

Endeavour Energy Trial waiver

Project summary

In September 2023, the Australian Energy Regulator (AER) announced it had granted a trial waiver to Endeavour Energy (Endeavour) to test DNSP roll-out of around 5,600 smart meters in smart meter parts of Greater Western Sydney, the Blue Mountains, the Southern Highlands and the Illawarra region of NSW. Endeavour Energy was granted the waiver to implement the trial that was expected to improve the delivery of load management services that reduce electricity consumption at peak periods and lower electricity network costs for consumers. This allowed Endeavour to initiate a meter swap where there is no genuine fault. The object of this was to address network constraints at the lowest overall cost while maximising customer benefits through accelerating the take-up of smart metering.

This trial originates in 2020-21 as part of a Demand Management Incentive Scheme based trial that sort to transition approximately 2,850 customers in the Albion Park area to smart metering to mitigate maintenance costs. In 2020, a Letter of No Action (LONA) was provided to Endeavour to undertake the 'Albion Park Trial'. The LONA project was successfully completed, resulting in the retirement of Audio Frequency Injection Control (AFIC) at Albion Park. AFIC provides centralised load control for customers' hot water systems, but this load control can instead be performed by a smart meter at each site.

In January 2023, Endeavour submitted a second LONA request to expand this trial to address other network needs. This request was identified by the AER as a project better suited to the Regulatory Sandboxing trial waiver process, with Endeavour subsequently lodging its trial waiver application in February 2023.

Trial aims

As noted in the consultation paper for this trial, the AEMC was concurrently undertaking its [review of the regulatory framework for metering services](#) to accelerate the deployment of smart meters in the National Electricity Market. One of the aims of this trial was to provide evidence on the impacts of DNSP-led metering installations. In the Trial Waiver: Final Decision, the AER noted that we did not consider this to contradict the Metering Review rather could provide learnings relating to DNSPs acting as metering providers of last resort in circumstances where DNSP-led installations could help facilitate efficient load control solutions in particular network areas. This sought to test delivery mechanisms that were an alternative to the current framework.

The AER supported the trial due to the potential benefits that were expected to accrue to consumers. These benefits included network cost efficiencies and avoided grid augmentation costs accruing from provision of load control services, which customers receive through lower network costs than if these augmentations were undertaken. Consumers could also benefit from smart meter technology which enables access to new and innovative tariff and Consumer Energy Resources (CER) technologies, as well as providing more information in relation to energy usage.

Trial outcomes

Below is the final report as provided by Endeavour Energy. As noted by Endeavour Energy, while it was anticipated that around 5,600 smart meters would be targeted, the revised listing amounted to around 1,801 sites. In addition to the reasons cited by Endeavour Energy for this revised number of replacements, the AER notes that the AEMC final report was released on 30 August 2023, which enabled DNSPs to develop 'Legacy meter retirement plans' (LMRPs). As noted by the AEMC, this was considered the most practical option as there are far fewer DNSPs than retailers in each area, and DNSPs have detailed information on the existing legacy meter fleet (whereas retailers may not).

This is reflected in Endeavour Energy's Lessons Learnt, where it notes that:

Endeavour Energy believes the LMRP is sufficient for further targeting the retirement of its AFLC fleet and avoiding further investment in AFLC equipment in combination with other priority meter replacement factors. As such, it is believed this sandbox waiver and approach was appropriate only for a time.

The AER is also pleased to see that this project avoided investment in Audio Frequency Load Control which would have limited value to customers once the transition to smart meters has been completed. The Endeavour report also provides some potential reasoning around the lower replacement rate, including that a higher percentage of "easy" to replace meters' have already been replaced. Likely contributing to a slightly higher cost per replaced meter. As noted by Endeavour, this project in combination with broader metering acceleration, has contributed to the avoidance of up to \$3.3m of network expenditure at these network locations.

This trial was the first considered and approved by the Energy Innovation Toolkit. The AER appreciates the engagement by Endeavour Energy, our EIT project partners and those who participated in the consultation.

Contact us

To find out more about regulatory sandboxing and trial waivers, please visit <https://energyinnovationtoolkit.gov.au/>.

If you have any queries, or wish to discuss lodging a sandboxing trial waiver, please contact regulatorysandbox@aer.gov.au.

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Sandbox Trial Waiver: Off Peak Smart Meter Replacement

Final Report: March 2026



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1. Sandbox Trial Waiver Summary

1.1 Context

Endeavour leverages Audio Frequency Load Control (AFLC) to operate the controlled load hot water systems for off peak customers. In some locations these systems are at capacity, are at the end of their lives and need to be either replaced or augmented or new systems need to be installed at greenfield substation which service brownfield customers. This can incur significant network cost. Endeavour have demonstrated that there is potential for significant network cost savings by replacing these customer's meters with smart meters, instead of the costlier network augmentation and replacement of AFLC equipment.

The trial represents the continuation of an approach conducted during 2020-21 which involved transitioning approximately 2,850 customers in the Albion Park area to smart metering to avoid the costs of replacement of AFIC/AFLC equipment in the Albion Park Zone Substation. This initial roll-out in 2020 was conducted as part of the AER's Demand Management Incentive Scheme (DMIS) for 2019-2021.

Further information, including the waiver decision can be found at <https://energyinnovationtoolkit.gov.au/article/current-trials/endeavour-energy-trial-waiver>

1.2 Scope of Waiver

This Sandbox waiver was requested on the basis that there currently does not exist a method to trigger a metering replacement for a network need other than a genuine meter failure.

This sandbox waiver utilised the Metering Failure Notification (MFN) process to trigger the metering replacement upon pre-agreement of the relevant retailers to action these swaps under a commercial incentive model. The coordination of participating retailers as well as metering replacement activities were undertaken by Intellihub. Participating retailers were:

- AGL
- Energy Australia
- Momentum
- Engie
- Simply
- Sumo

It was originally anticipated that some 5600 smart meters would be targeted at the start of the waiver process. This substantially reduced by the time of commencing the project post sandbox waiver approval (Sept 2023) as well as execution of commercial agreements with Intellihub (~June 2024).

The reasons for this reduction include:

- Significant growth in smart metering in the intervening period, i.e. excluded meters already Type 4A.
- Significant volume of genuine MFNs already raised/pending in system in the intervening period.
- Reduced retailer participation than originally expected

The revised target listing amounted to approximately 1801 sites.

It should be noted that further metering replacements were undertaken through a proactive Retailer Led program. This scope was not subject to the waiver since proactive Retailer led metering did not require the use of the MFN process under the rules.

The total target sites are summarised below.

Substation / Project	Waiver Target Customer Count
NPR-000067 Western Sydney Airport 22kV	192
NPR 000078 Bradfield North ZS	134
NPR-000017 Marsden Park Stage 2	93
NPR-000532 Penrith BESS	1115
NPR 000026 Westmead Third TX	267
Total	1801

Final Target Site Counts

2. Project Outcomes

2.1 Project Completion Metrics

The metering replacements commenced in July 24 and completed in Nov 25. Of the 1801 sites which were targeted for replacement, the completed sites as well as refusals are summarised in the table below.

Substation / Project	Successfully Replaced Count	Customer Refusals (Opt Out)	Not completed (all other reasons)	Opt Out Rate (%)	Overall Swap Rate (%)
NPR-000067 Western Sydney Airport 22kV	58	19	134	9.9%	30.2%
NPR 000078 Bradfield North ZS	44	10	90	7.5%	32.8%
NPR-000017 Marsden Park Stage 2	46	9	47	9.6%	49.5%
NPR-000532 Penrith BESS	545	71	570	6.3%	48.9%
NPR 000026 Westmead Third TX	108	11	159	4.1%	40.5%
Total	801	120	1000	6.2%	44.5%

Meter replacement completion statistics

The majority of customer meters that were not successfully replaced were due to a range of reasons other than Customer Refusal / Opt Out and included:

- Already replaced to a Typ4A meter for other reasons (e.g. solar)
- Shared fuse site
- Access onsite (locked, inaccessible, flora or fauna).
- Meter Board Limitations (asbestos, space etc)
- Already had a MFN in system
- Other admin cancellations (unable to arrange with customer, vulnerable customers, life support etc).

2.2 Project Spend

The expected vs actual expenditure on meter replacement incentive payments is provided below.

Substation / Project	Expected Spend	Actual Spend (\$) based on completed sites
NPR-000067 Western Sydney Airport 22kV	\$24,000	\$,7250
NPR 000078 Bradfield North ZS	\$16,750	\$5,500
NPR-000017 Marsden Park Stage 2	\$11,625	\$5,750
NPR-000532 Penrith BESS	\$139,375	\$68,125
NPR 000026 Westmead Third TX	\$33,375	\$13,500
Total	\$225,125	\$100,125

Project Spend (replacement incentive payments)

The reduced actual expenditure vs expected expenditure is reflective of and directly proportional to the overall successful meter swap rate of 44.5%. Payments were reconciled after successful meter swaps rather than up-front based on an assumed success rate or fixed contract value.

The reasons for the lower than budgeted swap rates are provided in Section 2.1. It should be noted that further attempts to successfully swap a site for reasons such as site specific access or coordination reasons were limited to avoid per site cost escalation in excess of the agreed swap incentive rate.

2.3 Realised Benefits

The principal driver for the project was to contribute towards avoiding investment in new AFLC equipment which would have limited value once all customers are transitioned to smart meters. A summary of the current view of realised avoided investment benefits is provided below.

Substation / Project	Project Status
NPR-000067 Western Sydney Airport 22kV	Commissioning Mar 26. Avoided AFLC system cost of ~\$670k [#]
NPR 000078 Bradfield North ZS	Commissioning May 26. Avoided AFLC system cost of ~\$670k [#]
NPR-000017 Marsden Park Stage 2	Project commissioned. Avoided AFLC system cost of ~\$670k [#] realised.
NPR-000532 Penrith BESS	Network Capex Project on hold due to cancellation of BESS customer connection. It is likely a future BESS or significant load connection in future in this location realises the benefits of AFLC decommissioning.
NPR 000026 Westmead Third TX	Project still ongoing, expected to be commissioned within 18-months. Expected future AFLC system cost avoidance ~\$670k [#]

Project status and realised benefits. Note typical AFLC system cost estimates above are “as installed” and include equipment, installation, ancillary works, project management etc.

3. Sandbox Waiver Lessons Learnt

A summary of the key lessons learnt from this Sandbox Waiver is provided below:

1. **The overall successful metering replacement rate at 45% was significantly lower than anticipated.** For reference, the original Albion Park Off Peak + trial had metering replacement rates in excess of 80%. This is likely due to the factors of a more proactive customer opt out approach under the sandbox waiver, limiting replacement attempts to a single attempt as well as avoiding shared fuse sites. In the Albion Park trial, sites often required multiple attempts to successfully replace a meter, however this increased costs. Furthermore, it is likely that a higher percentage of the “easy” to replace meters have already been replaced with the natural growth in smart metering since the Albion Park trial.
2. **While replacement rate was lower than hoped, it still contributed to the end goal of reducing the need for investment in AFLC control systems at these 5 project/substation sites.** The remaining customer’s without Type4A meters still dependent on AFLC relays will be catered for through temporary off peak relay bypass (for relays that don’t fail on) until natural meter replacements occur under the AEMC’s 100% smart meters by 2030 target.
3. **Bespoke approaches to metering replacement such as these are not efficient at scale.** This sandbox approach, while contributing to avoiding investment in soon to be stranded assets, had bespoke terms and conditions which bore overheads that were high relative the volume of meters targeted. The overheads included the sandbox process itself, enacting bespoke obligations and processes including through market systems, legal and commercial agreements, meter provider and retailer coordination, customer safeguards, tracking and reporting. For the given overheads it would have been more efficient to enact a wholesale meter replacement in targeted geographic areas (with less opt out opportunity) rather than only a subset of meters for one specific benefit (i.e. a roll a truck to the street once principle).
4. **The future “size of the prize” of this sandbox approach is low in the context of subsequent metering reforms.** With the recent outcomes of the AEMC metering review which were released post the sandbox application process, there is now a pathway to relatively rapid metering

replacements through the 100% smart meters by 2030 target and the enacting of this through a Legacy Metering Retirement plan. Endeavour Energy believes the LMRP is sufficient for further targeting the retirement of its AFLC fleet and avoiding further investment in AFLC equipment in combination with other priority meter replacement factors. As such, it is believed this sandbox waiver and approach was appropriate only for a time.

4. Customer Benefits & Outcomes

The key customer benefits and outcomes from this project are summarised below:

- **Reduced network investment, lowering costs to all customers.** This project, in combination with progress on broader metering acceleration, has contributed to the avoidance of up to \$3.3m of network expenditure at these network locations.
- **While the meter replacement opt out rate was relatively high, direct customer complaints were low.** Only two customer complaints were received by Endeavour Energy's call centre early on in the process.
- **Accelerated meter replacements contribute to a range of broader customer benefits.** These benefits includes improved data for customers and the network, readiness to install solar/cer without waiting for a meter replacement, access to greater options of tariffs, safety and quality of supply benefits (where the power quality data is accessible to the network).
- **Readies the uptake of CER.** Customer's that had their meters replaced have one less barrier to the adoption of CER, however it is not possible for Endeavour to know if the meter replacement was a conscious factor in customer's subsequent decision to adopt CER.
- **Metering replacement projects face a broad range of challenges** including access issues, suitability of customers switchboards (asbestos, space, ageing, electrical safety etc), shared fuses and coordination with networks. Many of these issues are already well understood and have been surfaced through metering reviews to date. Nevertheless, these will continue to challenge efforts to reach 100% smart meters by 2030 without significant coordination and support.

