



# Memorandum

## Response to AER on Community Battery Waiver

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To: Jaxson Smyth – Policy Officer, AER

Copy to: Colin Crisafulli – Head of Network Regulation, Endeavour Energy

From: Julie Romanet-Perroux – Head of Future Grid, Endeavour Energy

Date: 20<sup>th</sup> January 2023

### **Purpose**

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To respond to questions from the AER on the Endeavour Energy Community Battery Waiver application.

### **Background**

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Endeavour Energy made an application for a Community Battery Waiver on the 15<sup>th</sup> of December 2022. AER has responded with a request for clarification on the cost benefit modelling in the application. The clarifications requested by the AER are as follows:

- Estimated network benefits – the proposed RAB allocation amounts are closely linked to the estimated network benefits for each project. Therefore, we should be satisfied that these benefits have been estimated prudently. For each project, please provide a short summary of your rationale for the input assumptions used to estimate the following types of network benefits (in each cost benefit model):
  - Curtailment – the monetary value of avoided curtailment, volume of avoided curtailment (kWh) and calculation of \$ curtailment value in each year.
  - Failure to operate – technical assumptions including outage durations, probability of outage, load share etc.
  - Long run marginal costs – how has the LRMC (\$/kw/pa) been derived? What is the project-specific benefit?
- Period of waiver – the application proposes that the waiver expires on 20 June 2034, aligning with the estimated life of the BESS. However, each cost benefit model uses a 15-year analysis period (to 2037) to estimate network benefits. Please confirm that correct waiver period and cost-benefit analysis period.
- Estimated non-network benefits – in considering the reasonableness of the proposed RAB cost allocation we should also understand the nature of the non-network benefits and whether they are proportionate to the proposed costs (as they are for network benefits).
  - What is the estimated value of non-network benefits? (Associated with the retailer partner's proposed use cases)
  - How will these benefits be distributed? Will they accrue only to the retailer partner and its customers?

Endeavour Energy’s response is outlined in the following sections of this memorandum.

**Estimated Network Benefits**

The Community Batteries 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 export hosting capacity. The methodologies used to calculate the network benefits of the batteries follow established industry practices and AER Guidelines. This section provides an outline of the methodologies used to calculate Avoided Curtailment Benefits, Failure to Operate Benefits and Long Run Marginal Costs.

*Avoided Curtailment Benefits*

The following methodology was used to calculate avoided curtailment benefits:

1. The kWh curtailment values were taken for each site between 2023 and 2037, based on DER enablement modelling prepared for Endeavour Energy’s 2024-2029 regulatory submission
2. Curtailment value figures were applied using c/kWh rates from the AERs Draft Export Curtailment Value Methodology paper
3. The NPV of the result was taken as the benefit from the community batteries – on assumption that 100% of curtailment could be avoided through real and reactive power dispatch. The avoided curtailment values derived from this methodology are summarised in Table 1.

Table 1. Summary of Avoided Curtailment Values

Project	Volume of Avoided Curtailment 2023-2037 (MWh)	Value of Avoided Curtailment (\$)
DS29829 Steeltrap Dr, Bungaribee	64.9	██████████
DS20762 Emily Ct, Bowral	480.4	██████████
DS43480 Sovereign Ct, Shellharbour	609.0	██████████

*Failure to Operate Benefits*

The following methodology was used to calculate avoided risk cost / benefits from failure of the distribution substation:

1. In the year the substation reached 120% overloading, and thereafter, there is an increased the risk of outage from LV fuse failure, as LV network overloading typically occurs prior to failure of the distribution transformer. The chance of LV fuse failure was estimated to be 10%, and this continues to present as a risk unless mitigated by LV augmentation works.
2. In the year the substation reaches 120% overloading, there is an estimated 5% chance of distribution transformer failure. This continues to present as a risk unless mitigated by distribution substation augmentation or uprate works.
3. Failure to Operate Benefits do not factor in any fault and emergency rectification works. It is assumed that supply can be restored to customers within the times defined in Table 2. through LV back feeding and fuse replacement.
4. Distribution substation augmentation, uprate or installation of a battery can eliminate the risk cost associated with distribution substation overloading.

Table 2. Summary of Failure to Operate Input Values

Project	Year of Failure	Outage Duration from LV Fuse Failure	Outage Duration from Transformer Failure	Value of Failure to Operate
DS29829 Steeltrap Dr, Bungaribee	n/a	n/a	n/a	■
DS20762 Emily Ct, Bowral	2031	2hrs	4.7hrs	■
DS43480 Sovereign Ct, Shellharbour	2029	2hrs	4.7hrs	■

Please note we have identified an error in the cost benefit analysis for the DS29829 Steeltrap Dr, Bungaribee Site in which ■ was incorrectly attributed as a failure to operate risk cost value. There is a ■ risk cost value for failure to operate at this site, as the substation is not forecast to experience overloading. The waiver documents have been updated to amend this error.

*Long Run Marginal Costs*

The following methodology was used to calculate the long run marginal cost values:

1. LV kWh p.a. unit LRMV values consistent with the Endeavour Energy – Annual Distribution Pricing Proposal 2022-2023 – 31 March 2022.
2. The per site LRMV was calculated assuming the batteries can lead to long term avoided network augmentation equivalent to the Battery Dispatch Capacity. This is summarised in Table 3.
3. All three batteries in the waiver application have the same capacity thus the same LRMV value is derived for each site.

Table 3. Long Run Marginal Cost Values

Project	LV Unit LRMV Value (\$/kW p.a.)	Battery Dispatch Capacity (kW)	Per Site LRMV Value 2023-2037
All 3 Sites	■	■	■

**Period of the Waiver**

The cost benefit analysis period proposed by Endeavour Energy is based over a 15-year period out to 2037 consistent with the estimated lifespan of the batteries. Endeavour Energy proposed that the waiver should expire on the 20<sup>th</sup> of June 2034 to align with the end of the determination period, this can be adjusted to align to the cost benefit analysis period as per feedback from the AER. It is proposed to revise the waiver expiry date to the 31<sup>st</sup> of December 2037; the waiver document has been updated accordingly.

## **Estimated Non-Network Benefits**

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The Community Battery trial 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 outcomes below are provided for information but are unregulated or [REDACTED] matters.

Presently there are 3 main non-network use cases for the community batteries that are being explored by the partnership with [REDACTED]:

- Frequency Control Ancillary Services
- Community Storage Services
- Wholesale Energy Arbitrage

Revenues from regulated and unregulated use cases will not exceed the trial costs as a stand-alone initiative because of the limitations on the actual revenue that can be derived in the trial due to its small scale, and the high installation cost of the batteries. However, the trial will develop understanding of the non-network use cases, and the battery operation methodology to maximise revenues. This will ensure that the value streams are fully understood, and a positive business case can be developed to support any regulated and unregulated investment in community batteries beyond the trial.

### *Frequency Control Ancillary Services*

The technical, operational, and commercial requirements for the provision of Frequency Control Ancillary Services (FCAS) will be explored during the trial. However it will not be possible for [REDACTED] to provide FCAS in the current scope of the trial, as the batteries deployed will have a total aggregate dispatch capacity of less than 1MW – the minimum capacity required to provide FCAS.

### *Community Storage Services*

The trial will establish Community Storage Services program to demonstrate customer interest. To participate customers will pay a fee of [REDACTED] to access the batteries and will receive a monthly rebate equivalent to the energy they 'import' and 'export' to the batteries. Noting that these are modelled energy flows, and the trial will not involve real settlements between the Community Batteries and customers. Up to 120 customers may be able to participate across the 3 trial community battery sites identified in the waiver. The program will be accessible to all customers, including non-solar customers, in the local area surrounding the batteries and customers will not need to change their retailer to participate.

Customers can expect to receive between [REDACTED] in net benefits by participating. Actual benefits will vary between customers depending upon the type of tariff they are on with their current retailer, and the level usage of the community battery. Assuming an average net rebate to customers of [REDACTED] it is estimated that total rebates to customers will amount to [REDACTED] for the 3 trial sites in the waiver (refer further below).

### *Wholesale Energy Arbitrage*

The only not non-network value stream that is fully accessible in trial will be Wholesale Energy Arbitrage. It is estimated that Wholesale Energy Arbitrage will provide gross revenue of between [REDACTED] per kWh p.a. of installed capacity. The actual revenue that can be realised from Wholesale Energy Arbitrage will depend on the available capacity of the batteries when not used for network need, electricity market conditions, and development of robust operating methodologies to maximise revenues in this value stream (where they do not impede customer network benefits). These will be learning outcomes of the trial.

The revenue from Wholesale Energy Arbitrage will contribute towards the costs of running the Community Storage Services program. It is estimated that gross Wholesale Energy Arbitrage revenue will amount to between [REDACTED] for the 3 trial sites in the waiver. This revenue will be shared directly with participating customers via monthly rebates.