

MEASUREMENT AND INDEPENDENT EVIDENCE

An Electrical Reading Cannot Identify the Computation

Why net connection-point behaviour under-determines both underlying load and the equipment producing it.

RESEARCH AS AT

7 May 2026

Three findings on the limits of electrical evidence, worked from the dated CANUS submission and metrology sources no later than this cutoff.

ABSTRACT

Claims about a computational facility are routinely supported by electrical evidence. This paper establishes three limits on what that evidence carries. Net import at a connection point and underlying consumption are independent quantities: a worked case shows net import falling 6 MW while consumption does not move at all, so a claim established about one is not evidence for the other. Neither quantity identifies the equipment or the work behind it, so a claim about GPU identity, configuration or delivered service requires a separate observation that electrical evidence cannot supply. And naming an independent assessor does not establish independence; the operative test is whether the assessor can record an unfavourable or inconclusive result without the claimant determining it. Evidence must follow the proposition being decided, and a conclusion must stop where its observation stops.

01

Define the claim

02

Examine the evidence

03

Bound the conclusion

Conceptual sequence. Independent evidence does not replace the recipient's decision.

Edition and research provenance

Research as at 7 May 2026. The evidence set is the dated CANUS submission to the AEMC and fixed metrology standards; nothing later is used. Findings 1 and 2 are deductive. Company-authored research, not peer-reviewed. Not legal advice.

Research scope: Three established limits on what electrical evidence carries, with worked arithmetic. No physical trial, qualified examination method or regulatory endorsement is reported.

1. Principal findings

Finding 1 - Net import and underlying consumption move independently. At a site combining load, generation and storage, net import is consumption less generation less discharge. Any of the three can move while the others are fixed. A 6 MW fall in net import is therefore consistent with a 6 MW fall in consumption, with no change in consumption at all, or with a rise in consumption masked by a larger rise in discharge. Section 4 works the arithmetic.

Finding 2 - Neither quantity identifies the equipment or the work. A boundary reading describes power crossing a point. It does not establish which accelerators are installed, which are operating, what tasks ran on them, or whether a customer received a contracted service. These are separate propositions requiring separate observations. The inference from watts to GPUs is not available at any level of measurement quality.

Finding 3 - The identity of the assessor does not establish independence. An organisation reproducing an operator's report is not thereby independent of it. The questions that bear on independence are questions about judgement: can the assessor challenge an unsupported assumption, record missing information, and issue an unfavourable or inconclusive result without the claimant determining the answer? Independence and competence are separate requirements, and neither repairs a deficit in the other.

2. The proposition decides the evidence

A request for evidence should state the proposition it must resolve. Three propositions that are often treated as one: a site's net import stayed below a specified limit; its underlying consumption declined over an interval; a particular computing service met its performance requirement. These concern different physical subjects. Treating them interchangeably produces a conclusion broader than the observation supports.

JCGM 200 separates the quantity intended to be measured, measurement uncertainty and metrological traceability. Its definition of traceability carries an explicit caution: a traceable result is not thereby guaranteed to have suitable uncertainty or to be free from mistakes. [2, clauses 2.3, 2.26, 2.41] Two questions therefore have to be asked of any result, not one - whether it is technically supported, and whether it answers the proposition at hand.

The operative distinctions are between a declaration, an observation and an inference. A device inventory records what an operator says is installed. An electrical reading records power at a location. Neither reaches the capability of a computing service. Evidence can be strong for one purpose and irrelevant to another; narrowly worded conclusions are what keep that difference visible.

3. Claim and evidence, line by line

Claim under consideration	The evidence question	Where the inference stops
Net site import declined	Which connection point and interval do the observations describe?	A decline does not identify which internal activity changed.
Underlying consumption declined	Can generation or storage explain the net movement?	Net import alone leaves competing explanations open.
A stated electrical requirement was met	Do the observations address its boundary, duration and conditions?	A result for a different interval does not complete the assessment.
The assessment was independent	Who controlled the judgement and the treatment of contrary information?	A third-party name alone is insufficient.
Computing capability was demonstrated	Is there an observation addressing that separate service requirement?	Electrical demand does not establish GPU identity or useful computation.

Insufficient information leaves a proposition unresolved. Absence of support does not establish that a proposition is false – particularly where several physical explanations remain open.

4. The arithmetic of Finding 1

Take a facility with underlying consumption of 20 MW across two equal intervals. No generation; losses ignored so the arithmetic stays visible. In the first interval the battery supplies nothing, so net import is 20 MW. In the second the battery supplies 6 MW, so net import is 14 MW.

Interval	Underlying consumption	Battery contribution	Net import
A	20 MW	0 MW	20 MW
B	20 MW	6 MW	14 MW

The net-import claim holds: the average fell by 6 MW. The consumption claim fails: consumption was 20 MW throughout. And neither interval establishes what computing ran, which accelerators performed it, or whether any customer received a promised service.

The direction of the error matters. A party reporting the 6 MW fall as a reduction in consumption is not misreporting the number – the number is correct. It is answering a different question with it. Where the requirement concerned average net import, the distinction may be immaterial. Where it concerned underlying consumption, it is decisive.

JCGM 106 sets out decision rules that account for measurement uncertainty when judging conformity with a requirement. [3, clause 3.3.12] A live assessment would need that treatment and the applicable

conditions; the figures here deliberately omit both, and cannot determine compliance with any actual connection agreement or technical standard.

5. Where the evidence fails

The failure modes below assume mistakes and incentives, not misconduct.

Failure mode	Consequence	Question for review
Wrong boundary label	A site result is attributed to a subsystem	Does the description match the observation's subject?
Selected observation period	An unusual interval appears representative	Is the period appropriate to the claim?
Missing information	Several explanations collapse into one	Which alternatives remain unresolved?
Unsupported extrapolation	A bounded result becomes a continuing promise	Where does the conclusion explicitly stop?
Assessor conflict or error	Independent branding conceals weak judgement	Can the assessment withstand competent scrutiny?

Each of these justifies better evidence or a narrower conclusion. None justifies a second assessor at every facility. Materiality turns on the consequence of error, not on site size - and where existing evidence and judgement are both adequate, an additional assessment adds cost without adding support.

6. What follows

The three findings describe a structural limit, not a failure of practice. Electrical measurement is mature, and the parties producing these claims are not naive. But the limit has a consequence worth stating plainly: **at the point where an electrical observation is used to support a claim about computation, the observation and the claim have different physical subjects, and no improvement in measurement closes that gap.**

Two paths lead from there, and this paper does not choose between them.

The first: existing arrangements already handle it. Where the party relying on the claim is sophisticated, at arm's length, and able to specify its own evidence, it will ask for the observation that matches its proposition and reject one that does not.

The second: that capacity is conditional, and the conditions are visible in the findings themselves. It depends on the relying party knowing which proposition it needs resolved, being able to distinguish the three subjects in Finding 1, and having standing to demand the separate observation Finding 2 requires. Where a claim travels to a reader who was not present when the requirement was written - a financier, an insurer, a later purchaser - those conditions are not met by default.

Testable claim: given matched cases containing boundary substitutions, missing intervals and competing explanations, qualified reviewers working from operator reporting alone will accept a materially higher number of unsupported conclusions than reviewers given an assessment addressed to the stated proposition. That study has not been performed. It is stated here so that the second path can be tested rather than asserted.

7. Limits

The dated CANUS submission to the Australian Energy Market Commission supports a policy argument: recognition of independent measurement-based evidence alongside operator telemetry where claims are material, technology neutrality rather than a prescribed vendor, proportionality, explicit electrical boundaries, and a distinction between net connection-point behaviour and underlying load at sites combining consumption, generation and storage. [1, sections 5-7 and 9] It supports the questions in this paper. It does not establish the adoption of those proposals or the existence of a completed technical capability.

The arithmetic in section 4 is an explanatory case with stated assumptions, not a site measurement, a benchmark or a reported result. The cited metrology documents are background for the distinctions drawn; neither is evidence that any particular method complies with them. No experiment, qualified examination method or regulatory endorsement is reported, and this paper claims no priority over any person's work. Findings 1 and 2 are deductive - they follow from the definition of the quantities and hold independently of any measurement programme. Finding 3 is a statement about what the word independence requires, not a survey of what assessors do.

References

1. CANUS Technologies. Submission to the Australian Energy Market Commission: Improving the NEM Access Standards - Package 2 (ERC0394). Document dated 7 May 2026. Eight pages; page 1, sections 5-7, pages 4-6, and section 9, page 7.
2. JCGM. International vocabulary of metrology: Basic and general concepts and associated terms (VIM). JCGM 200:2012, third edition, 2008 version with minor corrections; 2012. Clauses 2.3, 2.26 and 2.41. Official URL: https://www.bipm.org/documents/20126/2071204/JCGM_200_2012.pdf.
3. JCGM. Evaluation of measurement data: The role of measurement uncertainty in conformity assessment. JCGM 106:2012, October 2012. Clause 3.3.12, printed page 6. Official URL: https://www.bipm.org/documents/20126/2071204/JCGM_106_2012_E.pdf.