Dear Sir/Madam,

Please find attached the Centre for Smart Power and Energy Research (CSPER), School of Engineering, Deakin University's submission to the Australian Energy Regulator (AER) consultation on Ausgrid's Emergency Backstop Mechanism (EBM) Cost Pass-Through Application.

Prepared by Dr Alireza Ganjovi and Associate Professor Saman A. Gorji, the submission provides technical, engineering and regulatory comamentary on Ausgrid's proposed expenditure for implementing the NSW EBM and associated CER control, digital-network and operational capabilities.

The submission supports the need for a technically robust emergency backstop to manage minimum-system-load risk and does not oppose recovery of prudent, efficient and genuinely incremental expenditure. Its central focus is whether Ausgrid's proposed investment represents the least-cost architecture capable of closing the operational-response gap identified by AEMO.

Rather than beginning with expenditure alone, the submission assesses the pathway from AEMO-required response, through existing controllable capability and the residual capability gap, to verified gap closure. Particular attention is given to the role of CSIP-AUS, complementary operational measures and existing network capability in meeting Ausgrid's required response.

The submission also examines Ausgrid's proposed digital control architecture, including the Utility Server, DERMS, PKI, flexible-export capability, data and hosting infrastructure, hardware and system integration. We recommend functional attribution of these investments to distinguish capability required specifically for the EBM from shared infrastructure and enduring digital-network capability that can support broader DER coordination and flexible-export functions.

A further focus is the balance between underinvestment and overinvestment in complementary measures. We recommend that these measures be assessed as a portfolio using verified MW contribution, response time, implementation lead time, cost, persistence and reversibility, rather than through cost-per-MW comparisons alone.

The submission also considers the treatment of internal labour redirected to EBM implementation. Where existing resources are reassigned from business-as-usual activities, we recommend traceability from redeployed labour to displaced activity and any subsequent expenditure consequence, helping prevent future duplication while recognising genuine resource substitution.

Given the capital-intensive nature of Ausgrid's proposed program, we place particular emphasis on technical acceptance testing. Commissioning and platform completion should be supported by evidence of successful integration, end-to-end operation, at-scale testing and verified operational MW. This provides a direct engineering link between regulated capital expenditure and demonstrable system-security capability.

Finally, the submission proposes architecture-based benchmarking across Ausgrid, Endeavour Energy and Essential Energy. Comparing legacy capability, capex/opex structure, control architecture, complementary measures and verified response can provide stronger regulatory learning than headline expenditure or simple $/MW comparisons.

The regulatory objective should be to ensure that Ausgrid's capital-intensive EBM program represents the least-cost incremental architecture capable of closing its AEMO-defined response gap and converting digital investment into demonstrable system-security capability.

We appreciate the opportunity to contribute to this consultation and trust that the submission will assist the AER in its assessment of Ausgrid's application.

Yours sincerely,

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From Capability Gap to Least-Cost Delivery: Assessing Ausgrid's Emergency Backstop Investment Architecture

Submission to the Australian Energy Regulator

Ausgrid-Emergency Backstop Mechanism Cost Pass-Through Application Consultation, August 2026

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1. Submission Context and Executive Summary

We support a technically robust NSW Emergency Backstop Mechanism (EBM) but focuses on whether Ausgrid's $45.3 million eligible claim converts into the least-cost, demonstrably incremental architecture needed to close AEMO's operational-response gap. The submission tests four linked issues: capability-gap definition, functional attribution of Ausgrid's Utility Server/DERMS/PKI/flexible-export stack, treatment of redeployed internal labour, and technical acceptance of a capital-intensive digital platform. The core principle is simple: expenditure should be traced from regulatory obligation to verified system-security capability.

Decision question	Required assurance
What capability gap is Ausgrid closing?	Map starting capability to AEMO requirement
Is the architecture least-cost?	Test digital and complementary measures together
Are costs economically incremental?	Trace labour substitution and displaced work
Does investment deliver sufficient MW?	Require tested and verified operational capability
Are enduring digital benefits allocated correctly?	Separate EBM-specific and wider DERMS value
What can the AER learn?	Benchmark architecture and outcomes across NSW DNSPs

2. Start With the Capability Gap, Not the Expenditure Claim

Ausgrid's EBM expenditure should be assessed against the operational shortfall it must close. AEMO's January 2026 advice assigns Ausgrid additional operational-demand requirements of about 83 MW in October 2025, 127 MW in October 2026 and 164 MW in October 2027 [1]. The licence conditions require sufficient controllable capacity for AEMO-directed minimum-system-load events and annual review of that requirement [2].

CSIP-AUS alone cannot initially fill this gap because capability accumulates through new and upgraded installations. Ausgrid therefore identified distribution-voltage management, storage, curtailment of systems above 200 kW and potentially existing solar as complementary options [3]. AEMO similarly treats emergency backstop as one element of a broader MSL-response portfolio [4]. International practice also emphasises coordinated activation and system-operator visibility when DER is relied upon for dependable services [5-6].

Therefore, the regulatory question is: what combination of new CER control, complementary measures and existing operational capability closes Ausgrid's AEMO-defined gap at least cost while preserving response speed and certainty? As illustrated in Figure 1, this requires the capability gap to be quantified first, followed by selection and testing of the least-cost intervention portfolio, with success measured by verified available MW against AEMO's required response, rather than installed capability alone.

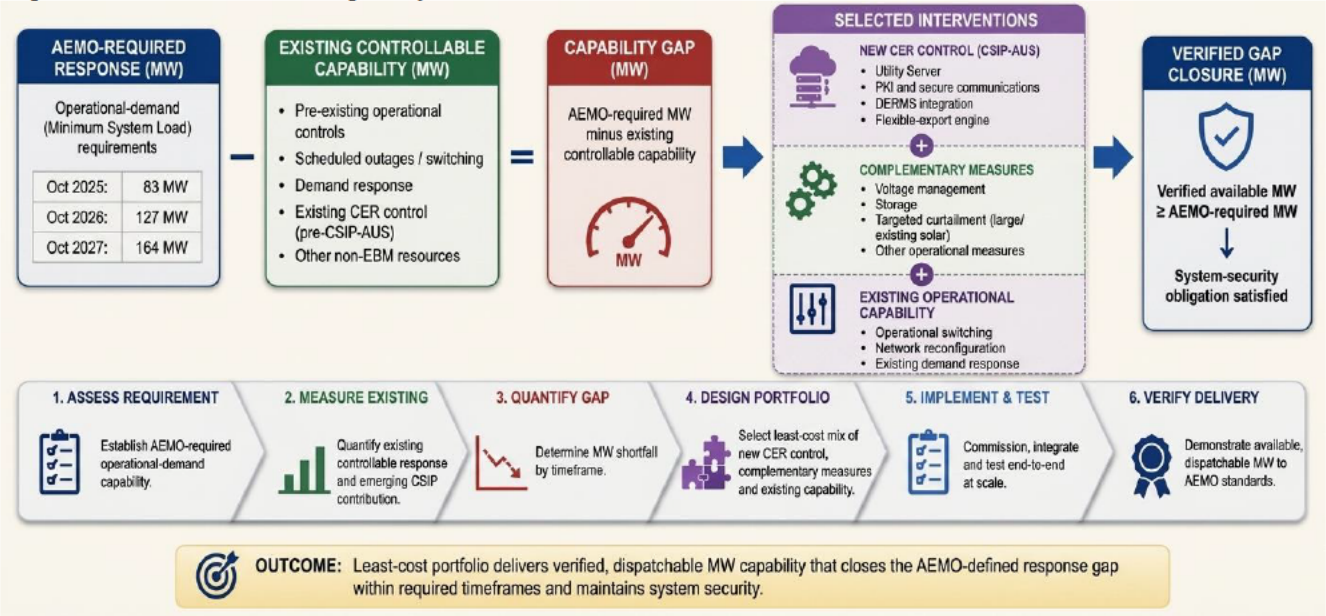

Figure 1. Capability-gap closure framework for Ausgrid's EBM, linking AEMO-required response and existing controllable capability to the residual gap, selected interventions and verified gap closure.

3. Is Ausgrid Buying the Right Architecture?

Ausgrid proposes a multi-layer control platform comprising a CSIP-AUS Utility Server, PKI, DERMS, flexible-export engine, data/hosting, hardware, business-system integration and complementary measures [2]. It forecasts $14.7 million of software and $2.2 million of hardware expenditure. The relevant question is not whether each component is

useful, but whether the combined stack is the minimum functional architecture for EBM compliance or also purchases enduring active-network capability.

Function	EBM role	Wider enduring value
Utility Server	CER curtailment	Active DER control
DERMS	Dispatch/orchestration	General DER coordination
PKI	Secure device communications	Wider CER cybersecurity
Flexible-export engine	Export-limit control	Routine hosting-capacity management
Data/hosting	Monitoring/verification	Digital-network functions
Hardware/interfaces	Platform operation	Multi-use infrastructure

This distinction is material since Ausgrid's platform supports both emergency curtailment and flexible exports [2], while DOE and DERMS capability can provide broader hosting-capacity, coordination and market/network services [7-9, 6]. Figure 2 maps these functions across the end-to-end digital control stack, distinguishing EBM-specific components from shared and enduring network capability. The AER should therefore apply functional attribution to identify which investments are required specifically for the EBM, which support multiple operational functions, and which create enduring value beyond the pass-through period.

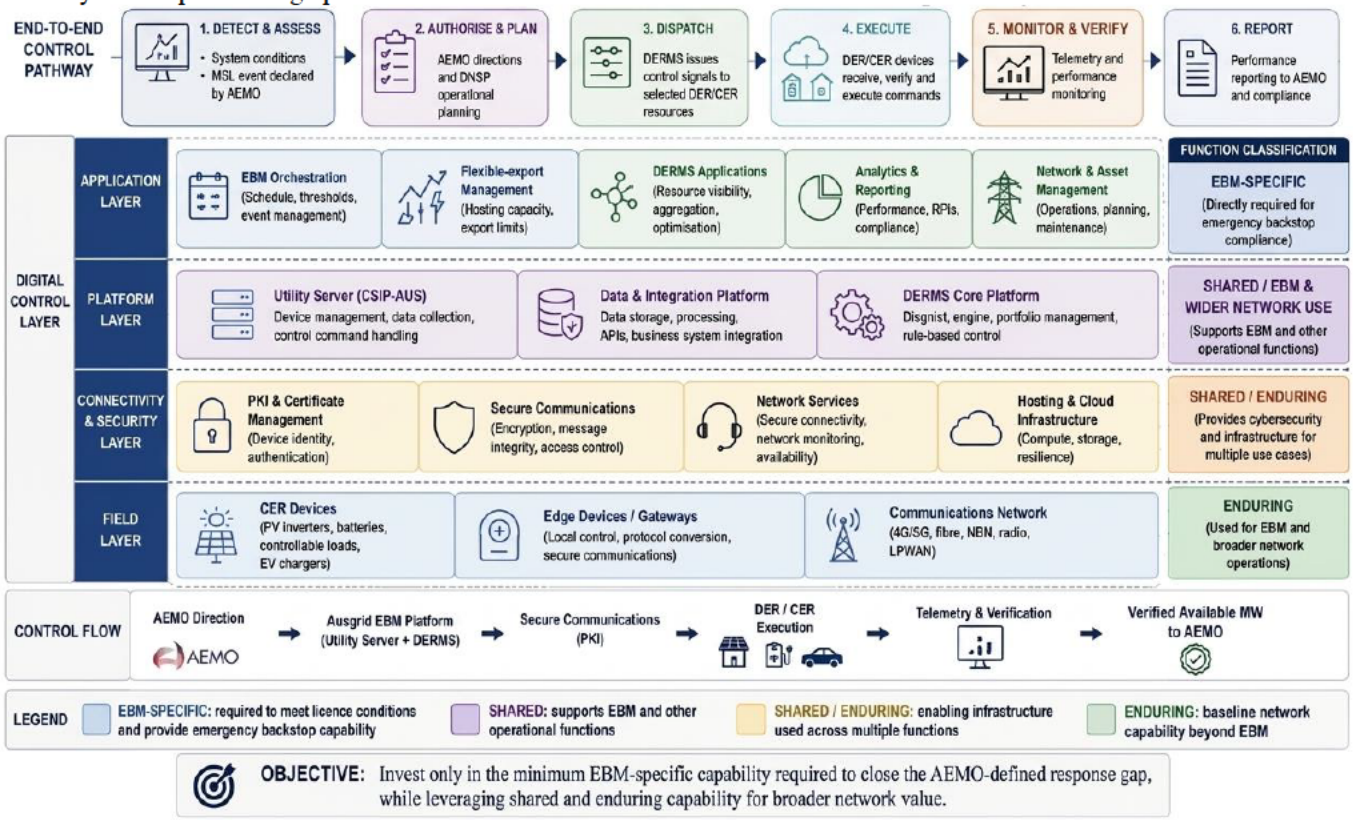

Figure 2. Ausgrid digital control stack showing the end-to-end pathway from AEMO direction to verified response, with EBM-specific, shared and enduring network functions distinguished across the architecture.

4. Complementary Measures: Enough, Too Much, or Too Little?

Ausgrid's complementary measures address a timing mismatch: CSIP-AUS capability grows progressively, whereas AEMO's required response is immediate and rising. Ausgrid earlier identified voltage management, storage and curtailment of larger or existing solar [3], but its final application limits complementary-measure contracted services to about $1.6 million because of forecast uncertainty and overinvestment risk [2].

Underinvestment risk ↔ Stranded / overinvestment risk

The AER should test the portfolio against verified MW contribution, response time, implementation lead time, persistence, customer impact, capex/opex, reversibility and dependence on future CSIP-AUS penetration. A useful screening indicator is:

$$C_{gap} = \frac{incremental\ cost\ of\ complementary\ measure}{verified\ MW\ of\ capability\ gap\ closed} \quad (1)$$

The metric should not be used mechanically. Fast, dispatchable capability may be more valuable than cheaper capacity that is slower, location-constrained or unavailable during the event [10-12]. The portfolio should therefore be large

enough to close the near-term AEMO gap, but no larger or less reversible than necessary while CSIP-AUS capability matures.

5. When Existing Staff Deliver New Obligations, What Is the Incremental Cost?

Ausgrid reports about $8.2 million of internal labour effort for EBM delivery but claims only $4.3 million; roughly $3.9 million was excluded because existing staff were redirected within current resourcing levels [2]. This is conservative in accounting terms and consistent with the principle that pass-through recovery should reflect demonstrably incremental costs [13-14].

However, zero incremental salary does not necessarily mean zero economic consequence. Redirected staff may defer, cancel or reschedule BAU work, or create later contractor/resource needs. Ausgrid itself identifies delayed programs, reprioritisation and future external resourcing as possible consequences [2]. The assurance chain should therefore be: redeployed labour → displaced activity → subsequent cost/outcome

Resource outcome	Regulatory treatment
Existing labour, no displaced activity	Exclude
Existing labour, activity permanently avoided	Exclude; document avoided cost
Existing labour, BAU work deferred	Track subsequent delivery and cost
Existing labour later replaced externally	Reconcile replacement expenditure
Incremental contract/resource hire	Assess prudency and efficiency

The test is economic traceability, not salary reclassification. Any later catch-up or replacement expenditure should remain observable so it cannot be recovered twice or attributed to an unrelated program [15].

6. From Capital Build to Operational Proof

Ausgrid's claim is capital-intensive: $32.1 million capex versus $13.2 million opex, so about 71% funds permanent or capitalised capability [2]. For a digital control platform, commissioning alone is not proof of operational readiness. The acceptance pathway should be: installed → integrated → end-to-end tested → at-scale tested → available MW demonstrated → AEMO requirement met.

Acceptance evidence should cover Utility Server availability, DERMS dispatch success, PKI authentication, communications availability, end-to-end latency, verified MW, test-failure rate, restoration and persistence of capability. Ausgrid's licence conditions already require periodic remote-curtailment testing, while AEMO emphasises at-scale operational response rather than nominal device capability [2, 4]. CSIP-AUS procedures similarly test registration, monitoring, control and communications resilience [16], and FERC requires telemetry and coordination sufficient for DER operational performance [6].

Thus, the AER should treat technical acceptance testing as expenditure assurance: capital completion should be recognised as operationally complete only when the integrated platform can demonstrate reliable, verified MW at the scale and speed required by AEMO.

7. Architecture Benchmarking, Not Just Cost Benchmarking

The NSW DNSPs face materially similar EBM obligations but propose different delivery architectures and expenditure structures. Headline claims are therefore less informative than the systems used to produce operational MW. Essential is opex-dominant and builds on its FNBC; Endeavour uses a mixed Utility Server/DOE/control and integration program; Ausgrid is capex-dominant and DERMS/PKI-centric [17-19, 2].

Dimension	Essential	Endeavour	Ausgrid
Capex/opex profile	Opex-dominant	Mixed	Capex-dominant
Core architecture	CSIP-AUS, Solar Switch, SCADA, DOE	Utility Server, DOE, integrated controls	Utility Server, DERMS, PKI
Pre-existing capability	FNBC/flexible exports	Flexible-export trial/digital programs	Existing systems/internal capability
Complementary measures	Multiple pathways	Control/operational integration	Targeted gap-closing
AEMO requirement, Oct-2027	170 MW	206 MW	164 MW
Digital-platform scope	Broad	Broad	Broad, DERMS-centric

The research question is why one regulatory obligation produces materially different technology portfolios and cost structures. Figure 3 provides a common architecture-based comparison, tracing each DNSP from legacy capability through its selected EBM architecture to delivered response. Differences should be interpreted in light of legacy systems, geography, customer density, procurement, accounting treatment, automation and complementary-measure mix, rather than attributed mechanically to relative cost efficiency. Ofgem and CEER demonstrate the value of common cost, output and smart-grid performance indicators for comparative regulatory learning [15, 20].

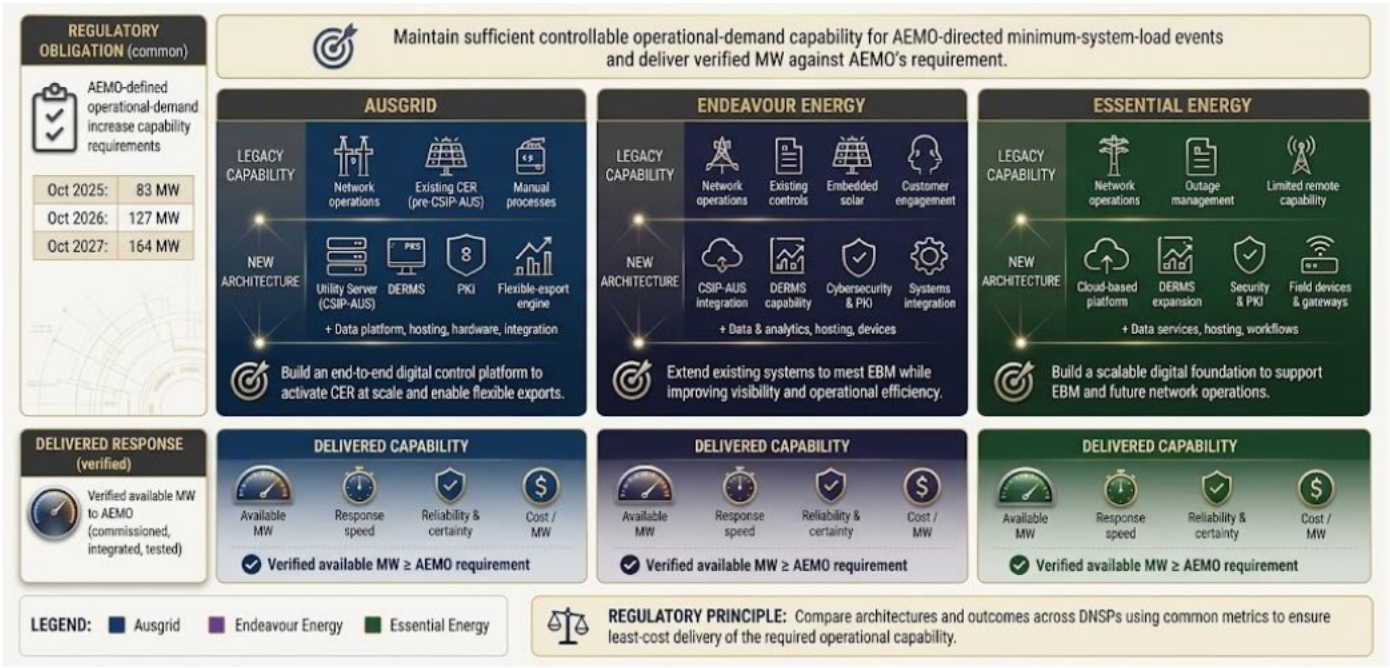

Figure 3. Cross-DNSP architecture benchmark comparing legacy capability, EBM delivery architecture and verified operational response across Ausgrid, Endeavour Energy and Essential Energy under a common NSW regulatory obligation.

8. Recommendations and Conclusion

i. Define the capability gap before assessing investment. Reconcile AEMO-required MW against existing and emerging controllable capacity [1].

ii. Test the digital architecture by function. Separate EBM-specific capability from enduring DERMS, PKI, flexible-export and digital-network value.

iii. Assess complementary measures as a least-cost gap-closing portfolio. Compare verified MW, response speed, cost, lead time and reversibility.

iv. Track internal-resource substitution. Identify displaced BAU work and reconcile any later catch-up or replacement expenditure.

v. Require technical acceptance evidence for capital expenditure. Link commissioning and integration to at-scale testing and verified operational MW [10].

vi. Benchmark architectures, not only costs, across NSW DNSPs. Compare capex/opex mix, legacy capability, control technology, complementary measures and delivered response [17, 15].

The regulatory objective should be to ensure that Ausgrid's capital-intensive EBM program represents the least-cost incremental architecture capable of closing its AEMO-defined response gap and converting digital investment into demonstrable system-security capability.

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