

## New Energy Storage Devices Waiver Application

*This application is for DNSPs who wish to apply for a waiver of its obligation under clause 3.1 of the Electricity Distribution Ring-fencing Guideline in respect of a New Energy Storage Device and believe they meet the criteria for a streamlined waiver as set out in Explanatory Statement to the guideline (Version 3). If applying for a waiver of obligations other than clause 3.1, a full waiver assessment process will be needed.*

*Please attach any relevant documents.*

### Applicant Information

<p><b>1 Name(s)</b></p>	<p>Endeavour Energy Network Operator Partnership (ABN <b>11 247 365 823</b>) trading as Endeavour Energy</p>
<p><b>2 Project description</b></p>	<p><i>Please provide a short summary of the battery project, including information about the number, size, and location of the batteries, and details of the services (e.g., voltage support, FCAS, or storage) that the batteries are expected to provide. Please identify which party will be providing each service and explain how the network and other services provided by the battery relate to each other. Further information and specific details can be included in an attachment.</i></p> <p><i>Please state the full legal names of any other entities that will be using the battery capacity e.g., community groups, RESPs, suppliers, retailers. Please describe the contractual relationship with each party.</i></p> <p>Endeavour Energy is undertaking the installation of 3 battery energy storage systems (BESS) at separate locations across the Endeavour Energy distribution network as part of a trial. The intent of this trial project to validate a variety network use cases for different BESS unit types in various locations.</p> <p>Endeavour Energy will use the BESS for standard control services in areas of high Customer Energy Resource (CER) penetration that have created a variety of network issues or constraints. Whilst fully justified on a network basis, the BESS trial is seeking to understand how additional value can be created and ultimately shared back to consumers via National Energy Market (NEM) participation through a market partner.</p> <p>Following a comprehensive and exhaustive retailer engagement process undertaken by Endeavour, [REDACTED] was successful in being chosen as the preferred retailer partner for the trial. By selecting an independent third-party on an arms-length basis, Endeavour Energy believes this engagement exercise complies with the Ring-fencing Guideline's non-discrimination obligations. The MOU with [REDACTED] has a minimum scope of 10 community batteries.</p>

Additional batteries may be included in future to reach a target of 1MW dispatchable capacity to provide FCAS.

████████████████████ was selected as the preferred retail partner as following conclusion of the retailer engagement process undertaken, it was assessed that ██████████████████████ had a mature proposal that fully understood and incorporated the requirements and landscape of Endeavour's proposed trial. This will help to understand the following;

- The best approaches to provides battery access to customers in future periods.
- The benefits that can be created that can ultimately including creating value for consumers and for networks to pursue options that are lower cost network options.
- The framework required to allow excess value to be shared back to customers.

In addition, it proposed an operating model that aligned with the intent of the trial. A shared outcome of both ██████████████████████ and Endeavour was that for the purposes of the trial, any excess value that is created through the trial be shared back to customers who participate, which would be via the form of direct rebates to customers from any surplus value generated from trading the battery in the market.

Under the proposed arrangements, ██████████████████████ will use the energy capacity for participation in the NEM wholesale markets at times when the batteries are not required for network support services and the units would otherwise be idle. ██████████████████████ use of this capacity will be constrained by dynamic operating envelopes set by Endeavour, which will prioritise network needs. All the costs for operating the batteries, integrating the batteries into the market, trading and integration are being provided by ██████████████████████ without charge. In addition, ██████████████████████ will not retain any share of the revenue generated from these activities. All revenue generated will be distributed to customers and participants into the program. Refer to *Confidential Attachment B* which contains details of the MoU between ██████████████████████ and Endeavour which further explains the intent of this trial.

Under the trial, Endeavour Energy will use the BESS to charge during the day to 'soak up' large volumes of solar PV export and selectively discharge at required times to support the security and reliability of supply to Endeavour's customers.

This is expected to achieve the following network support activities and provide valuable learnings on how effective BESS units are at achieving network services whilst a battery balances contestable services;

- prevention on network overloading,
- supporting network voltage,
- the provision of phase balancing, and
- testing the reduction in minimum and maximum demand.

Outside (or simultaneously) with times that the BESS units are being used for network support, the BESS capacity will be available for use by ██████████████████████ in accordance with the terms of an arms-length commercial arrangement.

It is expected that these learnings will enable Endeavour Energy to better understand the reliability and resilience of BESS units in providing network support services

Following commercial discussions with ██████████████████████, it is expected that ██████████████████████ will use the capacity for the following purposes.

- provision of storage services to consumers who are seeking to participate in a Community Battery trial,
- participation in wholesale energy arbitrage
- provision of ancillary services, and other emerging markets, and
- sub-leasing battery capacity to other third parties to provide a storage solution.

Any additional value generated by Endeavour Energy will be provided back to customers who participated in the scheme. This is designed to incentivise further customer take up of CER to proactively solve future network needs.

Refer to *confidential* Attachments A1, A2 and A3 for details on the site locations, battery sizes, site details and applications that each BESS is being expected to provide. Refer to *confidential* Attachment C for the letter of support from [REDACTED]

### 3 Reason for waiver

*Please provide the rationale for supplying excess capacity of the battery to third parties. Please also provide, for each battery, an estimate of the expected annual utilisation of the battery capacity for each different service identified above. This should include an indicative estimate of energy volume in kilowatt hours and capacity in kilowatts for each service by time of use over a representative summer and winter time period.*

#### **Rationale for supply excess capacity to third parties**

Endeavour Energy's BESS trial is intended to gain knowledge about how to maximise the overall benefits of BESS considering commercial considerations, cost allocation, risk apportionment and varying chronological and geographical benefits a BESS can offer when operated with a third party within a network dynamic operational envelope.

There is currently a significant under-investment by market participants in distribution connected energy storage. This is particularly the case across the Endeavour Energy network. As such, there are limited to no opportunities with external parties to test and assess whether grid-connected LV batteries are able to more effectively achieve these network management issues.

Endeavour Energy conducted deep discussions with a variety of third-party market participants to gauge interest in providing a contestable network support service using batteries connected to the low voltage network. However these discussion indicated that there is a lack of interest in this due to the following reasons; availability and cost of land required to place the batteries, practicality of easements and other access arrangements, geographic spread of network issues, need for customer spread and customer density to access a viable market for these services, and size and limited revenue opportunities.

There are a range of potential distribution connected BESS ownership models, including commercial third party, behind the meter, community funded, and commercial DNSP owned. However, analysis and discussions have shown that the commerciality of such investments is largely dependent on the ability to value stack services using the assets, and unfortunately any developed models for value stacking are immature and the trade-offs largely unknown at present.

The proposed waiver will enable Endeavour Energy to gain valuable learnings into the customer, system, and overall societal benefits of a currently immature value stacked energy storage market.

Endeavour Energy is of the strong view, that considering the size of, and urgent need for, energy storage, all models should be understood and explored, with the learnings shared publicly to support the development of innovative energy storage markets and to determine how the most competitive market models can be established.

#### **Estimate of the expected annual utilisation of the battery capacity**

The utilisation of the BESS for each service will be a learning of the trial. One of the goals is to develop knowledge about how the asset value can be maximised by multiple parties. The knowledge about when and how services could be offered by various parties and the trade-offs for providing those services will be a feature of the trial outcomes.

It is also expected that the outcomes of this trial will better inform Endeavour Energy about the viability and use cases of BESS units to deal with a variety of network issues, including network overloading, reverse power flow and power factor correction issues at localised areas of the network.

These findings will enable us to approach the contestable market for batteries in the future with clear parameters and requirements of the network need to enable to market to respond by providing an efficient, cost effective service.

#### **4 Period of the waiver**

*What is the proposed start date of the waiver? - What is the proposed end date of the waiver?*

*If the proposed end date is a date later than the end of the DNSP's next regulatory control period, please provide supporting information about the life of the relevant battery assets.*

Endeavour Energy proposes that the waiver commences immediately upon commissioning of each BESS and expires on 31<sup>st</sup> December 2037, which aligns with the estimated life of the BESS.

### **Supporting information for waiver application**

*This section is to provide information that will assist the AER's assessment of whether the benefits outweigh the costs for the battery project.*

#### **5 Costs if waiver not granted**

*Please state and provide details of the costs of complying with the ring-fencing guideline if the waiver is not granted, both for the DNSP and for consumers, including non-financial costs. Please include details of the extent to which the battery capacity will still be installed without the*

*waiver, and of how (if at all) the DNSP would use the battery in the absence of the waiver.*

If the AER denies the ring-fencing waiver, Endeavour Energy will be unable to proceed with the trial in its current state. While it would be able to use the BESS units for standard control services, it will not be able to test the application of the BESS units to the full extent intended, including providing storage services to residential and commercial customers. It is expected that if this waiver for trial purposes is not approved, it will lead to a direct reduction of customer benefits of ██████ (in present value terms) over the period of the waiver and the useful life of the batteries. Refer to Attachments A1, A2 and A3 for further details.

In the absence of an established value-stacked market, investor hesitancy will hinder the establishment of a market in time to address the impacts of rapidly declining minimum demand on the security and reliability of our network. If the waiver is refused the benefits described in section 6 below would not be realised, market benefits through shared trial learnings not being realised; and Endeavour Energy would need to identify alternative solutions to address the emerging network management challenges impacting Endeavour Energy's common distribution services.

This would ultimately result in two outcomes; higher energy prices for customers due to full cost-pass through of storage systems and associated frequency and voltage control issues, and the potential for reduced network performance in the long term due to DNSP inability to manage these levels of DER penetration.

This trial is needed to determine how to create value to consumers on the network and to understand additional impacts and benefits can be realised due to high levels of DER penetration, and how such solutions can provide value to customers.

**6 Benefits if waiver granted**

*Please state and provide details of the benefits, including non-financial benefits, that are likely to result from the granting of the waiver (and, particularly from the supply of the excess capacity by the DNSP to a third party), both for the DNSP and for consumers.*

*Please provide a clear and detailed explanation of how granting the waiver would contribute to the achievement of the National Electricity Objective.*

*We are particularly interested to understand if there are additional benefits the battery may provide for consumers experiencing vulnerabilities. Please describe.*

The National Electricity Objective is to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to:

1. price, quality, safety and reliability and security of supply of electricity; and
2. the reliability, safety, and security of the national electricity system.

Low voltage grid-connected batteries are a unique, and innovative, opportunity to provide additional storage uptake in the NEM to keep pace with the growth of intermittent renewable generation. They will complement transmission-connected and customer-connected energy storage systems to open up a new channel for storage to flourish in the NEM.

By granting the waiver for Endeavour Energy to partner with a third party to install and operate BESS units across its network, the NEO will be promoted as the proposed use of the BESS units:

- will avoid or defer augmentation in constrained parts of the network and, if successful, in future could reduce the costs to consumers associated with addressing network constraints;
- will reduce export curtailment and increase customers' ability to export their excess energy; and
- Will provide additional value to customers by ensuring that net benefits generated will be passed through and therefore reduce the cost of power to customers.

The Energy Security Board has acknowledged that regulatory arrangements must evolve to enable DNSPs to effectively manage the impacts of two-way energy flows while continuing to deliver electricity safely, securely, and reliably.

We consider a trial of BESS utilisation for both distribution services and other services would produce the following benefits:

1. The ability to test solutions for key concerns raised by customers in relation to excess solar on the distribution networks. Such solutions may include a 'solar sponge' tariff which will encourage distribution network utilisation during the daytime period as a mitigant to emergent system impacts caused by increased solar PV generation. Additionally, there may also be opportunities for retailers to develop customer product offerings with any contracted excess capacity. This will inform engagement as part of future potential tariff structures.
2. The provision of robust and beneficial evidence to inform the development of a mechanism to allocate costs and prevent cross-subsidisation considering future variations in use. As noted by the AER in its final electricity distribution Ring-fencing Guideline Explanatory statement, there is currently no well-established approach for how much of a battery asset should be assigned to the RAB where it is not intended solely for network services.

As also noted by the AER, batteries are a new technology where the potential split between use for network distribution services and other contestable services is currently unknown and the use of a particular battery may well change over time.

While mitigation of the risks to the safety and reliability of the Endeavour Energy network is a key driver for our proposal, we acknowledge that there is currently no explicit prohibition on DNSP investment in energy storage for network support, nor is it imperative that DNSPs own the storage used to provide such support.

However, the waiver will enable us to gain valuable learnings into the customer, system, and overall societal benefits of a currently immature value stacked energy storage market, that includes DNSP owned storage. Importantly, we consider that Endeavour Energy's ownership of the BESS can demonstrate through trial learnings:

1. the shared value of DNSP connected energy storage to a hesitant market
2. de-risking entry for private investors; and
3. informing regulatory decisions to improve the value that can be realised from DNSP connected energy storage, and encourage the market to grow

## **Evidence demonstrating that the risk of cross subsidisation is sufficiently addressed or does not arise**

*Applications that sufficiently address risk of cross subsidisation or where the risk does not arise could be eligible for the streamlined waiver process.<sup>1</sup>*

### **7 Cost Allocation<sup>2</sup>**

*Please provide the total cost of the battery project.*

*Please provide details of how the cost of the battery project is being funded, including (as relevant) the amounts that are being funded by: opex; capex; DMIA; grant; other external funding (please describe).*

*What cost allocation method is the DNSP proposing to use to allocate costs between the DNSP's own uses of the battery capacity and the supply of the excess capacity to a third party. How will the risk of cross subsidisation be addressed? Will the battery assets be included in the RAB? If yes, please provide details of the extent to which this will occur.*

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<sup>1</sup> AER, *Electricity Distribution Ring-fencing Guideline – Explanatory Statement (Version 3)*, p 29-31.

<sup>2</sup> For information on cost allocation methods, see AER, *Electricity Distribution Ring-fencing Guideline – Explanatory Statement (Version 3)*, p 35-36.



The cost of the 3 BESS units is expected to amount a total installed cost of [REDACTED]. The proposed cost allocation to the regulated asset base is as follows:

[REDACTED]

Site	Battery Capacity	Total CAPEX	RAB CAPEX	% RAB Allocation	Unregulated Investment (by Endeavour Energy)	Network Benefits
DS 29829 Steeltrap Dr Bungarribee	30kVA 79kWh	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
DS 43480 Sovereign Ct Shellharbour	30kVA 79kWh	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
DS 20762 Emily Ct Bowral	30kVA 79kWh	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<b>TOTAL</b>		[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<b>SITE AVERAGE</b>		[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

The BESS units will be used to provide standard control services on Endeavour Energy’s network, namely providing peak load management during hot day events, and solar soaking and reactive power support to improve hosting capacity. The capital expenditure that will be included in the RAB will be the net of the cost of installing and operating the BESS units. Refer to Attachments A1, A2 and A3 which detail the requested marginal CAPEX that will be spent to be added to the RAB.

Allocation of CAPEX will be allocated using the methodology prescribed above, total equipment costs are based on batteries acquired through a competitive procurement process undertaken to ensure BESS units are bespoke for site needs. The batteries will provide network benefits including improved hosting capacity, improved power quality, and better network resilience and reliability by alleviating network overloading. The value of these benefits is outlined in the table above.

We will seek to minimise OPEX costs through long term O&M arrangements for the units to provide certainty around the life-cycle operational costs of the units. This will ensure that there will be consistency between lease payments received and the cost of maintaining the units.

Accordingly, any associated ongoing costs will also be included in Endeavour Energy’s regulatory operating costs consistent with the principles of our approved cost allocation methodology.

**8 Process to engage third party suppliers**

*What is the process for testing the market for third-party suppliers for network support? Please describe the process undertaken, if a specific process was undertaken in relation to the network need addressed by these batteries and provide links or documents as supporting evidence.*



**of network services<sup>3</sup>**

Broad engagement and procurement activities with the competitive market has demonstrated there is currently no established market for distribution connected batteries nor a market for utilising behind the meter batteries for network support.

As part of this trial, Endeavour Energy approached the market directly in early August 2021, to understand the viability of offerings for non-network services through BESS units as an alternative to network investment for the proposed locations for our community battery trials. These battery sites are at locations where the estimated cost of addressing the identified need fell below the threshold at which a RIT-D is required. All retailers who responded were invited to further discussions to understand the intent of the trial and unpack their appetite for the project.

While we have received some market response, we have been unable to contract any energy storage due to a combination of lack of interest, absence of commercial value, the targeted nature of the distribution needs and the associated network requirements.

Third parties who Endeavour Energy engaged with around potential provision and partnership to procure Network Support Services and Community battery Storage Services included.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

In addition to this, Endeavour Energy reached out to solicit an interest in partnering or discussing these options to the following parties who declined to participate/ respond.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Some comments and feedback received included Endeavour Energy paying third party providers to subsidise batteries. Other feedback indicated a hesitancy to invest unless concrete provision of value stacks could be provided to underwrite and third-party investment. Endeavour Energy did not consider it reasonable to subsidise or underwrite third party investment for batteries in addition to procuring network support services from these batteries as it did not meet the National Electricity Objectives.

However, following this market engagement process, it was assessed that [REDACTED] could provide a partnership offer with Endeavour that would assist the trial in achieving its objectives, and creating value that could be passed onto customers on the Endeavour network. Its proposal was

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<sup>3</sup> AER, *Electricity Distribution Ring-fencing Guideline – Explanatory Statement (Version 3)*, p 34-37.

selected as it was determined as the one which could guarantee as much accretive value being passed back to Endeavour Energy customers.

Other proposals were focused on using any accretive value created being absorbed by retailer and not having excess value passed back to customers.

In addition, retailers were unable to communicate bandwidths or estimates for network support payment OPEX to enable Endeavour Energy to benchmark viability of procuring network support services to accompany the trial to reduce the cost to customer (this is true, EL did propose owning capital and leasing to EE for network support but did not quantify).

Our request to engage with the market for these services, continues to remain active via our Network Consultation for RIT-D projects and Requests for Demand management and network Support Services. The agreement with [REDACTED] is not exclusive, and other retail partners will be considered prior to any agreements with beyond the trial scope.

**9 Any other information**

*Please provide any additional information that you would like considered as part of your application. This could include, for example, details of any additional measures to reduce any identified risks with the project, and of stakeholder engagement undertaken.*

*Please also describe any unique features associated with this project and any broader observations about the costs and benefits to the project.*

The learnings from the proposed trial will be shared to inform the development of markets for the provision of these services including through, evidence based regulatory change necessary to give effect to such markets as required. Specifically, through this trial we are seeking evidence of:

1. Whether distribution connected batteries effectively value stack all the upstream benefits such as frequency response, generator ramping, transmission investment offsets, and voltage stability, while operating within distribution network envelopes and maintaining a safe, reliable distribution network.
2. The role of dynamic operating envelopes to support DER operation within local level and overall system constraints, and the commercial benefits they provide to third parties.
3. Whether batteries can contribute to deferred network augmentation in areas of high solar penetration, including avoiding the need to build our distribution network to allow energy flow into the transmission network during peak PV export, only to return at time of peak demand.
4. The extent to which distribution connected batteries can reduce network losses by storing energy generated locally.
5. The level of capacity required to fulfil network service requirements, when that capacity is likely to be required, and therefore what the nature of excess capacity is likely to be. Importantly, these insights will be of benefit, not only to Endeavour Energy, but to the development of

contestable markets for the provision of value stacked energy storage services.

6. Whether installing batteries in the distribution network at scale (i.e., in modules greater than the current network need) is the most beneficial outcome.
7. The customer benefits that distribution owned batteries can provide when considering the operational practices and policies of batteries owned and operated by the distribution business and the impacts this has on the ability to stack commercial market values under the existing and potential future market frameworks.
8. Trade-offs that distribution connected batteries will need to manage to effectively support distribution, transmission, and generation needs while operating within the confines of distribution network limitations, especially dynamic operating envelopes, and voltage constraints.
9. How the impacts of transmission and distribution use of system charges on distribution connected batteries impacts the overall economic benefit, which will inform future tariff development when customers transition from being load only to load and dispatchable generation.
10. The potential barriers to installing batteries in the distribution network, including council approvals, access to land, logistics, and community acceptance.
11. How connection policies, connection standards and processes can be improved to integrate energy storage more efficiently and expeditiously into the distribution network in a safe and commercially viable manner.

**Please note that, if approved, the following conditions are likely to apply:**

- Ex-post public sharing of information about the battery (e.g., location(s), size, status of the project (trial or full scale roll out), intended purposes and uses, approved cost allocation method, and a key contact for external stakeholders if they wish to discuss the project further) and any useful learnings from the battery usage that will support the battery market.
- Provide on an annual basis a comparison of the uses (volume and frequency) of the battery that confirms the different uses of the battery (e.g., that was provided in the application), and an explanation of any differences between the two. The independent assessor, as part of annual ring-fencing compliance assessment to confirm the comparison is accurate.
- If some of the cost of the battery is included in the RAB, as part of annual ring-fencing compliance assessment, the independent assessor to verify that the cost allocation method in the waiver has been applied between the services/uses.