



## **Independent review report to the Board of Directors of the Australian Energy Market Operator Limited (AEMO) for the National Electricity Market**

### ***Scope***

In accordance with our contract effective 1 January 2016, we were engaged by the Australian Energy Market Operator (AEMO) to perform an independent limited assurance engagement in respect of AEMO's internal control procedures in relation to compliance with the National Electricity Rules for the National Electricity Market, for the year ended 30 June 2017, in the following areas:

- the calculations and allocations performed by the metering and settlements system
- the billing and information systems
- the scheduling and dispatch processes
- the processes for software management
- the AEMO procedures and their compliance with the National Electricity Rules.

### ***AEMO Management's Responsibilities***

AEMO Management is responsible for maintaining an effective internal control structure, including control procedures to ensure compliance with the National Electricity Rules for the National Electricity Market. This responsibility includes establishing and maintaining internal controls relevant to compliance with the National Electricity Rules (NER) and the preparation and fair presentation of information that is free from material misstatement.

### ***Our Independence and Quality Control***

We have complied with relevant ethical requirements related to assurance engagements, which include independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

In accordance with Auditing Standard ASQC 1 *Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, Other Assurance Engagements and Related Services Engagements* the firm maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

### ***Our Responsibilities***

Our responsibility is to express a limited assurance conclusion based on the procedures we have performed and the evidence we have obtained.



Our engagement has been conducted in accordance with the Australian Standard on Assurance Engagements (ASAE 3000) *Assurance Engagements Other Than Audits or Reviews of Historical Financial Information*. That standard requires that we plan and perform this engagement to obtain limited assurance about whether anything has come to our attention to indicate that the AEMO internal control procedures in relation to the areas listed under the Scope section above, have not been, in all material respects, effectively designed and operated, in order to comply with the relevant criteria outlined in:

- National Electricity Rules – Version 82 (July 2016) to Version 92 (June 2017):
  - Chapter 2 – Registered Participants and Registration
  - Chapter 3 – Market Rules
  - Chapter 4 – Power System Security
  - Chapter 7 – Metering
  - Chapter 8 – Administrative Functions.

In determining compliance with the criteria above, we have also considered the following AEMO documents, where applicable:

- NEM Credit Limit Procedures, Version 2.0 (August 2014)
- NEM ROLR Processes Part A - MSATS Procedure and Part B - B2B Procedure, Version 1.3 (November 2013)
- Metering Service Provider Accreditation Procedure, Version 009 (November 2013)
- Physical Security Management Plan, Version 2 (July 2016)
- Access Control and Authentication Standard, Version 1.4 (May 2017)
- Logging and Log Management Standard, Version 1.3 (May 2017)
- Backup Standard, Version 1.3 (May 2017)
- AEMO Patch Management Standard, Version 1.4 (May 2017)
- IT Change Management Policy, Version 1.5 (April 2017)
- Incident Management Policy, Version 1.1 (April 2017)

The procedures we performed were based on our professional judgement and included:

- inquiry and observation of staff and management to understand the operation of controls
- review of relevant AEMO policies and procedures
- undertaking procedures to evaluate the design effectiveness of key controls
- performing limited sample testing to validate the operating effectiveness of key controls.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement and consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.



### ***Scope Exclusions***

Our review did not include application and IT controls over systems that are operated by external organisations, the compliance with Service Level Requirements, or the control procedures in place at those agencies not controlled by AEMO, for example:

- Meter Data Providers (MDPs)
- Real time systems
- Retailers
- Distributors.

It is assumed that the data received by AEMO from MDPs in relation to metering data is complete, accurate and valid. Our scope was limited to the procedures AEMO perform over validating the reasonableness of this data.

It is assumed that automated pricing, gas scheduling and settlement calculations are consistent with the NER. Our scope did not include certification of electricity market systems such as the National Electricity Market Dispatch Engine (NEMDE), Electricity Market Management System (EMMS), Project Assessment of System Adequacy (PASA) Solvers, or other market systems.

We accept no responsibility for the adequacy or accuracy of work performed by AEMO or the independent certifiers in relation to system certification. We accept no liability to AEMO or to any other person for any part of our review report that relies on, or assumes the adequacy of system certification.

### ***Use of Report***

This report has been prepared for distribution to the Board of Directors of AEMO. We disclaim any assumption of responsibility for any reliance on this report to any other persons or users other than the Board of Directors of AEMO, or for any purpose other than that for which it was prepared.

### ***Inherent Limitations***

Because of the inherent limitations of any internal control system, it is possible that fraud, error or non-compliance may occur and not be detected. Further, the internal compliance and control culture has not been reviewed and no view is expressed as to its effectiveness.

A limited assurance engagement is not designed to detect all weaknesses in the internal compliance and control system as it is limited primarily to inquiries with management and staff, undertaking procedures to evaluate design effectiveness of controls, analytical procedures and limited sample testing to validate the operating effectiveness of key controls. The limited assurance conclusion expressed in this report has been formed on the above basis.



### Materiality

We have considered materiality when evaluating the effect of identified control weaknesses on our conclusion. Materiality is considered in the context of AEMO’s objectives relevant to the area of activity being examined. When assessing materiality, we considered qualitative factors as well as quantitative factors, including:

- the purpose of the engagement and specific requirements of the engagement
- the economic, social, political and environmental impact of control weaknesses
- the importance of an identified control weakness in relation to the area of activities and the entities overall objectives
- the impact of a centralised function on other parts of the entity
- public perception and/or interest in the area of activity
- the cost of alternative controls relative to their likely benefit
- the length of time an identified control weakness was in existence.

### Summary of Findings

The table below summarises findings reported which remain open as at 30 June 2017. This includes findings reported by AEMO management or through our review procedures.

	Critical	Significant	Medium	Low
Level 1	0	0	6	2
Level 2	0	0	2	2
Level 3	0	0	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>5</b>

The table below summarises open findings from prior periods or this period which have been closed during FY17.

	Critical	Significant	Medium	Low
Level 1	0	2	4	9
Level 2	0	0	7	3
Level 3	0	0	0	5
<b>Total</b>	<b>0</b>	<b>2</b>	<b>11</b>	<b>17</b>

We have categorised control observations noted according to agreed risk and compliance ratings. The risk ratings applied for each finding are consistent with the likelihood and consequence matrix adopted by AEMO’s Risk and Audit Committee.



The ratings have been tailored to reflect the potential impact on the gas market as follows:

<b>Risk Rating</b>	<b>Definition</b>
Critical	Findings which may have a catastrophic impact on the electricity market operations if they are not addressed immediately and require executive action with regular reporting at Board level.
Significant	Findings which may have a major impact on the electricity market operations if they are not addressed as a matter of priority. These findings require senior management attention with regular monitoring and reporting at executive and Board meetings.
Medium	Findings which may have a moderate impact on the electricity market operations if they are not addressed within a reasonable timeframe. These findings require management attention with regular ongoing monitoring.
Low	Findings which may have a minor impact on electricity market operations if they are not addressed in the future. These findings are the responsibility of management with regular monitoring and reporting at staff meetings.

<b>Compliance Rating</b>	<b>Definition</b>
Level 1	Evidence of non-compliance with review criteria. These should be addressed as a matter of high priority. (Breach)
Level 2	Issues which could possibly result in non-compliance with review criteria but where no evidence of actual non-compliance was found. However, there is considered to be insufficient formal evidence of controls in place or being actioned in relation to these issues. These should generally be addressed within one to two months. (Improvements in AEMO's controls to prevent a potential breach)
Level 3	Housekeeping matters and opportunities for improving internal controls and procedures relating to market operations. These should be addressed within three to six months. (Better controls but not critical to prevent a breach)



**Conclusion**

Based on our review, which is not an audit, nothing has come to our attention that causes us to believe that the Australian Energy Market Operator did not maintain, in all material respects, effective control procedures in relation to the National Electricity Market for the year ended 30 June 2017, based on the scope referred to above.

A handwritten signature in black ink that reads 'PricewaterhouseCoopers' in a cursive, flowing script.

PricewaterhouseCoopers

A handwritten signature in black ink, appearing to be 'M.H.', written in a cursive style.

Matthew Hunt  
Partner

Melbourne  
14 September 2017