVE OFFICER
MACQUARIE GENERATION

On behalf of the NEM Generators' Group

29 June 2011

Response to AEMC consultation paper

June 2011

Response to AEMC consultation paper

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Introduction

1 Introduction

1.1 Background

Frontier Economics (Frontier) has prepared this report in response to the Australian Energy Market Commission's (AEMC's) Consultation Paper on the proposed *National Electricity Amendment (Potential Generator Market Power in the NEM) Rule* 2011. The Consultation Paper was prepared following the submission of a Rule change proposal by the Major Energy Users' Inc (MEU or Proponent).

1.2 Brief summary of proposed Rule

The MEU Rule change proposal seeks to prevent certain identified 'dominant generators' from making dispatch offers above the price of $300/MWh when electricity demand in the relevant region exceeds certain levels. The identity of dominant generators within a region and the level of regional demand at which bidding restrictions are imposed on these generators will be determined by the Australian Energy Regulator (AER) on the basis of guidelines it is obliged to develop. The proposed principles for these guidelines effectively seek to identify dominant generators as those that are required to run to meet regional demand under certain conditions. The limitations on the bidding behaviour of these generators are imposed at times when the level of demand exceeds the same threshold levels used to identify the generator as 'dominant' in the first instance.

For the purposes of identifying whether a generator is dominant and applying the bidding restrictions, the proposed Rule refers to a generator's entire portfolio, being the generation under the control of the generating company.

Under the proposed Rule, dominant generators must offer all their available capacity at a price no greater than $300/MWh. The reference to available capacity is intended to prevent dominant generators from responding to the Rule change by offering a smaller proportion of their capacity to the market. The bidding behaviour of other 'non-dominant' generators in a region is not a subject of the proposed Rule.

1.3 Structure of the report

This report is structured along the lines of the questions raised by the AEMC in the Consultation Paper, which focuses on generator market power. Therefore:

- Section 2 discusses the meaning of market power in the NEM
- Section 3 considers the effect of the exercise of market power on efficiency
- Section 4 examines the likely effectiveness of the proposed Rule change
- Section 5 considers the scope for alternatives to the proposed Rule change
- Section 6 discusses the impacts of the proposed Rule change on the achievement of the National Electricity Objective

2 Meaning of market power in the NEM

2.1 Introduction

The Consultation Paper begins by seeking to characterise the problem that the Rule change proposal is intended to address. According to the Consultation Paper, the Proponent considers that the problem is the exercise of market power by generators in the NEM.[1] In particular, the Proponent appears concerned that in periods of high demand, certain generators may be able to 'manipulate' the spot price of electricity by engaging in what it refers to as physical or economic withholding of its capacity. According to the Proponent,[2] physical withholding refers to a generator determining not to offer a proportion of its available capacity to the market. Economic withholding is described as a generator offering a proportion of its capacity near the Market Price Cap (MPC) in order to reduce its dispatch. These terms are unhelpful in describing normal commercial behaviour that exists in every market. Firms everywhere choose how much output they wish to offer the market and at what price – electricity generators are no different. In the literature, the process of firms choosing to compete by determining how much output they are independently prepared to offer the market is generally referred to as Cournot competition. The process of choosing a price for the level of output that each firm independently offers to the market is generally referred to as Bertrand competition. There is an extensive literature describing these two approaches to competitive behaviour that the AEMC should have regard to in its consideration of the Proponent's Rule change proposal.

Irrespective of which terms are used to define the manner of commercial behaviour of generators, if the AEMC is to consider whether generators do have market power, and the extent to which this is likely to compromise the achievement of the National Electricity Objective, it is important to first clarify what is meant by market power. The following section seeks to describe the widely accepted definition of market power used to underpin industry reform, economics and competition law.

1 Consultation Paper, p.5.

2 See Consultation Paper, p.5.

2.2 Market power is the ability to give less and take more

There is an extensive literature in economic theory and competition case law that seeks to define market power. This report does not seek to comprehensively review this literature but rather seeks to draw out the key conclusions.

While market power may be described in different ways by different economic theorists or in different case law judgements, there is a common theme that runs through most concepts of market power. In essence, it is the idea that in competitive markets, firms (either acting individually or in concert) are unable by their own actions to influence the level of output and prices in the market. In turn, this means they are unable to reduce the supply of their product to increase its price above its cost. Each firm in a competitive market is said to be a 'price taker'. By contrast, where a firm has market power, it is able to influence the market price of its product by choosing to supply less. By restricting its output, it is able to increase price above cost. In other words, it becomes a 'price maker'.

Therefore, economic theory views market power and competition as opposites: "market power and competition are but the inverse of each other".[3] The essential feature of market power is that a firm possessing market power is able to act without constraint. This is the opposite of competition – where a firm is constrained by its rivals in its business activities. This is explained in the famous words of the United States Attorney-General's National Committee to Study the Antitrust Law in its report of 1955:

> The basic characteristic of effective competition in the economic sense is that no one seller, and no group of sellers acting in concert, has the power to choose its level of profits by giving less and charging more. Where there is workable competition, rival sellers, whether existing competitors or new or potential entrants into the field, would keep this power in check by offering or threatening to offer effective inducements … [4]

These notions of market power are summarised in three key concepts often associated with the description of market power – it is the ability to:

- reduce output in order to increase prices – i.e. it is the ability to "give less and take more"
- operate without constraint on such activity that would otherwise be imposed by competitors operating in a competitive market
- profitably alter prices away from their competitive level.

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3 Maureen Brunt, '"Market Definition" Issues in Australian and New Zealand Trade Practices Litigation', *Australian Business Law Review*, 1990, Vol. 18, No. 2, pp. 86-128, at p. 95.

4 Quoted in Brunt, *op. cit,* p. 95.

The above passage is also noteworthy by referring to the concept of 'workable competition' [5] and [6] or 'effective competition'[7]. Both concepts acknowledge that real-world market structures and processes depart in many respects from the strict assumptions embodied in theoretical market constructs such as perfect competition. For example, trade in many real-world markets incorporates differentiated products rather than the homogeneous products traded under perfect competition. While electricity is a homogeneous good, sellers in real-world electricity markets differ in their technology and cost characteristics unlike the identical sellers of perfect competition.

The extent to which an enterprise is subject to competitive pressures or free of competitive pressures (that is, enjoys market power) will vary, depending on the circumstances of the enterprise and the market in which it is situated. Because these circumstances can very – and will substantially depart from textbook models of perfect competition – economists (starting in the 1940s) developed the notion of effective (or workable) competition. The idea behind this development was that a market was effectively (or workably) competitive if none of the firms in that market had significant market power. These concepts of workable and effective competition are consistent with the notion that competition is the antithesis of market power.

The concept of workable competition is therefore useful for distinguishing between instances where intervention is or is not likely to be worthwhile. A key aspect of whether a market is workably or effectively competitive – and hence whether intervention of some form might be appropriate – is whether any market power observable in that market is likely to be sustained over the long term. This is discussed further below.

Market power is mostly of concern when it is enduring

An important finding in both economic theory and competition law is that the ability of a firm to increase prices above cost is of less concern if this ability is only temporary in nature. In the words of Kaysen and Turner:

> A firm possesses market power when it can behave **persistently** in a manner different from the behaviour that a competitive market would enforce on a firm facing otherwise similar cost and demand conditions.[8] [emphasis added]

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5 John Clark is regarded as the founder of the concept of workable competition as initially set out in Clark, J.M. (1940), "Towards a Concept of Workable Competition", *American Economic Review*

6 Sosnick, S. 1958, "A critique of concepts of workable competition", *The Quarterly Journal of Economics,* Vol. 72, No. 3. (Aug., 1958), pp. 380-423.

7 For example, Shepherd, W.G. (1197), *The Economics of Industrial Organisation*, Prentice Hall.

8 Kaysen, C. and Turner, D. F., (1959), *Antitrust Policy* at p. 75.

This is recognised in *Queensland Wire*, where the High Court defined market power as:

> … the ability of a firm to raise prices above the supply cost without rivals taking away customers **in due time**, supply cost being the minimum cost an efficient firm would incur in producing the product...[9] [emphasis added].

This view is also found in the writings of Niels *et al*, who note in reference to market power being the ability to price above the competitive level that:

> This pricing power must also persist for some considerable time to be deemed more than transient market power.[10]

A key reason why the transient ability to raise prices above costs is not properly considered market power is that it is the pursuit of the ability to charge prices above cost that is an important motive that drives firms to compete more vigorously or to enter the market. As noted by Niels et al:

> The very prospect of high profits is what drives companies to reduce costs and introduce new products and technologies to become market leader. The prospect of these profits being regulated once a dominant position is obtained may distort these incentives …. the high profit made by the incumbent company is precisely what attracts those entrants. Regulatory control of those profits may distort this efficient signalling function of prices, and may thus paradoxically slow down the process of erosion of market power. Hence, the crucial question in each specific case is whether new competitors are indeed likely to enter the market and in what timeframe.[11]

Hence, the pursuit of market power can be an important part of the *process* of competition. However, if such market power were to be transient and moderated by new entrants or expansion by other competitors, it can be counter-productive to seek to control market power through regulatory means. This is because regulatory intervention historically created its own inefficiencies, and in the case of the electricity supply industry, regulations that failed so profoundly it led to the widespread structural reform of the sector and the introduction of the NEM market design. Yet the Proponent appears to propose a move back towards the heavily regulated arrangements rejected by reformers in successive State and Commonwealth Governments.

Market power is likely to be of more concern when it is *enduring* – where natural market forces will not serve to correct short-term increases of price above cost. Enduring market power is generally regarded as a problem as it may lead to material economic inefficiencies. Transient market power is not considered to be

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9 *Queensland Wire Industries Pty Ltd v Broken Hill Pty Co Ltd* (1989) 167 CLR 177.

10 Niels, G., Jenkins, H. and Kavanagh, J., *Economics for Competition Lawyers*, Oxford University Press 2011, p. 119.

11 Niels, G., Jenkins, H. and Kavanah, J., *op. cit.*, pp. 270-271.

a policy problem because it usually does not result in material economic inefficiencies.

This explains why some economists believe that the existence of barriers to entry is a key determinant of whether firms have market power. This is reflected in the Australian Competition Tribunal's findings in *QCMA*, where it noted that:

> Competition is a process rather than a situation. Nevertheless, whether firms compete is very much a matter of the structure of the markets in which they operate... Of all these elements of market structure, no doubt the most important is … the condition of entry. For it is the ease with which firms may enter which establishes the possibilities of market concentration over time; and it is the threat of entry of a new firm or a new plant into a market which operates as the ultimate regulator of competitive conduct.[12]

It follows that evidence of prices being above costs is of less concern if there are low barriers to entry into the market. This is because the existence of above-cost pricing will act as an incentive for other suppliers to either enter the market, or for existing suppliers to replicate the competitive advantage of a supplier that is able to presently set prices above cost. In the absence of major barriers to entry, above-cost pricing may be transient and competitive forces can serve to prevent this from enduring over time.

Measures of market power should focus on long-term considerations

Given that market power should describe an enduring ability to act without constraint, it is important that measures of market power used by the AEMC and other agencies be based on long-term rather than short-term considerations. In this regard, care must be taken in finding that a firm has market power simply because it is paid more than its marginal cost. In reality, firms price above marginal cost in practically all industries in the economy. This is especially the case in high fixed-cost industries – such as electricity and other utility industries – where firms need to receive a price above their marginal cost, at least in some periods, in order to recover their fixed costs. This implies that the mere observation of the spot electricity price being above the marginal cost of a generator in particular periods is not sufficient to find that the generator is pricing in a way that enables it to recover more than its total costs over time.

12 *Re Queensland Co-Op Milling Association Limited and Defiance Holdings Limited* (1976) 8 ALR 481, at p. 515.

This leads Niels *et al* to favour measuring market power by considering whether a firm is making economic profits over time. They note that:

> … profitability over a longer term can be used as an indicator of market power. Like the Lerner index, it has the benefit of directly capturing the essence of the definition of market power: the ability to keep price above the competitive level for a sustained period of time without being undermined by consumers switching or competitors entering the market.[13]

Market power should be identified and assessed with this longer-term perspective in mind. The ability of a generator to cause the spot price to rise above the generator's avoidable resource costs (also known as short-run marginal cost or SRMC) for shorter periods of time will be described in this report as 'transient market power', as it was by French J (as he was then) in the *AGL* decision:

> No doubt, as Victoria's largest generator, it is in a position opportunistically to respond to supply/demand imbalance in very short time intervals and if all the variables are in the right place, to affect both spot and forward contract prices. The question is whether the existence of such opportunities and the fact that it responds to them from time to time reflects the existence of market power. There is here a distinction to be drawn between what was referred to as 'transient market power' and 'persistent but intermittent' market power.[14]

Further:

> I am prepared to accept that there are periods of high demand where a generator may opportunistically bid to increase the spot price. I do not accept that such inter-temporal market power reflects more than an intermittent phenomenon nor does it reflect a longrun phenomenon having regard to the possibilities of new entry through additional generation capacity and the upgrade of interconnections between regions. It does not amount to an ongoing ability to price without constraint from competition.[15]

Market definition should be conducted with the purpose of assessing market power

Markets should be defined with a clear view as to the purpose of the definition and the question that the market concept is intended to be used to answer. To quote Maureen Brunt:

> As is often said, the market concept is an instrumental concept, designed to assist in the analysis of processes of competition and sources of market power.[16]

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13 Niels, G., Jenkins, H. and Kavanah, J., *op. cit.*, pp. 270-271.

14 *Australian Gas Light Company v Australian Competition and Consumer Commission (No. 3)* [2003] FCA 1525 (19 December 2003), para 453.

15 Para 493.

16 Brunt, M., "Market Definition Issues in Australian and New Zealand Trade Practices Litigation", *Australian Law Business Review*, Vol. 18, p. 193.

In the present case, the purpose of the market definition exercise is to help determine whether certain generators have market power in certain circumstances, and then whether the implications of this are serious enough to warrant a change to the Rules. This suggests that market definition should be undertaken with a view to helping understand what factors are likely to control the pricing and output decisions of each generator in question. This approach to market definition is frequently identified with Edward Mason, the founder of the field of industrial organisation:

> … the market, and market structure, must be defined with reference to the position of a single seller or buyer. The structure of a seller's market, then, includes all those considerations which he takes into account in determining his business policies and practices. His market includes all buyers and sellers, of whatever product, whose action he considers to influence his volume of sales.[17]

This means that in making conclusions about the boundaries of a market, it is important not to be overly limited in assessing the factors that are likely to constrain a given generator's activities. It is better to define markets in a way that includes all relevant considerations that are likely to constrain a generator's pricing and output decisions. The extent to which they are likely to do so can be separately considered when determining the extent to which the generator is likely to have market power in that market. For instance, if another generator is likely to only weakly constrain the pricing and output decision of a given generator, this can be noted when deciding the extent to which the generator in question is likely to have market power.

Importantly, the process of market definition should not be seen as an end in itself – it should not determine whether or not a generator has market power on its own. Its main purpose is to help identify the forces that operate within a market. As noted by the eminent economist Franklin Fisher, commenting on a famous US anti-trust case:

> If the case really turns on market definition – and especially if small changes in definition are likely to lead to large changes in other arguments or conclusions - then there is something wrong. In such circumstances, market definition is obscuring the facts rather than organizing them, and the outcome is being affected by the way in which the analyst chooses to categorize the information.[18]

This suggests that the AEMC should err on the side of a broader market definition than an artificially narrow definition.

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17 E. S. Mason, "Price and Production Policies of Large-Scale Enterprise", *American Economic Review*, 1939, Reprinted in E. S. Mason, *Economic Concentration and the Monopoly Problem*, Harvard University Press, 1957, pp. 52-72, at p. 65.

18 F. Fisher, J. McGowan, J. Greenwood, *Folded, Spindled and Mutilated: Economic Analysis and US v. IBM,* 1983, p. 343

2.3 Response to Question 1

What is market power in the context of the NEM?

1.1 What is an appropriate definition for the relevant market in which to examine whether market power is being exercised? What are the relevant product, functional, geographic and temporal dimensions?

As indicated in Section 2.2 above, market definition should be undertaken with a view to capturing all relevant factors that are likely to constrain the pricing and output decision of the electricity generator(s) in question. This process should consider all the factors likely to constrain those generators' pricing and output decisions, including the extent to which they are likely to do so.

As a result, the product and functional dimensions of the relevant market are relatively straightforward to define – they are the wholesale trading of electricity.

The geographic and temporal dimensions of the market are somewhat less obvious. The interconnected nature of the NEM suggests that the geographic dimension should be national rather than state-based, and should include interconnected participants in Queensland, New South Wales, the ACT, Victoria, South Australia and Tasmania. This is because the interconnected nature of the NEM implies that generators from across these jurisdictions are able to supply consumers in any one of those jurisdictions. This means that generators across the NEM can constrain, at least to some degree, the prices bid by any given generator.

However, the ability of electricity generators in one NEM region to supply consumers in another region can be limited at particular times due to the binding of constraints on transmission interconnectors. These limitations should be taken into account when assessing the extent to which generators throughout the NEM are likely to constrain the pricing and output decisions of individual generators.

With regard to the temporal dimension of the market, one approach is to narrowly define the market at the level of a 30-minute trading interval. However, this would be misleading as it would not reflect the basis on which generators operate their businesses. Generators make their business and investment decisions having regard to their ability to earn a commercial return over the life of their investment and do not enter or exit the market on the basis of the price they receive for their output in a particular trading interval. This suggests that the appropriate temporal dimension of the market should be substantially longer than a single trading interval. This view is consistent with the findings of the New Zealand High Court in *Power New Zealand Ltd v Mercury Energy Ltd* where the court found that:

> We are fortified in this approach by the Court of Appeal's treatment of market definition in *Tru Tone Ltd v Festival Records Retail Marketing Ltd*, (1988) 2 NZBLC

> 103,286; [1988] 2 NZLR 352. In that case, the Court had been invited to find that a single album (whether record, cassette or disc) might constitute the relevant market. *Richardson* J said at p 360-
>
> > "Viewed in relation to product and time the single album definition of market ignores commercial realities. It focuses on short run phenomena. It presents a snapshot rather than a moving picture of continuing commercial reality."
>
> The learned Judge accepted the view presented in the High Court that "in reality no distributor or retailer could run a business on the basis of a market confined to one album".[19]

As noted above, Justice French took a similar view on the appropriate temporal dimension of the market in the AGL decision.

1.2 How should market power be defined in the context of the NEM?

Consistent with the discussion above, market power should be defined as the ability of electricity generators to act without competitive constraint in the long-run such that they are able to earn long-run economic profits.

Importantly, this implies that observations of prices being above a generator's SRMC in a specific period are not sufficient to characterise a generator as having market power. As indicated above, all firms facing large fixed costs require the price they receive to exceed their marginal cost at least at certain times if they are to be able to recover their total costs. It is for this reason that regulated utility prices are generally set with reference to some long-run average cost concept rather than to a short-run marginal cost price.

Therefore in determining what behaviour constitutes enduring market power, it is necessary to have regard to whether a generator is able to earn economic profits in the long-run or whether these profits will be reined in by new entry into (or expansion by other existing operators in) the market. As noted in Section 2.2 above, the ability of a generator to offer its output at a price above its SRMC for a shorter time period is better described as 'transient market power'.

1.3 Do barriers to entry in the market exist such that the exercise of market power would not be constrained by potential entrants?

Barriers to entry are a relevant consideration in the context of determining whether a generator has enduring market power. The key barriers to generator entry in the NEM relate to the need to incur high fixed costs that become sunk after entry and the lead-time for investment. Combined with the discreteness or 'lumpiness' of generation capacity, this means that investors will not seek to develop new generators unless they have a reasonable level of confidence that average wholesale prices will remain sufficiently attractive post-entry that they

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19 *Power New Zealand Ltd v Mercury Energy Ltd* (1996) 5 NZBLC 104,015.

will be able to earn a normal profit on their investment over time. This is consistent with the proposed temporal dimension of the market as encompassing the time period over which generators base their entry decisions.

Nevertheless, the history of generation investment in the NEM indicates that the barriers to entry are relatively low. For example, over 12 GW of new capacity has entered the market since the NEM commenced in December 1998.[20]

2.4 Response to Question 2

What is 'exercise' of market power in the context of the NEM?

2.1 Are the existing competition law tests for 'taking advantage' or 'abuse' of market power an appropriate test in the context of this Rule change request?

While the notion of market power used in competition law is relevant to informing the appropriate definition of market power, the competition law tests for "taking advantage" or "abuse" are not helpful to assessing what is an "exercise" of market power in the context of the NEM. This is because the notions of "taking advantage" or "abuse" generally relate to conduct that would have the effect of *lessening* competition in a relevant market. This is not the basis for deciding whether a Rule change is appropriate. This is because the statutory regime set out in the National Electricity Law (NEL) is designed not with the purpose of preventing a lessening of competition in a relevant market, but instead with promoting efficient investment in, and efficient operation and use of, electricity services for the long term interests of electricity consumers.

2.2 Alternatively, should the Commission develop a different test for assessing whether market power has been exercised in the context of generation in the NEM? If so, what elements might it contain? For example, should it contain the concepts of sustained price rises above the competitive level and/or profitability?

As discussed above, the appropriate test for whether a generator has exercised market power is whether it is able to sustain wholesale prices in excess of its costs over the long term. The relevant cost parameter in this context is the total costs of the generator, sometimes described as its long-run marginal cost (LRMC).[21] As noted above, success in raising spot prices above a generator's SRMC does not reflect enduring market power.

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20 AER, *State of the Market 2010*, p.37.

21 In their reports on generator costs, consultants ACIL Tasman define LRMC as "the cost of an incremental unit of generation capacity, spread across each unit of electricity produced over the life of the station" – see ACIL Tasman, *Fuel resource, new entry and generation costs in the NEM, Prepared for*

3 Effect of market power on efficiency

3.1 Introduction

The Consultation Paper discusses the effect of the exercise of market power on economic efficiency by examining the three dimensions of efficiency relevant to the National Electricity Objective:

- Allocative efficiency – refers to how well a market allocates resources to their highest-valued uses. In the context of the NEM, allocative efficiency involves supplying consumers with power up to the point that where their willingness to pay for power equals the marginal cost of supplying additional power. If prices are higher or lower than the level at which consumers' willingness to pay equals the marginal cost of supply, this can result in a loss of potential welfare to the market described as a 'deadweight loss'
- Productive efficiency – refers to the maximisation of outputs for given inputs or alternatively, the production of given outputs for the minimum inputs. In the NEM context, productive efficiency typically refers to serving load at least (avoidable) resource cost[22]
- Dynamic efficiency – refers to how well investment in new capital stock reflects efficient resource allocation over time. In the context of electricity markets, this generally refers to the optimality of the type, timing, size and location of new generation investment

3.2 Allocative efficiency

Prices that are persistently above long run costs may result in a deadweight loss due to sub-optimal levels of electricity consumption and production. Prices that are too low may cause electricity consumption to be inefficiently high. If prices are too low and consumption is too high then the power sector will be using an inefficiently high level of resources.

The extent to which inefficiency results from prices being too low or high will depend on consumers' responsiveness to electricity prices. If consumers

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the Inter-Regional Planning Committee, April 2009, p.5. The term LRMC is also often used – typically in the context of regulatory decision-making – to describe the incremental cost of an expansion of the overall generation system.

22 Note that serving load at least cost is strictly a form of allocative efficiency – minimising the cost (rather than the quantity) of the inputs used to produce given outputs. However, as economists usually assume production processes are *technically* efficient, it is more convenient here for the expression 'productive efficiency' to refer to allocative efficiency in *production*, leaving the expression 'allocative efficiency' to refer to allocative efficiency in *consumption* (i.e. whether goods and services are going to the consumers that value them most highly).

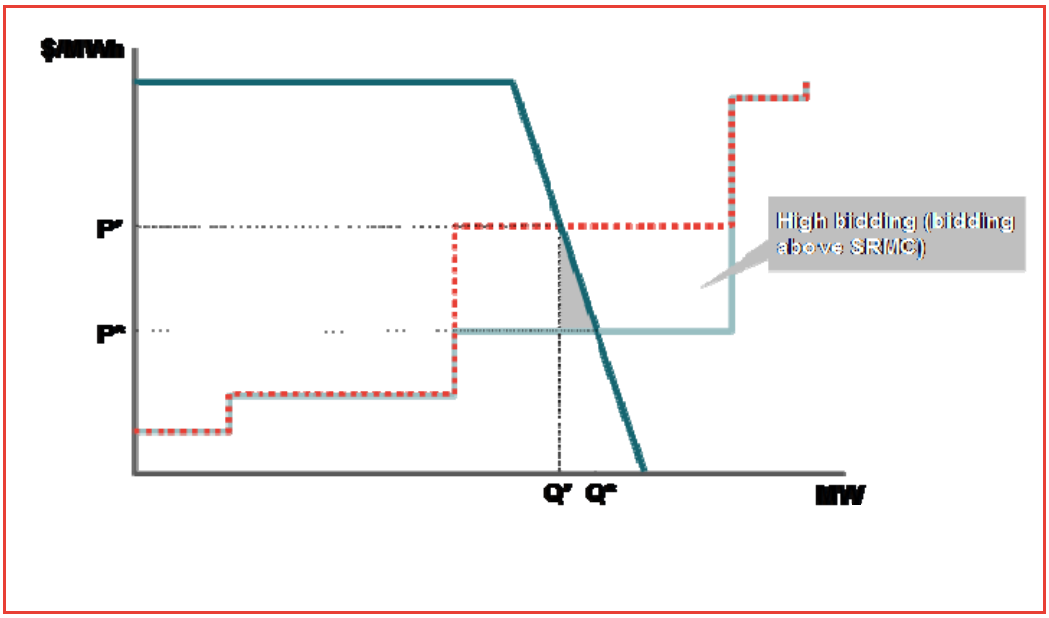
consume the same amount of electricity irrespective of the price of electricity then no inefficiency will result whether prices are too high or low.

In the short run, electricity demand is highly 'inelastic', meaning that it is relatively unresponsive to price. This means that any deadweight loss arising due to the exercise of transient market power will be low to non-existent. This is one reason why transient market power is of little concern from an allocative efficiency perspective.

However, if demand is not perfectly inelastic – which is more likely to be the case in the longer term – then prices that are too low or high could be of more concern. This concept of deadweight loss is demonstrated by the stylised example in Figure 1 below. The exercise of market power causes the market price (P') to exceed the fully-competitive price (P*), giving rise to a deadweight loss equal to the area denoted by the grey triangle. This deadweight loss arises as consumers reduce their consumption of electricity from Q* to Q' in response to higher prices. This reflects an inefficient diversion of resources away from the production and consumption of electricity.

In this example, the market price is higher than the price that would arise if generators offered their capacity at their short run marginal costs. The same result could occur if this generator instead chose not to continue offering all of its available capacity to the market at a loss and this resulted in more expensive plant (in terms of its SRMC) to run and set the market price (which would help all infra-marginal generators recover their costs and, hopefully, make a return).

Figure 1: Allocative efficiency



Source: Frontier Economics

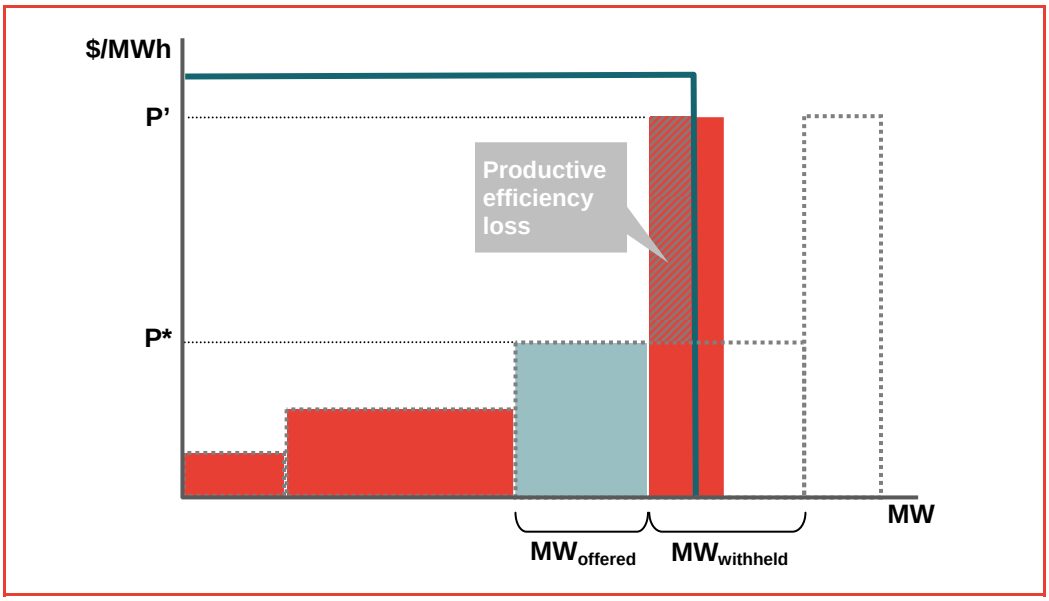
The fact that allocative inefficiency is more likely to emerge over a longer timeframe when consumers can adjust their consumption of electricity in the face of higher prices reinforces the view expressed above that market power should be considered in a long term context. Short term spikes in price caused by the exercise of transient market power are unlikely to result in any material inefficiency not least because virtually every consumer is shielded from price spikes by the nature of the contract they have with a retailer.

3.3 Productive efficiency

Productive efficiency in the context of the NEM requires that demand be met at least-cost. This requires that the 'cheapest' generation (in terms of its SRMC) is dispatched to meet load first and progressively more expensive generation is dispatched to meet load as the availability of cheaper generation is exhausted. This is the process by which the NEM dispatch engine, NEMDE, seeks to dispatch the market. Any generator bidding above its SRMC or refraining from offering all its available capacity to the market can result in more expensive generation operating in place of cheaper generation. To the extent this occurs, it has the effect of increasing the resource costs of serving load (as well as the market price) and results in a loss of productive efficiency in the form of a deadweight loss.

Figure 2 depicts, in simple terms, the deadweight loss arising from a generator (the third-cheapest in the market) choosing to offer less than its full output to the market. This behaviour results in a more expensive generator (the fourth-cheapest) being required to run to meet demand and set the market price. The deadweight loss is due to the incurring of higher resource costs to meet demand than is necessary. The same result could occur if a generator bids above its SRMC. In that case, a least-cost dispatch engine could dispatch a more expensive plant ahead of a cheaper plant.

Figure 2: Productive efficiency



Source: Frontier Economics

It is important to recognise that neither of these bidding strategies will necessarily harm productive efficiency. For example if all generators in the market chose to offer their capacity at a premium to their SRMCs such that the relative prices of capacity remained approximately the same (which is a high frequency event in the NEM), the cost efficient merit order will remain intact.

It is also important to note that the NEM is characterised by a supply function that is relatively flat over a very wide range (i.e. the short run marginal costs of the majority of plant is very similar). This means that even if bidding behaviour switches the merit order of power stations, it is unlikely to have much of a cost consequence. This is especially the case in the current context as the difference in the SRMCs of gas- and coal-fired plant across the eastern seaboard of Australia has narrowed due to:

- Rising black coal prices due to strong international demand and
- Falling domestic gas prices due to the development of major reserves of coal-seam methane in southern Queensland

The implementation of a carbon pricing regime would further narrow the cost difference between coal- and gas-fired plant (which it is designed to do). To the extent this difference in coal and gas prices continues to narrow over time, the exercise of transient market power may not be associated with a material loss of productive efficiency in the NEM.

Finally, even if certain generator bidding behaviour does have a resource cost consequence, this is typically a very short-lived phenomenon and hence does not produce material inefficiencies from a long term perspective.

3.4 Dynamic efficiency

This section considers the implications of the exercise of market power on plant entry/exit and investment decisions. To properly characterise the impact of market power on dynamic efficiency, it is important to recall the thinking behind the NEM's 'energy-only' market design.

Energy-only market design

The NEM was designed as an energy-only market in which all plant would recover their variable and fixed costs through the spot market and derivatives contracts settled against spot market outcomes. For this to happen, the spot price must be able to at least occasionally rise above the SRMC of the most expensive plant in the market to enable that plant (typically a distillate or gas-fired peaking plant) to recover its fixed costs.

An alternative form of market design involves the establishment and operation of separate markets for energy and for capacity. In such market designs, generators are expected to recover some or all of their fixed costs through the capacity market. Many electricity markets in the United States, as well as the Western Australian electricity market, incorporate separate capacity and energy markets. However, such market designs give rise to their own problems, such as the need for centralised involvement in the setting of capacity requirements and prices. These are described further below.

The energy-only design of the NEM necessarily leads to high spot price volatility. This volatility was expected by the body established by the State Governments involved in designing the NEM and the Federal Government, the National Grid Management Council (NGMC):

> Pool prices are intended to reflect the value of electricity that is traded at a particular point in time. If prices reflect the value of the product, then for an appropriate investment in generation, revenue from the pool will cover both its variable production costs and its fixed costs over the life of the investment.
>
> There is no guarantee however, that in a particular period, the revenues a generator receives from the pool will cover its costs. The lumpy nature of the capital and the variability in demand, mean that there will be some periods in which pool revenues more than cover total costs, and other periods where it does not.[23]

and:

> The spot price can be very volatile and will rise and fall due to supply and demand factors. Participants can insulate themselves from this risk by entering into retail arrangements or by long and short term wholesale contracts. In the absence of

[23] National Grid Management Council, *Transition to a National Electricity Market*, July 1993, p. 11.

> contracts or a retail arrangement, customers would pay the spot price for all the energy they consume.[24]

As noted above, the most expensive generation plant in the system can only recover its fixed costs at times when the market price is above its SRMC. This can only happen in the spot market in the event of:

- Voluntary (dispatchable) load shedding – in which case the spot price is set by demand-side bids or
- Involuntary load shedding – in which case the price is set at the MPC

Putting voluntary demand-side bids to one side, this means that there is a strong interdependence between the level of the MPC, generator costs and the duration of unserved energy.

To illustrate the relationship between these three factors, consider the following example:

- The MPC is set at $12,500/MWh
- Based on available technology, the smallest and lowest capital cost peaking plant that can be built has an annual capital cost over the life of the plant of $95,000/MW and a SRMC (made up of fuel and variable operating and maintenance costs) of $500/MWh
- There are no demand-side bids above the SRMC of the most expensive peaking generator

Under these assumptions, the duration of unserved energy can be calculated by determining the minimum number of hours of involuntary load shedding – and hence, the number of hours of MPC prices – required to just recover this plant's annual capital and variable costs. The relationship is:

$$Hours_{MPC} = \frac{Annual\ capital\ cost}{(MPC - SRMC)}$$

In this example, the annual duration of MPC prices is 7.91 hours or 0.09% of the year. Given an MPC of $12,500/MWh and annual peaking generator capital costs of $95,000, it is not economically efficient to invest in peaking capacity that will be used for less than 7.91 hours a year.

The level of the MPC combined with the pattern of demand over time, known as the load profile also determine the optimal level of installed generation capacity.

This can be seen by considering Figure 3, which illustrates a stylised load-duration curve. Continuing with the above example, the annual duration of MPC prices is 7.91 hours. The optimal level of installed generation capacity (in MW) to

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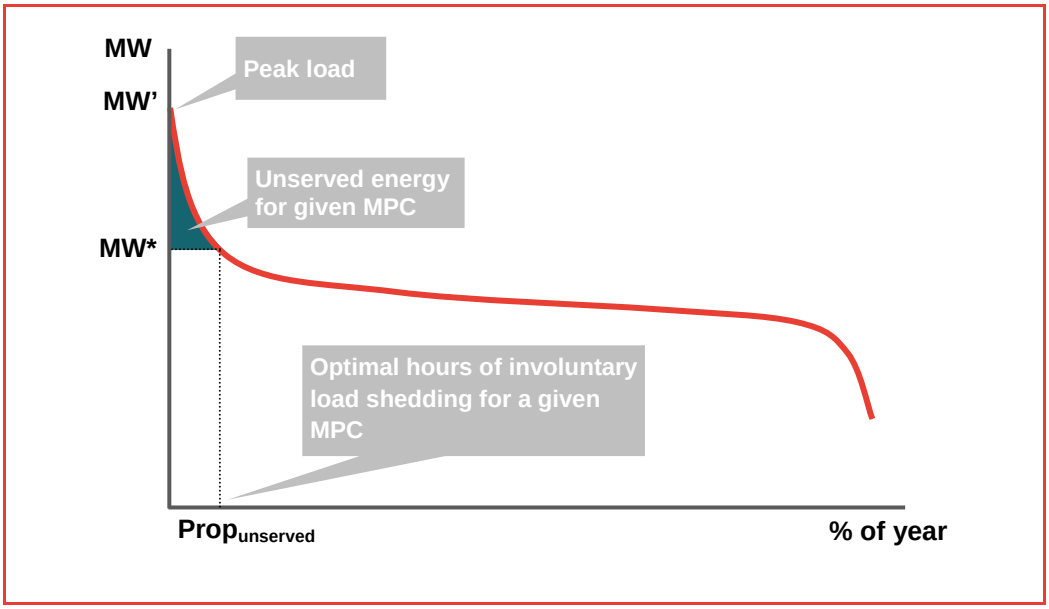
24 National Grid Management Council, *Empowering the Market, National Electricity Reform for Australia,* December 1994, p. 15.

yield 7.91 hours per annum of involuntary load shedding is MW* and the amount of unserved energy (in MWh) implied by the shape of demand, the level of MPC and cost of peaking generation is equal to the dark blue area. The difference between peak load (MW') and the optimal level of installed capacity (MW*) is the maximum level (in MW) of unmet demand at any stage over the course of the year.

Figure 3: MPC, optimal installed capacity and unserved energy



Source: Frontier Economics

Consequently, the level of the MPC (currently, $12,500/MWh) is a critical parameter in an energy-only market. Since the MPC applies when there is involuntary load shedding, a case can be made for it to reflect the value of reliable energy supply to customers. In practice, however, the MPC is not an exogenous variable in the NEM but is the output of a modelling process overseen by the AEMC and the market operator, AEMO, in which the MPC is set with the objective of ensuring that the NEM reliability standard of 0.002% energy unserved is not exceeded.

As noted above, an alternative way to ensure a reliability standard is met is to restructure the market design to incorporate a separate 'capacity market' in addition to the 'energy market'. Under such a market design, the role of the energy market is primarily to allow all generators to recover their variable operating costs (although baseload and mid-merit plant will also recover some of their fixed costs). As a result, prices in the energy market are typically capped at much lower levels than in the NEM (such as $1,000/MWh). The role of the capacity market is to enable peaking plant to recover their fixed costs and to enable other plant to recover the remainder of their fixed costs not recovered through the energy market. Clearly, a move to such a market design would

involve radical changes to the NEM and the Rules. As alluded to above, the establishment and operation of a capacity market would require considerable effort and involvement from market institutions such as AEMO, the AEMC and the AER in terms of:

- Setting aggregate and local capacity requirements
- Setting capacity prices, potentially in different locations and
- Recognising differences in typically capacity factors exhibited by different types and technologies of plant (particularly recognising the low availability of wind at peak times)

As a consequence, a shift to a market design that incorporated separate energy and capacity markets would be far from a panacea for issues arising in the current energy-only NEM design. Indeed, the Proponent's Rule change proposal could represent only the beginning of a move back towards greater regulatory intervention in the NEM.

Optimal plant mix and cost recovery[25]

The energy-only market design is not only intended to yield consistent levels of unserved energy and installed generation capacity, it can also produce an efficient technology mix of plant. In a theoretically ideal (fully-competitive) energy-only market, for a given:

- MPC
- mix of generation technologies (differing cost and operating characteristics)
- shape of load (flat, peaky),

price-taking generator bidding behaviour should result in:

- the optimal technology mix and timing of generation investment as well as the optimal operation of these generators, together ensuring that long-run total costs of meeting load are minimised and
- a path of market prices that results in this optimal mix of plant, based on optimal dispatch, perfectly recovering all generators' total costs (fixed and variable) over time

The precise conditions necessary for this outcome are not borne out in practice due to a range of real-world market imperfections and failures. Nevertheless, it is illustrative to recap how in theory an energy-only market seeks to ensure the efficient mix and operation of generation plant as well as cost recovery for that efficient mix of plant.

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25 A complete exposition of this result can be found in Stoft, S., *Power System Economics, Designing Markets for Electricity*, IEEE Press, 2002, Part 2.

The top panel of Figure 4 below shows the total cost, per MWh, of three generation technologies at different operating capacity factors. The y-intercept denotes fixed cost and the slope of the line denotes variable cost. Depending on the duration of operation, each technology is at some point least-cost in $/MWh terms (i.e. it lies on the dotted red line).

These 'screening curves' can be used to determine the optimum plant mix for a given shape of load. Taking as given the optimal annual number of hours of unserved energy, it is possible to derive the optimal proportion of the year that each plant should run and the resultant optimal level of installed capacity of each plant from the middle panel of Figure 4.

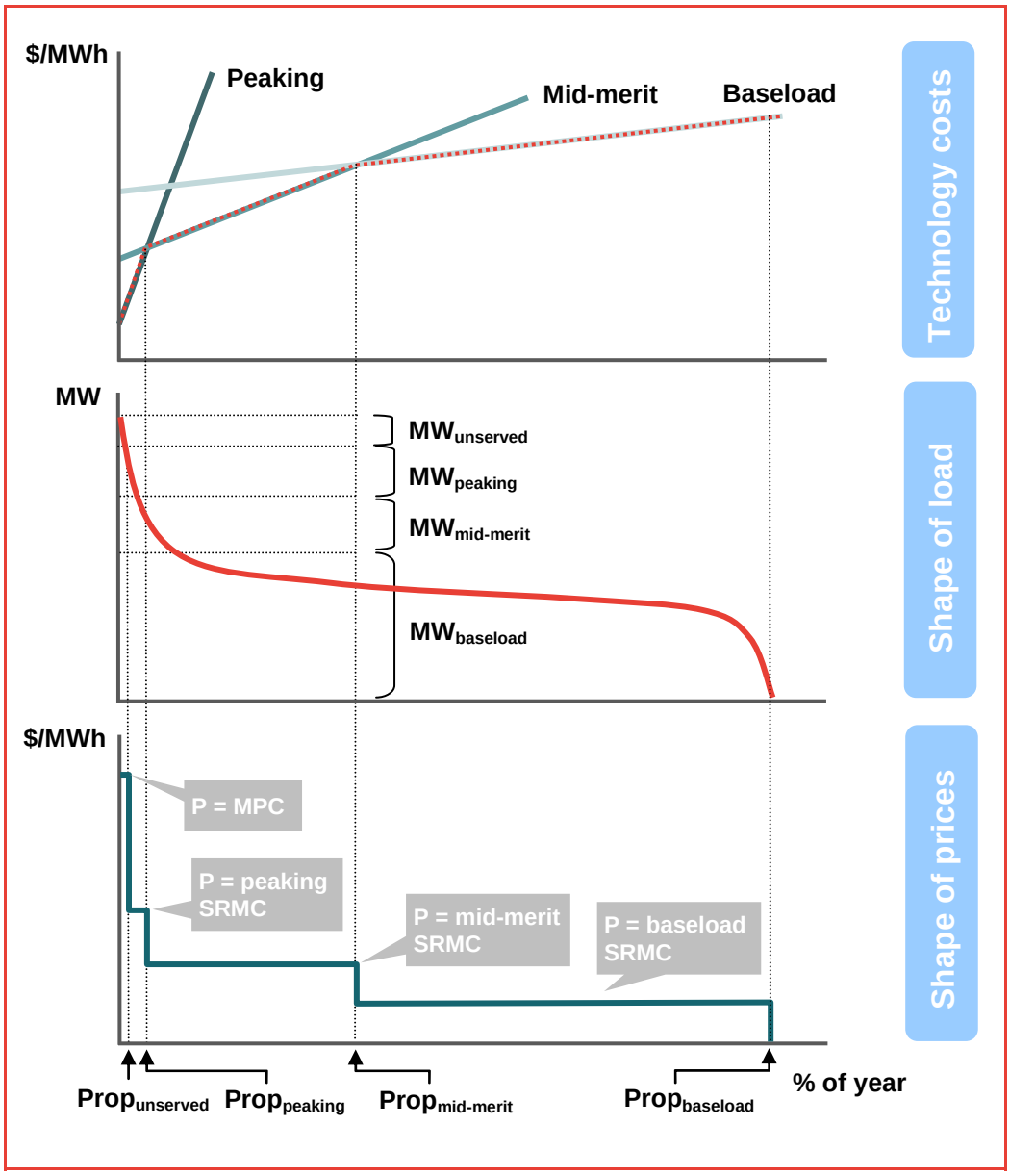
Under the assumptions of a fully-competitive market, the:

- optimal duration of unserved energy, combined with the
- optimal plant mix and operation given technology costs and the shape of load,

can be used to derive an optimal price-duration curve as per the bottom panel of Figure 4. This resultant price-duration curve is sufficient to ensure that all technologies in the optimal mix can recover their total costs (variable and fixed) over time. Each technology recovers only its variable costs when it is setting the price (i.e. it is the marginal generator). Each technology recovers both its variable and a portion of its fixed costs when the market price rises above its variable cost. This means that:

- the most expensive generation technology recovers its fixed costs only during periods of unserved energy when the market price is equal to the MPC (ignoring instances of voluntary load shedding that lead to prices being set between that plant's SRMC and MPC)
- all other generation technologies in the optimal mix also rely on MPC prices at these times to ensure they fully recover their fixed costs. For example, a baseload unit will recover some of its fixed costs when a mid-merit plant is marginal and setting the price, but will not recover all its fixed costs unless the optimal duration of MPC prices occurs.

Figure 4: Technology costs, optimal plant mix and price-duration curve



Source: Frontier Economics

Implications for generation investment

The extent of any dynamic inefficiency will depend on a number of factors apart from the magnitude and duration of prices being higher than long run costs. For example, the range of other influences on generation investment includes:

- Proximity of fuel, land, water and the transmission network
- Environmental obligations and
- Uncertainty over the introduction and nature of climate change policies such as carbon pricing

The importance of these other influences on generation investment was recognised in the AEMC's Congestion Management Review.[26]

Many of these other influences will be far more important to the efficient pattern of generation investment decisions than the effect of high pricing. For example, uncertainty over carbon pricing is leading many investors to limit their investments to open-cycle gas plant irrespective of any price signals provided through the NEM wholesale market. In this environment, clipping transient price spikes will have virtually no effect on the level, technology and timing of generation investment. Indeed, it is likely to have the reverse effect on new investment and long term prices. Investors in the energy-only NEM design are likely to be alarmed at the serious threat posed by the Proponent's Rule change proposal and are likely to deter or delay their investments. This could cause prices to become higher and more volatile, which may encourage even more dubious proposals for increasing regulation in the NEM.

Implications for retail markets

Prices that are inefficiently high for an enduring period may have implications for retail markets in the NEM. If this higher average price is a result of greater volatility, this may change the nature of the type of hedging contracts sought by retailers to help manage the spot market risks they face. It may also mean that retailers require higher margins to help compensate for any increases in risk that cannot be managed by altering their mix of hedge purchases. To the extent that required retailer margins rise, this may have consequences for the timing and nature of entry into the retail market and/or lead to higher retail prices paid by consumers.

However, these effects should be put into perspective – in particular, in light of the options that retailers have to manage volatility. The experience in the NEM has shown that retailers do not find it difficult to enter the market in spite of claims that 'the contract market' is 'illiquid' (which usually means that retailers prefer lower contracts prices than the market price). Retailers have responded to any attempts by generators to exert any influence over prices by developing their own peaking generation capacity. This has helped mitigate any market power that generators have had and, together with the large amount of new entry of plant to the NEM through normal investment (12 GW to-date) and subsidised entry through environmental schemes, has resulted in wholesale prices are lower than average generation costs across the NEM.

26 AEMC, *Congestion Management Review, Final Report*, June 2008, pp.140 and 205.

3.5 Response to Question 3

What impact is the exercise of market power likely to have on efficiency?

3.1 How might the exercise of market power impact on allocative efficiency in the NEM?

As discussed above prices that are too low or high will result in inefficient use of resources but the extent of any efficiency loss is directly related to the price elasticity of demand. This means that in the short term, such as during real-time dispatch, when demand is almost perfectly inelastic (which is the nature of events addressed by the Proponent's Rule change proposal), there is likely to be little to no effect on allocative efficiency from the exercise of transient market power. However, in the longer term any efficiency loss will depend on:

- The relevant long term elasticity of demand and
- The extent to which average prices paid by consumers in the long term are higher than they would be in the absence of the exercise of market power

Even though long term elasticity is higher than it is in the short term, given that prices are currently less than the long run average generation costs, it is difficult to see that there is any exercise of market power occurring. Further, if there is, it is not likely to have much of an effect on economic efficiency.

3.2 How might the exercise of market power impact on productive efficiency in the NEM?

The extent of any inefficiency will depend on the extent to which the generation merit order and dispatch changes as a result. If the exercise of transient market power leads to a plant of a given technology and fuel-type displacing another plant of the same or similar technology and fuel-type, the magnitude of the inefficiency will be small. However, given that the bulk of the NEM generation stock is coal-fired, the exercise of transient market power will often not to lead to material deadweight losses. Further, even where the exercise of transient market power leads to gas-fired plant running in place of coal-fired plant, the effect on productive efficiency may be small because of the ongoing narrowing of the costs of coal- and gas-fired plant in the NEM, due to rising international black coal prices and falling domestic gas prices due to the development of major reserves of coal-seam methane in southern Queensland. The implementation of a carbon pricing regime would further narrow the cost differences between coal- and gas-fired plant. Therefore, it may not be the case in practice that the exercise of transient market power leads to a material loss of productive efficiency in the NEM.

3.3 How might the exercise of market power impact on dynamic efficiency in the NEM?

As noted above, the extent of any dynamic efficiency will depend on a number of factors apart from the exercise of market power, such as the availability and proximity of fuel, land, water and transmission network. Many of these other influences will be far more important to generation investment decisions than the effect of the exercise of a degree of market power.

Further, present uncertainty over the introduction and nature of a carbon pricing regime is leading many investors to limit their investments to open-cycle gas plant irrespective of any price signals provided through the NEM wholesale market. In this environment, the exercise of market power may have, in reality, little or no practical effect on the level, technology and timing of generation investment.

3.4 What other impacts might the exercise of market power have on efficiency and/or the long term interests of consumers?

It is certainly the case that generators have not been able to exercise market power in the long term, as prices have not exceeded long run costs for any enduring period. This means that it is unlikely that the long term interests of consumers have been harmed. The reason that generators have been unable to exercise enduring market power is because of the relative ease of market entry, as evidenced by the development of over 12 GW of new capacity since the commencement of the NEM.

4 Effectiveness of the proposed Rule change

4.1 Introduction

This section considers the potential impediments to the proposed Rule change being effective in deterring or preventing the exercise of market power.

The first issue with the proposed Rule change is that the proposed $300/MWh bidding cap is flawed in two ways. The first flaw is that it was naively based on the existing administered price cap (APC) in the Rules. This fails to acknowledge that the APC does not operate immediately. Rather, it only applies when the cumulative pricing threshold has been reached. This provides peaking generators with an opportunity to recover some of their fixed costs before the APC is imposed. The proposed Rule change does not provide a similar time period prior to applying the bidding cap and hence is likely to inhibit fixed cost recovery.

The second flaw with the cap is that the proposed Rule change fails to recognise that the SRMC of many peaking generators in the NEM is higher than $300/MWh. For example, according to ACIL Tasman, Snuggery, Port Lincoln GT and Angaston in South Australia each has a SRMC of approximately $400/MWh (in 2009/10$).[27] If such plant were 'caught' by the bidding restriction due to being part of a dominant generator portfolio, the implications for the NEM could be adverse and severe. To the extent that the Rule change meant that extreme peaking plant were prevented from running without making an operating loss, the initial symptom could be mothballing of these plant. This could be followed by increased incidences of involuntary load shedding if these plants were required to serve peak loads. These particular implications could of course be largely be avoided by increasing the level of the bidding restriction. As such a move would do relatively little to compromise the objective of the proposed Rule, the remainder of this report generally assumes that the $300/MWh bidding cap is replaced by a bidding cap that is at least higher than the highest avoidable costs of any generator in the NEM.

Second, as noted in the Consultation Paper, any attempt to prevent 'dominant' generators from engaging in what the Proponent describes as 'economic withholding' is likely to be met by attempts to engage in what the Proponent describes as 'physical withholding', including the retirement of plant.

While the proposed Rule change prevents dominant generators from bidding close to the MPC ('MPC-bidding') by forcing these plants to offer all available capacity at the Administered Price Cap (APC) of $300/MWh when called by AEMO, the critical reference is to all available capacity. To the extent that a

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27 ACIL Tasman, *Fuel resource, new entry and generation costs in the NEM, Prepared for the Inter-Regional Planning Committee*, April 2009, Table 30, p.48.

dominant generator can avoid making its capacity completely available to the market – including by physically remove capacity from the market through mothballing or cycling unit availability – such generators can engage in strategies with similar effects to those of a MPC-bidding strategy, rendering the Proponent's Rule change proposal ineffective, or worse, it may result in greater unreliable and system insecurity

The third determinant of the efficacy of the proposed Rule change is the extent to which these changes result in under-recovery of generators' efficient total costs. In order to avoid deterring efficient generator entry and to ensure the NEM reliability standard continues to be met following the Rule change, the MPC may need to be revised higher. Raising the MPC has implications for the average level and volatility of wholesale spot prices, and consequently, for the level of wholesale contract prices.

Finally, the proposed Rule change may raise the possibility that non-dominant generators who previously did not engage in strategies to increase spot prices may find it worthwhile to do so, which could ultimately result in even more generators becoming subject to regulation.

4.2 Preventing generators refrain from offering all their capacity to the market

The Rule change proposal discusses the prospect of dominant generators substituting a strategy of not offering all their available capacity to the market for a MPC-bidding strategy. The Rule change proposal supports a change in the powers and responsibilities of the AER and AEMO to prevent dominant generators from not offering their available capacity to the market in response to the Rule change. In effect, the Rule change proposal suggests:

- Extending AEMO's powers of direction to allow it to "constrain-on" (force to run) a dominant generator that has bid less than all its capacity as available. The Rule change proposes to compensate such plant by settling constrained-on output at the APC of $300/MWh[28]
- Expanding the AER's responsibilities to include conducting an *ex post* review of the capacity offered by a dominant generator and to require such generation to demonstrate that at times when it could exercise market power, it did offer all its available capacity to the market.[29] The Rule change proposal suggests expanding the AER's investigation and information collection powers via amendments to the NEL or by allowing the ACCC to conduct

28 p.39.

29 p.39.

such investigations using its powers under the CCA via a change to the Rules[30]

The Rule change proposal raises two issues that will make the monitoring and enforcement of strategies of not offering available capacity to the market challenging:

- Creating an unprecedented onus to supply on generators and
- *Ex post* determination of whether a generator has refrained from offering all its available capacity.

Onus to supply

A fundamental tenet of the NEM – and almost any type of market – is that no generator is forced to supply its capacity to the market. The market operates on the premise that the profit-maximising behaviour of generators will result in power being offered to the market when generators consider it worthwhile to do so. This avoids the need for centralised institutions (such as AEMO and the AER) to get heavily involved in individual generators' operating and investment decisions.

The Rule change proposal notes that under certain circumstances, AEMO currently has the power to direct generators to either increase or decrease their dispatch. However, this power is limited to instances where system security and reliability is threatened.

Any change to the design of the NEM that obliges AEMO to force generators to offer a certain amount of capacity to the market for purposes other than ensuring system security and reliability would represent a fundamental departure from the rationale underpinning the original market design and indeed, the very concept of a 'market' as an allocationary institution. Such a fundamental change to the market design and such a fundamental departure from the ordinary principles upon which markets operate can only be justified if current market outcomes are giving rise to significant harm to the long-term interests of electricity consumers.

Ex post determination of generators not offering all available capacity

The Rule change proposal discusses the process regarding the AER's assessment, *ex post*, of whether generators have failed to offer all their available capacity to the market. The Rule change proposal contends that the AER should be capable of

30 pp.40-41.

performing such reviews provided it has access to the necessary resources and funds[31].

We agree that, in theory, an *ex post* assessment of a particular generator should be capable of identifying whether a unit has been removed from service for strategic reasons in the short term. For instance, when a unit's removal from service coincides with high expected temperatures and demand, and where the unit has been in service shortly prior to the event and returns to service soon after the event, the likelihood that the unit was removed as part of a deliberate strategy would appear high. However, any such an assessment will involve a degree of subjectivity and may take considerable time to undertake properly and following due process.

Further, the Rule change proposal does not discuss the prospect of such strategies being effected through medium-term mothballing decisions by generators. It is likely to be extremely difficult to ascertain whether a decision by, say, a large baseload coal generator to mothball an entire unit for economic reasons might constitute a strategy of refraining from offering all available capacity to the market.

This difficulty arises from how "available capacity" is defined and no definition is without drawbacks:

- If available capacity is defined as capacity that can be returned to service in the short term (say, 24 hours), longer-term decisions to retire or mothball units would not be considered contrary to the Rules. This means that generators could potentially circumvent the Rule change proposal by taking a unit out of service for, say, one to three months over peak demand periods. Further, depending on the technical characteristics of the plant, returning a unit to service within 24 hours after an extended period of being idle may not be technically feasible and hence may not be unlawful
- Conversely, if available capacity is referenced to the nameplate capacity of the plant, even a bona fide maintenance outage or a decision by a generator to mothball a unit for sound efficiency reasons (for example if the generator does not expect the plant to run for a certain period) could be considered unlawful. This may provide incentives for generators to inefficiently operate plant to avoid being penalised, to the detriment of productive and possibly dynamic efficiency if efficient entry is deterred

4.3 Impact of proposed Rule on dynamic efficiency

By constraining generators' bidding behaviour, the proposed Rule change may affect the ability of extreme peaking generators to recover their fixed costs with

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the existing level of the MPC. To understand why this is the case, it is worth reflecting on the methodology used by ROAM to set the MPC and how the proposed Rule change would affect the MPC calculation.

Determination of the MPC

As noted above, the target level of unserved energy (USE) in the NEM is an exogenous parameter known as the NEM reliability standard. The NEM reliability standard is that no more than 0.002% of energy is unserved annually. The MPC is set to provide sufficient incentives for investment in peaking generation capacity to ensure that the target reliability standard is met.

The AEMC Reliability Panel is responsible for reviewing the setting of the MPC. The most recent MPC determination, conducted in 2010, was performed with the assistance of ROAM Consulting (ROAM).[32]

In setting the MPC, Frontier understands that ROAM's methodology seeks to determine the MPC necessary to ensure that for a given:

- forecast demand profile in each NEM region
- variable and fixed cost of 'extreme' peaking plant (i.e. the cheapest capital cost peaking generator available)
- minimum generating unit size in each region based on existing peaking plant,

the target level of unserved energy will not be exceeded.

This would only occur if the MPC was sufficiently high to ensure that new entrant extreme peaking plant was able to fully recover its total annual costs. The analysis assumes that the extreme peaking new entrant:

- ***Runs only at times when it is required to run to prevent or limit involuntary load shedding:*** The extreme peaker is assumed not to be dispatched unless: (i) it must run to avoid load shedding or (ii) involuntary load shedding is occurring due to available supply being insufficient to meet demand.
- ***Sets the price at just below the MPC whenever it is marginal:*** The extreme peaker is assumed to set the spot price at just below the MPC when it is the marginal plant on the system; if the extreme peaker is running at a time of involuntary load shedding, the spot price will simply be the MPC.

32 ROAM Consulting (2010). *Reliability Standard and Setting Review*, 21 April 2010, available HhereH.

MPC, generator bidding and generator cost recovery

The next step is to consider an extension of the example outlined above.. Assume the following:

- Based on available technology, the hypothetical extreme peaking plant has an annual capital cost over the life of the plant of $95,000/MW and a SRMC of $500/MWh – this means it must earn a gross operating profit (market price less SRMC) of $95,000/MW over the course of the year
- MPC is $12,500/MWh
- There are no demand-side bids above the SRMC of the most expensive peaking generator
- Based on the USE target of 0.002%, the expected duration of unserved energy is 4 hours over the year
- To keep USE to 4 hours for the year, the extreme peaking plant must run for 7.91 hours in the year – being the 4 hours in which involuntary load shedding occurs as well as an additional 3.91 hours in which involuntary load shedding would occur if the extreme peaker did not run

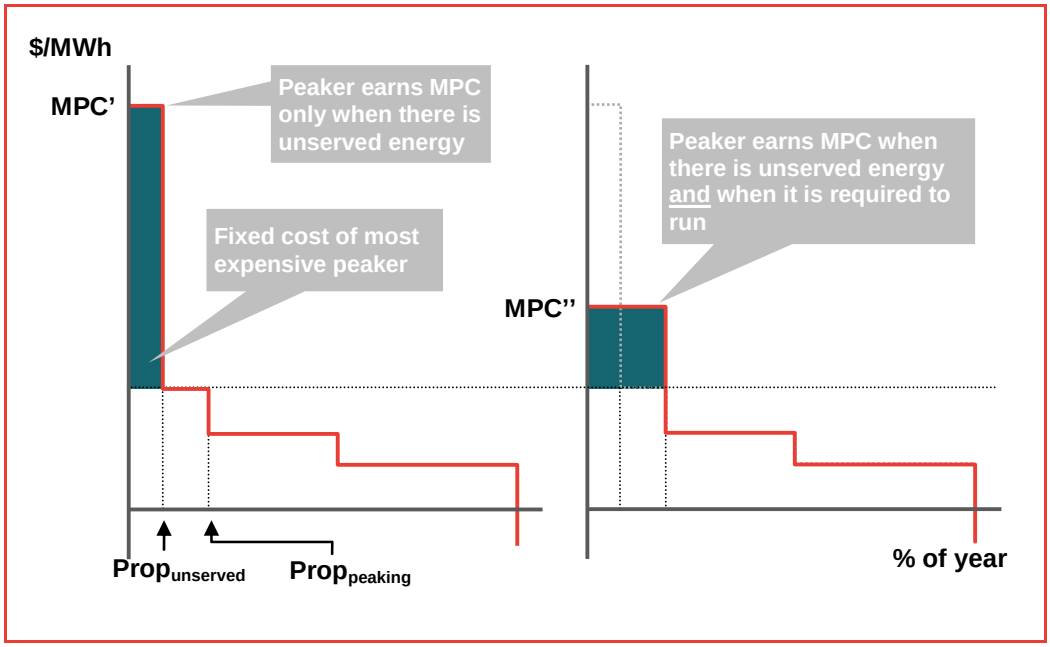
As noted above, the ROAM methodology assumes that the extreme peaker sets the wholesale spot price at just below the MPC whenever it is require to run to avoid involuntary load shedding. In addition, the extreme peaker earns the MPC whenever it operates during a period of actual involuntary load shedding.

If, however, the extreme peaker is not permitted to offer its capacity at just below the MPC when it is required to run to avoid involuntary load shedding, it will earn much lower operating profits than assumed in the ROAM analysis. For example, if the extreme peaker is only able to earn the MPC during periods of involuntary load shedding (and earns only its SRMC at other times it is required to run), it will only earn operating profits of $48,000/MW per annum (being ($12,500-$500)*4 hours). This is less than the generator's annualised fixed costs of $95,000/MW. For this plant to earn its annualised fixed costs under these conditions, the MPC would need to be increased to $24,250/MWh (i.e. ($24,250-$500)*4 hours = $95,000).

The difference between these two outcomes is illustrated graphically in Figure 5. In both panels, the required operating profits needed to recover the extreme peaker's annualised fixed costs is the same and is shaded blue. The first panel shows the situation where the extreme peaker can only earn the MPC when there is involuntary load shedding. If it is required to run at other times to avoid load shedding, it is assumed the plant only earns its SRMC (i.e. zero operating profits). The second panel shows the situation based on the ROAM methodology. This assumes that the extreme peaker can earn a price at or close to the MPC during periods of involuntary load shedding or whenever it is required to run to avoid

involuntary load shedding. This enables the extreme peaker to earn its required annual operating profits at a lower MPC.

Figure 5: Cost recovery at times of MPC prices



Source: Frontier Economics

Over the last four complete financial years, only a modest proportion of the estimated annual capital cost of a entrant peaker ($95,000/MW) has come from prices at the MPC (i.e. during periods of involuntary load shedding) – see Table 1. This observation is consistent with the annual NEM reliability standard having been achieved comfortably in these years.

Table 1: Annual value of 'price spikes' by region, average over FY2007-2010

Region	Maximum estimated SRMC ($2009/10)	Value of prices at MPC ($2009/10)	Value of prices in excess of maximum SRMC ($2009/10)	Proportion of total value from MPC prices ($2009/10)
NSW	$395.33	$14,858.68	$73,857.93	20.12%
QLD	$394.77	$8,454.92	$76,146.03	11.10%
SA	$425.00	$6,993.38	$168,272.42	4.16%
VIC	$71.36	$17,489.56	$99,744.35	17.53%

Source: ACIL Tasman (2009), AEMO 5-minute price data, Frontier Economics analysis

This result suggests that to the extent extreme peaking plant are prevented from bidding at or just below the MPC at times of extreme demand, they may be

prevented from recovering their annualised fixed costs. By extension, this will result in all efficient plant in the system failing to recover their fixed costs, since all efficient plant in the system rely on these high-price events to recover their fixed costs.

Implications of peakers being classified dominant generators

The discussion above indicates that a Rule change that would prevent extreme peaking plant from bidding close to the MPC when they are marginal could have deleterious effects on generator fixed cost recovery. Over time, unless the MPC is increased, it would also compromise the achievement of the NEM reliability standard.

The current drafting of the Rule change proposal indicates that a portfolio approach will be taken when determining whether a particular generating plant is part of a 'dominant generator' in a particular region. Proposed clause 3.8.2(f)(4) states:

> generation plant will be the output of generating plant owned by the generating company as well as any generation over which the generator has dispatch control;

This means that a particular power station may be classified as part of a dominant generator even if it is of a relatively small capacity itself.

If all extreme peaking generators in a region are classified as being part of a dominant generator portfolio, it will not be possible for these plants to bid in the manner assumed by the ROAM methodology. This could lead to extreme peaking plant (and all generators more generally) not being able to recover their annualised fixed costs.

Alternatively, one could take the view that it is not strictly necessary for the extreme peaking plant to set the spot price at just below the MPC when it is required to run to avoid involuntary load shedding. Rather, it would be adequate for any plant in the region to set the price at just below the MPC at these times. For example, the extreme peaker ROAM assumes in the NSW region is the Hunter Valley gas turbine. This plant is owned by Macquarie Generation, which is likely to be considered a dominant generator under the proposed Rule change. As such, Hunter Valley GT will not be able to offer its capacity above $300/MWh at times it is required to run to avoid load shedding. But other plant in NSW – knowing that all plant in the region are required to run at these times – may be able to bid at just under the MPC and set the spot price at that level. If this could happen, the extreme peaker (and other generators) in the region could earn their required operating profit without an increase in the MPC.

This raises the question of whether, following the Rule change, each region in the NEM has or is likely to have a generating plant with the ability and incentive to offer its plant at just below the MPC at times of extreme demand:

- In order to have the ability to bid in this manner under the proposed Rule change, this generator(s) must not be included in a dominant generator portfolio at times of peak demand.
- In order to have the incentive to bid in this manner, this generator(s) needs to have a "long" exposure to the generation side of the market, such that it benefits from increased spot prices. This requirement precludes any generators who are party to long-term PPAs or network support contracts, as well as any vertically-integrated generators who are 'long' retail (i.e. have a greater retail than generation exposure), since such entities stand to lose from higher spot prices.

Based on the current ownership structure of all existing scheduled market generators in the NEM, as published by AEMO and the AER, there are very few generators that meet the above two requirements. In particular, there are no plant in South Australia that are (i) likely to be excluded from any dominant generator portfolio and (ii) not part of a 'long retail' vertically-integrated entity.[33] This suggests that spot prices may fail to enable the recovery of annualised fixed generating costs in one or more regions of the NEM at the current level of the MPC. Consequently, it may be necessary to increase the MPC to ensure the NEM reliability standard is met going forward.

Implications of increasing the MPC

Any increase in the MPC will increase the incentives for generators to exercise transient market power to the extent they can. For dominant generators, this will increase their incentives to try to refrain from offering all their available capacity to the market. Non-dominant generators may face stronger incentives to bid near the MPC. Therefore, it is possible that any reduction in non-competitive bidding by dominant generators could be at least partially offset by increased non-competitive bidding by non-dominant generators.

The prospect of a higher MPC also implies that spot prices can and will need to reach higher levels than they do now. According to the Proponent, one of the key motivations for the Rule change is to reduce the volatility of spot prices in

33 Hallett could have been a candidate for an extreme peaking generator in South Australia that is able to set the spot price just below the MPC. However, its ownership by TRUenergy – which appears to have a higher South Australian retail load than Hallet's capacity – suggests that Hallet is unlikely to be consistently offered into the NEM at a price close to the MPC. Rather, it will generally be in TRUenergy's interests to offer Hallet at a price close to its SRMC to help hedge TRUenergy's exposure to high spot prices.

the NEM.[34] However, if spot prices can and do rise higher than they do at present, the implications of the Rule change for price volatility are ambiguous and depend on how volatility is defined. The relevant alternative states of the world are:

- Current levels of non-competitive bidding by dominant generators at times of high demand up to the current MPC
- Potentially more muted levels of non-competitive bidding by dominant generators at times of high demand but with spot prices occasionally rising up the level of the higher MPC at times of involuntary load shedding.

The prospect of spot prices rising to an appreciably higher MPC than at present means that many of the claimed benefits of the Rule change may not eventuate. In particular, it is difficult to see how a higher MPC will not deter generators from offering hedging contracts to retailers at least without an increase in hedging contract premiums.

Impact on generation investment

As noted above, without an accompanying increase in the MPC, the proposed Rule change could result in existing plant earning lower operating profits than they do currently. This will largely depend on whether dominant generators are able to replace MPC-bidding strategies with strategies of not offering all available capacity to the market. Assuming they cannot do this, the extent to which lower operating profits could harm dynamic efficiency depends on the extent to which existing generators over-recover the costs of efficient plant:

- If current market prices and revenues are resulting in over-recovery of efficient long-run costs (and there appears to be no evidence of this), then with relatively easy entry, it is likely that there is currently inefficient over-investment in generation stock and, in addition, a sub-optimal mix of technologies. In this case, the proposed Rule change could improve dynamic efficiency, since a fall in prices towards more competitive levels would result in decreased operating profits and a more efficient pattern of investment going forward
- If current market prices and revenues are resulting in efficient long-run costs being either broadly recovered or under-recovered (which reflects the situation in the NEM), it is likely that the proposed Rule change will harm dynamic efficiency unless there is an accompanying increase in the MPC. If prices and hence revenues fall relative to their current levels, efficient long-run costs will either cease to be recovered or be unrecovered to a greater degree than before. This is an even greater risk given the growth of wind in

[34] p.9, pp.52-53.

the NEM, which is effectively making the price duration curve more peaky. Therefore, thermal generators are becoming even more reliant on price spikes to recover their fixed costs and attempts to limit spikes will make cost recovery more difficult. In either case, the timing, level and type of new generation investment could be distorted. Even more importantly, the NEM reliability standard may fail to be met

Assuming the Rule change is accompanied by an increase in the MPC, dynamic efficiency could be improved compared to the status quo. This is because, again assuming that generators will not substitute MPC-bidding strategies with strategies of not offering all available capacity to the market, the level and pattern of market prices will be more consistent with those expected in a fully-competitive market than at present. This would result in a more efficient pattern of generation investment going forward.

Impact on the retail market

As noted above, to the extent that the Rule change is accompanied by a higher MPC (which it must or else it must be accompanied by the introduction of a regulated capacity market), contract premiums could be expected to rise as generators will require a stronger inducement to provide hedges, other things being equal. Higher contract premiums and/or a reduced supply of wholesale contracts may deter retail entry and thereby harm retail competition. The higher volatility associated with a higher MPC may also affect the ease with which retailers can enter the market.

Strategic response from non-dominant generators

There are two possible strategic responses from non-dominant generators that may occur as a result of the proposed Rule change.

Unilateral action

As noted above, to the extent that the proposed Rule change is accompanied by an increase in the MPC, the incentive of non-dominant generators to exercise transient market power will be amplified. This may mean that generators that are deemed non-dominant and previously found it unprofitable to exercise whatever transient market power they had may now find it worthwhile to do so. That is, raising the MPC may encourage strategic bidding on behalf of non-dominant generators who previously had incentives to bid more competitively. To the extent that the MPC is not increased along with the proposed Rule change, it is unlikely that non-dominant generators will change their bidding behaviour materially in response.

Co-ordinated action

The Consultation Paper and Rule change proposal discuss the possibility that as a result of the proposed Rule change, the ability for smaller generators to tacitly collude may increase. Specifically, the Rule change proposal states:

> Tacit/parallel collusion could allow generators other than the dominant generator to use the effect of the proposed mitigation approach to impact the spot price when previously they did not have this power. Thus another large generator could reduce its output to force the dominant generator to provide up to its maximum available capacity and by further reduction of output, force on higher priced generators to seek a spike in the spot price.[35]

This behaviour does not reflect tacit or parallel collusion. Any form of collusion requires some expectation of interdependent behaviour. The behaviour described above merely reflects non-dominant generators' incentives to try to raise spot prices given that dominant generators will be obliged to bid their capacity in a certain way.

Thus, the issue described above and discussed in the Rule change proposal is better described as a limitation of the proposal than an example of tacit or parallel collusion. The fact that a large but non-dominant generator could reduce its output to the point of driving up the spot price is merely a reflection of the fact that, for sufficiently high levels of demand, many if not all generators in the NEM posses a degree of transient market power.

4.4 Response to Question 5

Will the proposed Rule effectively address the exercise of market power?

5.1 Do you consider that the proposed Rule is likely to prevent or constrain the ability of generators to exercise market power in a manner that reduces efficiency in the NEM and adversely affects the long term interests of consumers (if there is evidence of any such exercise of market power)?

The answer to this question depends on the efficacy with which the proposed Rule change prevents generators from substituting a strategy of not offering all available capacity to the market for a MPC-bidding strategy. This, in turn, will depend on how "available capacity" is defined and interpreted. To the extent the proposed Rule change results in generators inefficiently avoiding mothballing or maintaining plant to avoid being accused of 'physical withholding', the proposed Rule change will reduce allocative and productive efficiency. Unless at times of

35 p.43.

peak demand all generators in the system are classified as dominant generators and constrained to bidding a maximum of $300/MWh, the proposed Rule change will not prevent all generators from exercising transient market power.

Given the current methodology for setting the MPC, the changes to generator bidding behaviour as a result of the proposed Rule change will require an upward revision of the MPC to ensure that appropriate investment incentives are maintained and the NEM reliability standard is met. An increase in the MPC may increase the incentives of non-dominant generators to exercise transient market power. Together, this means that the effects of the Rule change on spot price volatility are ambiguous.

5.2 How are other generators that are not declared to be a 'dominant generator' likely to change their behaviour if the proposed Rule is made?

The answer to this question depends on whether the proposed Rule change is accompanied by an increase in the MPC (which is essential if the Rule change is to allow generation cost recovery while meeting the NEM reliability standard). An increase in the MPC will increase all generators' incentives to exercise transient market power. This may result in non-dominant generators, who previously were bidding competitively, beginning to bid less competitively. If the MPC is not increased, the bidding behaviour of non-dominant generators is unlikely to change much in response to the proposed Rule change.

5.3 Should any Rule change that seeks to address the exercise of market power by generators also address tacit collusion or parallel behaviour by generators, or is it appropriate to limit the Rule change to the unilateral exercise of market power?

The threat of tacit or parallel collusion is poorly justified in the Rule change proposal and appears to have been confused for unilateral bidding behaviour of the sort the proposed Rule change is seeking to address. To the extent tacit or parallel collusion is or does become an issue, it should continue to be dealt with by the CCA. There should not be a separate rule for what constitutes collusive behaviour in the NEM compared to elsewhere in the Australian economy.

5 Scope for alternative options

5.1 Discussion of issues

The Consultation Paper and the Proponent's Rule change proposal refer to three broad approaches to constraining the behaviour of generators with market power:

- Structural separation – requiring generators to be restructured through sale or divestment so that they are sufficiently small they do not have market power
- *Ex ante* restrictions – imposing constraints on the way generators can bid to prevent them from exercising market power
- *Ex post* monitoring – requiring an oversight body (such as the AER) to determine after the fact whether a generator has exercised market power in a prohibited manner and, if so, impose penalties.

These are discussed below.

Structural separation

Structural separation would involve forced divestments of plant from existing generation portfolios. This approach would rightly be regarded as draconian and impractical in the Australian NEM context.

First, there is a question over whether the ACCC or any other government body has the ability under law to force private firms to divest assets, except as a remedy for an unlawful merger. Only the Government-owned generator in New South Wales and Queensland could be coerced into further separation, although it is worth noting that the Queensland Government is in the process of merging its three generators into two portfolios while the NSW Government recently separated Delta Electricity into Delta West and Delta Coast.

Second, if the objective of the exercise is to prevent any generator from having even transient market power, this approach would likely require disaggregation of most if not all of the generation portfolios in each region. This would be an extremely intrusive, laborious and costly exercise, and one that would ultimately diminish the financial stability of the market. Further, even if it could be legally and practically undertaken, a process of splitting large portfolios into individual plant-based participants could have undesirable flow-on effects in the contract market. The smaller a generation portfolio is relative to generation unit size, the lower the likely willingness of generators to offer hedging contracts in order to manage outage risk. This could lead to an undesirable tightening of hedge trading and higher contract premiums.

Finally, the extent to which significant new entrants unaffiliated with existing generation portfolios in the NEM would emerge over time and be willing to invest in the divested generation assets is unclear.

Ex ante behavioural restrictions

As discussed in previous sections, given the design of the NEM, any change to the way in which generators are permitted to bid into the market needs to be carefully considered to ensure that efficient total generation costs are recoverable. To the extent that *ex ante* bidding restrictions prevent efficient total costs being recovered over time, dynamic efficiency and system reliability will be compromised and the NEM reliability standard may not be satisfied.

The proposed Rule change discusses the potential for the Cumulative Price Threshold (CPT) to be used to constrain market power in lieu of imposing some form of bidding restriction. However, as acknowledged by the Proponent, while tightening the CPT may have the effect of reducing the incentive to exercise transient market power, it has several drawbacks.

First, tightening the CPT does not reduce the incentive to exercise transient market power in the periods prior to the CPT being triggered. Second, to have a significant effect on the ability of generators to exercise transient market power, it may need to be reduced significantly. However, such a move could – like a reduction in the MPC – lead to under-recovery of generators' efficient fixed costs. This could lead to a violation of the NEM reliability standard.

According to ROAM in its recent report for the AEMC Reliability Panel:

> ROAM's analysis has concluded that there is clear relationship between the [CPT and the MPC], and any reduction in the multiplier would increase the number of MPC events affected by the administered price cap, which will impact on the profitability of peaking generators.
>
> ROAM has not considered the effects that breaching the CPT may have on generator revenues when assessing the recommended MPC. As such, if compensation mechanisms are not sufficient to recover sufficient revenues for extreme peaking generators to negate the effect of a CPT breach, it is likely that the MPC would need to be higher than that recommended to ensure that for those MPC periods not affected by the APC, sufficient revenues are earned to meet their revenue requirements.[36]

Therefore, as with the proposed Rule change, one unintended effect of this measure may be the need to raise the MPC to ensure that peaking plant in particular are able to recover their fixed costs so that the NEM reliability standard can be maintained.

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36 p. 22.

Ex post regulatory oversight

This approach is undesirable given that it relies on onerous and intrusive regulatory oversight on an ongoing basis. Such scrutiny could result in a perception that the market is non-transparent and subject to unpredictable regulatory intervention. This increases the regulatory risk faced by potential investors and may deter or distort generation investment, which is likely to bring its own costs.

Response to Question 6

Question 6: What other options could effectively address the exercise of market power?

6.1 Do you consider that there are other options that could prevent or constrain the ability of generators to exercise market power in a manner that reduces efficiency in the NEM and adversely affects the long term interests of consumers (if there is evidence of any such exercise of market power)?

We consider that the main options are those that are outlined in the Proponent's Rule change proposal and noted in the Consultation Paper – namely (i) structural separation, (ii) some form of *ex ante* behavioural restriction on generator bidding such as that put forward in the proposed Rule change or (iii) some form of *ex post* regulatory monitoring or oversight.

6.2 If so, are those options likely to better contribute to the achievement of the NEO than the proposed Rule, and why?

We consider that of the three above options, an *ex ante* approach is likely to be the least damaging approach to constraining the behaviour of generators with market power (transient or otherwise), but emphasise that we do not consider there to is evidence of a generator market power problem to be addressed in the first instance. A structural separation approach is unlikely to be practicable for a variety of reasons. Further, a structural approach could result in an undesirable tightening of trading in financial hedges, to the detriment of retail competition. An *ex post* regulatory approach relies on ongoing onerous regulatory oversight and intervention. This may result in a perception of the market being non-transparent and subject to unpredictable regulatory intervention, thereby increasing uncertainty and deterring efficient generation investment.

6 Impacts on National Electricity Objective

6.1 Discussion

The National Electricity Objective (NEO), as set out in section 7 of the NEL, is 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.

The key features of the proposed Rule for the purposes of assessing whether the proposed changes will promote the NEO are:

- Whether the maximum offer price for dominant generators is increased to at least the SRMC of the highest operating cost plant in the NEM. If this is not done, the Rule change could have substantial destabilising implications for market efficiency and reliability. Even this cap would require some changes to the Rules to allow the most expensive plants to recover their costs.
- The extent to which the proposed Rule change prevents generators from substituting a strategy of not offering all available capacity to the market for a MPC-bidding strategy
- The extent to which the MPC is upwardly revised as a result of the proposed Rule change
- the extent to which the bidding restrictions embodied in the Rule change are consistent with good regulatory practice

If the Rule change is effective in preventing generators substituting a strategy of not offering all available capacity to the market for a MPC-bidding strategy, and if current market prices are too high (of which there is no evidence), the proposed Rule change could improve both allocative and productive efficiency in the short term and promote the NEO with respect to the efficient operation and use of electricity services.

More realistically, if the Rule change does not prevent generating substituting a strategy of not offering all available capacity to the market for a MPC-bidding strategy, it will harm market efficiency and reliability compared to the status quo. This is because a strategy of not offering all available capacity to the market typically provides less flexibility for responding to late changes in market conditions than a MPC-bidding strategy.

A potentially larger issue is whether any improvement in short-run allocative and productive efficiency brought out by the proposed Rule is at the expense of

distortions to investment signals and dynamic inefficiency. This will partly depend on whether the MPC needs to rise – and in fact is allowed to rise – to enable efficient plant to earn sufficient returns so as to enable the NEM reliability standard to be maintained. To the extent this does not occur, the Rule change could compromise dynamic efficiency and reliability. If dynamic efficiency and reliability are harmed, the Rule change would be contrary to the NEO.

Another consideration in assessing the Rule change is the element of good regulatory practice. The AEMC has previously characterised good regulatory practice as the stability, predictability and transparency of regulatory arrangements.[37] It has also been used to refer to minimising regulatory intervention in market processes.[38]

The proposed Rule change would represent an unprecedented change in the NEM design philosophy. It would, for the first time, bring the involvement of NEM institutions into the question of the appropriateness of real-time participant bidding and availability decisions. In this context, the Rule change risks being an over-reaction to limited evidence of the exercise of transient market power by some generators at certain times and no evidence of material and enduring market power.

6.2 Response to Question 7

Question 7: What are the likely impacts of the proposed Rule on the achievement of the NEO?

7.1 What impact is the proposed Rule likely to have on wholesale electricity prices?

If the proposed Rule does not effectively prevent generators from substituting a strategy of not offering all available capacity to the market for a MPC-bidding strategy and the MPC is not increased, then wholesale prices are unlikely to materially change. If generators are not prevented from engaging in strategies of not offering all available capacity to the market and the MPC is upwardly revised, then the level and volatility of wholesale prices will likely increase.

Assuming generators are prevented from engaging in strategies of not offering all available capacity to the market in substitution of MPC-bidding strategies, and if the MPC is not upwardly revised as required under the ROAM methodology, then the proposed Rule will likely result in a reduction in both the average level and volatility of wholesale spot prices at least in the short term. If the MPC is

37 See, for example, AEMC, *National Electricity Amendment (Code Recovery for "Other" Services Directions) Rule* 2010, Draft Rule Determination, available HhereH, p.12.

38 *Ibid.*, p.6.

upwardly revised, then the impact on wholesale spot prices is somewhat ambiguous. It is possible that the average level of prices could fall. However, spot price volatility could increase. This is because the level to which spot prices could (and would need to) rise – the MPC – would be higher than before. The effect on price volatility would also depend on the strategic response to the higher MPC from non-dominant generators.

7.2 What impact is the proposed Rule likely to have on efficient investment in generation, in particular incentives for efficient entry of new generation?

Assuming the proposed Rule change effectively prevents generators substituting a strategy of not offering all available capacity to the market for a MPC-bidding strategy and the MPC is not increased, efficient investment in new generation may be deterred. Given the current approach to setting the MPC, it is necessary for at least one generator in each region to have the ability to set the market price at just below the MPC during extreme peak demand times. To the extent that the Rule change prevents this from occurring, it is likely to distort signals for efficient investment in peaking capacity. This has implications for cost recovery and investment across the market. The ultimate result could be a failure to meet the NEM reliability standard.

If the MPC is appropriately upwardly revised, the proposed Rule change is likely to promote new generation investment to manage the risk of more volatile prices. But it is unclear whether this will be efficient or not. The greater volatility could make retailer entry more difficult and to the extent that new retailers support independent generation entry, this could frustrate the continued development of a competitive generation market.

7.3 What impact is the proposed Rule likely to have on the efficient operation of the wholesale electricity market?

The proposed Rule change will only be effective if (1) there is clear evidence that there is material, enduring exercise of generator market power – which there is not, and (2) the Rule change prevents generators substituting a strategy of not offering all available capacity from the market for a MPC-bidding strategy – which it does not. Given that neither of these necessary conditions exist, it is unclear how the proposed Rule can improve the efficiency of the market.

The more likely outcome is that the proposed Rule will lead to an increase in generators not offering all available capacity to the market, which is likely to harm the efficient operation of the wholesale market. This is because plant that are made unavailable as the result of a deliberate strategy cannot be offered back to serve load at short notice. At least plant that are offered at a high price as the result of a MPC-bidding strategy can be dispatched if the spot price rises enough or if the NEMDE constrains-on the plant. Other things being equal, a strategy of

not offering all available capacity to the market is likely to harm the efficient operation of the market more than a MPC-bidding strategy.

7.4 What impact is the proposed Rule likely to have on the efficient use of electricity services?

The proposed Rule change is designed to lower prices even further below cost recovery levels. This will cause prices to be below efficient levels and cause over consumption of electricity services. This over consumption will result in an over use of society's scarce resources.

7.5 What impact, if any, is the proposed Rule likely to have on the market for electricity derivative products and/or the retail electricity market?

If the proposed Rule change is not accompanied by an increase in the MPC, it is likely to lead to less volatile spot prices, at least in the short term. This could encourage generators to offer to supply more derivative contracts, thereby reducing contract premiums and further lower returns to generators. However, over time, the outcome may be later generation investment and less reliable supply, and hence more volatile spot prices in the future and for longer. Therefore in the longer term the proposed Rule will tend to increase the demand for derivative contracts, which could cause contract premiums to rise compared to the status quo.

If the proposed Rule change is accompanied by an increase in the MPC, it is likely to lead to more extreme peak prices, but less frequent high prices than at present. The overall effect on volatility is ambiguous and depends on how volatility is defined. However, the scope for spot prices to rise to higher levels may reduce the willingness of generators to offer derivative contracts. At the same time, retailers are likely to increase their demand for hedges to limit their exposure to the potential higher spot price. This interaction could lead to higher hedging contract premiums.

It is difficult to summarise the impact of the proposed Rule change on the retail market. Lower wholesale prices should eventually pass-through to lower retail prices, but higher contract premiums may negate some of this effect.

7.6 Do you consider that the proposed Rule is likely to have any other impact on the achievement of the NEO?

Relative to the status quo, the proposed Rule change involves the imposition of more intrusive rules of conduct on market participants and requires a more laborious and costly monitoring and enforcement effort by the regulator.

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