Reliability Panel
AEMC

REVIEW

Reliability Panel AEMC

# ISSUES PAPER

## Energy Adequacy Assessment Projection (EAAP) Review

30 August 2012

Submissions due 28 September 2012. Reference: REL0049
Issues Paper

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**About the AEMC**

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

**About the AEMC Reliability Panel (Panel)**

The Panel is a specialist body within the AEMC and comprises industry and consumer representatives. It is responsible for monitoring, reviewing and reporting on reliability, security and safety of the national electricity system and advising the AEMC in respect of such matters. The Panel's responsibilities are specified in section 38 of the National Electricity Law.

## Reliability Panel members

Neville Henderson, Chairman and AEMC Commissioner

Trevor Armstrong, Chief Operating Officer, Ausgrid

Simon Bartlett, Chief Operating Officer, Powerlink

Mark Grenning, Chief Advisor Energy, Rio Tinto

Chris Murphy, Chief Executive Officer, Secure Energy

Andrew Nance, Principal, St Kitts Associates

Tim O'Grady, Head of Public Policy, Origin Energy

Nick Sankey, Head of Utilities Energy and Renewables, Commonwealth Bank

David Swift, Executive General Manager Corporate Development, Australian Energy Market Operator

# Contents

# 1 Introduction

Under the National Electricity Rules (NER) the Australian Energy Market Operator (AEMO) is required to publish the Energy Adequacy Assessment Projection (EAAP) on a quarterly basis. The NER also requires the Reliability Panel (Panel) to undertake a review of the rules that set out the EAAP obligations, which the Panel is now conducting. The purpose of this paper is to facilitate consultation and seek views on relevant issues for this review.

## 1.1 The EAAP

The EAAP is an information mechanism that provides analysis on the impact of energy constraints in the National Electricity Market (NEM). It examines a two year outlook of the ability of generation in the NEM to meet demand in the presence of generator energy constraints. The EAAP operates in a similar manner to the capacity projection assessments of the medium term Projected Assessment of System Adequacy (MT PASA) however the EAAP considers energy instead of capacity constraints.

AEMO is responsible for preparing and publishing the EAAP. The NER sets out the specific requirements for the EAAP including the underlying purpose and principles that apply. AEMO is also required to establish a set of guidelines to assist with the administration of the EAAP. The guidelines were developed and published by AEMO in 2009.[1] For the purpose of preparing the EAAP, scheduled generators are required under the NER to provide information to AEMO on a quarterly basis.

## 1.2 Requirement and purpose of the review

The NER requires the Panel to undertake a review of the operation of the EAAP rule by 31 March 2013.[2] In July 2012, the Australian Energy Market Commission (AEMC or Commission) issued terms of reference to the Panel for this review to be undertaken.[3] This review provides the opportunity to ensure that the EAAP has been achieving its intended purpose and that the cost of producing it does not outweighed the benefits on an ongoing basis.

Should this review identify issues that suggest the NER should be changed, the Panel will consider the requirements for raising a rule change request with the AEMC following the completion of this review.

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1 The EAAP guidelines are published on AEMO's website. http://www.aemo.com.au/en/Electricity/Market-and-Power-Systems/Development-of-Energy-Adequacy-Assessment-Projection-EAAP-Guidelines-Consultation

2 Clause 3.7C(s) of the NER requires the Panel to undertake a review of the operation of rule 3.7C by no later than the end of the third year after the publication of the first EAAP. As AEMO published the first EAAP on 31 March 2010, the Panel must complete this review by 31 March 2013. This is a 'one-off' review under the NER; however, the AEMC could direct the Panel to undertake further reviews at any time.

3 The terms of reference is published on the AEMC Reliability Panel website.

## 1.3 Timetable for the review and consultation process

For this review, the Panel is required to follow the consultation processes set out in clause 8.8.3 of the Rules (and any specific requirements in the terms of reference). The Panel will undertake consultation with stakeholders through seeking comments and submissions on the issues paper and draft report as well as through a public meeting. As outlined below, submissions on the issues paper are due on 28 September 2012. The remaining key milestones and proposed dates are set out in the following table.

### Indicative timetable

| Stage of review / milestone | Date |
|---|---|
| Publish draft report | 29 November 2012 |
| Close of submissions on draft report | 25 January 2013 |
| Public Meeting | 13 February 2013 |
| Publish final report | 27 March 2013 |

## 1.4 Submissions to the Issues Paper

The Panel invites comments from interested parties in response to this Issues Paper by 28 September 2012. All submissions will be published on the AEMC Reliability Panel website.

Electronic submissions must be lodged online through the AEMC's website www.aemc.gov.au using the link entitled "lodge a submission" and reference code "**REL0049**". The submission must be on letterhead (if submitted on behalf of an organisation), signed and dated.

Upon receipt of the electronic submission, the AEMC website will issue a confirmation email. If this confirmation email is not received within three business days, it is the submitter's responsibility to ensure the submission has been delivered successfully.

Or, if choosing to make submissions by mail, the submission must be on letterhead (if submitted on behalf of an organisation), signed and dated. The submission may be posted to:

The Reliability Panel
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

## 1.5 Structure of the paper

The remainder of this issues paper is structured as follows:

**Chapter 2 Background** - provides background information on the EAAP.

**Chapter 3 Factors for consideration and key issues** - provides a discussion of the key issues the Panel will consider in this review. Specific questions for consultation are also outlined.

# 2 Background

This chapter sets out background information on the EAAP.

## 2.1 Comprehensive Reliability Review

In 2007 the Panel undertook the comprehensive reliability review, which was a review examining various key reliability standards and parameters in the NEM. As a part of this review, following a separate request from the Ministerial Council on Energy (MCE), the Panel also considered the effectiveness of the arrangements that were in place at that time to manage generation input constraints. That is, the request from the MCE related to information that was available at that time on energy shortfall forecasts in AEMO's drought impact reports.[4] The MCE had asked the Panel to consider what, if any, improvements could be made to strengthen the market's ability to manage input constraints.

In carrying out the comprehensive reliability review, the Panel noted that generally the NEM design is predicated upon reliability of the bulk supply system in terms of the capacity of the system. The impacts of energy constraints were a new consideration. The Panel considered that the risks associated with energy constraints, arising from factors such as droughts, were material and could potentially be wide spread. For this reason, the Panel proposed improving the information available to market participants and stakeholders to facilitate a better understanding of when and where energy constraints could potentially impact reliability. This information would be provided in the form of the EAAP which would build upon and extend the work that had been undertaken by AEMO for the drought reports.

Information provided through the EAAP was expected to facilitate changes to the behaviour of generators, such as changes in the allocations of existing water and fuel sources. The increased availability of information through the EAAP could also provide the opportunity for market responses to develop within the NEM.

The Panel's recommendations on the EAAP were incorporated into a rule change proposal and submitted to the AEMC in 2008.

## 2.2 Reliability settings rule change proposal

The AEMC considered the Panel's rule change proposal in 2008 and determined to make the rule to introduce the EAAP.[5] The AEMC considered that the EAAP would formalise and extend the drought reporting that had been carried out by AEMO as the information provided under those reports were considered useful. The AEMC agreed that the EAAP would provide an additional source of information to the market and could lead to improved market responses to projected shortfalls in reserve. The AEMC

4 At that time the drought reports were being published by NEMMCO.

considered there would be benefits to consumers in the long term as the EAAP could increase the efficiency of investment in generation; improve the reliability of supply for end use consumers; and reduce average energy prices relative to what they would have otherwise been by smoothing out high prices during times of energy shortfall.

The AEMC added the requirement for the Panel to conduct a review of the operation of the EAAP provisions under the NER. A review of this kind was considered to be good regulatory practice and would provide the opportunity for the overall governance arrangements of the EAAP to be strengthened.

## 2.3 Development and publication of the EAAP guidelines

Under the rules that were introduced, AEMO were required to develop the EAAP guidelines in consultation with stakeholders. As outlined above, AEMO developed and published these guidelines in 2009. The guidelines set out specific details about the content of the EAAP such as the scenarios and relevant modelling assumptions. It also sets out more detailed information about the data that scheduled generators must provide to AEMO for the purpose of producing the EAAP. Additional discussion of the provisions for the EAAP guidelines is set out in Chapter 3.

## 2.4 EAAP publications

AEMO publishes the EAAP on a quarterly basis. These reports are available on the AEMO website.[6]

The EAAP reports outline analysis on energy constraints under three scenarios: low rainfall; short term average rainfall; and long term average rainfall. Explanations are also provided for the inputs and outputs of the modelling process as well detailed discussion of the modelling outcomes. The reports also provide information on new generation projects and generation retirements.

5 NEM Reliability Settings: Information, Safety Net and Directions rule change. Details are published on the AEMC website.

6 http://www.aemo.com.au/electricityops/eaap.html

# 3 Factors for consideration & key issues

This chapter sets out the specific requirements under the NER and discusses some of the key issues that the Panel will consider in this review. Stakeholders are encouraged to comment on these issues as well as any other aspect of the EAAP that may be relevant to this review. Terms in *italics* are defined under the NER. Some of the key definitions are replicated in the glossary of this paper.

## 3.1 Purpose of the EAAP

The NER sets out that the purpose of the EAAP is to 'make available to *Market Participants* and other interested persons an analysis that quantifies the impact of *energy constraints* on *energy* availability over a 24 month period under a range of scenarios'.[7]

**Question 1 Purpose of the EAAP**

**(a) Does the EAAP, as it is currently configured, meet the purpose as set out under the NER?**

**(b) How do stakeholders use the information contained in the EAAP and does the EAAP meet stakeholders' requirements and expectations?**

**(c) Have stakeholders been able to use the output of the EAAP to assist with demand side participation decisions and managing the allocation of water and other resources?**

**(d) Will the purpose or potential benefits of the EAAP change in the future?**

## 3.2 EAAP principles

The NER includes a set of EAAP principles to guide the application of the EAAP requirements. The principles are set out under clause 3.7C(b) and are as follows.[8]

> "The *EAAP* must:
>
> (1) cover a 24 month period, commencing on the day the *EAAP* is *published* under this rule 3.7C;
>
> (2) be *published* every three months;
>
> (3) provide a probabilistic assessment of projected *energy* availability for each *region*;

7 Clause 3.7C(a) of the NER.

8 GELF parameters are discussed in sections 3.3 and 3.4.

(4) provide projected *unserved energy* levels for each *region* with a monthly resolution;

(5) provide aggregated information on the adequacy of *energy* availability for each scenario that *AEMO* defines for the purpose of the *EAAP*, based on information received from *Registered Participants* and on anticipated *power system* constraints;

(6) take into account:

(A) where relevant, the information and *medium term PASA* inputs referred to in clauses 3.7.1 and 3.7.2;

(B) where relevant, the matters *AEMO* considers in, and for the purpose of, clause 5.6.5(c) in carrying out the [Annual National Transmission Statement] *review*;

(C) *Generator Energy Limitation Frameworks* provided in accordance with paragraph (g), including *GELFs* that apply to more than one *scheduled generating unit* under clause 3.7C(k)(6) where those *GELFs* adequately represent the relevant *generating units*; and

(D) *GELF parameters* for each *GELF* which are provided in accordance with the *EAAP guidelines* and are updated in accordance with the *timetable*."

The NER further requires AEMO to comply with the EAAP principles in preparing the EAAP.[9]

**Question 2 EAAP Principles**

**(a) Are the EAAP principles still relevant?**

**(b) Are there any of the EAAP principles that should be changed? Which principles and for what reasons?**

**(c) For example: should the publication of the EAAP remain on a quarterly cycle? Is a 24 month outlook appropriate? Are the factors that AEMO need to take into account in preparing the EAAP sufficient or are there new sources of information or data that should be used?**

**(d) Clause 3.7C(b)(6)(B) refers to matters considered by AEMO in undertaking the Annual National Transmission Statement (ANTS) review. However, given that the ANTS review provisions have been replaced by the National Transmission Network Development Plan (NTNDP), should the ANTS reference under this clause be replaced with 'NTNDP' or should it refer to other sources of information or reviews?**

9 Clause 3.7C(c) of the NER.

## 3.3 Administration of the EAAP

Under the NER, scheduled generators must provide information to AEMO in accordance with a defined timetable. The information includes the Generator Energy Limitation Framework (GELF) and updated parameters, where the GELF is the framework that defines the generator energy constraints relevant to the EAAP. In addition to the GELF parameters, scheduled generators are also required to provide to AEMO other information that is reasonably required to study the scenarios defined in the EAAP guidelines. In considering the information that is reasonably required, AEMO is required to have regard to the likely costs that may be incurred by the scheduled generator in preparing and providing the information and the likely benefits of that information.

The Panel understands that AEMO has largely automated the information collecting process to minimise the impact on scheduled generators.

**Question 3 Administration of the EAAP**

**(a) What have been the experiences of AEMO and scheduled generators in administering the EAAP?**

**(b) Are the provisions under the NER sufficiently detailed on how the EAAP should be administered?**

**(c) Apart from the likely costs that may be incurred by generators, should the NER set out other factors to be taken into account of by AEMO in considering what information is reasonably required?**

## 3.4 Generator Energy Limitation Framework

The NER specifies that scheduled generators must prepare and submit to AEMO the GELF information and any other parameters as defined under the EAAP guidelines. The information must be updated every three months and whenever there has been a material change to their generating units which has an impact on the energy constraints. Any information received by AEMO must be treated as confidential information.

**Question 4 Generator Energy Limitation Framework**

**(a) What have been the experiences of and impacts on generators in complying with the provisions under the NER for providing information for the EAAP?**

**(b) Are the impacts on generators likely to change going forward?**

## 3.5 EAAP guidelines

The NER required AEMO to develop and publish the EAAP guidelines in accordance with the consultation procedures under the NER. This was completed by AEMO in 2009. AEMO may also from time to time amend or replace the EAAP guidelines so long as it follows the consultation procedures under the NER in making any changes.[10]

The EAAP guidelines must define the details of the scenarios and assumptions that apply to the EAAP as well as details of the GELF data that scheduled generators must provide. The NER sets out specifically that the EAAP guidelines must:[11]

> "(1) define scenarios that *AEMO* must study in preparing the *EAAP*;
>
> (2) define modelling assumptions for the *EAAP*;
>
> (3) define the components of a *GELF* that a *Scheduled Generator* must include in a *GELF* [submitted under the specific clause of the NER];
>
> (4) provide detail on the forms of the *GELF* sufficient for a *Scheduled Generator* [to meet the specific requirements under the NER];
>
> (5) define variable parameters specific to a *GELF* (*GELF parameters*) that are likely to have a material impact on the *GELF* and therefore the *EAAP*, and which may include, but are not limited to, parameters in relation to:
>
> (i) hydro storage including pump storage;
>
> (ii) thermal generation fuel;
>
> (iii) cooling water availability; and
>
> (iv) gas supply limitations;
>
> (6) define circumstances where a *GELF* submitted [under the NER] can apply to a collection of *scheduled generating units* that face common *energy constraints* due to their geographic location, access to fuel source or another similar reason;
>
> (7) define the form of information to be submitted by each *Scheduled Generator* [in accordance with the NER]; and
>
> (8) define arrangements for managing the confidentiality of information submitted to *AEMO* under this rule"

The NER further sets out that the scenarios that AEMO's study may include (but are not limited to) scenarios considering water conditions such as normal rainfall or

10 Clause 3.7C(q) of the NER.

11 Clause 3.7C(k) of the NER.

drought and the impact of material restrictions on the supply of a significant fuel source.[12]

**Question 5 EAAP guidelines**

**(a) Are the factors that AEMO must include in its guidelines clear and sufficient?**

**(b) Are there any other areas that AEMO's guidelines could include? For what reasons?**

## 3.6 Provision of information to scheduled generators

AEMO is required to provide to each scheduled generator the estimate of the total energy production of the scheduled generating units of the generator for the period of the EAAP.[13] The estimate is to be based on the relevant GELF.

**Question 6 Provision of information to scheduled generators**

**(a) What have been the experiences of stakeholders of AEMO providing information? What are the expectations going forward?**

**(b) Are there requirements for any other types of information to be exchanged?**

## 3.7 Panel review

As discussed above, the Panel is required to undertake this review by 31 March 2013. This is a 'one off' review under the NER.[14]

**Question 7 Panel review**

**(a) At this stage, are there any reasons for the Panel to review the EAAP provisions again in the future?**

## 3.8 Other issues

The Panel welcomes comments on any other issues on the EAAP particularly on stakeholders' experiences with the current operations and the anticipated costs and benefits of the EAAP going forward.

12 Clause 3.7C(l) of the NER.

13 Clause 3.7C(r) of the NER.

14 Clause 3.7C(s) of the NER.

# Abbreviations

| | |
|---|---|
| AEMC | Australian Energy Market Commission |
| AEMO | Australian Energy Market Operator |
| Commission | See AEMC |
| EAAP | Energy Adequacy Assessment Projection |
| GELF | Generator Energy Limitation Framework |
| MCE | Ministerial Council on Energy |
| MT PASA | medium term Projected Assessment of System Adequacy |
| NEM | National Electricity Market |
| NER | National Electricity Rules |
| NTNDP | National Transmission Network Development Plan |
| Panel | Reliability Panel |

# A Glossary

Chapter 10 of the NER sets out the defined terms under the NER. The NER definition of a number terms that are relevant to this review are set out below.

| term | definition |
|---|---|
| active energy | A measure of electrical energy flow, being the time integral of the product of voltage and the in-phase component of current flow across a connection point, expressed in watthour (Wh). |
| energy | Active energy and/or reactive energy. |
| energy constraint | A limitation on the ability of a *generating unit* or group of *generating units* to generate *active power* due to the restrictions in the availability of fuel or other necessary expendable resources such as, but not limited to, gas, coal, or water for operating turbines for cooling. |
| GELF parameters | Variable parameters specific to a *Generator Energy Limitation Framework (GELF)* which are defined in the *EAAP guidelines* and supplement the *GELF*, and are submitted by a *Scheduled Generator* and updated in accordance with rule 3.7C for the purpose of the *EAAP*. |
| Generator Energy Limitation Framework (GELF) | A description of the *energy constraints* that affect the ability of a *scheduled generating unit* to generate electricity prepared in accordance with the *EAAP guidelines*. |
| publish | [For publication by AEMO, a document is considered published if it is made available to *Registered Participants* electronically.] |
| reactive energy | A measure in varhour (varh), of the alternating exchange of stored energy in inductors and capacitors, which is the time-integral of the product of voltage and the out-of-phase component of current flows across a connection point. |
| scheduled generating units | (a) A generating unit so classified in accordance with Chapter 2.<br><br>(b) For the purpose of Chapter 3 and rule 4.9, two or more generating units referred to in paragraph (a) that have been aggregated in accordance with clause 3.8.3. |
| Scheduled Generator | A *Generator* in respect of which any *generating unit* is classified as a *scheduled generating unit* in accordance with Chapter 2. |
| timetable | The timetable published by *AEMO* under clause 3.4.3 for the operation of the *spot market* and the provision of *market* information. |
| unserved energy | The amount of *energy* that is demanded, but cannot be supplied, in a *region* and which is defined in accordance with the *power system security and reliability standards* and is expressed as:<br><br>(a) GWh; or<br><br>(b) a percentage of the total *energy* demanded in that *region* over a specific period of time such as a year. |