

# Sub-threshold tariff notification

Evoenergy: Australian Capital Territory electricity distribution network

Notification to the Australian Energy Regulator

Planned battery tariff trials 2021–22 to 2022–23

February 2021



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# Introduction

In accordance with Rule 6.18.1C of the *National Electricity Rules* (NER), Evoenergy is making this submission to notify the Australian Energy Regulator (AER) of its intention to trial two new sub-threshold tariffs from 1 July 2021. The two proposed tariffs are:

- **Residential battery tariff** – a tariff designed for residential customers with controlled batteries supported by modern energy technologies.<sup>1</sup> This tariff trial provides a unique opportunity for Evoenergy to test new network tariffs that may be suitable as the uptake of renewable technologies increases across the network.
- **Large-scale battery tariff** – a number of large-scale batteries are expected to be introduced to the ACT electricity network from 2021. The large-scale battery tariff provides Evoenergy with an opportunity to test customer responses to highly cost-reflective price signals. The trial will be particularly important given that large-scale batteries will respond to a range of price signals (including wholesale prices and Frequency Control Ancillary Services (FCAS)), not only network price signals.

The objective of these trials is to investigate cost-reflective pricing options for customers with battery technologies, with a view to making such tariffs more widely available in future regulatory periods. These tariffs have the potential to provide customers with more control over their network electricity bills, improve network utilisation, and enable efficient integration of distributed energy resources (DER) in the distribution network. The trials are expected to provide valuable evidence to support the potential introduction of the new tariffs (or a modified version) as part of Evoenergy's suite of electricity network tariffs for the next regulatory period (2024–29).

The tariff trials provide Evoenergy with an opportunity to test new and innovative tariff structures that can meet the future needs of its customers and the distribution network. The emergence of new technologies, such as batteries, and the increasing uptake of solar are changing the way customers interact with the distribution network, and it is important that Evoenergy's tariffs keep pace with these changes. The proposed tariff trials set the path for ensuring Evoenergy can provide its future customers with more choices and pricing structures that reflect customers' changing technological preferences and energy-usage behaviours.

Given the new and innovative nature of the proposed tariffs, Evoenergy is committed to maintaining close contact with the AER, consumers, and retailers to ensure the tariffs are fit-for-purpose and deliver on their objectives. The design of the tariff trials has been informed by close engagement with consumers (including consumer groups and large-scale battery proponents) and retailers. The tariff design is also aligned to Evoenergy's overall tariff strategy of moving towards greater cost-reflectivity and transparency in its tariff structure.

This notification sets out background information on the subthreshold tariffs, describes the tariff structures, and includes supporting information to demonstrate compliance with the requirements of Rule 6.18.1C.

The attachments to this notification include an independent review of the tariff structure prepared by Oakley Greenwood (**Attachment 1**), and an outline of consumer and retailer engagement prepared by Communication Link (**Attachment 2**).

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<sup>1</sup> For example, this may include solar panels, and home energy management systems. However, these are not a requirement for the tariff trial.

# 1. Summary of notification information

Table 1 summarises the required information for the subthreshold tariff notification, in accordance with the NER and AER requirements. Further detail is presented in the sections below.

**Table 1: Summary of tariff trial notification**

	Residential battery tariff	Large-scale battery tariff
<b>Required information</b>		
<b>Name of Trial</b>	Residential battery tariff trial	Large-scale battery tariff trial
<b>Objectives of trial</b>	<p>As the uptake of battery technology (both residential and large-scale) increases, these trials aim to explore the suitability of highly cost reflective tariffs for customers with batteries and modern energy technologies. The tariffs are designed to provide customers with sharper pricing signals, and the opportunity to better manage their load on the network and their network bill. This includes sending customers a price signal about the costs of importing and exporting energy at peak and non-peak times, and incentivising efficient use of the distribution network.</p> <p>This has the potential to improve network utilisation and allow for the efficient integration of DERs, as battery technology becomes more widespread.</p> <p>Based on the outcomes of the trials, Evoenergy will consider incorporating the new battery tariffs into its proposed tariff structure for the next regulatory period (2024–29)</p>	
<b>Retailer engagement</b>	<p>Evoenergy provided separate presentations to four active retailers in the ACT to inform them of the tariff trials. Retailers were provided with factsheets and contact details of Evoenergy personnel should they require further information. To date, feedback received from retailers has been supportive of the trials, and conversations with retailers will continue in the lead-up to the trials and throughout the trial period.</p>	
<b>Consumer engagement</b>	<p>Evoenergy has engaged directly with consumers regarding the proposed subthreshold tariffs, including establishing a webpage dedicated to the tariff trial. The webpage includes a fact sheet and a presentation about the tariff trials, and provides contact details should consumers have any questions. The tariff trials have also been promoted on social media.</p> <p>In developing the tariff trials Evoenergy also sought feedback from the Energy Consumer Reference Council (ECRC), provided presentations to members of the Strathnairn community, and held discussions with two large-scale battery operators who intend to connect to Evoenergy's distribution network.</p>	
<b>Proposed tariff (structure and pricing)</b>	<p>The tariff comprises the following components:</p> <ul style="list-style-type: none"> <li>• Fixed supply charge</li> <li>• Time-of-Use consumption charges</li> <li>• Seasonal peak demand import charge (based on highest half-hourly demand during the peak period in a calendar month)</li> <li>• Seasonal export charge (based on customer's export beyond 3.75KW during the peak export period)</li> <li>• Export critical peak rebate (credit based on export (kWh) during a notified critical peak event)</li> </ul> <p>Indicative prices are shown in Section 6.</p>	<p>The tariff comprises the following components:</p> <ul style="list-style-type: none"> <li>• Seasonal Peak Demand Charge (based on highest half-hourly demand during the peak period in a calendar month, where the peak period is based on whether the battery is located in a residential or commercial area)</li> <li>• Net consumption charge to recover jurisdictional scheme costs only</li> <li>• Export Critical Peak Rebate (credit based on export (kWh) during a notified critical peak event)</li> <li>• Export Critical Peak Charge (based on export (kWh) during a notified critical peak event)</li> <li>• Capacity charge to recover residual costs</li> <li>• Avoided / Incurred TUOS charge based on actual transmission costs incurred or avoided.</li> </ul> <p>Indicative prices are shown in Section 6</p>
<b>Forecast revenue</b>	\$178,521 (NUOS revenue, \$2021/22)	\$429,673 (NUOS revenue, \$2021/22)

<b>Trial start date</b>	1 July 2021	
<b>Duration of trial</b>	3 years (ending 30 June 2024)	
<b>Potential changes and triggers</b>	The three-year tariff trial will be reviewed on an annual basis. No changes to the tariff structures are contemplated at this time; however any proposed changes will be notified to the AER on an annual basis through a subthreshold tariff notification in accordance with Rule 6.18.1C	
<b>Notification date</b>	26 February 2021	
<b>Optional information</b>		
Forecast volumes	See Section 6	
Potential additions	N/A	N/A
Location of Trial	ACT	ACT
Other	N/A	N/A

## 2. NER and AER requirements for tariff trials

### 2.1 Requirements under the NER

Section 6.18.1.C(1) of the NER requires a Distribution Network Service Provider (DNSP) to notify the AER, affected retailers, and affected retail customers of a new proposed tariff that is determined otherwise than in accordance with the current Tariff Structure Statement (TSS). In particular, the NER requires that:

- The DNSP's forecast annual revenue for each tariff is no greater than 0.5 per cent of the DNSPs annual revenue requirement (the individual threshold); and
- The DNSP's forecast annual revenue from all tariff trials is no greater than 1 per cent of the DNSP's annual revenue requirement (the cumulative threshold).

Evoenergy's proposed tariffs are within both the individual threshold and cumulative threshold, as shown in Section 0.

### 2.2 AER guidance on tariff trials

The AER has published a guidance note on its expectations for tariff trials pursued under the regulatory framework.<sup>2</sup> In particular, the AER's guidance note states that distributors should provide clear links between the tariff trial and the distributors' TSS strategy. The AER also requests that distributors report on the results of the tariff trials, and how these learnings have been used by the business.

Evoenergy's proposed tariff trials aim to further its strategy of moving towards greater cost reflectivity and providing customers with greater tariff choice and the opportunity to better manage their network bills. The alignment of the subthreshold tariffs to Evoenergy's TSS strategy is described in Section 8.

## 3. Eligibility and duration of tariff trial

This section outlines the proposed duration of the tariff trials, and the mechanisms by which customers will be assigned to the tariffs.

### 3.1 Tariff trial period

Evoenergy intends to commence the tariff trials on 1 July 2021, with the trials running over a three-year period, concluding on 30 June 2023. This would allow customers on the trial to potentially transition to a new, AER-approved tariff through the TSS process on 1 July 2024. The three-year period has been nominated for a number of reasons:

- 1) It will provide Evoenergy with two full years of trial data to inform its revised 2024-29 TSS which will be submitted to the AER in late 2023, and may include a

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<sup>2</sup> AER, Distributors should explore tariff trials, <<https://www.aer.gov.au/system/files/Tariff%20Reform%20One%20Pager%20on%20Trials%20under%20TSS.pdf>>

proposal to incorporate the trialled tariffs into Evoenergy's permanent tariff structure.

- 2) It will ensure that, if the tariffs are incorporated into Evoenergy's tariff structure for 2024-29, customers on the tariff trial will be able to smoothly transition across to the new permanent tariffs. This provides customers with greater certainty, and avoids a potential situation where customers are automatically opted-out of the tariffs at the end of the trial.

### 3.2 Residential battery tariff eligibility and assignment

The residential battery tariff will be provided to customers on an opt-in basis. To be eligible for the residential battery tariff, a customer must:

1. be a residential customer;<sup>3</sup>
2. have a grid-connected battery<sup>4</sup>; and
3. have a smart meter.

Customers can register their interest for the tariff trial by completing a form on Evoenergy's website (<https://www.evoenergy.com.au/residential-tariff-trial>). Evoenergy will then verify the customer's eligibility based on the information provided through the registration of interest. Once Evoenergy has confirmed a customer is eligible, they will be invited to register for the tariff trial and will be notified of participating retailers.<sup>5</sup> The customer will then be assigned to the residential battery network tariff when the trial commences.

Customers on the residential battery tariff can opt-out to an eligible tariff at any time in accordance with Evoenergy's current tariff assignment policy. This means that customers can opt out to either the residential demand tariff (tariff codes 025, 026) or the residential time of use tariff (tariff codes 015, 016).

### 3.3 Large-scale battery tariff assignment

To be eligible for the large-scale battery tariff, a customer must:

- 1) be a commercial low voltage (LV) or high voltage (HV) customer<sup>6</sup>
- 2) have a stand-alone grid-connected battery<sup>4</sup>;
- 3) have a minimum battery size of 200kVA

Customers on the large-scale battery tariff can opt-out to an eligible tariff at any time in accordance with Evoenergy's current assignment policy.

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<sup>3</sup> As defined under Evoenergy's Statement of Tariff Classes and Tariffs

<sup>4</sup> For the purposes of the trial, the tariff is restricted to customers with a grid connected battery to allow Evoenergy to collect relevant data on customer responses to price signals. However, to ensure the tariff is technologically neutral, this requirement may be removed if the tariff is incorporated into Evoenergy's future tariff structure (noting that the tariff is designed for, and can provide more benefits to, customers with a battery).

<sup>5</sup> It is possible that no retailer will choose to offer an equivalent retail tariff that reflects the network residential battery tariff. However, customers will still be given the opportunity opt-in to the network residential battery tariff. In this event, the customers' network usage data and indicative network bill will continue to be analysed by Evoenergy, noting that the customers' retailer (and not the customer) has faced the network price signals.

<sup>6</sup> As defined under Evoenergy's Statement of Tariff Classes and Tariffs



## 4. Consumer and retailer engagement

Evoenergy has a long-standing commitment to engage and communicate with the ACT community. As Evoenergy progresses towards the commencement of tariff trials, engagement with the local community is crucial to ensure Evoenergy's subthreshold tariffs are suitable for customers with batteries, and that Evoenergy has considered the community's views on the introduction of these subthreshold tariffs.

To that end, Evoenergy has engaged a consultant (Communication Link) to develop an engagement strategy and implementation plan. This has included advice about key messages, the form of engagement and target audiences. The engagement plan developed by the consultants is comprehensive, covering initial engagement that commenced in 2020 (nearly 12 months from the intended commencement of the trial) to 2023 when decisions about the implementation of the trialled tariffs may be proposed for inclusion in Evoenergy's network tariff structure, through the TSS process. The consultant has provided an interim report which is included as Attachment 2 to this notification.

To date, Evoenergy has engaged with the following audiences.

**Consumers** – Evoenergy has engaged directly with consumers regarding the proposed subthreshold tariffs. Evoenergy has established a webpage dedicated to the tariff trial.<sup>7</sup> In addition to information about the trial, the webpage provides the opportunity for users to download a fact sheet and a presentation. The fact sheet provides a dedicated email address to which consumers and retailers can direct their questions about the trial. Social media has also been used to promote the tariff trial, with links to Evoenergy's tariff trial webpage.

At each of the Energy Consumer Reference Council<sup>8</sup> (ECRC) meetings since August 2020, Evoenergy has provided an overview and update on the subthreshold tariff trials. The ECRC has responded with a range of comments and questions about the tariffs that have helped Evoenergy refine its approach to the trials. For example, an ECRC member indicated the importance of trialling the residential battery tariff across different housing types, demographics and geographic locations. This suggestion has been addressed in the design of the registration form, which requests this information.

For the large-scale battery tariff, Evoenergy has presented to two large-scale battery operators who intend to connect to Evoenergy's distribution network in 2021. Evoenergy will also maintain contact with the ACT Government as the trial progresses.

For the residential battery tariff, Evoenergy has provided a presentation to members of the Strathnairn community.<sup>9</sup> This newly developed ACT suburb requires residents to install solar PV, and encourages the uptake of residential batteries. Evoenergy presented to the community on an evening in December, to facilitate attendance by residents who work during business hours.

**Retailers** – Evoenergy provided separate presentations to four active retailers in the ACT to notify them of Evoenergy's intention to trial two new tariffs. These retailers were

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<sup>7</sup> <https://www.evoenergy.com.au/emerging-technology/initiatives/residential-tariff-trial>

<sup>8</sup> <https://www.evoenergy.com.au/consumer-engagement-program/energy-consumer-reference-council>

<sup>9</sup> The suburb of Strathnairn is part of the masterplanned Ginninderry development in the ACT, and has one of the highest uptakes of solar and battery technology in the ACT. Development rules require all households in Strathnairn to install solar panels, and residents are provided with incentives to install batteries, high efficiency appliances and demand management systems.

provided with a copy of the presentation and the fact sheet to be circulated within their organisations. Importantly, the retailers were provided with contact details of personnel at Evoenergy whom they can contact if they require additional information.

To date, feedback received from retailers has been supportive. Most retailers that have been engaged recognise the need for a residential tariff that is designed for customers who are highly engaged in their interactions with the energy industry. The conversation with retailers will be ongoing, as Evoenergy is optimistic that a retailer will pass through the network tariff trial price signals directly to the end customer. This outcome would provide a rich source of consumer data on which to base a decision about whether the battery tariffs should be proposed in Evoenergy's upcoming 2024–29 TSS.

## 5. Tariff structure

This section describes the tariff structures for the residential battery tariff and large-scale battery tariffs. In developing the tariff structure, Evoenergy engaged consultants Oakley Greenwood to provide expert independent advice on the tariff design and their conformance with the NER pricing principles. Oakley Greenwood's report on the tariff designs is contained in Attachment 1.

### 5.1 Residential battery tariff

The residential battery tariff structure has been specifically designed with 'prosumer' residential customers in mind. The tariff is designed for customers with batteries and other energy technologies (e.g. solar and home energy management systems) that can be used to actively monitor energy use and generation, and dynamically respond to network prices.

Customers who have a home energy management system (HEMS) can use this technology to automatically respond to network price signals, with little or no ongoing input from the customer. This technology also allows Evoenergy to send sharper, more cost reflective price signals since the HEMS device will primarily be responsible for optimising import/export behaviour on the customers' behalf. This contrasts with non-prosumer customers who may have limited ability to actively optimise their energy use in response to sharper network price signals.

The tariff structure for the residential battery tariff has been designed to build-upon and extend the basic charge components of Evoenergy's existing network tariffs for residential customers, but with the addition of specific charge components based on import and export behaviours. This provides a more cost reflective tariff structure that gives residential customers with batteries more choice and more control over their network electricity bills. The residential battery tariff has been designed based on two underlying principles (discussed further in **Attachment 1**):

1. Ensuring each component of the tariff is cost-reflective; and
2. Preventing cross-subsidisation of network costs

The residential battery tariff comprises the following charges:

- Fixed supply charge
- Time of use (TOU) consumption charges
- Seasonal peak demand import charge
- Seasonal export charge
- Critical peak export rebate

Each of these components is described below.

### Fixed supply charge

The residential battery tariff includes a fixed supply charge that is paid by customers irrespective of how much energy they consume or export. This charge is designed to signal Evoenergy's fixed costs for providing a safe and reliable electricity network, ready for ACT customers to use at any time.

It is proposed that the fixed charge will be applied on a daily basis, and set at a similar level as the fixed charge in Evoenergy's residential basic, time-of-use (TOU) and peak demand tariffs.

### Time-of-Use (TOU) consumption charges

Time-of-use charges are designed to incentivise efficient energy import behaviour. These charges recognise that the costs customers impose on the network will vary with the time of day. Network utilisation can be improved by incentivising customers to import energy and recharge their batteries during times when the network is experiencing a relatively low load, and to self-consume from their battery during periods when the residential network typically experiences relatively high demand.

The charging windows have been set based on typical load profiles for residential customers. The charging windows are summarised in the table below.

**Table 1 – Residential battery tariff: TOU charging windows**

Charging window	Time (AEST)	Description
Peak	7am – 9am daily 5pm – 8pm daily	<p>The Evoenergy network (in residential areas) typically experiences peaks between 7-9am and 5-8pm daily.<sup>10</sup></p> <p>The peak charges incentivise self-consumption from the battery to avoid contributing to network peaks.</p> <p>In addition, the 7-9am peak charge incentivises discharge of the battery in preparation for soaking up solar energy during the middle of the day.</p>

<sup>10</sup> See section 2.3.2 of Evoenergy's current TSS. Available here: <https://www.evoenergy.com.au/residents/pricing-and-tariffs/tariff-structure-statement>

Shoulder	9am – 11am daily 3pm – 5pm daily 8pm – 10pm daily	Represents time periods leading into and out of peak windows.
Off-peak	10pm – 7am daily	The night off-peak period provides an incentive to charge the battery overnight, ready for self-consumption to reduce morning peaks.
Solar sponge	11am – 3pm daily	The midday solar sponge period promotes grid consumption when solar exports are high, and charging the battery in preparation for the evening peak period.

Note: all times are Australian Eastern Standard Time (AEST)

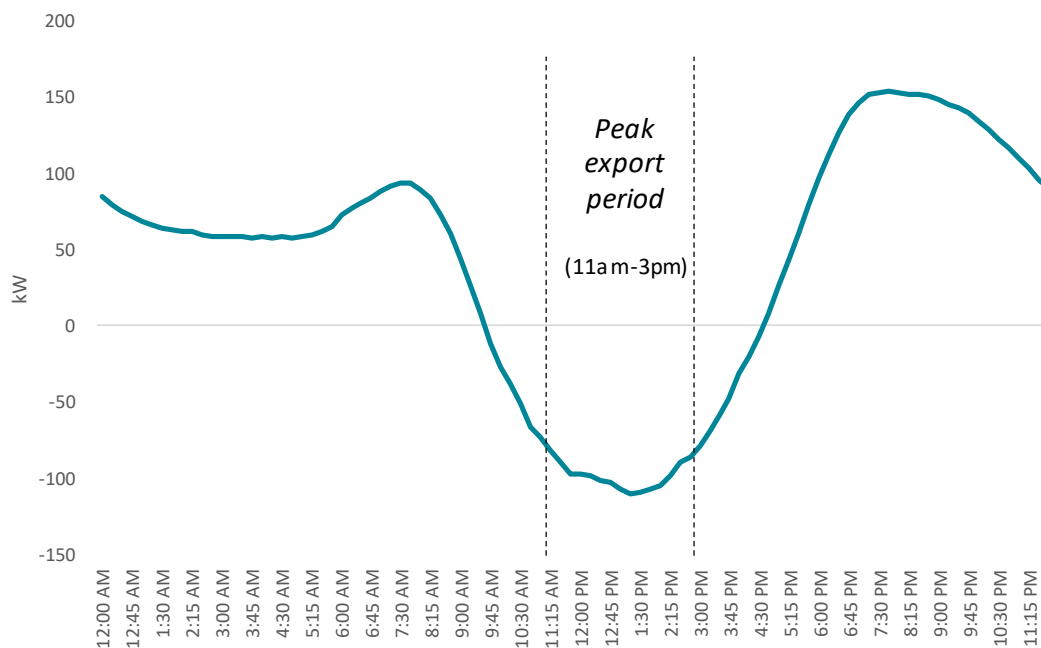
The same TOU charges will apply all year round (i.e. there is no seasonal change to the charges).

The charging windows are based on the time windows that currently apply to Evoenergy's residential time-of-use tariff (tariff codes 015, 016). However, an additional 'solar sponge' period has been introduced from 11am to 3pm each day.

This is designed to encourage customers to import energy at times when additional load can avoid network costs arising from high solar generation, or there is otherwise excess capacity on the network. Customers could shift load to these times through charging electric vehicles or running smart appliances, or by charging their batteries in preparation for the evening peak period.

The 11am to 3pm off-peak time window was selected based on analysis of energy exports in Denman Prospect (an ACT suburb with relatively high solar penetration) between January and December 2020. Chart 1 shows that peak exports generally occur at approximately 11am to 3pm.

**Chart 1: Average load profile of top five peak export days: Denman Prospect, Jan to Dec 2020**



### Seasonal peak demand import charge

The seasonal peak demand charge is designed to send a sharp price signal about the cost of importing electricity at peak and non-peak times. The charge is based on a customer's highest half-hourly demand (measured in kilowatts) during the peak demand period in a calendar month. The peak demand period is 5-8pm daily (AEST). The application of this charge and peak window aligns with Evoenergy's existing residential network demand tariff (tariff codes 025, 026).

In this residential battery tariff, the peak demand import charge is designed to incentivise customers to use electricity from their battery during peak periods.

The peak demand charge is based on Evoenergy's long-run marginal cost (LRMC). The charge varies with the season, reflecting the different costs imposed on the network at different times of year. It is set higher in spring and summer, and lower in autumn and winter.

### Seasonal export charge

In July 2020, a rule change request was submitted to the Australian Energy Market Commission (AEMC) seeking to amend the NER to, among other things, allow export charges as a pricing tool.<sup>11</sup> It is possible that the rule change will be introduced before the start of Evoenergy's 2024–29 regulatory period. The residential battery tariff trial provides an important opportunity for Evoenergy to test export charges, and gather relevant data to inform the potential introduction of export charges in Evoenergy's 2024–29 tariff structure.

<sup>11</sup> AEMC, *Distributed energy resources integration – updating regulatory arrangements*, July 2020.

The seasonal export charge is designed to address potential export-related constraints on Evoenergy’s network, particularly in the middle of the day during spring and summer when solar exports are high and energy imports by residential customers are relatively low.

The charge is aimed at sending a price signal to encourage self-consumption and/or battery recharging during the middle of the day to ‘soak-up’ solar exports at that time. This response will allow customers to reduce or avoid export charges.

The export charge will be levied on any exports in excess of a 3.75 kWh threshold during any one-hour period between 11am and 3pm (AEST).<sup>12</sup> This is illustrated in Figure 1.

The export charge is set higher in spring and summer, and lower in winter and autumn, reflecting that export constraints are more likely during high solar seasons.

**Figure 1 – illustration of seasonal export charge**

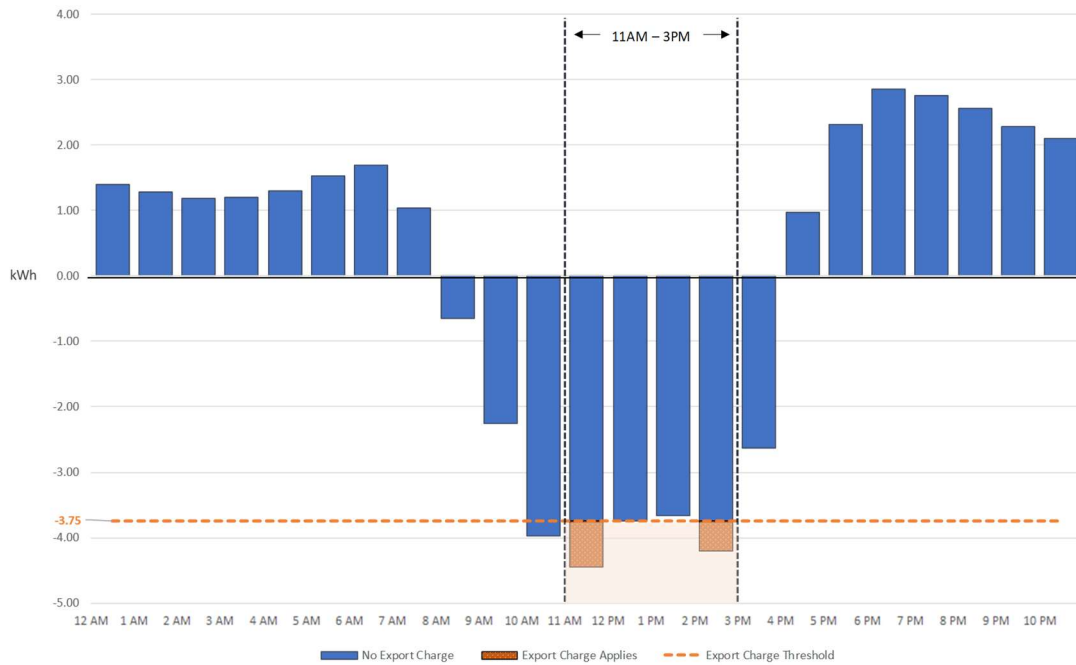


Table 2 shows a worked example of the seasonal export charge, based on the hypothetical import/export profile shown in Figure 1. In this example, the customer exports above the 3.75kWh threshold during 12pm – 1pm and 2pm – 3pm. The customers’ total exports in excess of the threshold are 1 kWh. Therefore, the customer will pay export charges on 1 kWh of exports for that day.

<sup>12</sup> The one hour periods are 11am – 12pm; 12pm – 1pm; 1pm – 2pm; and 2pm – 3pm (AEST).

**Table 2 – hypothetical example of export charge with threshold (for one day).**

Time	Threshold	Customer exports	Chargeable exports
11am – 12pm	3.75 kWh	4.4kWh	0.65 kWh
12pm – 1pm	3.75 kWh	3.75 kWh	0 kWh
1pm – 2pm	3.75 kWh	3.6 kWh	0 kWh
2pm – 3pm	3.75 kWh	4.1 kWh	0.35 kWh
<b>Total chargeable exports</b>			<b>1 kWh</b>

In practice, customers are likely to receive a feed-in-tariff from their retailer that is higher than the seasonal export charge. This means that the seasonal export charge may in effect reduce the 'net' feed-in-tariff received by the customer, rather than being a net charge to the customer.<sup>13</sup>

### Export charge threshold

The export charge threshold recognises that some level of residual network capacity is already accounted for in customers' usage charges, and therefore the export charge only applies when customers impose costs on the network beyond this level.

The export charge threshold has been set based on analysis of the After Diversity Maximum Demand (ADMD) for residential developments with batteries on Evoenergy's electricity network. This analysis found that the weighted average ADMD across various block sizes is approximately 3.75 kW. The ADMD is used as the basis of Evoenergy's network planning, and therefore it can reasonably be expected that reverse power flows (on average) above the ADMD would contribute to power quality and capacity constraints. In turn, this requires additional network augmentation and investment for the efficient and safe operation of the distribution network.

### **Export rebate**

The export rebate is designed to encourage customers to export during critical peak (CP) events. Customers on the residential battery tariff will be notified of the timing of a 'CP event' approximately 24-48 hours in advance. If a customer chooses to export during this period, they will be rewarded through a rebate provided by Evoenergy. The rebate is based on the number of kilowatt hours of energy exported during the critical peak period.

The number of critical peak events will be limited to a maximum of six rebate events per financial year. The duration of any event will be limited to a maximum of three hours. This helps provide greater certainty to households and more fairly share critical peak risk between customers and Evoenergy.

The export rebate signals to customers the benefits (avoided costs) accrued to the network from exports during critical peak events. In practice, the CP event notification

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<sup>13</sup> This depends on the tariff structure offered by retailers, and the extent to which network charges are passed-through to customers.

could be received by the customers' home energy management system, which could trigger exports on the customers' behalf.

## 5.2 Large scale battery tariff

Evoenergy expects to receive a number of connection applications from large-scale batteries in the coming years, with the ACT Government committing to at least 250 MW of batteries over the next five years.<sup>14</sup> Evoenergy does not currently have a network pricing arrangement for such assets.

Large scale batteries have the potential to both impose network costs (similar to other large customers), and reduce network costs (through their ability to address import or export related network constraints). The large-scale battery tariff trial is intended to test cost-reflective charging arrangements. In contrast to many of Evoenergy's other customers, large-scale batteries are not primarily 'consumers' of energy. Rather, these batteries are typically commercial entities that import and export energy at different times, participate in wholesale electricity markets, and provide a variety of network services (e.g. FCAS).

The sophisticated nature of their connection means that large scale batteries are uniquely placed to respond to highly cost reflective price signals and contribute to improving network utilisation. In turn, improving network utilisation may require large scale batteries to respond differently depending on where in the distribution network they are located (i.e. in a commercial or residential area).

The purpose of the large-scale battery tariff trial is to test new charging arrangements that give recognition to both the costs and benefits of large-scale batteries, and encourage their efficient participation in the distribution network.

The tariff structure of large-scale batteries has been designed in accordance with three overarching principles:

- 1) Each component of the tariff is cost reflective – that is, bills for battery customers will be based on their contribution to distribution and transmission costs.
- 2) Equitable contribution to costs and avoiding double counting – all customers should make a contribution to the recovery of the efficient cost of the network, such that other customers still benefit if a battery elects not to provide network support, in pursuance of other revenue streams;
- 3) Prevent cross-subsidisation of network costs – Evoenergy maintains a technology agnostic approach to network charging, which preserves competitive neutrality in the market.

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<sup>14</sup> ABC (2020), 'ACT Labor promise Canberra-wide network of renewable energy batteries if elected', <<https://www.abc.net.au/news/2020-09-30/biggest-renewable-battery-promised-act-labor-election/12715314?nw=0>>



Based on these principles, the tariff structure for the large-scale battery comprises the following components:

- Peak Demand Charge
- Net consumption charge
- Export critical peak rebate/charge
- Capacity charge
- Avoided / Incurred TUOS Charge

Each of these components is described below.

### Peak demand charge

Large scale batteries have the potential to increase network peak demand and contribute to network congestion and network costs during peak times. The peak demand charge signals the costs of importing energy during these times to allow the battery to make efficient decisions on the timing of battery charging.

The peak demand charge is based on the maximum half-hourly demand (measured in kVA) by the large-scale battery during the peak period during the calendar month. The charge is set to signal Evoenergy’s Long Run Marginal Cost (LRMC).

The peak period will be determined by the area in which the battery is located (residential or commercial area), ensuring the price signal accurately reflects periods of network congestion at that location. The peak periods align with the peak periods for the residential demand and commercial demand tariffs. In particular,

- If the battery is in a predominantly residential area, the peak period is 5-8pm daily (AEST)
- If the battery is in a predominantly commercial area, the peak period is 9am-5pm on weekdays (AEST).

This approach of using predominantly residential and commercial load profiles is more cost reflective than using a network load profile which would be a weighted average of the residential and commercial load profiles. This approach thereby provides a more accurate local profile on which to set charging windows, which ultimately leads to large scale batteries receiving sharper price signals that, on average, reflect the peaks that occur on the network in their area.

The ACT zone substations are divided into residential or commercial areas in Table 3 below. This analysis is based on the feeder length servicing residential and commercial customers for each distribution zone station in the ACT.

**Table 3 – ACT zone substations by residential and commercial area**

	Residential	Commercial	Profile
Belconnen	92%	8%	Residential
City East	86%	14%	Commercial
Civic	84%	16%	Commercial

East Lake	15%	85%	Commercial
Fyshwick	13%	87%	Commercial
Gilmore	92%	8%	Residential
Gold Creek	96%	4%	Residential
Latham	96%	4%	Residential
Telopea Park	88%	12%	Residential
Theodore	98%	2%	Residential
Wanniassa	93%	7%	Residential
Woden	91%	9%	Residential

Source: Confidential Evoenergy data, 2019-20.

The battery may avoid or reduce its peak demand charge by either shifting recharging activities outside the peak period, or spreading its load on the network during the peak period to avoid high peaks.

### **Net consumption charge**

Due to energy losses, large scale batteries operate with a round-trip efficiency of less than 100 per cent. That is, a battery will export less energy than it imports. From the perspective of the distribution network, the energy losses represent 'net consumption' of energy by the battery (electricity imported minus electricity exported).

Under ACT legislation, Evoenergy is obligated to make various jurisdictional scheme payments, which it recovers from customers through network tariffs. The jurisdictional schemes currently include:

- Energy Industry Levy (EIL)
- Utilities Network Facilities Tax (UNFT)
- Feed-in Tariff (small, medium, and large scale)

Failing to recover these costs from large-scale batteries would create a cross-subsidy between batteries and other customers. Therefore, the large-scale battery tariff includes a net consumption charge to recover jurisdictional charges from battery operators. DUOS and TUOS costs are reflected in the other tariff charge components and are therefore not recovered through consumption charges.

### **Export Critical Peak Rebate / Charge**

The export critical peak rebate / charge is designed to incentivise export behaviour by the battery, by sending price signals to the operator about the costs and benefits of exporting during nominated critical peak events. This charge/rebate recognises the ability of the large-scale battery to assist the distribution network by either reducing export loads on the network at times of high solar output, or increasing exports when the network is experiencing high demand. The battery can also provide assistance during times when there are generation shortages, however such events are rare.

Under this arrangement, a large-scale battery operator may be notified of the timing of a 'critical peak' (CP) event 24-48 hours in advance. During the CP event window, a battery may be requested to either increase or reduce energy exports. Depending on the type of critical peak event, the large-scale battery may receive a notification for either:

- A **Critical peak export charge** – designed to discourage exports during critical peak events. This can help address rising voltage issues due to increased solar exports, and is expected to apply primarily during the middle of the day in spring and summer. During the critical peak event window, the battery will pay a charge for any exports (measured in kVA hours). If the battery does not export during this period, then the export charge will be zero, and therefore avoided.
- A **Critical peak rebate** – designed to encourage exports during critical peak events. This can help address periods of high network demand, and is expected to apply primarily during the morning and evening periods in summer. During the nominated period, the battery will receive a rebate from Evoenergy for any exports (measured in kVA hours). If the battery does not export during this period, it will not receive any rebate.

The number of critical peak events will be limited to a maximum of six export charge events, and six rebate events per financial year. The duration of any event will be limited to a maximum of three hours. This helps provide greater operational certainty to battery operators and more fairly share critical peak risk between the battery and Evoenergy.

### **Capacity charge**

The capacity charge is designed to recover residual network costs (i.e. the remaining costs that are not covered by LRMC-based peak demand charge).

The capacity charge for the large-scale battery tariff is similar to the capacity charge that currently applies to Evoenergy's HV customers. It is calculated based on the battery's highest demand (measured in kVA), at any time of day, during the previous 13 months.

Including residual costs in the capacity charge allows for a more cost-reflective tariff structure, because the charge is scaled based on the battery's size/capacity. Specifically, the capacity charge provides an incentive for large-scale batteries to flatten their network load throughout the year.

### **Avoided / Incurred TUOS charge**

Evoenergy is required to pay Transmission Use of Service (TUOS) fees to transmission network operators.

Under the NER, Evoenergy is required to make avoided TUOS payments to certain embedded generators over 5MW. The tariff trial extends avoided TUOS payments to all eligible large-scale batteries (see Section 3.3), even if they are below the 5MW threshold. Evoenergy is also proposing a symmetric arrangement, where large scale batteries pay for incurred TUOS, as well as receiving payments for avoided TUOS. This is because, unlike traditional embedded generators (such as solar and wind farms), large-scale batteries are expected to import and export energy, and therefore have the ability to increase or reduce Evoenergy's TUOS costs.

Under Evoenergy's existing suite of network tariffs, TUOS charges are recovered by spreading the costs across the customer base, rather than charging each customer based on their actual incurred TUOS. This is because Evoenergy's customer base is relatively diversified, meaning that it is difficult to identify when or if a particular customer contributes to Evoenergy's highest transmission demand. This also allows for a simpler charging

structure, that is easier for customers to understand and provides greater predictability of network bills.

However, large scale batteries have a significantly different relationship with the distribution network. They operate by responding to market price signals to optimise energy imports and exports, and actively participate in the wholesale electricity market. This allows large scale batteries to be highly responsive to price signals, and contribute to improving network efficiency.

Their relatively large size and active participation in energy markets means that large scale batteries can increase or decrease maximum transmission demand, and therefore directly impact on Evoenergy's TUOS bill.

Therefore, under the tariff trial, large scale batteries will be charged based on their actual incurred or avoided TUOS costs. In particular,

- When the battery increases maximum demand, the battery is charged based on the incremental increase in TUOS payments made by Evoenergy.
- If the battery reduces maximum transmission demand, Evoenergy passes the TUOS saving to the battery via an avoided TUOS payment

If the battery does not contribute to peak transmission demand in a given month, it will not pay the incurred TUOS charge. Similarly, if the battery does not reduce transmission demand it will not receive an avoided TUOS payment.

To account for uncertainty as to the effects of the battery's operation on Evoenergy's TUOS bill, the avoided / incurred TUOS charges will be calculated retrospectively at the end of each calendar month. This is because it is not possible to determine, at any point in time, whether the battery is contributing to increasing or reducing the monthly maximum transmission demand. This also helps to ensure an equitable outcome for battery operators, who will be billed based on actual TUOS incurred.

The retrospective charging arrangement provides a further incentive for battery operators to actively monitor conditions on transmission networks, and avoid periods that have historically been associated with increased transmission demand. This approach is also the most cost reflective way to account for TUOS charges and rebates, and avoids potential cross subsidies between batteries and other customers.

## 6. Indicative pricing

At the time of this tariff notification, Evoenergy has developed indicative price levels for the residential battery and large-scale battery tariff trials using baseline assumptions. Evoenergy will continue to work with economic consultants to model and refine these prices. Evoenergy will submit the proposed tariff trial prices to the AER as part of Evoenergy's 2021/22 Pricing Proposal, due in March 2021. In doing so, Evoenergy will ensure the proposed prices continue to adhere to the subthreshold revenue requirements.

Table 4 and Table 5 set out Evoenergy's indicative 2021/22 prices for the residential battery and large-scale battery tariff trials. Any proposed changes to prices for 2022/23 and 2023/24 will be submitted to the AER in Evoenergy's relevant annual pricing proposal and will ensure that the subthreshold tariff revenue thresholds are met.

**Table 4: Residential battery tariff – indicative prices 2021/22**

Charge component	Unit	High season (spring/summer)	Low season (Autumn winter)
Fixed charge	\$/day	0.28	0.28
Off-peak energy 10pm – 7am daily	\$/kWh	0.02	0.02
Peak energy 7am – 9am daily 5pm – 8pm daily	\$/kWh	0.09	0.06
Shoulder energy 9am – 11am daily 3pm – 5pm daily 8pm – 10pm daily	\$/kWh	0.05	0.04
Solar Sponge 11am – 3pm daily	\$/kWh	0.01	0.01
Peak demand	\$/kW/day	0.16	0.05
Peak export	\$/kWh	0.057	0.019

*Times based on AEST. If applicable, customers may also be charged metering charges in accordance with Evoenergy's approved Network Pricing Proposal for 2021/22.*

**Table 5: Large-scale battery tariff – indicative prices 2021/22**

Charge component	Unit	Value
Peak demand	\$/kVA	
Net consumption	\$/kWh	
Export critical peak charge	\$/kVAh	
Export critical peak rebate	\$/kVAh	
Capacity charge	\$/kVA	
<b>Avoided/Incurred TUOS</b>	<i>Actual avoided/incurred TUOS</i>	

*Charging time windows for the large scale battery tariff differ depending on whether the battery is located in a predominantly residential or commercial area (see Table 3, Section 5.2)*

## 7. Forecast revenues and thresholds

Section 6.18.1C(a) requires that subthreshold tariffs must satisfy both an individual and cumulative revenue threshold. In particular, the NER requires that Evoenergy's:

- forecast annual revenue for each tariff is no greater than 0.5 per cent of the annual revenue requirement (the individual threshold); and
- forecast annual revenue from all tariff trials is no greater than 1 per cent of the annual revenue requirement (the cumulative threshold).

As shown in Table 6 and Table 7, Evoenergy’s proposed subthreshold tariffs are forecast to fall significantly below both the individual and cumulative thresholds for 2021/22. Modelling by Evoenergy has found that even if all potentially eligible residential customers sign-up for the residential battery tariff, Evoenergy will remain below the relevant thresholds.

Evoenergy will continue to monitor customer numbers and volumes on the residential battery and large-scale battery tariffs. In the unlikely event that that the trials approach the revenue thresholds, Evoenergy will remove the registration form from its website to cap the number of customers registering for the trial. Evoenergy will also cease assigning new customers to the large-scale battery tariff if it believes doing so may result in a breach of the revenue thresholds.

Evoenergy intends to demonstrate ongoing compliance with the revenue thresholds in its annual pricing proposals to the AER for 2022/23 and 2023/24.

**Table 6: Compliance with revenue thresholds for subthreshold tariffs (\$2021/22)**

Annual Revenue Requirement (AAR)	DUOS	NUOS
Indicative 2021/22 AAR	\$146,075,576	\$372,701,821
1% of AAR	\$1,460,756	\$3,727,018
0.5% of AAR	\$730,378	\$1,863,509

**Table 7: Indicative revenues from subthreshold tariffs (\$2021/22)**

Indicative revenue from sub-threshold tariffs	DUOS revenue	% of DUOS AAR
Residential battery tariff	\$121,601	0.08%
Large-scale battery tariff	\$276,043	0.19%
Total	\$397,644	0.27%

**Table 7: Indicative prices and forecast revenues – 2021/22**

Tariff Description	Units	2021/22 forecast volumes*	DUOS prices (per 'units')	Forecast DUOS revenue	TUOS prices (per 'units')	Forecast TUOS revenue	JS prices (per 'units')	Forecast JS revenue	NUOS prices (per 'units')	Forecast NUOS revenue
<b>027 Residential Battery Network</b>										
Network access charge	cents/day	200	28.0	\$20,431	0.0	\$0	0.0	\$0	28.0	\$20,431
Energy consumption at max times	cents/kWh	375,202	7.6	\$28,665	1.9	\$6,956	7.4	\$27,847	16.9	\$63,469
Energy consumption at mid times	cents/kWh	292,738	3.4	\$9,815	0.8	\$2,383	3.3	\$9,537	7.4	\$21,736
Energy consumption at economy times	cents/kWh	471,079	1.6	\$7,735	0.4	\$1,875	1.6	\$7,518	3.6	\$17,128
Energy consumption during solar sponge times	cents/kWh	59,589	1.0	\$569	0.2	\$138	0.9	\$553	2.1	\$1,260
Peak period maximum demand - high season	c/kW/day	856	14.9	\$46,691	0.0	\$91	0.0	\$0	15.0	\$46,782
Peak period maximum demand - low season	c/kW/day	987	3.2	\$11,670	0.0	\$22	0.0	\$0	3.2	\$11,691
Export threshold charge - high season	cents/kWh	21,740	2.0	\$435	0.0	\$0	0.0	\$0	2.0	\$435
Export threshold charge - low season	cents/kWh	5,958	1.5	\$89	0.0	\$0	0.0	\$0	1.5	\$89
Export critical peak rebate	cents/kWh	9,000	-50	-\$4,500	0.0	\$0	0.0	\$0	-50.0	-\$4,500
				<b>\$121,601</b>		<b>\$11,464</b>		<b>\$45,456</b>		<b>\$178,521</b>
<b>123 Stand-alone Battery Network: Residential area</b>										
Capacity charge	c/KVA/day	5,955	7.1	\$155,152	4.6	\$99,290	0.0	\$0	11.7	\$254,442
Net Energy consumption	cents/kWh	1,086,800	0.0	\$0	0.0	\$0	5.0	\$54,340	5.0	\$54,340
Peak period maximum demand: high season	c/KVA/day	2,960	11.3	\$122,029	0.0	\$0	0.0	\$0	11.3	\$122,029
Peak period maximum demand: low season	c/KVA/day	2,584	5.6	\$52,862	0.0	\$0	0.0	\$0	5.6	\$52,862
Critical Peak Export Rebate	cents/kWh	216,000	-25.0	-\$54,000	0.0	\$0	0.0	\$0	-25.0	-\$54,000
Critical Peak Export Charge	cents/kWh	0	0	\$0	0.0	\$0	0.0	\$0	0.00	\$0
				<b>\$276,043</b>		<b>\$99,290</b>		<b>\$54,340</b>		<b>\$429,673</b>
<b>124 Stand-alone Battery Network: Commercial area</b>										
Capacity charge	c/KVA/day	0	7.1	\$0	4.6	\$0	0.0	\$0	11.7	\$0
Net Energy consumption	cents/kWh	0	0.0	\$0	0.0	\$0	5.0	\$0	5.0	\$0
Peak period maximum demand: high season	c/KVA/day	0	11.3	\$0	0.0	\$0	0.0	\$0	11.3	\$0
Peak period maximum demand: low season	c/KVA/day	0	5.6	\$0	0.0	\$0	0.0	\$0	5.6	\$0
Critical Peak Export Rebate	cents/kWh	0	-25.0	\$0	0.0	\$0	0.0	\$0	-25.0	\$0
Critical Peak Export Charge	cents/kWh	0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0
				<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
<b>Total forecast revenue</b>				<b>\$397,644</b>		<b>\$110,754</b>		<b>\$99,796</b>		<b>\$608,194</b>

\* Volumes in the "Network access charge" rows are customer numbers. Volumes in the energy consumption rows are energy consumption in kWh units. Volumes in the maximum demand and capacity charge rows are demand volumes in kW or kVA units (as per "Units" column).

## 8. Alignment to TSS strategy

Evoenergy's 2019-24 TSS continues Evoenergy's strategy of transitioning its network tariffs towards greater cost reflectivity over time. This strategy recognises that cost-reflective price signals are critical to improving network utilisation, and driving more efficient network augmentation. At the same time, Evoenergy is looking to the future and the emergence of new technologies, such as batteries, that can change the way customers interact with the distribution network. The proposed tariff trials set the path for ensuring Evoenergy can provide its future customers with more choices and pricing structures that reflect customers' changing technological preferences and energy-usage behaviours.

The transition to greater cost reflectivity comes at a time when there is a growing uptake of solar panels, batteries, and other distributed energy resources in the ACT. This has aligned with the roll-out of smart meters and energy management technologies that have made it easier for customers to engage with their electricity supply, understand their consumption patterns and respond to price signals.

The proposed tariff trials represent a continuation of Evoenergy's TSS strategy by allowing Evoenergy to future-proof its tariff structure, so that it is ready to accommodate a growing number of customers with batteries and advanced energy technologies. These tariffs help customers manage their network bills, improve network utilisation and long-term costs, and meet customers' expectations for a safe and reliable electricity distribution network.

The tariff trials are also aligned to Evoenergy's TSS through the NER pricing principles which underpin both the TSS, and the design of the trials. Attachment 1 outlines how the proposed tariff trial pricing structures conform with the National Electricity Objective (NEO) and the pricing principles under the NER.