



## Review of the reliability standard and settings - Terms of Reference

### 1. Introduction

The reliability standard and the reliability settings in the National Electricity Market (NEM) are important mechanisms to encourage sufficient investment in generation capacity to meet consumer demand for energy while protecting market participants from substantial risks that threaten the overall stability and integrity of the market.<sup>1</sup>

Every four years the Reliability Panel (the Panel) is required to review the reliability standard and the reliability settings.<sup>2</sup> Through this periodic review the Panel considers whether the standards and settings remain suitable for current market arrangements. This document sets out the terms of reference for the next review, which is to be completed by 30 April 2018 (2018 Review).

The reliability standard is an ex-ante planning standard. It feeds into various NEM wholesale pricing parameters that form part of the framework in which investment decisions to meet consumer demand for electricity are made.<sup>3</sup> The concept of a reliability standard essentially embodies a trade-off, made on behalf of consumers, between the cost of additional capacity and the cost of not having energy when we need it (unserved energy). The reliability standard is not a regulatory or performance standard that is 'enforced', but rather it is a planning standard used to indicate to the market the required level of supply to meet demand on a regional basis. All NEM planning processes must seek to satisfy the reliability standard. For instance, the standard drives the planning and operational decisions of the Australian Energy Market Operator (AEMO).

The level at which the standard is set is intended to reflect an economically efficient trade-off between meeting a given level of consumer demand for electricity and the cost of meeting that level of demand (being the cost of generation and interconnector capability). The cost of providing that capability is reflected in wholesale market prices and network costs, and ultimately the prices that consumers pay for electricity.

The reliability standard specifies this economic trade-off as a maximum expected amount of energy that is at risk of not being served in a region in a given financial year. The current standard, expressed in terms of the maximum unserved energy (USE), is set at a maximum USE of 0.002 per cent of the total energy demanded in each region per financial year.<sup>4</sup> The reliability standard is set

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<sup>1</sup> Reliability Panel, *Review of reliability standard and settings guidelines final determination*, December 2016, Sydney

<sup>2</sup> Clause 3.9.3A(d) of the National Electricity Rules.

<sup>3</sup> The standard relates to generation and inter-regional transmission assets that form the basis of the wholesale supply of electricity.

Intra-regional transmission and distribution network reliability standards are set by the respective State government and are separate to the reliability standard being considered by the Reliability Panel.

<sup>4</sup> National Electricity Rules clause 3.9.3C(a).

by the Australian Energy Market Commission (AEMC) based on the recommendations of the Panel in accordance with the National Electricity Rules (NER).

The reliability settings comprise four price mechanisms<sup>5</sup>:

- **The market price cap (MPC)** which is the maximum market price that can be reached in any dispatch interval and in any trading interval. It is indexed to movements in the consumer price index (CPI) each financial year. The primary purpose of the MPC is to enable the market to achieve and send efficient price signals, to support the efficient operation of and investment in electricity services over the long run. The secondary purpose of the MPC is to manage participant exposure to price risk. The MPC is currently set at \$14,000/MWh.<sup>6</sup>
- **The cumulative price threshold (CPT)** is the maximum total energy price that can be reached in a time period of 336 trading intervals, and the maximum total frequency control ancillary services (FCAS) price that can be reached in a period of 2160 dispatch intervals, before an administered price period (APP) commences and the APC is applied to market prices. The primary purpose of the CPT is to cap the total price risk to which market participants are exposed, over a given time period. The secondary purpose of the CPT is to maintain the effectiveness of the MPC, by not hindering the market price signals for efficient operational decisions and efficient investment in generation capacity and/or demand-side response. The CPT is currently set at \$210,000 for the energy market, and at six times the energy market value for FCAS markets. The CPT is indexed to CPI each financial year.
- **The market floor price (MFP)** is the minimum price that can be reached in any dispatch interval and in any trading interval. The purpose of the MFP is to allow the market to clear during low demand periods, while preventing market instability by imposing a negative limit on the total potential volatility of market prices. It is currently set at -\$1,000/MWh.
- **The administered price cap (APC)** is the maximum settlement price that applies during an administered price period. The function of the APC is to cap participant exposure to the potential of what could otherwise be high prices during an APP, while maintaining incentives for participants to supply energy. It is currently set at \$300/MWh.

Collectively these reliability settings:

- Establish the price envelope within which energy supply and demand is balanced in the wholesale market.
- Allow the market to send price signals to market participants, and create incentives to enter into hedging contracts, to support investment in sufficient generation capacity or demand side response to meet the reliability standard.
- Limit financial risk for market participants.<sup>7</sup>

The Panel has previously undertaken a number of assessments and reviews of the reliability standard and reliability settings. These include the most recent statutory review of the reliability standard and settings which was completed in July 2014.

In 2016 the Panel released guidelines describing the methodology it will use for future statutory reviews.<sup>8</sup> The guidelines identify the approach to be used in assessing the reliability standard and each of the settings, including what component of each will be subject to review.

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<sup>5</sup> Reliability Panel, *Review of reliability standard and settings guidelines final determination*, December 2016, Sydney (Guidelines Determination).

<sup>6</sup> Under the National Electricity Rules, the AEMC is required to adjust the Market Price Cap and Cumulative Price Threshold for the NEM, in line with the consumer price index, by 28 February each year. Using the method set out in the National Electricity Rules, the values for the Market Price Cap and Cumulative Price Threshold for the 2017-18 financial year are \$14,200/MWh and \$212,800 respectively and will apply from 1 July 2017.

<sup>7</sup> Reliability. Panel, *Reliability Standard and Reliability Settings Review 2014, Final Report*, 16 July 2014, Sydney.

## 2. Scope of the 2018 Review

The Panel is to carry out the 2018 Review in accordance with the requirements established in the NER as well as the *Review of reliability standard and settings guidelines, final guidelines*<sup>9</sup> (the guidelines). The Panel must undertake the review in accordance with NER clause 3.9.3A and the rules consultation procedures set out in NER clause 8.9. The Panel may submit a rule change request to the AEMC if it decides to recommend changes to the reliability standard and/or settings.<sup>10</sup>

### 2.1 General requirements

As established in the NER the 2018 Review is to consider the reliability standard and settings to apply on and from 1 July 2020.<sup>11</sup> The rules require that the Panel:<sup>12</sup>

1. Must have regard to the potential impact of any proposed change to a reliability setting on:
  - spot prices
  - investment in the NEM
  - the reliability of the power system, and
  - market participants.
2. Must have regard to any value of customer reliability (VCR) determined by AEMO which the Reliability Panel considers to be relevant.
3. Must comply with the guidelines.
4. May take into account any other matters specified in the guidelines or which the Panel considers relevant.

As established and detailed in the guidelines the Panel will be guided by the following general assessment principles in order to meet the NEO:<sup>13</sup>

1. Allowing efficient price signals while managing price risk.
2. Delivering a level of reliability consistent with the value placed on that reliability by customers.
3. Providing a stable, predictable and flexible regulatory framework.

### 2.2 Specific requirements

The NER and the guidelines establish specific requirements on the Panel in its review of the standard and each of the settings.

#### 2.2.1 The Reliability Standard

The guidelines establish that the level of the reliability standard is only to be re-assessed if it meets the requirements of a materiality assessment.<sup>14</sup> This assessment is to include consideration of factors including but not limited to:

- Any changes to AEMO's VCR measure.

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<sup>8</sup> Reliability Panel, *Review of reliability standard and settings guidelines, final guidelines*, December 2016, Sydney; and Guidelines Determination.

<sup>9</sup> Reliability Panel, *Review of reliability standard and settings guidelines, final guidelines*, December 2016, Sydney.

<sup>10</sup> National Electricity Rules clause 3.9.3A(i).

<sup>11</sup> Noting that every four years the Reliability Panel must conduct a review of the reliability standard and settings.

<sup>12</sup> National Electricity Rules clause 3.9.3A(e).

<sup>13</sup> Guidelines section 2.

<sup>14</sup> This means that the form and/or level of the component will remain the same as in the previous review, unless the Panel considers there may be a material benefit in assessing it during the 2018 review (guidelines section 3.1).

- Any marked changes in the way consumers use electricity, particularly through the use of new technology, that suggest a large number of consumers may place a lower value on a reliable supply of electricity from the NEM.

In 2016 the Reliability Panel examined the measure used to express reliability in the NEM (namely, a percentage of the energy demanded in a region in a financial year).<sup>15</sup> The Panel determined that the measure used for the reliability standard remains appropriate and is therefore not subject to review.<sup>16</sup>

### 2.2.2 The Market Price Cap

The guidelines establish that the Panel is to review the level of the MPC.

In accordance with the NER the Panel may only recommend a MPC that it considers will:

- Allow the reliability standard to be satisfied without use of AEMO's powers to intervene under clauses 3.20.7(a) and 4.8.9(a).
- In conjunction with other provisions of the NER, not create risks which threaten the overall integrity of the market.<sup>17</sup>

The NER also specifies that if the Panel is of the view that a decrease in the MPC may mean the reliability standard is not maintained, the Panel may only recommend such a decrease where it has considered any alternative arrangements necessary to maintain the reliability standard.<sup>18</sup>

The guidelines require the Panel to consider the following principles in its assessment of the level of the MPC:

- The MPC should not be used to actively steer the market into a short-run equilibrium position, or to actively drive disinvestment decisions.
- While the MPC may move either up or down over time, these movements should be gradual. These movements should occur over a period of several review periods.
- When setting the MPC, the Panel should give secondary consideration to the MPC's effect on the financial burden faced by participants from high market prices, including price volatility and impacts on retailers.

The guidelines establish that the form of indexation for the MPC is subject to a materiality assessment. In making its decision, the Panel will consider factors including but not limited to whether:

- There have been material changes in the basket of goods used to calculate the CPI that make it less relevant for indexation of the settings.
- There have been changes in the methodology used to calculate the CPI.
- A more preferable index becomes available and/or there is a change in the designation of the CPI as an official statistic.

The guidelines establish the metric used for the MPC, and the annual indexation of the MPC, are not subject to review.<sup>19</sup>

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<sup>15</sup> Guidelines Determination.

<sup>16</sup> The metric is the maximum expected unserved energy in a region as a per cent of the total energy demanded in that region for a given financial year, as per the National Electricity Rules, clause 3.9.3C(a).

<sup>17</sup> National Electricity Rules, clause 3.9.3A(f).

<sup>18</sup> National Electricity Rules, clause 3.9.3A(g).

<sup>19</sup> The MPC is the maximum market price, measured as dollars per MWh value, that can be reached in any dispatch interval and in any trading interval. Guidelines p6.

### 2.2.3 Cumulative Price Threshold

In accordance with the NER the Panel may only recommend a CPT that it considers will:<sup>20</sup>

- Allow the reliability standard to be satisfied without use of AEMO's powers to intervene under clauses 3.20.7(a) and 4.8.9(a).
- In conjunction with other provisions of the NER, not create risks which threaten the overall integrity of the market.

The NER also specifies that if the Panel is of the view that a decrease in the CPT may mean the reliability standard is not maintained, the Panel may only recommend such a decrease where it has considered any alternative arrangements necessary to maintain the reliability standard.<sup>21</sup>

The guidelines establish that the Panel is to review the level of the CPT. In its assessment, the Panel will consider the following principles:

- The CPT should protect all market participants from prolonged periods of high market prices, with particular consideration to impacts on investment costs and the promotion of market stability.
- The CPT should not impede the ability of the market to determine price signals for efficient operation and investment in energy services.
- The CPT should be determined giving consideration to the level of the MPC.

The guidelines establish that the use of the CPI to index the CPT is subject to a materiality assessment. In making its decision, the Panel will consider factors including but not limited to whether:

- there have been material changes in the basket of goods used to calculate the CPI that make it less relevant for indexation of the settings
- there have been changes in the methodology used to calculate the CPI
- a more preferable index becomes available and/or there is a change in the designation of the CPI as an official statistic.

As per the guidelines the metric used for the CPT and annual indexation of the CPT are not subject to review.<sup>22</sup>

### 2.2.4 Administered Price Cap

The guidelines establish that the APC level is subject to a materiality assessment. In making its decision the Panel will consider factors including, but not limited to, whether there have been any:

- significant changes in the typical short-run marginal costs of generators in the NEM
- compensation claims since the last review.

The guidelines establish that the metric used for the APC and the annual indexation of the APC are not subject to review.<sup>23</sup>

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<sup>20</sup> National Electricity Rules, clause 3.9.3A(f).

<sup>21</sup> National Electricity Rules, clause 3.9.3A(g).

<sup>22</sup> The CPT metric is the maximum total market price, measured in Australian dollars, that can be reached in a period of 336 trading intervals, before an APP commences and the APC is applied to market prices. Guidelines p6, p7.

<sup>23</sup> The APC metric is the maximum market price paid to participants, measured as a dollar per MWh value, that can be reached in any dispatch interval and any trading interval, during an APP. Guidelines p8.

## 2.2.5 Market Floor Price

The guidelines establish that the assessment of the level of the MFP is subject to a materiality assessment. In making its decision, the Panel will consider factors including but not limited to:

- the number and frequency of trading intervals where the market price has been, or has approached, the level of the MFP
- whether there have been significant changes in the generation fleet, such that average generator cycling costs have changed significantly.

In accordance with the NER the Panel may only recommend a MFP which it considers will:

- allow the market to clear in most circumstances
- not create substantial risks which threaten the overall stability and integrity of the market.<sup>24</sup>

The guidelines establish that the metric used for the MFP and the annual indexation of the MFP are not subject to review.<sup>25</sup>

## 2.3 Other matters for consideration

In its review, the Panel should also consider the potential impacts of the different reliability settings on participant price risk management behaviour, particularly potential outcomes in contract markets.<sup>26</sup>

Secondary contract markets are a key method used by participants to manage their exposure to price risk in the NEM. These contracts may include over-the-counter type products, as well as exchange traded products.

The reliability settings, particularly the MPC, will influence prices and liquidity in contract markets. A higher MPC creates additional price risk in the market. This may increase the demand for, and price of, risk management tools including contracts, depending on the strength of this signal compared to other factors relevant to the market generally. High contract prices for generators support investment in the NEM, as they provide the stable cash flows needed to underpin the high cost assets that supply consumer demand for energy.

In coming to a conclusion on the levels of the MPC and CPT which will satisfy the requirements in clauses 3.9.3A(f)(1) and (2) of the NER (allowing the reliability standard to be satisfied and not creating risks which threaten the integrity of the market), the Panel should therefore consider how changing the relevant reliability settings may affect price risk management behaviour, including potential impacts on contract markets, and how this may affect investment outcomes in the NEM.

## 2.4 Modelling

As established in the guidelines, in developing modelling for the purposes of informing its assessment of the standard and settings, the Panel will consider the following general principles:

- the model should consider how a long-term equilibrium between price and reliability can be achieved in the market
- in considering long-term equilibrium, the modelling should consider both new investment and the potential for retirement of capacity.

When designing the specifics of the model, the Panel will consider the following principles regarding the assumed generator behaviour included in the model:

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<sup>24</sup> National Electricity Rules, clause 3.9.3A(h).

<sup>25</sup> The metric for the MFP is the minimum price that can be achieved in any dispatch and trading interval, measured in dollars per MWh. Guidelines p7.

<sup>26</sup> These issues are discussed on pages 17-18 of the Guidelines Determination.

- the model should be technology-neutral and assess MPC on the basis of the cheapest available marginal technology that can be used to deliver the standard;
- assumed generator behaviours should be modelled on reality and the modelled generators should be allowed to offer their capacity in a way that reflects reasonable behaviour; and
- the model should not make assumptions regarding the contracting behaviour of any modelled generators.

The range of inputs and scenarios to be used in the model may include, but are not limited to, the inputs and scenarios specified in the guidelines.

## **2.5 Market and policy developments and uncertainties**

Additional and related to the matters outlined above, the Panel is to consider in the 2018 Review market and policy developments and uncertainties.

The pace of change in the energy market is well documented. Some of these market trends and developments are likely to affect the NEM in the years 2020 – 2024, the period under consideration by the Panel for this review.

There are also a number of potential policy developments that may be relevant to the Panel's consideration, including those originating outside of the energy market. The AEMC is currently undertaking reviews and considering rule change requests that may affect the market in the medium-term. AEMO, other market bodies, jurisdictional governments and the COAG Energy Council are also pursuing work programs that may be relevant to this review.

Other relevant policy changes, either internal or external to the NEM, may emerge during the course of the 2018 Review.

In this context, the AEMC requests that the Panel:

1. Clearly outline to stakeholders in documents relating to the 2018 Review, the key market and policy developments and uncertainties the Panel considers relevant to its review, and how the Panel proposes to address them.
2. Outline in the 2018 Review's final report any future market or policy conditions that are likely to have a significant bearing on the effectiveness of the reliability standard and settings recommended by the Panel. The Panel should also recommend responses it considers necessary should these conditions arise, such as requiring a reassessment of the findings of the 2018 Review prior to the next four-yearly review.

The Panel may take into account any other matters it considers relevant.

## **3. Process and timing**

The NER requires the Panel to follow the rules consultation procedures in carrying out the 2018 Review.<sup>27</sup> This includes the requirement to publish a draft report and carry out consultation on the draft report. The Panel will also publish an issues paper for consultation at the initiation of the review. The AEMC also anticipates that the Panel will hold at least one public meeting during the course of the review. The Panel's final report is to be published and submitted to the AEMC no later than 30 April 2018.

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<sup>27</sup> National Electricity Rules clause 3.9.3A(d); the procedures are set out in clause 8.9.