



To: The Board of Directors of AEMO

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

Scope

In accordance with the terms of our contract dated 14 January 2022, we were engaged by the Australian Energy Market Operator (AEMO) to perform an independent limited assurance engagement for the year ended 30 June 2023, in respect of AEMO's internal control procedures in relation to compliance, in all material respects, with the National Electricity Rules for the National Electricity Market (NEM) version 183 (July 2022) to version 200 (May 2023) (the "NER"), in the following areas:

- the calculations and allocations performed by the metering system 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 NER.

Our procedures have predominantly focused on the following divisions of the NER, which we have determined as the applicable divisions for the above areas:

- Chapter 2 – Registered Participants and Registration
- Chapter 3 – Market Rules, including the Settlement Residue Auction Rules (March 2020)
- Chapter 4 – Power System Security
- Chapter 7 – Metering
- Chapter 8 – Administrative Functions.

AEMO management's responsibilities

AEMO management is responsible for:

- (a) Identification of the compliance requirements within the NER
- (b) Maintaining an effective internal control structure, including control procedures, to ensure compliance with the NER
- (c) Identification and implementation of controls which will mitigate those risks that prevent the compliance requirements being met and monitoring ongoing compliance.
- (d) Maintaining information relevant to compliance with the NER that is free from material misstatement.

Our independence and quality management

We have complied with the ethical requirements of the Accounting Professional and Ethical Standard Board's APES 110 *Code of Ethics for Professional Accountants (including Independence Standards)* relevant to assurance engagements, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

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Our firm applies Australian Standard on Quality Management ASQM 1, *Quality Management for Firms that Perform Audits or Reviews of Financial Reports and Other Financial Information, or Other Assurance or Related Services Engagements*, which requires the firm to design, implement and operate a system of quality management including policies or 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 AEMO's internal control procedures, have not complied, in all material respects, with the NER.

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 on compliance with the NER.

Refer Appendix A for a summary of findings.

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

Scope exclusions

Our procedures did not include any assessment of compliance or controls by market participants other than AEMO. For example, our procedures did not consider:

- information technology general controls (ITGCs) or application controls over systems that are operated by external organisations
- compliance with Service Level Agreements
- control procedures in place at those agencies not controlled by AEMO, such as Retailers, Distributors and Meter Data Providers
- whether data received by AEMO from external organisations was complete, accurate and valid beyond limited assurance tests of the procedures that AEMO perform over validating the reasonableness of this data.

In designing our procedures in relation to AEMO's processes for software management, the criteria used to evaluate compliance was AEMO's internal control procedure documents relating to ITGCs.



Procedures were therefore limited to testing of ITGCs. In addition, ITGCs have been tested on a homogenous basis across AEMO's IT environment, as agreed with AEMO, and therefore it is noted that samples selected for testing may not have been directly selected from the NEM systems.

In designing our procedures in relation to AEMO's calculations and allocations performed by the metering and settlement systems, billing and information systems and the scheduling and dispatch processes, our procedures were limited to testing of AEMO controls over the accuracy of calculations, including AEMO's controls to obtain third party certifications of systems where appropriate. Our scope did not include re-performing or validating the calculations, or certification, of NEM 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 limited assurance conclusion that relies on or assumes the adequacy of system certification.

Our procedures did not include an assessment of key processes and controls associated with Operational Technology, including, but not limited to, SCADA and Real Time Systems.

Our work is based primarily on information supplied by management and was carried out on the basis that such information is accurate and complete.

Our procedures focused on AEMO's internal control procedures in relation to compliance with the NER. We have not performed procedures over the completeness or accuracy of all information published or provided by AEMO.

Use of report

We prepared this report solely for AEMO's use and benefit in accordance with and for the purpose set out in our Master Supplies Agreement (MSA) between PricewaterhouseCoopers and AEMO dated 14 January 2022, and Description of Supplies for Market Audit Services dated 14 January 2022. In doing so, we acted exclusively for AEMO and considered no-one else's interests.

We disclaim any assumption of responsibility, duty or liability:

- to anyone other than AEMO in connection with this report
- to AEMO for the consequences of using or relying on it for a purpose other than that referred to above.

We make no representation concerning the appropriateness of this report for anyone other than AEMO. If anyone other than AEMO chooses to use or rely on it they do so at their own risk.

This disclaimer applies:

- to the maximum extent permitted by law and, without limitation, to liability arising in negligence or under statute
- even if we consent to anyone other than AEMO receiving or using this report.



Inherent limitations

Because of the inherent limitations of an assurance engagement, together with 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 throughout the specified period does not provide assurance on whether compliance with the NER will continue in the future.

A limited assurance engagement is not designed to detect all instances of non-compliance with the NER, as it is limited primarily to making enquiries, with management and staff, and applying analytical procedures. The limited assurance conclusion expressed in this report has been formed on the above basis.

Conclusion

Based on the procedures performed and evidence obtained, 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 compliance with the NER for the National Electricity Market for the year ended 30 June 2023.

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

PricewaterhouseCoopers

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

Matthew Hunt
Partner

Melbourne
12 October 2023



Appendix A – Summary of Findings

Findings identified through the limited assurance engagement are reported to AEMO management each year.

We have considered materiality when evaluating the effect of identified control weakness on our conclusion. 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 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
- The frequency and severity of control weaknesses identified in previous engagements.

The table below summarises new findings reported, and findings from prior periods which remained open throughout FY23. This includes findings reported by AEMO management or through our procedures. The items included in the table below comprise of 12 market-related non-compliances with the NER, 3 market-related control observation and 21 IT-related observations.

	Critical	High	Medium	Low
Level 1	0	1	8	13
Level 2	0	0	9	5
Level 3	0	0	0	0
Total	0	1	17	18

The table below summarises findings from prior periods which have been closed during FY23. These include 1 market-related non-compliance with the NER and 5 IT-related observations.

	Critical	High	Medium	Low
Level 1	0	0	2	2
Level 2	0	0	0	2
Level 3	0	0	0	0
Total	0	0	2	5

All findings in the table above have been agreed with management and formally reported to AEMO's Finance Risk and Audit Committee.

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 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.
High	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. (Non-compliance)
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. (Gaps in control design or operating effectiveness)
Level 3	Housekeeping matters and opportunities for improving internal controls and procedures relating to gas market operations. (Control improvement opportunities)