

17 May 2022

Kathie Standen  
Executive General Manager  
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Australian Energy Regulator  
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Dear Ms Standen

**Energex's waiver application against the Australian Energy Regulator's Ring-fencing Guideline – 35 pole and ground mounted energy storage devices**

Under the *National Electricity Rules* (NER) Energex Limited (Energex) must comply with the Australian Energy Regulator's (AER) Electricity Distribution Ring-fencing Guideline (the Guideline).<sup>1</sup> The Guideline permits Energex to apply for a waiver of the legal separation obligations. Energex is seeking a waiver for up to 35 pole and ground mounted energy storage devices under the streamlined waiver process.

The trial was initiated by Origin Energy. Origin Energy approached Energex to collaborate on this trial of pole and ground mounted energy storage devices to test, develop and participate in innovative energy supply solutions that maximise the customer and market benefits and reduce the risks associated with traditional poles and wires investments.

As part of this trial, there is an opportunity to include metering in the design of the pole top battery. This will result in metering installations falling within Energex's exclusion zone. Exclusion zones are a minimum safe distance that must be kept from powerlines to reduce the risk of electric shock. Only authorised persons may access an exclusion zone. For this reason, at a later date Energex intends to submit an additional waiver application seeking to be responsible for the provision, installation and maintenance of the metering installations that are designed into the batteries and that fall within the exclusion zones.

Energex looks forward to providing continued assistance to the AER in considering our attached application. Should you require additional information or wish to discuss any aspect of this application, please do not hesitate to contact myself, or Alena Christmas, Policy and Regulatory Reform Specialist, on 0429 394 855.

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<sup>1</sup> Clause 6.17.2.

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**Energex Limited**  
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Yours sincerely

A handwritten signature in black ink, appearing to read 'N Roscoe', written in a cursive style.

Nicola Roscoe

**GM Strategy Regulation**

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***Encl: Energex's streamlined waiver application and Origin Energy's letter of support***

## 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

1	<b>Name(s)</b>	Energex Limited (Energex)
2	<b>Project description</b>	<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>Installation of up to 30 pole and 5 ground mounted low voltage (LV) connected battery energy storage systems (BESS) at various locations on the Energex distribution network to test network use cases and National Energy Market (NEM) participation through a market partner.</p> <p><b>Individual Battery Size:</b> 30kW / 60kWh</p> <p><b>Location:</b> Ipswich suburbs - Booval, Redbank, and Goodna</p> <p><b>Details of services and parties:</b></p> <p>Energex were approached by Origin Energy (Origin) to participate in a jointly funded project of up to 35 pole and ground mounted BESSs connected to the LV network. The purpose of which is to</p>

explore customer, market and network benefits, while also investigating potential business models.

Energex will use the BESSs for common distribution services in areas of high distributed energy resource (DER) penetration.

Origin intends to use the BESSs' excess capacity for providing general market services as well as any other customer storage offers. Importantly, Origin's use of the excess capacity will be constrained through dynamic operating envelopes set by Energex. These dynamic operating envelopes prioritise network needs of capacity, while voltage is being managed through inbuilt automated battery settings.

Under the proposed arrangement, Energex and Origin will explore how the BESSs charge during the day to 'soak up' solar PV export on LV networks, while concurrently supporting the security and reliability of supply to Energex's customers through, among other things, supporting network voltage, the provision of phase balancing and testing the reduction in minimum and maximum demand. The stored energy in the systems will then be available for use by Origin in accordance with agreed commercial terms and conditions. This arrangement will allow Origin to participate in wholesale energy arbitrage, ancillary services, and other emerging markets, including customer offers, further benefiting consumers through lower overall energy costs.

**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**

The goal of the trial is to gain knowledge about how to maximise the overall benefits of LV connected BESSs taking into account commercial considerations, cost allocation, risk apportionment and varying chronological and geospatial benefits a BESS can offer

when operated with a third party within a network dynamic operational envelope in the LV network.

The ARENA's Report, Grid vs Garage<sup>1</sup>, prepared by AECOM, indicated that BESS on the LV network provided the greatest benefit. However, these benefits were offset by the need for increased volume due to the smaller size.

Exploration of distribution network connected LV BESSs is warranted due to the unprecedented adoption of roof top solar photovoltaic (PV) which primarily connected to the LV networks, placing increasing strain on the safety, power quality and capacity of the assets which traditionally had the lowest visibility by the DNSP.

While LV connected BESSs can provide local benefits, they also have the potential to provide system benefits such as reducing the minimum system load risk. The continued uptake of roof top solar PV is placing increasing pressure on system stability due to the decreasing minimum system load, which continues to reduce at unprecedented rates. These challenges to Energex's network and the power system as a whole, were recently acknowledged by AEMO in its 2021 Electricity Statement of Opportunities<sup>2</sup> (ESOO), including the need for accelerated complementary market-based and operational support to address the risks to security and reliability of the power system.

Leveraging LV connected BESSs is particularly important in more geographically dense areas where existing DNSP assets such as poles can provide a suitable safe location for installing LV connected BESSs. We acknowledge there are a range of other potential distribution connected BESS ownership models, including behind-the-meter and community funded. However, the models can be dependent on the ability to value stack services using the assets, and unfortunately the models for value stacking are immature and the trade-offs largely unknown at present.

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<sup>1</sup> <https://arena.gov.au/assets/2020/04/arena-grid-vs-garage.pdf> pg 50

<sup>2</sup> [https://aemo.com.au/-/media/files/electricity/nem/planning\\_and\\_forecasting/nem\\_esoo/2021/2021-nem-esoo.pdf?la=en&hash=D53ED10E2E0D452C79F97812BDD926ED](https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2021/2021-nem-esoo.pdf?la=en&hash=D53ED10E2E0D452C79F97812BDD926ED) pg 52-61

This project complements Ergon Energy's five BESS projects, as this one is focused on the LV network and will allow a comparison of the benefits and costs of distribution connected BESS across the entire distribution network.

The proposed waiver will enable Energex to gain valuable learnings into the customer, system, and overall societal benefits of a currently immature value stacked energy storage market connected to the LV network. Energex is of the strong view, that considering the size of, and urgent need for, energy storage, all models should be understood and explored.

#### **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 BESS benefit 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. Energex will be exploring opportunities to use the various capabilities of the BESS for different purposes, for example, reactive support would mainly be utilised by the network to support the local voltage, while energy (kWh) would mainly be utilised by Origin for the provision of market services.

#### **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.*

Energex proposes that the waiver commences immediately upon commissioning of each BESS and expires on 30 June 2035, which closely 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 waiver is refused, Energex would be unable to proceed with the joint trial as planned. While it would be able to use the BESSs for distribution services it will not be able to use the BESSs to the fullest extent possible, that is, for Energex to be able to provide “other services” to Origin Energy to maximise the benefit of the batteries.

In the absence of an established value-stacked market, investor hesitancy will likely 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. Overarchingly, refusal of the waiver would result in:

- the benefits described in section 6 below not being realised
- market benefits, through the sharing of non-commercially sensitive trial learnings, not being realised; and
- alternative solutions to address the challenges associated with increasing minimum demand and connection of roof top solar PV into the future, needing to be delivered as part of Energex’s common distribution services.

This would result in ongoing tension between higher energy prices for customers and poorer network performance in the long term.

**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:

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

The Energy Security Board has acknowledged the need for regulatory arrangements to evolve to support the impacts of two-way energy flows on the ability of networks to transport and deliver electricity safely, securely, and reliably. A first step has been taken by the AEMC<sup>3</sup> in their final determination on amendments to the regulatory framework to integrate more DER, which recognises the two-way use of the distribution network.

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

- The ability to test solutions to address constraints in the distribution network to enable lower costs to serve for customers.
- To work with a contestable retailer to explore and test how contracted excess capacity could be applied to retail product offerings.

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<sup>3</sup> <https://www.aemc.gov.au/sites/default/files/2021-08/Final%20determination%20-%20Access%2C%20pricing%20and%20incentive%20arrangements%20for%20DER.pdf>



- To understand the impacts of network tariffs on battery operation and customer offers. The outcomes of this trial will be used to inform the Energex 2025-2030 Tariff Structure Statement.
- The provision of robust and beneficial evidence to inform the development of a mechanism to allocate costs and prevent cross-subsidisation taking into account future variations in use. As noted by the AER in its Draft 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 regulated asset base (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 Energex 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.

On this basis, Energex has chosen several feeders where there is an increasing network investment risk from peak demand growth and roof top solar PV. In our view, these sites will allow Origin and Energex to jointly test how the benefits of energy storage can be stacked and shared between customers, market participants and networks. In addition, 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 Energex's ownership of the BESSs can demonstrate through trial learnings:

- the shared value of DNSP connected energy storage to a hesitant market in the LV network

- the community acceptance and local planning laws required for installation of pole and ground mounted BESSs on the LV network in close proximity to customers
- right of access arrangements and prioritisation of access to the capacity under local, feeder and system contingency events
- de-risking entry for private investors; and
- informing regulatory decisions to support the creation of a deep and liquid energy storage market.

## 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>4</sup>*

### 7 Cost Allocation<sup>5</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.*

The total cost of the BESS trial is \$10 million and is jointly funded by Energy Queensland Limited, Energex's parent company, and Origin Energy. The assets will, therefore, be excluded from

<sup>4</sup> AER, *Electricity Distribution Ring-fencing Guideline – Explanatory Statement (Version 3)*, p 29-31.

<sup>5</sup> For information on cost allocation methods, see AER, *Electricity Distribution Ring-fencing Guideline – Explanatory Statement (Version 3)*, p 35-36.

**8 Process to engage third party suppliers of network services<sup>6</sup>**

Energex 's RAB and classified as unregulated assets. Accordingly, any associated ongoing costs will also be excluded from Energex 's regulatory operating costs consistent with the principles of our approved cost allocation methodology.

The trial will develop learnings on appropriate methodologies for including BESS or portions of BESS into the RAB should that be appropriate in the future.

*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.*

Our demand management program demonstrates there is currently no established market for distribution connected batteries nor a market for utilising behind the meter batteries for network support. Both Ergon Energy and Energex, have repeatedly tried to engage the market via mechanisms such as our online rewards maps.<sup>7</sup> Energex has also engaged the market directly, via our Demand Side Engagement Register, to request quotation for non-network services as an alternative to network investment for 20 feeders, where the estimated cost of addressing the identified need fell below the threshold at which a RIT-D is required. 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.

Given the current lack of a market for distribution connected energy storage, and the barriers to any rapid advancement of such a market, Energex was approached by Origin, an unrelated entity to participate in this trial. To support this partnership, Energex entered into a Memorandum of Understanding with Origin to

<sup>6</sup> AER, *Electricity Distribution Ring-fencing Guideline – Explanatory Statement (Version 3)*, p 34-37.

<sup>7</sup> <https://www.ergon.com.au/network/manage-your-energy/reward-programs/cashback-rewards/search-incentives>

<https://www.energex.com.au/home/control-your-energy/cashback-rewards-program>

**9 Any other information**

procure and install up to thirty-five low voltage connected BESSs for connection at strategic locations within the Energex distribution network. Those BESS are the subject of this waiver application.

The locations in which the BESS will be connected have been selected based on having high, and forecast to increase, local DER penetration, and network constraints which may lead to increased network investment in the mid-term.

*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 key, non-commercially sensitive 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:

- Whether LV distribution connected BESSs 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, providing reactive voltage support and maintaining a safe and reliable distribution network.
- a greater understanding of the practical issues that may arise through the sharing of capacity from LV connected BESSs.
- A greater understanding of the practical implications on battery operations and scalability of the proposed solution

- The operational considerations, including, amongst others, emergency response, routine maintenance, network reconfigurations that arise from LV connected BESSs.
- 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.
- The potential barriers to installing low voltage batteries in the distribution network, including council approvals, access to land, logistics, and community acceptance.
- 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.
- The benefits and trade-offs between LV and medium voltage distribution connected batteries

**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.



12 May 2022

Ms Kathie Standen  
Executive General Manager  
Consumers, Policy and Markets  
Australian Energy Regulator  
GPO Box 3131  
Canberra ACT 2601

Dear Ms Standen,

**RE: Energex Ring-fencing Waiver Application**

Origin Energy is pleased to provide this letter of support for Energex Limited's application for a ring-fencing waiver for the installation of 35 low-voltage connected battery energy storage systems on the Energex distribution network.

Origin has been a strong advocate that effective ring-fencing is essential to promoting the long-term interest of consumers. We have also argued strongly that distributed energy and smart technologies are fundamental to the progression of both network tariff reform and innovative service offerings in the competitive sector of the industry.

We consider the battery trial proposed by Energex will provide invaluable insights into how a battery can provide efficient network support services and how any excess capacity can be provided to the competitive retail market while preserving the objectives of the regulatory framework. We believe that understanding how these services interact will be fundamental to how distribution and retail services will evolve.

Notwithstanding the obvious benefits this trial can provide, the regulatory rules must take primacy. In this regard, we feel that the AER's streamlined waiver process provides a pragmatic framework for preserving the integrity of the ring-fencing arrangements while also allowing industry to test emerging operating models not otherwise anticipated in the current Rules. We are also comfortable that the waiver process prevents discriminatory behaviour (namely those obligations set out in clause 4.1 and 4.3 of the ring-fencing guidelines).

On this basis Origin is pleased to support this application for ring-fencing waiver. We believe this trial provides a unique opportunity to obtain learnings about how batteries located within the distribution network can provide optimal outcomes for both regulated and third-party competitive services.

If you have any questions regarding this submission, please contact Sean Greenup in the first instance on (07) 3867 0620.

Yours sincerely

A handwritten signature in blue ink, appearing to read "K. Robertson".

Keith Robertson  
General Manager, Regulatory Policy