



Australian Government  
Australian Renewable  
Energy Agency

**ARENA**

16 September 2021

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## **ARENA submission on the AEMC's Integrating Energy Storage Draft Determination**

This submission provides information and insight relevant to the AEMC's proposal to apply transmission use of system (TUoS) charges to standalone energy storage systems.

In summary:

- The effect of transferring TUoS from end-consumers to energy storage systems would be to delay investment in energy storage and this will result in higher prices, lower system security and reliability and less resilience to contingency events and the exit of thermal generating units.
- There is a 'first principles' justification for imposing transmission and distribution network charges on a load where they are afforded equivalent network access rights as non-scheduled end-consumers. Where charging loads are scheduled or operate within zero-base dynamic connection agreements<sup>1</sup>, this justification is less apparent.

## The impact of imposing TUoS on energy storage

Large-scale batteries will be a critical resource for the power system as we transition to much higher penetrations of low-cost variable renewable energy. This includes through the provision of real-time balancing, intraday energy arbitrage and potentially, medium-duration multiday storage.

There are a number of reasons for the AEMC to opt to support an increase in the rate of deployment of innovative energy storage technologies:

1. **Demonstrate new capability** - The full capability of batteries and advanced inverters is yet to be demonstrated, including in relation to the provision of synthetic inertia, system strength and ramping support. The value of demonstrating new capability is realised

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<sup>1</sup> A load that is able to be dialed down to zero to mitigate peak load impacts on a local network.

through more efficient generation and transmission investment planning and through informing changes to market and off-market incentives frameworks.

2. **Get ahead of planned or unplanned thermal generator retirements** - Recent experiences in the NEM have drawn attention to the potential wholesale price impacts of thermal generation retirement. While variable renewable energy generation suppresses prices when it is available, at other times (such as during evening ramping periods) resource scarcity and market power<sup>2</sup> effects can offset associated benefits for consumers.<sup>3</sup> Energy storage technologies are ideally placed to mitigate market power effects during evening ramping periods. Despite this, there are a range of barriers to efficient level of storage investment including policy uncertainty. The imposition of TUoS on storage would further suppress investment and operational signals.
3. **Support increased industry learning rates** - The costs of the overall transition will be highly sensitive to the capital cost of energy storage. Increasing the deployment of batteries at this stage of the market's development can bring forward cost reductions and enable new options for market development.

Despite these benefits, the business case for storage is generally marginal and dependent on public funding. Based on current market intelligence, a capital cost subsidy of 20-30% is still required to achieve a bankable project for a large-scale battery. The imposition of additional TUoS costs on projects could increase the level of subsidy required by a further 10% (of the capital cost) and therefore set the industry back by approximately two years in its commercialisation pathway. This would be a detriment to consumer welfare via a combination of higher and more volatile wholesale prices, higher costs to the taxpayer and/or lower system security and reliability.

## Principles for cost recovery on battery charging load

ARENA's experience in accelerating renewable energy innovation has supported the argument for technology-neutral market rules that provide flexibility for policy outcomes to be achieved at the lowest cost, taking advantage of technical and commercial innovation as they occur. It is therefore appropriate not to base network cost recovery charges based on the technology deployed at a generator or customer site. With regard to the application of TUoS, different types of loads could be however differentiated on the basis of the services they provide, or require, rather than in relation to the use of specific technologies.

The current exemption of storage loads from TUoS is consistent with cost-reflective ('causer-pays') pricing principles. While scheduled storage units utilise transmission capacity, they do that in a way that does not contribute to additional costs for other customers. By virtue of being scheduled, they are only dispatched when there is available line capacity. They are therefore incapable of contributing to peak demand. Where scheduled loads are exempt from

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<sup>2</sup> Jha & Lesie (2021) [Start-up Costs and Market Power: Lessons from the Renewable Energy Transition](#)

<sup>3</sup> In the first half of 2021, the average midday electricity price in NSW of \$39/MWh (3.8 cents/kWh) versus \$395/MWh (39.5 cents/kWh) at 6pm.

TUoS charges, there is no indication of material cross subsidies or distortions on either investment or operational timeframes. This same principle applies to loads on distribution networks that are subject to zero-base dynamic connection agreements.

From a beneficiary-pays perspective, it is important to note that end-consumers share in the benefits of energy storage in the form of enhanced reliability and lower prices. Given the early stage of development of energy storage in Australia, current investments in energy storage also have various public good spill-overs that will materially benefit consumers in the medium to long term, principally in the form of accelerated industry learning and lower electricity prices.

For the reasons outlined above, ARENA considers that consumer interests are best served by exempting (or otherwise delaying or minimising) the imposition of additional network charges on energy storage, as a scheduled load<sup>4</sup>. We consider the effect of transferring ToUS from end-consumers to energy storage systems will be to delay critical investment in energy storage and this will result in higher prices, lower reliability and less resilience to contingency events and the exit of thermal generating units.

## About ARENA

The Australian Renewable Energy Agency (ARENA) was established in 2012 by the Australian Government. ARENA's function and objectives are set out in the *Australian Renewable Energy Agency Act 2011*.

ARENA provides financial assistance to support innovation and the commercialisation of renewable energy and enabling technologies by helping to overcome technical and commercial barriers. A key part of ARENA's role is to collect, store and disseminate knowledge gained from the projects and activities it supports for use by the wider industry and Australia's energy market institutions.

Please contact Jon Sibley, Principal Policy Advisor ([jon.sibley@arena.gov.au](mailto:jon.sibley@arena.gov.au)) if you would like to discuss any aspect of ARENA's submission.

Yours sincerely

Darren Miller

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<sup>4</sup> One prospective option may be to charge TUoS only on the net of metered *scheduled* generation and *scheduled* load in a specified period (e.g. day/week/month). This would be consistent with AEMC's [prior determination](#) that distribution networks must credit embedded generators for avoided TUoS payments (in this case the TNSP would be providing the credit). This would result in non-storage scheduled loads, by default, being subject to full TUoS and would provide a much needed incentive for market participants to schedule their generation and load consistent with the ESB's broader two-sided market reform vision.