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Reposit Power Pty Ltd (Reposit) thanks the AER for the opportunity to contribute to the consultation process for the Electricity ring-fencing guideline review.

Reposit supports the use of DNSP-led SAPS to efficiently serve isolated customers under an exemption framework. This is likely to support effective delivery of electricity for customers where traditional distribution and transmission solutions may be cost ineffective.

In accordance with the National Electricity Objective (NEO), Reposit believes that it is efficient to deliver energy storage services through behind-the-meter DER i.e. consumer owned assets.

Reposit does not support the proposed relaxation of ring-fencing guidelines to allow the use of network owned energy storage assets to provide electricity services. Reposit believes that permitting regulated storage assets to participate in energy services is inherently cross-subsidisation and may lead to anti-competitive behaviour.

There are mature platforms that leverage existing and future DER assets to provide the same services as DNSP-owned energy storage at a comparable and/or lower cost[1]. To potentially ignore or threaten the market for these consumer-owned assets through networked-owned storage could be economically inefficient.

Reposit believes that consumer-led investment in DER for the provision of network services using existing energy storage solutions promotes the NEO. Reposit controls over 19MW / 32MWh of distributed batteries that have been delivering services to meet both regulated network needs and providing energy services since 2016.

DER is expected to play a critical role in AEMO's 2020 Integrated System Plan (ISP)[2], where 13% to 22% of total underlying annual NEM energy consumption is expected to be met by behind-the-meter assets in 2040. Reposit believes that network investment in energy storage may erode the value of behind-the-meter DER, and potentially slow the future uptake of consumer-owned storage assets.

To demonstrate this assertion, Reposit would like to highlight our perspectives on:

- **Cost inefficiencies:** Network owned batteries are currently cost inefficient; and
- **Inefficient operation, & use of services:** Services can be delivered using existing solutions

With this submission, Reposit would like to highlight that provision of energy services using distributed batteries promotes the NEO, and the long-term interest of electricity consumers.

[1] DER Price Signals: 'Fit' with Market Rules, International Experience and Cost-Benefit Assessment
[2] AEMO | 2020 Integrated System Plan (ISP)

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1.0 Network owned batteries are currently cost inefficient

1.1 Lowest Cost of Acquisition Per MW

It is efficient to acquire MWs using existing DER. The cost of acquiring (COA) 1 MW from a customer owned asset using a Reposit solution is $134,000. In contrast, the COA / MW via Hornsdale (Phases 1 + 2) is approx. $1.15M[3], Geelong $530K[4], and Tallawarra B is $263K[5]. The lower COA is a result of asset ownership by the customers, and not traditional network options.

Furthermore, to establish new energy storage assets, networks are likely to first have to spend CAPEX to set up these new asset types, and then spend additional OPEX for ongoing maintenance of these new asset types. This may contribute to investment inefficiencies.

1.2 Network owned batteries may have significant overheads

Network owned batteries currently cost more than existing operational and/or planned utility scale batteries. This indicates potential overheads in establishing and operating network owned batteries -- noting, of course, that network owned storage is still an emerging technology and thus overheads should be reasonably expected at this stage in their maturity lifecycle.

Research from ANU[6] on the cost-benefits of network owned batteries indicates that networks are unlikely to be able to create a profitable operating model using network owned batteries without allowing third-parties to operate in energy services markets.

There have been recent examples of network owned batteries costing up to $400,000[7] for a single 150kW unit, equivalent to $2,600,000+ to deliver 1 MW of network capacity. This would appear cost ineffective in a competitive market where utility solutions exist at a lower price point.

The use of a Reposit solution allows networks to pay OPEX to use existing consumer-owned behind-the-meter DER assets, without having to make further CAPEX investments to procure new storage assets. This is efficient as the cost is passed to consumers, and networks still retain the ability to access consumer-owned assets for grid support at lower marginal costs.

1.3 Network capacity may be inefficient

Several types of behind-the-meter energy storage devices are already installed and capable of providing regulated network support[8]. If DNSPs are permitted to invest in energy storage assets directly, these behind-the-meter devices may be impacted e.g. be under-utilised.

It may be possible that DNSP ownership of energy storage assets could create *sunk cost fallacies* for the future development of DER. As an example, there will be CAPEX required to set up new energy storage assets, which may or may not lead to desirable outcomes, but noting the investment, the networks may not have an option left but to continue to use them due to sunk costs.

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[3] Revealed: True cost of Tesla big battery, and its government contract

[4] 300 MW Victorian Big Battery targets stronger grid and more renewable energy.

[5] EnergyAustralia gets government money for first "green hydrogen" gas generator

[6] Community batteries: a cost/benefit analysis

[7] Ausgrid installs "first of many" community batteries on Sydney network

[8] AEMO and Energy Networks Australia 2018. Open Energy Networks, consultation Paper.

Unlike current proposed models for network owned batteries, Reposit works behind-the-meter. The Reposit DER model is a digital platform that allows low marginal cost access to assets for network support. It is also highly scalable to control and aggregate emerging asset types like EVs.

More and more, these asset types are becoming DER capable, driven by market demand. As such there is a significant opportunity to leverage existing asset types to deliver network services like demand response.

The addition of another regulated asset class may create duplication of network capacity that already exists in the form of such assets, and inherently lead to operational and investment inefficiencies.

1.4 Workforce capabilities exist for consumer-owned storage

There is an existing solar and battery installer workforce that can efficiently install behind-the-meter and consumer owned DER asset types.

Roof-top solar PV system installs alone have contributed to 13,070[9] jobs to the workforce according to the Australian Bureau of Statistics (ABS) in 2018-19, this was equivalent to 50% of total FTE employment related to renewable energy in 2018-19. Further, according to University of Technology Sydney (UTS), under a high-DER penetration scenario, this is likely to peak around 34,000[10] by 2034, of which 32% are likely to be related to distributed rooftop PV.

This workforce currently installs distributed solar PV and battery systems, and is projected continue to grow both in skills and FTE count -- up to 10,000[11] jobs being created due to battery installs.

The workforce is expected to grow. It may be unavailable to networks to access in cost effective ways due to labor arrangements typical in the industry, which primarily comprises small business and individual traders.

Potential workforce development required to install and support network owned batteries to meet network requirements is likely to incur investment, labor force management, and operational inefficiencies.

1.5 Growth and Future Potential

Using a behind-the-meter aggregation solution like Reposit has low marginal costs to dispatch the asset by networks, and near zero marginal costs to dispatch by Reposit to provide energy services. Additionally, there is existing real estate, metering, and connection point arrangements that allow these to occur efficiently.

Further, network owned batteries will compete directly with consumer owned batteries to deliver electrical services. Networks have the discretion to set export limits for consumers. As a result, network owned batteries may lead to market distortion that impedes the penetration of consumer owned DER asset types.

Such possible ***market distortion***, *may lead to material revenue impacts for consumers of regulated services.* In addition, this may impact efficient delivery of services due to potentially reduced market competition.

[9] Employment in Renewable Energy Activities, Australia, 2018-19 financial year
[10] Renewable Energy Jobs in Australia: Stage One
[11] Renewable Energy Jobs in Australia: Stage One

2.0 Services can be delivered using existing solutions

2.1 Existing Software and Capability

Technology and capability already exist that can be leveraged to deliver efficient market and consumer outcomes. Reposit has existing software, hardware, and operational capability (e.g. a national network of solar and battery installation partners) that Reposit has matured over ~10 years.

Reposit has been operating residential solar and battery systems as market responsive Distributed Energy Resources (DER) in the NEM that provide network services. This has brought Reposit end users hundreds of dollars of new value each year.

At the time of this submission (July 2021), Reposit has delivered a total of 121.4 MWh in network dispatches, equivalent to 10229.4 hrs (426.22 days) of active dispatches. Since our first dispatch in June 2016, Reposit's fleet of solar and battery controlled assets has grown by a factor of 100x.

2.1.1 Already delivering network services

Reposit provides these network support services to DNSPs across australia, including:

Table 1 - Grid services Reposit currently provides

Service	Dispatch	Real Time Fleet Monitoring	Voltage & Reactive Power Control	Solar Curtailment	Dynamic Operating Envelopes
Essential Energy	✓	✓	✓	✓	✓
Evoenergy	✓	✓	✓	✓	Planned
Ausgrid	✓	✓	✓	✓	Planned
Horizon Power	✓	✓	✓	✓	Capable
United Energy	✓	✓	✓	Capable	Capable
TasNetworks	✓	✓	✓	Capable	Capable
Endeavour Energy	✓	✓	Capable	Capable	Planned
SAPN	Capable	✓	Capable	Capable	Capable

2.1.2. Already delivering energy services

Additionally, Reposit has current capability to participate in the National Electricity Market to provide a number of services -- *without any relaxed rules and not under trial arrangements*, including:

Table 2 - Energy services Reposit currently provides

	FCAS (6 Markets)	RERT	Wholesale Arbitrage	ToU / Demand Charge Arbitrage	Increased PV self Use	Intelligent Backup Reserve
Ability to Provide	✓	✓	✓	✓	✓	✓
Operational Since	2019	2019	2012	2012 / 2018	2012	2012

Our largest dispatches earlier in January 2021 saw 757 systems being used to deliver 3.56 MWh to manage network constraints in LV networks for one of the largest DNSPs in the country.

With over 2600 dispatches, Reposit has been able to refine and mature our technology and capability to provide reliable, safe, and quality grid support services.

2.1.3 Network owned batteries may need new software

Network owned batteries may need to be aggregated to provide wholesale energy and FCAS services due to the *1MW de minimis*, which could require new software to aggregate them to provide grid support.

To develop such new aggregation IT infrastructure, networks may need to either change investment priorities in their asset types, or seek additional investments to develop or procure fit-for-purpose solutions. It is unlikely that such IT infrastructure development or integration may occur without additional regulated investment.

It is Reposit's opinion that there is likely to be significant technical work involved in the development of such software. This would contribute to overall inefficiencies in achievement of the NEO, noting that existing software and technology capabilities like Reposit can already support network services.

2.2 Market trading is already occurring

There are no regulatory changes required to enable DER use under the current market design. The NEM already supports effective investment and operation of capital to incentivise DER penetration, and allows market trading to occur in a competitive energy-only market.

Reposit has been able to provide energy services within the current structures of the NEM, to deliver a cost effective control system that allows networks to use consumer assets to manage network constraints, and also develop a commercially viable business model. *Reposit actively participates in all 6 Contingency FCAS markets, currently with a registration of 10+ MW, under no relaxed rules or trial arrangements.*

Reposit had to demonstrate to AEMO that batteries are able participate in the NEM to deliver energy services. Additionally, Reposit has also previously delivered RERT, and will re-enter the market to deliver emergency services in the future. Energy market trading using DER is already occurring.

Addition of new energy storage asset types or permitting regulated storage assets to participate in contestable markets may require additional regulatory work, which may contribute to operational inefficiencies, and regulatory overheads.

3.0 Recommendations

In summary, Reposit partially supports the draft ring-fencing guideline version 3. However, Reposit encourages the AER to consider:

- **The impact of decentralised aggregation models**, and the ability to procure network services via existing commercial arrangements.
- **The potential stifling impacts to innovation in the market** if third party market participants, including aggregators, have to compete with networks to provide electricity services.
- **A more flexible approach towards qualifying investments** in network and non-network solutions (e.g. reducing the investment threshold to $150,000) to ensure that non-network solutions are fairly contemplated against the business cases for network owned assets.

4.0 Summary

There are existing cost effective consumer-owned storage solutions in the market that are already being used and can continue to be used to deliver network and market services.

Solutions like the Reposit's have low cost of acquisition of MWs, can compete on price and utility with network owned batteries, and have an existing workforce and technology capability.

Reposit believes that there is an opportunity to continue to work with AER, networks, other market bodies, as well as industry to deliver efficient services to the grid.

Continued Engagement

Reposit welcomes the opportunity to more fully discuss this review with the AER, and other stakeholders as required. Equally, Reposit is happy to support the AER with further data or analysis to support the review.

Reposit looks forward to using our technology to support the AER and networks to provide:

- Consumers with options to reduce costs (and in some cases, no electricity bills guaranteed);
- System security efficiencies; and
- Effective solutions to support the achievement of the NEO.

Should the AER have any questions about this submission, please contact Manik Mahajan, Manager of Market Operations at Reposit via 0405115747 or manik@repositpower.com.

Regards,

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