



Independent review report to the Board of Directors of the Australian Energy Market Operator Limited (AEMO) for the National Electricity Market for the year ended 30 June 2019

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 2019, 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's 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 (NER) for the National Electricity Market. This responsibility includes establishing and maintaining internal controls relevant to compliance with the 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 controls 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:

PricewaterhouseCoopers PricewaterhouseCoopers, ABN 52 780 433 757
2 Riverside Quay, SOUTHBANK VIC 3006, GPO Box 1331 MELBOURNE VIC 3001
T: +61 3 8603 1000, F: +61 3 8603 1999, www.pwc.com.au

Liability limited by a scheme approved under Professional Standards Legislation.



- National Electricity Rules – Version 110 (July 2018) to Version 122 (June 2019):
 - 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:

- NEM Credit Limit Procedures, Version 4.0 (May 2018)
- Qualification Procedures – Metering Providers, Metering Data Providers and Embedded Network Managers, Version 1.2 (September 2017)
- Dispatch System Operating Procedure, Version 86 (February 2019)
- Power System Security Guidelines, Version 93 (1 March 2019)
- System Restart Ancillary Services Guideline, Version 1 (15 December 2017)
- Physical Security Management Plan, Version 2 (May 2018)
- AEMO Cyber Security Policy, Version 3.0 (July 2019)
- AEMO Cyber Security Standards (July 2019)
- IT Change Management Policy, Version 1.5 (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 Certifier 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 was prepared for distribution to the Board of Directors of AEMO. We disclaim any assumption of responsibility for any reliance on this report to any 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 making enquiries, 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 weakness 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 2019. This includes findings reported by AEMO management or through our review procedures.

	Critical	Significant	Medium	Low
Level 1	0	0	4	1
Level 2	0	0	7	3
Level 3	0	0	0	2
Total	0	0	11	6

The table below summarises open findings from prior periods or this period which have been closed during FY19.

	Critical	Significant	Medium	Low
Level 1	0	0	3	13
Level 2	0	0	2	2
Level 3	0	0	0	0
Total	0	0	5	15

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:

Risk Rating	Definition
Critical	Findings which may have a catastrophic impact on the 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 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 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 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.

Compliance Rating	Definition
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 electricity 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 2019, based on the scope referred to above.

PricewaterhouseCoopers

PricewaterhouseCoopers

A handwritten signature in blue ink, appearing to read 'M. Hunt', with a large, stylized flourish above the name.

Matthew Hunt
Partner

Melbourne
6 September 2019