

# Sub-threshold tariff notification

Evoenergy: Australian Capital Territory electricity distribution network

Notification to the Australian Energy Regulator

Planned battery tariff trials 2021–22 to 2023–24

February 2022



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# Glossary

<b>Term</b>	<b>Definition</b>
<b>AAR</b>	Annual revenue requirement
<b>ACT</b>	Australian Capital Territory
<b>ADMD</b>	After Diversity Maximum Demand
<b>AEMC</b>	Australian Energy Market Commissioner
<b>AER</b>	Australian Energy Regulator
<b>AEST</b>	Australian Eastern Standard Time
<b>CP</b>	Critical Peak
<b>DER</b>	Distributed Energy Resources
<b>DNSP</b>	Distribution Network Service Provider
<b>ECRC</b>	Energy Consumer Reference Council
<b>EIL</b>	Energy Industry Levy
<b>EV</b>	Electric Vehicle
<b>FCAS</b>	Frequency Control Ancillary Services
<b>HEMS</b>	Home Energy Management System
<b>kVA</b>	Kilo volt ampere
<b>kVAh</b>	Kilo volt ampere hours
<b>kWh</b>	Kilo watt hour
<b>LRMC</b>	Long run marginal cost
<b>MW</b>	Mega watt
<b>NEO</b>	National Energy Objective
<b>NER</b>	National Energy Regulator
<b>NUOS</b>	Network use of system
<b>TOU</b>	Time of Use
<b>TSS</b>	Tariff Structure Statement
<b>TUOS</b>	Transmission Use of System
<b>UNFT</b>	Utilities Network Facilities Tax

# 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 continue the trial of sub-threshold tariffs into 2022/23. The two subthreshold tariffs are as follows.

- **Residential battery tariff** – a tariff designed for residential customers with controlled batteries and electric vehicles (EVs) 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** – stand-alone batteries began connecting to the ACT electricity network in 2021. The large-scale battery tariff enables Evoenergy to test customer responses to highly cost-reflective price signals. The trial remains particularly important given that large-scale batteries respond to a range of price signals (including wholesale prices and Frequency Control Ancillary Services (FCAS)), in addition to network price signals.

Given the innovative nature of the trial tariffs Evoenergy has maintained close contact with the AER, consumers, and retailers to ensure the tariffs are fit-for-purpose and deliver on their objectives. Feedback obtained via engagement with consumers (including consumer groups and large-scale battery proponents) and retailers on the tariff trials has been taken into account to further inform the tariff trials. The trials 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).

Learnings and feedback from stakeholders over the past 12 months have resulted in proposed adjustments to the Residential battery and Large-scale battery tariff trials for 2022/23.

This notification sets out background information on the subthreshold tariffs, the consumer and retailer engagement undertaken, and describes the tariff structures. The proposed alterations to the tariffs in the 2022/23 period are also explained. It also includes supporting information to demonstrate compliance with the requirements of Rule 6.18.1C.

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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 renewable 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 highly cost reflective pricing signals, and the opportunity to better manage their load on the network and therefore their network bill. This includes sending customers price signals about the costs of importing and exporting energy at peak and non-peak times, and incentivising efficient use of the distribution network.</p> <p>The tariffs have the potential to improve network utilisation and allow for the efficient integration of distributed energy resources (DER), as battery technology becomes more widespread.</p> <p>Evoenergy will consider incorporating the new tariffs into its proposed tariff structure for the next regulatory period (2024–29)</p>	
<b>Retailer engagement</b>	<p>Evoenergy has met regularly with retailers who have expressed interest in participating in the tariff trial. These meetings have allowed Evoenergy to clarify any queries retailers have regarding the trials as they are integrated into the billing systems. Feedback received from retailers has remained supportive of the trials, and conversations with retailers will continue throughout the trial period.</p>	
<b>Consumer engagement</b>	<p>A webpage dedicated to the Residential Battery Tariff which includes a fact sheet and presentation about the tariff trials, along with contact details should consumers have any questions, is available for consumers to access.</p>	<p>Evoenergy has continued to engage directly with large battery operators, informing them of the pricing principles, tariff design and indicative bill impacts. Battery operators have provided valuable feedback which has been addressed in tariff adjustments.</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 3.75kWh 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). The peak period varies depending on whether the battery is located in a residential or commercial area)</li> <li>• Net consumption charge to recover losses (imports less exports)</li> <li>• Export Critical Peak Rebate (credit based on export (kVAh) during a notified critical peak rebate event)</li> <li>• Export Critical Peak Charge (based on export (kVAh) during a notified critical peak charge event)</li> <li>• Capacity charge (based on the highest half-hourly demand placed on the network any time over the previous 13 months)</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>

	Residential battery tariff	Large-scale battery tariff
<b>Forecast revenue</b>	\$37,470 (NUOS revenue, \$2022/23)	\$129,923 (NUOS revenue, \$2022/23)
<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>	<p>Evoenergy will expand the assignment policy to also include residential customers who own electric vehicles (EVs). This is because some EVs have the capability to operate as a battery, and as a result may be able to respond to price signals contained within the tariff.</p> <p>This change has been triggered via feedback from retailers who have identified that EV owners have the ability to respond to the price signals within the tariff.</p>	<p>Evoenergy has altered the balance of cost allocations across the seasonal peak demand and capacity charges. These will sharpen the price signals for large-scale batteries located in residential areas.</p> <p>The change was triggered by a review of large-scale battery behaviour during the first year of the trial.</p> <p>The tariff trial will be open to low voltage (LV) commercial customers in 2022/23 with the introduction of the same tariff structure for this tariff class. The LV commercial versions of the tariff have different prices to reflect the long run marginal cost (LRMC) for the LV commercial tariff class.</p>
<b>Notification date</b>	25 February 2022	
<b>Optional information</b>		
Forecast volumes	See Section 7	
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 6.18.1C(a) 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). Clause 11.141.8 of the NER requires that:

- the DNSP's forecast annual revenue for each tariff is no greater than 1 per cent of the DNSP's annual revenue requirement (the individual threshold); and
- the DNSP's forecast annual revenue from all tariff trials is no greater than 5 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 7.

### 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 one of its strategic goal 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.

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



## 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 commenced the tariff trials on 1 July 2021, with the intention of running the trial over a three-year period, concluding on 30 June 2024. 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 was nominated for a number of reasons.

- 1) It will provide Evoenergy with trial data to inform its revised 2024-29 TSS which will be submitted to the AER in late 2023 and may include a 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 is available 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 behind-the-meter battery or an EV which is charged on the premises; and
3. have a smart meter.

Evoenergy proposes to extend the eligibility requirements in the 2022/23 period to include customers who own EVs. The reasoning behind this change is that some EVs have the capability to operate as a battery with 2-way flows. In addition, it is anticipated that EVs with 2-way flow capabilities will become more common in the future. Customers with EVs may be well placed to respond to the tariffs' price signals as they may decide to charge their EV during the solar sponge period or delay the charging of their EV until the off-peak periods. Including EV customers in the trial will inform Evoenergy of the charging preferences of EV owners in response to tariff price signals.

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 be notified of participating retailers. 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).

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

### 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>4</sup>;
- 2) have a stand-alone grid-connected battery; and
- 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>4</sup> Ibid

## 4. Consumer and retailer engagement

Evoenergy has continued to engage with the ACT community about the network tariff trials. In the past 12 months, the focus of engagement has shifted from the design of tariffs to the implementation of the tariff trials. This has meant regular meetings with retailers who have expressed interest in taking up the new network tariffs, engaging with the ACT Government, and a focus on engaging with large-scale battery operators that are seeking to connect to the ACT distribution network.

Stakeholder engagement over the past 12 months has provided valuable learnings to Evoenergy, particularly in regard to the implementation and cost reflectivity of the tariffs. An overview of stakeholder engagement is provided below.

**Consumers** – Evoenergy has maintained a webpage dedicated to the tariff trial so that consumers can access information about the trials and register their interest.<sup>5</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.

For the large-scale battery tariff, Evoenergy has engaged regularly with large-scale battery operators who have connected or intend to connect to Evoenergy's distribution network. These presentations covered the 2021/22 tariff trial prices and indicative bill impacts (after prices were approved and implemented), and proposed changes to the pricing of tariff components (for 2022/23).

**ACT Government** – Evoenergy engaged with the ACT Government about the tariff trial. This has included presentations on the structure of the large-scale battery tariff and a subsequent update.

**Retailers** – Evoenergy has been engaging with retailers through one-on-one meetings since the concept of ACT tariff trials in 2020. In the past 12 months, Evoenergy has regularly met with retailers who have indicated their interest in participating in the trials. Evoenergy also provided retailers with a copy of the 2021/22 network electricity schedule of charges to inform retailers of the tariff trial prices.

The meetings with retailers have allowed Evoenergy and retailers to explore implementation options and better understand retailers' concerns and priorities. Retailer feedback has resulted in the proposed expansion of the residential battery tariffs' eligibility to include EV owners.

To date, retailers have been supportive of Evoenergy's tariff trials. However, retailers are concerned that the magnitude of customers eligible for the tariff may not warrant the retail system changes required for implementation. Furthermore, there is no central, publicly available source of data to identify ACT customers with batteries (or EVs) which presents a further barrier for retailers participating in the tariff trials. While there are currently no retailers participating in the residential battery tariff trial, Evoenergy is progressing with the trials due to positive community feedback and indications from retailers of their intention to participate in the tariff trial shortly. Evoenergy continues to meet regularly with interested retailers to find solutions.

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<sup>5</sup> <https://www.evoenergy.com.au/emerging-technology/initiatives/residential-tariff-trial>

## 5. Tariff structure

This section describes the tariff structures for the residential battery tariff and large-scale battery tariffs. These tariff structures were developed in consultation with Oakley Greenwood who provided expert independent advice on the tariff design and their conformance with the NER pricing principles.

### 5.1 Residential battery tariff

The residential battery tariff structure is specifically designed with ‘prosumer’ residential customers in mind. The tariff is designed for customers with batteries, EVs and other energy technologies (e.g. 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.

In 2022/23, Evoenergy proposes to extend the eligibility of the tariff to EV owners. EVs are another form of batteries which may be able to take advantage of the highly cost reflective price signals contained within the residential battery tariff. Customers with an EV charging load may be responsive to price due to their ability to control when an EV recharging load occurs.

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 and EVs more control over their network electricity bills. The residential battery tariff has been designed based on the two underlying principles.

1. Ensuring each component of the tariff is cost-reflective.
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. Notably, the structure of this tariff is to be the same in 2022/23 as it was in 2021/22.

## Fixed supply charge

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

The fixed charge will continue be applied on a daily basis, and be 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/EVs 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	The Evoenergy network (in residential areas) typically experiences peaks between 7-9am and 5-8pm daily. <sup>6</sup>  The peak charges incentivise self-consumption from the battery to avoid contributing to network peaks.  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.
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)

<sup>6</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>

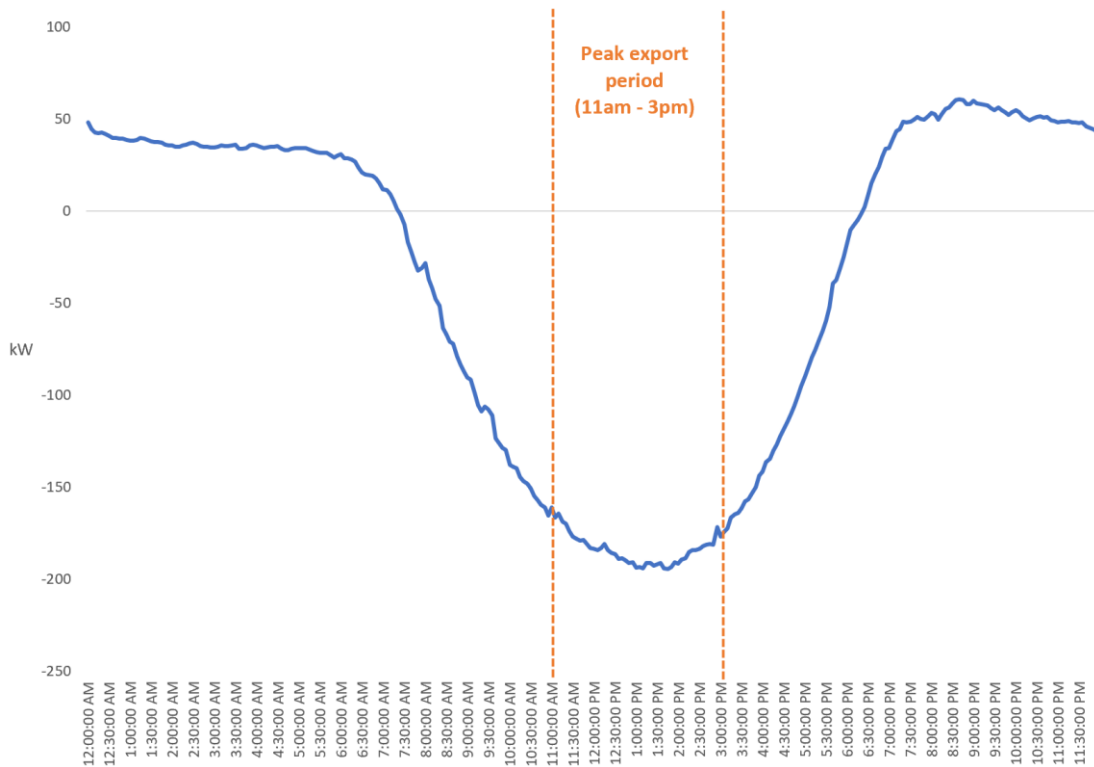
The same TOU charges will apply all year round (i.e. there is no seasonal change to the charges).

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 (AEST) 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 EVs 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 an ACT suburb with relatively high solar penetration, between January and December 2021. Chart 1 shows that peak exports generally occur at approximately 11am to 3pm.

**Chart 1: Average load profile of top five peak export days: Strathnairn distribution substation, Jan to Dec 2021**



### **Seasonal peak demand import charge**

The seasonal peak demand charge is designed to send a 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>7</sup> The AEMC made a final decision on this request in August 2021, which means export charges can be applied. Until 1 July 2025, export charges can be offered to customers in the form of an opt-in tariff (such as this tariff trial). 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.

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>8</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 the 'high seasons'.

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<sup>7</sup> AEMC, *Distributed energy resources integration – updating regulatory arrangements*, July 2020.

<sup>8</sup> The one-hour periods are 11am – 12pm; 12pm – 1pm; 1pm – 2pm; and 2pm – 3pm (AEST).

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

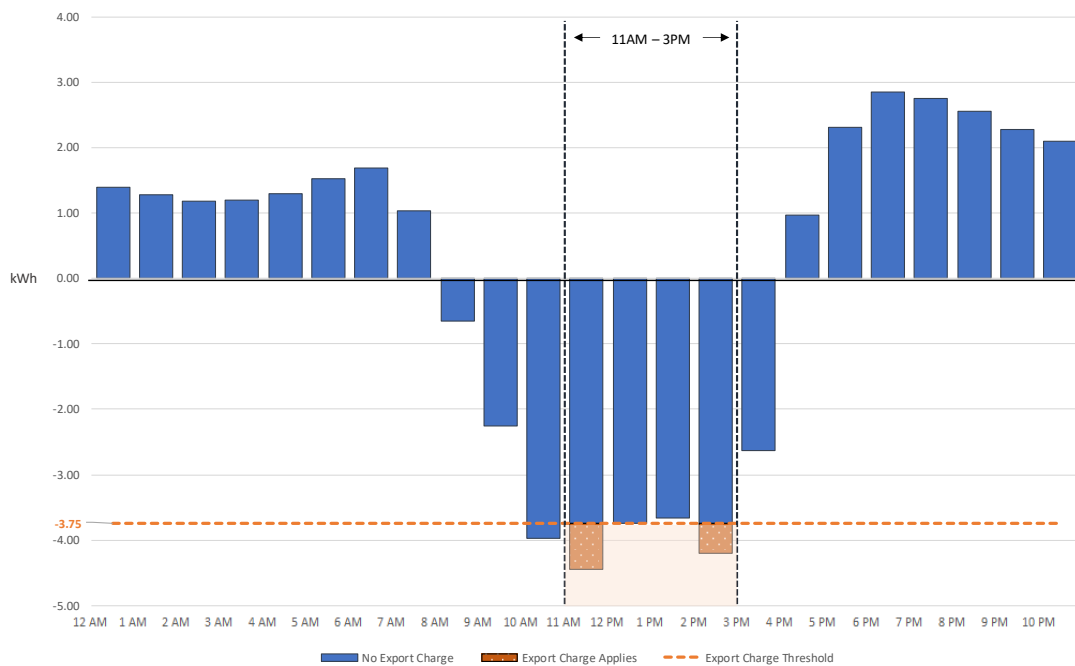


Table 2 shows a worked example of the seasonal export charge, based on the hypothetical import/export profile shown in Figure 1. In this example, the customer exports above the 3.75kWh threshold during 12pm – 1pm and 2pm – 3pm. The customers’ total exports in excess of the threshold are 1 kWh. Therefore,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

**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>9</sup>

<sup>9</sup> This depends on the tariff structure offered by retailers, and the extent to which network charges are passed-through to customers.



### Export charge threshold

The export charge threshold recognises that some level of residual network capacity is already accounted for in customers' consumption 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 electricity 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 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>10</sup> Evoenergy's current tariff structure statement does not contain a network pricing arrangement for such assets. The large-scale battery tariff trial enables Evoenergy to offer battery proponents a tariff option which is designed for large-scale batteries.

Large-scale batteries could be either HV or LV commercial customers. To accommodate both tariff classes, Evoenergy intends to add two new tariffs to the large-scale battery tariff trial as per the list below. This will enable revenue recovered from each tariff class to be appropriately accounted for. The prices will vary between the LV and HV commercial versions of the tariff to reflect the LRMC of each tariff class.

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<sup>10</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>>

1. Large-scale battery with an HV connection, located in a residential area.
2. Large-scale battery with an HV connection, located in a commercial area.
3. Large-scale battery with an LV connection, located in a residential area.
4. Large-scale battery with an LV connection, located in a commercial area.

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 electricity. 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.

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 cost of importing electricity during these peak times to allow the battery the opportunity to make informed decisions about the timing of battery recharging.

The peak demand charge is based on the maximum half-hourly demand (measured in kVA) by the large-scale battery during the peak period in a calendar month. The charge is set to signal Evoenergy's Long Run Marginal Cost (LRMC). The demand charges also recover a portion of the residual cost component, as batteries are utilising the network when they import during peak demand periods.

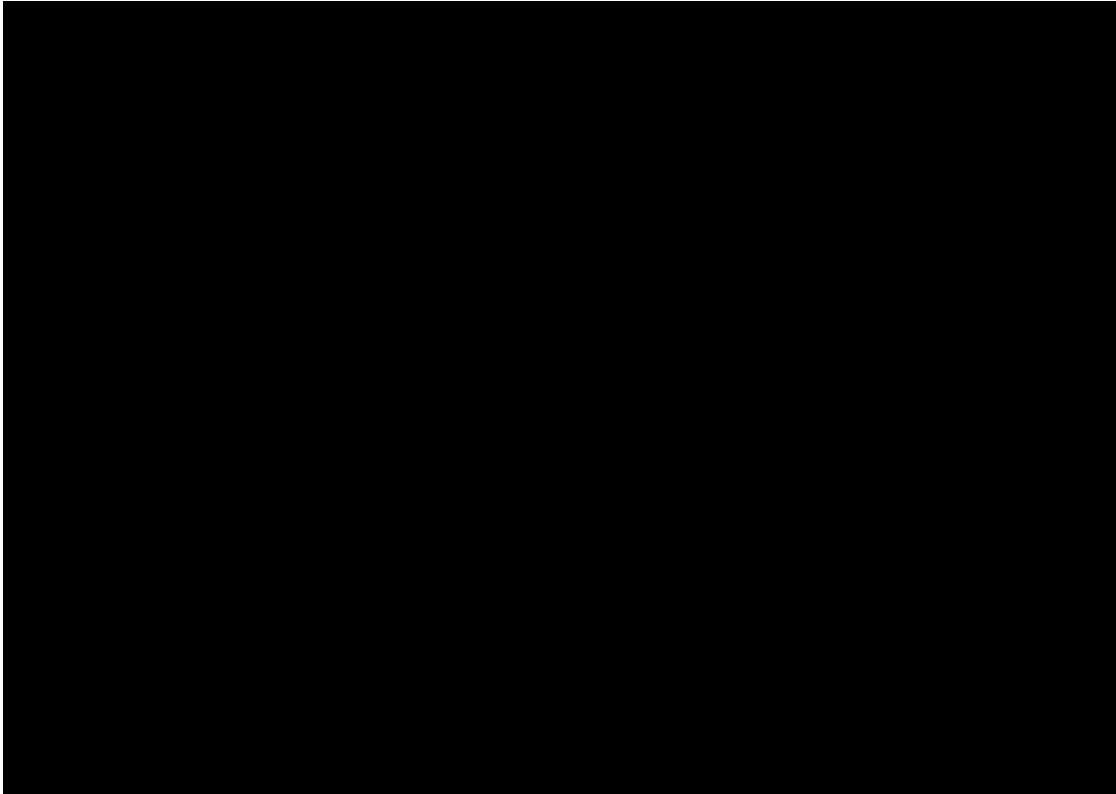
The peak period will be determined by the area in which the battery is located (residential or commercial area), ensuring the price signal reflects periods of network congestion at that location. The demand charge peak periods align with the peak periods for the residential demand and commercial demand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

- if the battery is in a predominantly residential area, the peak period is 5-8pm daily (AEST) all year-round; and
- if the battery is in a predominantly commercial area, the peak period is 9am-5pm on weekdays (AEST) all year-round.

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 and 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**



Source: Confidential Evoenergy data, 2019-20.

The large-scale 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.

For large-scale batteries located in a residential area (tariff 123), Evoenergy proposes to rebalance the peak demand and capacity charges in 2022/23. Specifically, Evoenergy proposes to reduce the capacity charge and increase the peak demand charge. This will sharpen the tariff's price signal, creating a greater incentive for large-scale batteries to concentrate on the peak period (5-8pm AEST).

The change enables large-scale batteries greater control over their network bill. If large-scale batteries on tariff code 123 are able to avoid or reduce imports during the peak window, they can potentially reduce their 2022/23 network bill compared to 2021/22.

Evoenergy has engaged on this specific change with large-scale batteries who are operating (or considering operating) in the ACT. All battery proponents with whom we engaged provided positive feedback on this proposal.

This rebalancing is not proposed for large-scale batteries located in commercial areas (tariff code 124). This is because it is unrealistic to expect a large-scale battery to avoid the 7am-5pm (AEST) weekday peak period. Increasing the peak demand charge on the commercial-area tariff (code 124) to the same degree as the residential-area tariff (code 123) could potentially result in substantial bill increases for large-scale batteries located in commercial areas.

## 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 electricity than it imports. From the perspective of the distribution network, the energy losses represent 'net consumption' of electricity 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 large-scale 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 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 its export loads on the network at times of high solar output, or increasing its 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 of the following.

- 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 charge 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 a portion of the residual network costs which are attributable to a battery's operation irrespective of when the battery imports or exports.

The capacity charge for the large-scale battery tariff is calculated based on the battery's highest demand (measured in kVA), at any time of day, during the previous 13 months. The capacity charge provides an incentive for large-scale batteries to flatten their network load throughout the year.

Including residual costs in the capacity charge allows for a more cost-reflective tariff structure. The capacity charge is scaled to the battery's size/capacity, rather than being applied uniformly via a fixed charge.

## 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 as follows.

- If 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. The accumulated month avoided/incurred TUOS payments will be paid on an annual basis.

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 an increase or decrease in 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 or avoided.

This approach is 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 refine these prices for inclusion in Evoenergy's 2022/23 Pricing Proposal. In doing so, Evoenergy will ensure the proposed prices continue to adhere to the subthreshold revenue requirements.

Tables 4 to 8 set out Evoenergy's indicative 2022/23 prices for the residential battery and large-scale battery tariff trials. Any proposed changes to prices for 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 2022/23**

Charge component	Unit	High season	Low season
Fixed charge	\$/day		
Off-peak energy <i>10pm – 7am daily</i>	\$/kWh		
Peak energy <i>7am – 9am daily</i> <i>5pm – 8pm daily</i>	\$/kWh		
Shoulder energy <i>9am – 11am daily</i> <i>3pm – 5pm daily</i> <i>8pm – 10pm daily</i>	\$/kWh		
Solar Sponge <i>11am – 3pm daily</i>	\$/kWh		
Peak demand	\$/kW/day		
Peak export	\$/kWh		
Peak export rebate	\$/kWh		

Notes: all times are based on AEST. If applicable, customers may also be charged metering charges in accordance with Evoenergy's approved Network Pricing Proposal for 2022/23.



**Table 5: HV Large-scale battery tariff (Residential) – indicative prices 2022/23**

Charge component	Unit	High Season	Low Season
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>		

Note: 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).

**Table 6: HV Large-scale battery tariff (Commercial)– indicative prices 2022/23**

Charge component	Unit	High Season	Low Season
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>		

Note: 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)

**Table 7: LV Large-scale battery tariff (Residential) – indicative prices 2022/23**

Charge component	Unit	High Season	Low Season
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>		

Note: 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)

**Table 8: LV Large-scale battery tariff (Commercial) – indicative prices 2022/23**

Charge component	Unit	High Season	Low Season
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>		

Note: 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) and Section 11.141.8 of the NER 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 1 per cent of the annual revenue requirement (the individual threshold); and
- forecast annual revenue from all tariff trials is no greater than 5 per cent of the annual revenue requirement (the cumulative threshold).

As shown in Tables 9 and 10, Evoenergy's proposed subthreshold tariffs are forecast to fall significantly below both the individual and cumulative thresholds for 2022/23.

Evoenergy will continue to monitor customer numbers and volumes on the residential battery and large-scale battery tariffs. In the unlikely event 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 2023/24.

**Table 9: Compliance with revenue thresholds for subthreshold tariffs (\$2022/23)**

Annual Revenue Requirement (AAR)	DUOS	NUOS
Indicative 2022/23 AAR	\$141,300,502	\$317,373,977
5% of AAR	\$7,065,025	\$15,868,898
1% of AAR	\$1,413,005	\$3,173,739

**Table 10: Indicative revenues from subthreshold tariffs (\$2022/23)**

Indicative revenue from sub-threshold tariffs	DUOS revenue	% of DUOS AAR
025 / 026 Residential battery tariff	\$59,574	0.04%
108 LV Large-scale battery (Res) tariff	\$0	0.0%
109 LV Residential battery (Com) tariff	\$0	0.0%
123 HV Large-scale battery (Res) tariff	\$256,856	0.18%
124 HV Large-scale battery (Com) tariff	\$0	0.0%
Total	\$316,431	0.22%

Note: (Res) / (Com) indicate whether the stand-alone battery is serviced by a Residential or Commercial Substation.

**Table 11: Indicative prices and forecast revenues – 2022/23**

Tariff Description	Units	2022/23 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									
Energy consumption at max times	cents/kWh									
Energy consumption at mid times	cents/kWh									
Energy consumption at economy times	cents/kWh									
Energy consumption at solar sponge times	cents/kWh									
Peak period maximum demand - high season	cents/kW/day									
Peak period maximum demand - low season	cents/kW/day									
Export threshold charge - high season	cents/kWh									
Export threshold charge - low season	cents/kWh									
Export critical peak rebate	cents/kWh									
<b>108 LV Stand-alone Battery Network (Residential area)</b>										
Capacity charge	cents/kVA/day									
Net energy consumption	cents/kWh									
Peak period maximum demand: high season	cents/kVA/day									
Peak period maximum demand: low season	cents/kVA/day									
Critical peak export rebate	cents/kVAh									
Critical peak export charge	cents/kVAh									
<b>109 LV Stand-alone Battery Network (Commercial area)</b>										
Capacity charge	cents/kVA/day									
Net energy consumption	cents/kWh									
Peak period maximum demand: high season	cents/kVA/day									
Peak period maximum demand: low season	cents/kVA/day									
Critical peak export rebate	cents/kVAh									
Critical peak export charge	cents/kVAh									
<b>123 HV Stand-alone Battery Network (Residential area)</b>										
Capacity charge	cents/kVA/day									
Net energy consumption	cents/kWh									
Peak period maximum demand: high season	cents/kVA/day									
Peak period maximum demand: low season	cents/kVA/day									
Critical peak export rebate	cents/kVAh									
Critical peak export charge	cents/kVAh									
<b>124 HV Stand-alone Battery Network (Commercial area)</b>										
Capacity charge	cents/kVA/day									
Net energy consumption	cents/kWh									
Peak period maximum demand: high season	cents/kVA/day									
Peak period maximum demand: low season	cents/kVA/day									
Critical peak export rebate	cents/kVAh									
Critical peak export charge	cents/kVAh									
<b>Total forecast revenue</b>				<b>\$316,431</b>		<b>\$154,016</b>		<b>\$88,408</b>		<b>\$558,856</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 strategic goal 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, EVs 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.