



# Wholesale electricity market performance monitoring

## Statement of approach

March 2018

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# 1 Introduction

The National Electricity Law (NEL) requires the AER to monitor the wholesale market and report on its performance at least every two years.<sup>1</sup> We are required to identify and analyse whether:

- there is ‘effective competition’ within the relevant wholesale market, as defined in the NEL
- there are features of the market that may be detrimental to effective competition within the market
- there are features of the market that may be impacting detrimentally on the efficient functioning of the market and the achievement of the national electricity objective.

This monitoring and reporting role supports the efficient operation of the wholesale electricity market as it allows early detection of issues affecting market performance.

We have other performance reporting obligations across our wholesale, retail and network areas that pre-date these new functions. In wholesale these have generally focussed on short term outcomes, compliance issues and individual price events. The new wholesale monitoring and reporting functions will take a longer term view and focus on competition issues.

## 1.1 Statement of approach and Focus

This statement of approach outlines the general approach we will take towards fulfilling our wholesale electricity market performance monitoring functions. It sets out:

- how we are defining the competition and efficiency parameters of the analysis
- the markets we will include in our analysis
- the framework for our analysis
- the way we will collect and use information.

Our intention is that this statement of approach is enduring, but we may modify it if required. Alongside this statement of approach will sit a focus document that explains the particular methods we will use and areas of the market that we are going to take a closer look at from report to report. We intend to prepare a new focus for each monitoring period, taking into account lessons learnt, developments in the market and any new data that is available.

## 1.2 Key legislation

The legislative obligations for wholesale market performance monitoring are set out in the NEL<sup>2</sup>. This outlines the scope of our functions and defines key terms, such as effective competition.

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<sup>1</sup> National Electricity Law, Part 3 Division 1A.

While the NEL is reasonably specific in terms of the things that we must consider in the course of wholesale market performance monitoring, it also gives the AER discretion to analyse other matters that are not specifically provided for:<sup>3</sup>

*other matters of a long term nature relevant to effective competition within the market, including, for example, observations relating to planned increases in interconnector capacity and trends in demand for electricity and in the uptake of alternative sources of energy.*

In addition, we will have regard to the national electricity objective, which is<sup>4</sup>:

*...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*

*(b) the reliability, safety and security of the national electricity system.*

### 1.3 Assessment criteria for analytical tools

Analysing the effectiveness of competition and the efficiency of the market is a complex task. Our assessment will need to be informed by a range of qualitative and quantitative analyses. We will examine the interaction between these various pieces of analysis rather than relying on any single result or test as being determinative of a particular conclusion. We will prioritise issues based on observed or potential harm.

We are likely to expand and enhance the measures and tools we use over time drawing on best practice. We will consider the following criteria to determine which measures, tools or information we will prioritise:

- *Probative value*—whether it will provide additional or new insights about market performance compared to other tools the AER uses
- *Robustness*—whether it is a robust and reliable measure of performance that is likely to remain stable over time
- *Accessibility*— it is important that the measure or tool can be easily understood, including how it is applied to contribute to any conclusions
- *Practicality*—the extent to which it can be prepared in a timely manner, and taking into account the amount of information or data required.

We will carefully communicate how we use and interpret the measures and tools we use. We will also consider the physical, economic and political realities of the NEM when interpreting the results of our analysis.

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<sup>2</sup> NEL, Part 3 Division 1A.

<sup>3</sup> NEL, Section 18C(3)(e).

<sup>4</sup> NEL Section 7.

## 1.4 The relevant time period for our analysis

The wholesale electricity spot market is currently settled every 30 minutes. One approach to selecting the relevant time period would be to define a separate market for every 30 minute trading interval, but this does not reflect the basis on which generators and energy consumers operate their businesses. Market participants make business and investment decisions based on their ability to earn a commercial return over the life of their investments.

The definition of effective competition in the NEL suggests that aspects of our assessment should be considered with regard to the long term. We note however, that there is some risk in adopting a very long time period for all aspects of our assessments. Significant trends in the wholesale electricity market can manifest over comparatively short periods and have material effect on efficiency or effective competition. We will analyse the markets looking across a range of timeframes in order to draw robust conclusions about market outcomes.

## 2 Defining effective competition and efficiency

We must monitor the markets to assess whether there is effective competition and if the market is functioning efficiently.

The following section sets out our considerations of effective competition and the efficient functioning of the wholesale electricity markets.

### 2.1 Effective competition

The level of competition in any market can be assessed against a range of competitive outcomes. At one extreme is a monopoly where one firm effectively controls all output in the market and there is no competition. The other extreme is a perfectly competitive market where no firm holds market power at any time. Perfect competition rarely arises in practice.

We are required to identify and analyse whether there is *effective competition*. The definition of effective competition in the NEL provides a list of factors we must have regard to:<sup>5</sup>

- whether there are active competitors in the market and whether those competitors hold a reasonably sustainable position in the market (or whether there is merely the threat of competition in the market)
- whether prices are determined on a long term basis by underlying costs rather than the existence of market power, even though a particular competitor may hold a substantial degree of market power from time to time
- whether barriers to entry into the market are sufficiently low so that a substantial degree of market power may only be held by a particular competitor on a temporary basis
- whether there is independent rivalry in all dimensions of the price, product or service offered in the market
- any other matters we consider relevant.

We may draw on economic theory and competition law commentary when determining which other matters may be relevant to our assessments of effective competition. While this material is not binding on us, it may provide useful insights. Box 1 provides some relevant summary material.

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<sup>5</sup> NEL, Section 18B.



### Box 1: Effective competition—Economic theory and case law commentary

Economic theory provides that in perfectly competitive markets, firms are unable to influence the level of output and prices in the market—each firm is said to be a 'price taker'.<sup>6</sup>

Competition is often defined by an absence of market power,<sup>7</sup> while market power has been described as “the ability of a buyer or seller to affect the price of a good”.<sup>8</sup>

Two commonly cited forms of conduct in economic literature associated with the exercise of market power by generators in a wholesale electricity market are:<sup>9</sup>

- *economic withholding*—raising the price of output above marginal costs
- *physical withholding*—reducing output offered to the market.

Policy-makers and courts typically focus on whether competition is 'effective' or 'workable'.<sup>10</sup> This is in recognition that in many respects real world markets depart from the theoretical concepts that underpin perfect competition. A market is said to be effectively or workably competitive if none of the firms in that market have *sustained* market power.<sup>11</sup> The High Court has described market power as:<sup>12</sup>

*... 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....[emphasis added]*

The NEL also suggests that we should have regard to whether market power is sustained or enduring. In particular, the definition refers to whether:

- prices are determined on a *long term basis* by underlying costs rather than market power, even though a particular competitor may hold a substantial degree of market power from *time to time*
- barriers to entry are sufficiently low that a substantial degree of market power may be held by a competitor only on a *temporary basis*.

In competition law analysis, the existence of barriers to entry is typically regarded as a key determinant of whether firms have market power in a practical sense. In the absence of

<sup>6</sup> Pindyck, R.S. and D.L. Rubinfeld (2001), *Microeconomics*, Fifth Edition (International Edition), Pearson Education Inc (New Jersey), p.328.

<sup>7</sup> Brunt, M., “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.

<sup>8</sup> Mas-Collel, A., A. Whinston and J. Green (1995), *Microeconomic Theory*, New York, Oxford University Press, p.383.

<sup>9</sup> Stoft, S., *Power System Economics, Designing Markets for Electricity*, IEEE Press 2002, p.322. Stoft notes that in most cases, these are equivalent strategies. The only difference is that financial withholding strategies allow the generator greater control of prices (in that the generator can set the market price anywhere up to the level of the next highest bid or offer); but this can be no more profitable than a quantity withholding strategy (in which the generator can force the price up to the level of the next highest bid or offer).

<sup>10</sup> John Clark is regarded as the founder of the concept of workable competition as initially set out in Clark, J.M., “Towards a Concept of Workable Competition”, *American Economic Review*, Vol.30, No.2, Part 1, (June 1940), pp.241-256.

<sup>11</sup> Kaysen, C. and Turner, D. F., (1959), *Antitrust Policy* at p. 75.

<sup>12</sup> *Queensland Wire Industries Pty Ltd v Broken Hill Pty Co Ltd* (1989) 167 CLR 177 (*Queensland Wire*) p.188.

major barriers to entry, above-cost pricing may be transient and competitive forces can serve to prevent such outcomes enduring over time.<sup>13</sup>

The economic rationale for comparing prices to underlying costs is that prices above or below underlying cost should eventually lead to a supply response – new investment or plant exit. The result is that firms make zero economic profits in the long-run competitive equilibrium.<sup>14</sup> However, it is not always clear what is meant by ‘underlying costs’ in a power system with a variety of plant types and where the fixed and variable costs of different plant technologies will change over time.

## 2.2 Efficient functioning of the market

The NEL does not provide an explicit definition of efficiency; however it is a well understood concept in economic literature. Economic efficiency is concerned with maximising overall welfare (or the sum of consumer and producer surplus) in a market given the available resources. Consumer surplus is the difference between the value consumers place on a good or service and the price they actually pay. Producer surplus is the difference between the price producers receive and their marginal costs of production.<sup>15</sup>

Economic efficiency has three dimensions:<sup>16</sup>

- *allocative efficiency*—resources are allocated to their highest valued uses
- *productive efficiency*—the value of resources used are minimised for a given level of outputs
- *dynamic efficiency*—resources are allocated efficiently over time.

A range of factors such as participant conduct, market design and other external features can create inefficiencies in each of these categories. Box 2 sets out examples in each of these categories.

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<sup>13</sup> *Queensland Wire*, p.189.

<sup>14</sup> Stoft, *op.cit.*, pp.58-59.

<sup>15</sup> Pindyck, R.S. and D.L. Rubinfeld (2001), *Microeconomics*, Fifth Edition (International Edition), Pearson Education Inc (New Jersey), p.123, 269.

<sup>16</sup> For example see *The National Competition Policy: Report by the Independent Committee of Inquiry* (F. Hilmer, M. Rayner and G. Taperell), 1993, AGPS, Canberra, p. 4.

## **Box 2: Examples of activities or market features that reduce efficiency**

### ***Participant conduct***

The sustained exercise of market power through financial or physical withholding by generators can compromise efficiency across all three dimensions, for example:

- Withholding may raise average wholesale electricity prices above the costs of supply. In the long run this may result in a deadweight loss to society by deterring demand and causing a sub-optimally low level of electricity consumption and production. This reflects a loss of allocative efficiency.
- Withholding by low-marginal cost generators may result in higher-cost generators operating in their place. This increases the resource costs of dispatch and reflects a loss of productive efficiency.
- Withholding may lead to the premature entry of new generation plant due to expected wholesale prices being higher than they would otherwise be. Higher prices may also lead to lower levels of investment in electricity-consuming facilities. Both of these outcomes reflect a loss in dynamic efficiency.

### ***Market design***

Aspects of the NEM may compromise economic efficiency. For example, some system security services provided by synchronous generators are not currently valued in the market. As the generation mix shifts to more non-synchronous generation, these services are not provided as a matter of course, giving rise to increasing challenges in maintaining the power system security. This may result in insufficient system security services being provided, which represents a loss of productive efficiency. The AEMC and AEMO have identified a number of reforms to address these issues.

### ***External features***

Features of the NEM beyond market design may also give rise to inefficiency. For example, investment in the electricity sector, such as large scale generation, tends to be high cost and long term investment. Given this, stable government policy is required to underpin investment decisions. Uncertainty over policy direction may compromise dynamic efficiency, in particular, by undermining the integrity of market signals for investment and retirement decisions.

## 3 The relevant markets

The NEL defines a wholesale electricity market as “any market for electricity regulated under this Law or Rules”. While this definition limits the scope of the assessment task, it does not specifically define the particular products and markets that we should monitor.

In competition law, markets are commonly defined across various dimensions, including:

- *Functional dimension*—the levels of the supply chain (e.g. retail, distribution, or wholesale) over which substitution possibilities exist.
- *Product dimension*—the goods or services that are substitutable for, or otherwise competitive with, the goods or services under analysis
- *Geographic dimension*—the geographic area over which substitution possibilities exist
- *Temporal dimension*—the time periods over which substitution possibilities exist

The functional level of the market is specified in the NEL as the wholesale market. The AEMC's annual retail competition reviews explore issues in retail markets.

### 3.1 Product dimension

There are a number of products regulated under the NEL and National Electricity Rules (NER), which we are able to consider as part of our performance monitoring activities. Our analysis will focus on the market for physical electricity, but we may also analyse ancillary services and the other products regulated under the NEL and NER, such as the rights to interregional settlement residues.

There are a number of other products, which while not regulated under the NEL or NER, we may analyse because of their close interactions and potential to affect competition or efficiency in the NEM.

#### 3.1.1 Products regulated under the law and rules

The most significant product regulated under the NEL and NER is physical electricity. All electricity produced in the NEM must be traded in the spot market.<sup>17</sup>

There are also a range of ancillary services markets and a series of contracted services that ensure the secure operation of the power system. For example, AEMO operates frequency control ancillary services (FCAS) markets to manage frequency deviations in the supply and demand balance as well as major events (such as the loss of a major industrial load). As the proportion of non-synchronous generation capacity increases, this may influence the performance and operation of FCAS markets. Given this, we anticipate analysing spot markets and FCAS markets separately will be appropriate in most cases.

There are a number of other products regulated under the NEL and NER that could fall within scope of our monitoring activities. It is also possible that new product markets will

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<sup>17</sup> There are some limited exceptions.

emerge in future. While we might examine these products from time to time we may not report on the markets for all of these various products in each review.

For example, AEMO operates auctions for the rights to interregional settlement residues (IRSRs). Participants can acquire these rights to hedge their exposure to inter-regional price differences. When there is price separation across regions, electricity will tend to flow from lower priced regions to higher priced regions. The generators in the exporting region are paid at their local regional spot price, while customers in the importing region will pay the higher spot price in the importing region. This difference between these prices multiplied by the amount of electricity exported is called the settlement residue. The NER set out principles for the allocation of these rights and permits AEMO to auction the rights to these residues.

### **3.1.2 Other products and markets**

There are a range of other products and markets that are not regulated under the NEL or NER, but will be important for us to understand due to their potential impact on the spot market.

Significantly, most generators and retailers sell (or buy) a range of derivatives products. There are a range of derivatives products. They are traded either on the ASX or directly between two parties, referred to as over-the-counter (OTC). The products traded on the ASX are standardised to promote trading, while OTC products can be sculpted to suit the requirements of the counterparties. There are close interactions between trading of derivatives products and the spot market. For example:

- derivatives products may be settled by reference to outcomes on the spot market
- the degree to which generators are hedged may affect how they offer capacity in the spot markets
- a lack of availability of derivatives products may act as a barrier to entry for generators and retailers who may wish to participate in the wholesale spot markets.

There is publically available information on derivatives trading on the ASX, however there is little public information on OTC transactions. We have powers to request confidential information from market participants where we identify a potential issue using public information (see section 5.2).

There are a number of other products or markets which may also be relevant to our assessments. We will identify these additional products or markets in our focus documents. For example, the market for large scale generation certificates (LGCs) under the renewable energy target (RET) affects outcomes in the spot markets. The large-scale RET creates a financial incentive for renewable generation in the NEM through the creation of LGCs. LGCs are created based on the amount of eligible renewable electricity produced. Electricity retailers are obliged to buy LGCs for a proportion of their energy.

## 3.2 Geographic dimension

The NEM operates across five separate regions in Queensland, New South Wales (NSW), Victoria, Tasmania and South Australia, with the Australian Capital Territory (ACT) in the NSW region. The regions roughly align with each of the state boundaries. The regions are linked by transmission interconnectors.

The interconnected nature of the NEM means that electricity produced by generators may be consumed in any region. However, the ability of generators in one region to supply consumers in another is limited by the capacity of the transmission network connecting them.

The ability of generators to hedge against prices between regions diverging by acquiring interregional settlement residue rights (see 3.1.1) is also limited. While these rights provide their holder with a stream of revenue when there is price separation between regions, they do not provide a completely reliable hedge against this risk. This is because the auctioned amount is based on a notional interconnector capacity and at times the actual transfer limit between regions, on which the IRSR settle, is significantly lower than the notional limit. This makes the product non-firm. Further, network limitations within a region may cause prices to diverge even though an interconnector may not be constrained.

Because regional markets can be separated due to interconnector constraints, we expect assessing the wholesale market at a regional level will be appropriate in most cases. We may expand or narrow the geographic dimension of the market where our analysis suggests it appropriate to do so.

## 3.3 Temporal dimension

The temporal dimension refers to the time period over which substitution possibilities exist. As electricity is supplied continuously, we will primarily consider the continuous supply of electricity.

However, some factors can limit substitution possibilities in certain temporal periods. For example:

- In peak demand periods, supply and transmission constraints can limit substitution possibilities.
- Some intermittent technologies, like solar and wind, have limited control over their hours of operation. This can constrain the periods when they can operate and compete in the market. It may be important to make a distinction between periods of constraint, and periods where those technologies are not limited.

Where it is relevant and can add value to our analysis, we will allow for consideration of different temporal periods.

## 4 Analytical framework

We will use the Structure-Conduct-Performance (SCP) framework as the primary basis for analysing the wholesale electricity markets. This framework has been used for many years to analyse markets across a range of industries.<sup>18</sup> A number of electricity market regulators and monitoring agencies internationally have utilised the SCP framework in assessing markets.<sup>19</sup>

At its simplest level:

- *Structure* refers to the market structure, and includes the number and size of buyers and sellers, the nature of the products and the height of barriers to entry.
- *Conduct* refers to firms' behaviour in the market, including production, buying and selling decisions.
- *Performance* refers to market outcomes, usually by reference to concepts of efficiency.

In undertaking our analysis we will have regard to the interactions between these three concepts rather than considering each in isolation.

### 4.1 Market structure

Market structure influences the level of competition in a market. Features of market structure can be intrinsic to the market or result from participant behaviour. We will assess structural features such as:

- market concentration
- barriers to entry
- the extent of vertical integration.

#### 4.1.1 Market concentration and power

The definition of effective competition in the NEL directs us to have regard to whether there are active competitors in the market and whether they hold a reasonably sustainable position in the market. Market concentration is our primary tool for understanding the positions of competitors in the market.

Market share is a simple way to measure the degree of concentration in a market. Markets with a small number of generators are less likely to have effective competition. The ACCC uses market shares as a key input when determining merger matters.<sup>20</sup> We will identify the market shares of participants in the markets we consider.

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<sup>18</sup> The structure-conduct-performance paradigm was developed by Joe Bain in the 1950s see Bain, J.S. *Industrial Organization*, New York, Wiley 1959.

<sup>19</sup> For example the New Zealand Electricity Authority and the Alberta Market Surveillance Authority

<sup>20</sup> ACCC, *Merger Guidelines*, November 2008, p. 36.

We will also consider concentration metrics, which provide summary statistics by combining market share data for individual firms. Some primary concentration metrics include:

- *Herfindahl-Hirschman Index (HHI)*<sup>21</sup> —calculated by adding the squared market shares held by each firm. The HHI highlights the impact of large firms on the market. It takes into account the market shares of all firms. However, the HHI does not account for variations in demand over time. This can be significant in energy only electricity markets such as the NEM, as high demand events are often needed for market power to be exercised.
- The n-firm concentration ratio. It examines the market share of the 'n' largest sellers or buyers in the market. A shortfall of this approach is that it focuses on the 'n' largest firms, to the exclusion of all the other firms in the market.
- The residual supply index (RSI). It takes account of variations in demand and price elasticity to estimate market power. RSI measures the extent to which one or more generators are 'pivotal' to the market, that is, the extent to which a generator's capacity is necessary to meet demand after taking into account other generators' capacity. A generator is seen as pivotal if market demand exceeds the capacity of all other generators. In other words, the generator must be dispatched in order for demand to be met. A key shortcoming of RSI measures is that they focus on whether a generator is able to raise prices, rather than whether it is profitable for it to do so.

In addition to using primary concentration metrics, it may be beneficial to consider the degree of horizontal concentration in the NEM. This could include looking at the extent to which participants invest in different technologies, enter into arrangements between themselves (for example, joint ventures and power purchase agreements) and operate across regions. The effect of horizontal integration is that there could be communication and collaboration between participants who in all other respects are competitors.

#### 4.1.2 Barriers to entry

We will examine barriers to entry. The definition of effective competition in the NEL specifically requires us to consider whether "barriers to entry are sufficiently low so that a substantial degree of market power may only be held by a particular competitor on a temporary basis". Understanding barriers to entry is important as the entry, or potential entry, of new participants provide an important source of competitive constraint on incumbents.<sup>22</sup>

In assessing barriers to entry, we will distinguish between barriers in an economic sense that affect new entrants, and factors that may make investment unattractive for both entrants and incumbents. The different types of barriers to entry that we will consider include:<sup>23</sup>

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<sup>21</sup> The HHI can range from a value of 0 (in a perfectly competitive market where each firm is infinitesimally small) to 10,000 (with a monopoly). For example, in a market containing three players with 20 per cent, 45 per cent and 35 per cent market shares each, the HHI would be  $(20^2 + 45^2 + 35^2 =) 3650$ .

<sup>22</sup> ACCC, *Merger Guidelines*, November 2008, p. 38.

<sup>23</sup> See McAfee, R.P., H.M. Mailon, and M.A. Williams, "What is a Barrier to Entry?", *AEA Papers and Proceedings*, Vol.94, No.2., May 2004, pp.461-465 (McAfee et al) for a summary of the different definitions of barriers to entry in the economic literature.



- *Structural barriers* - these arise where an existing participant has inherent advantages over new entrants. For example, this can be due to:
  - Sunk costs— In a wholesale electricity market, generators' fixed costs are commonly regarded as sunk once incurred. While incumbent generators may be willing to continue to supply so long as they can earn their ongoing variable and fixed costs, a potential entrant will only be prepared to enter if they expect to earn sufficient revenues to cover both sunk and ongoing costs
  - Substantial economies of scale—Economies of scale may limit the viability of new entry below a certain minimum efficient scale because entrants will need to achieve large volumes to realise a competitive cost per unit
  - Absolute cost barriers—These arise where the new entrant faces higher costs than an existing participant. Absolute cost advantages can enable the incumbent to price above its costs but below the costs that would be faced by an entrant. Absolute cost barriers could also include legal and regulatory costs that need to be met by new entrants.
- *Strategic barriers* to entry arise due to the actions (or threatened actions) of existing participants. For example, an existing participant may engage in deliberate over investment in capacity to deter the entry of potential rivals.
- *Legal or regulatory barriers* to entry that restrict the ability of new participants to enter the market or existing participants to expand existing operations. Regulatory uncertainty increases risk for all participants and hinders new investment.

A qualitative approach will likely be most effective for considering barriers to entry. This may involve surveying or interviewing market participants directly or through an intermediary. This could include both incumbents and potential new entrants.

### 4.1.3 Barriers to exit

Barriers to exit are the obstacles faced by a generator if it leaves the market. There are a range of obstacles that inform generator exit decisions. Many of these are known and taken into account when planning entry and exit. Barriers to exit can support inefficient exit decisions, for example this could take the form of an older, inefficient generator remaining in the market rather than a newer, more efficient generator entering the market.

Uncertainty around the costs a generator would face upon exit, or the way those costs may change in the future, can increase barriers to exit. For example, uncertainty around future changes to site remediation costs may result in an inefficient generator remaining in operation, when the otherwise expected efficient outcome would be for its exit.

Barriers to exit can also act as barriers to entry. Potential new entrants will need to incur exit costs in the future, and so those costs must be factored into any investment decisions.

As with barriers to entry, a qualitative approach will likely be most effective for considering barriers to efficient exit.

#### 4.1.4 Vertical integration

Vertical integration occurs when a company expands its operations by extending into other parts of the supply chain. In electricity, this usually involves combining retail and wholesale market operations. Vertical integration allows generators and retailers to internally insure against price risk in the wholesale market. This reduces the need for these 'gentailers' to hedge their positions in futures markets.

Vertical integration may contribute to barriers to entry. For example, some investors may be less willing to invest without an accompanying retail contract to underpin their investment. Vertical integration may lead to reduced liquidity of derivatives markets, making it harder for new entrant generators (or retailers) to secure long term contracts with the remaining non-vertically integrated participants.

We can analyse vertical integration on a qualitative or quantitative basis. For example, we could consider the share of generation capacity owned by an entity that has an associated retailer.

## 4.2 Market conduct

We will examine participants' conduct to understand the relationship between participant's bidding behaviour and market outcomes. We will look to understand a range of conduct that may affect competition or efficiency in the markets, for example this could include:

- the extent of any physical withholding of capacity in the market
- the extent to which participants may have engaged in economic withholding, for example by shifting capacity to extreme high prices
- the extent to which participants are rebidding capacity from low to high prices close to dispatch, which can limit competitive responses from other generators
- whether aspects of conduct suggest market manipulation
- other aspects of participant's conduct we may identify through our compliance monitoring activities (such as instances of false or misleading bidding).

In undertaking our assessments we will consider the extent to which particular behaviours may be compromising efficiency or effective competition. Some of the behaviours listed above might be expected from a profit maximising firm and may not be a cause for concern. For example, occasional instances of withholding may not prevent the wholesale market from being "effectively competitive" and may not be detrimental to efficiency. However, sustained or recurring behaviour is of concern.

These behaviours we are considering are distinguished from the misuse of market power, which occurs when a company with substantial market power illegally engages in conduct for the purpose, effect or likely effect of substantially lessening competition, as this is considered by the ACCC.<sup>24</sup> To the extent our analysis suggests potential competition law

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<sup>24</sup> Competition and Consumer Act 2010, Section 46.

issues, we will liaise with the ACCC where appropriate, given its responsibility for application of competition law in the energy sector.

Our assessment of conduct will build on our existing analysis in our reviews of high price events and weekly reports. We will integrate our conclusions from this work to provide a longer term assessment of trends and patterns in participant conduct in the NEM.

Over time, we will develop a range of metrics and tools to inform our analysis, drawing on the experiences of other international energy market monitors and experiences in other markets. We expect that we will develop and refine these tools over time.

## 4.3 Market performance

Market performance refers to outcomes in the market. We will examine the efficiency of the market separately to the competitiveness of the market. Even if a market is competitive, there may be inefficient market outcomes. For example, certain conduct or market features may not lead us to conclude the market is uncompetitive; even so, they may compromise the efficient functioning of the market.

To assess the performance of the markets we will draw on a broad range of measures. No single measure will lead us to conclude that the market is effectively competitive or efficient.

### 4.3.1 Measures of effective competition

The definition of effective competition in the NEL requires us to consider whether prices are determined in the long run by underlying costs.

In an efficient, competitive market, with free entry and exit, we expect prices to move broadly in line with underlying costs. On one hand, if prices are persistently higher than underlying costs, entrepreneurs will see an opportunity and enter the market, driving down the price. On the other hand, if prices are persistently lower than the underlying costs, some existing firms with high costs will eventually reach a point where it is no longer profitable to remain in the market and leave. Over time, this will cause the market price to rise.

An efficient wholesale electricity market involves a mix of supply and demand side options. In equilibrium, prices should adjust so that each of these different generation types earns a normal competitive return on its investment. These ideas apply to the wholesale electricity market in Australia.

We have identified two possible approaches for estimating costs, when assessing whether prices are determined in the long run by underlying costs:

- *Levelised cost of energy (LCOE)* —known by other names, including levelised unit electricity cost (LUEC) – is a measurement of the average cost of building and operating a new generator of a specific technology over its assumed life cycle. It follows that LCOE can be seen as the average minimum cost for a generator to sell its electricity in order to break even over its lifetime. If anticipated revenue is sustained above LCOE, it would be expected that investment occurs, or that price signals cease. If neither of those scenarios eventuate, it may indicate that factors other than price are impeding the effectiveness of competitive outcomes in the market. The Market Surveillance Authority in Alberta

adopted this approach in its 2012 State of the Market report<sup>25</sup>. It calculated the LCOE for a specific generation type and compared it to a conditional average price in order to confirm that prices were not higher than necessary to ensure the market was sustainable.<sup>26</sup>

- *Long run marginal cost (LRMC)* —LRMC is the cost of meeting an incremental change in demand, assuming all factors of production can be varied. There is a range of methods for deriving LRMC. In its assessment of the MEU's rule change, the AEMC compared estimates of LRMC to average historical wholesale market prices to assess whether prices are determined on a long-term basis by underlying costs<sup>27</sup>. The AEMC's justification for using this measure was informed by its view that the occasional ability of a generator to increase prices for a short period of time is an inherent feature of a workably competitive wholesale market. Transient pricing power only presents a concern if it occurs frequently and significantly enough to cause average annual wholesale prices to be above the LRMC of generators.

Both LCOE and LRMC have a range of individual limitations and differences. Given this, we will carefully consider the outcomes of each approach. Any potential cost indicators we find will be used as part of a larger whole.

### 4.3.2 Identifying and measuring inefficiencies

The NEL requires us to identify whether there are features of the market that are detrimental to efficiency.

We will consider efficiency based on the three common components of efficiency that we discussed in section 2 above:

- Productive efficiency
- Allocative efficiency
- Dynamic efficiency.

We will examine the interaction between a balance of both qualitative and quantitative measures. As with all our analytical tools, no one measure will be a determinant of any particular conclusion.

Our approach will also be informed by our ongoing assessment of the causes and impacts of high prices and other significant market events. Our review of these events may highlight repeated conduct, market design or operational issues which impact the efficiency of the market.

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<sup>25</sup> Alberta MSA, *A Comparison of the Long-Run Marginal Cost and Price of Electricity in Alberta*, December 2012.

<sup>26</sup> We note that LCOE does not estimate costs of current or incumbent generators, rather it estimates the cost faced by new entrants seeking to enter the market.

<sup>27</sup> AEMC 2013, *Potential Generator Market Power in the NEM, Final Rule Determination*, 26 April 2013.

## 5 Information gathering and confidentiality

### 5.1 Publicly available information

We must use publicly available information to carry out our wholesale market monitoring functions in the first instance.<sup>28</sup> There is a range of public information we will rely on, including information and data published by AEMO, the AEMC and jurisdictional regulators, as well as data available through the ASX. We may also collect primary data through direct engagement or surveys of market participants and other stakeholders.

### 5.2 Confidential information

If we identify an issue, then we may use our powers under section 28 of the NEL to acquire non-public information.

Our general approach to the use and disclosure of information is set out in the *AER/ACCC Information Policy*, June 2014 which is available on our website. The amendments to the NEL include additional provisions on the treatment of information collected under our section 28 powers for the purpose of the new wholesale market monitoring functions. As at March 2018, these additional provisions have not yet commenced and as such have not been reflected in an update to our information policy.

Section 18D(2)–(6) of the NEL provides that:

- any information obtained using the section 28 powers for the purpose of the market monitoring function is taken to have been given in confidence
- we must not use this confidential information for any purpose other than the performance of the wholesale market monitoring functions
- we must not disclose the confidential information unless the disclosure is for the purpose of the wholesale market monitoring or reporting functions and the information can be combined or arranged in a way that does not reveal confidential aspects of the information or the identity of whom the information relates
- the AER must return any documents obtained within 12 months or as soon as reasonably practical after 12 months.

In preparation for the commencement of these provisions, we propose to treat any information we gather using our section 28 powers for the purpose of the wholesale market monitoring functions as if it were subject to the restrictions (to the extent we are permitted to do so under law). We consider that adopting these practices, where appropriate, will ensure that we establish procedures which are compliant with the obligations under the NEL when they are ultimately enlivened.

Our approach to the use and disclosure of all other information we receive (including confidential information provided voluntarily) is set out in the *AER/ACCC Information Policy*.

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<sup>28</sup> NEL, 18D(1)(a).