

Draft Decision

Endeavour Energy

Electricity Distribution

Determination 2024 to 2029

(1 July 2024 to 30 June 2029)

Attachment 18
Connection Policy

September 2023

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Contents

18 Connection Policy	4
18.1 Draft decision.....	5
18.2 Endeavour Energy’s proposal.....	5
18.3 Stakeholder consultation and Framework and Approach	5
18.4 Assessment approach	6
18.5 Reasons for draft decision	6
18.6 AER approved connection policy	7
AER approved connection policy for Endeavour Energy	8
Shortened forms	9

18 Connection Policy

We are required to approve a connection policy prepared by a distributor under the National Electricity Rules (NER).¹

A connection policy sets out the nature of connection services offered by a distributor, when connection charges may be payable by retail customers, and how those charges are calculated. A connection policy:²

- must be consistent with:
 - the connection charge principles set out in chapter 5A of the NER
 - the connection policy requirements set out in part DA of chapter 6 of the NER
 - our connection charge guideline published under chapter 5A³, and
- must detail:
 - the categories of persons that may be required to pay a connection charge and the circumstances in which such a requirement may be imposed
 - the aspects of a connection service for which a connection charge may be made
 - the basis on which connection charges are determined
 - the way connection charges are to be paid (or equivalent consideration is to be given)
 - a threshold (based on capacity or any other measure identified in the connection charge guideline) below which a retail customer (not being a non-registered embedded generator or a real estate developer) will not be liable for a connection charge for an augmentation other than an extension.

Our connection charge guideline for electricity retail customers

Under the chapter 5A of the NER, we are required to develop and publish our connection charge guideline to set out how electricity distributors should charge new electricity customers for connecting to their networks.⁴

Following a rule change, we initiated a review of the connection charge guideline to specify the conditions under which a distributor may impose a static zero export limit on rooftop solar in limited situations. Static zero export limit means a customer may not export electricity at any time. These conditions are intended to strengthen customer safeguards.⁵

Our final decision on the review of the connection charge guideline was published in April 2023, after the due date for the regulatory proposal. Hence, there is also a need to modify

¹ NER, Part DA of chapter 6.

² NER, cl. 6.7A.1(b).

³ AER, *Connection charge guideline for electricity retail customers, Under chapter 5A of the National Electricity Rules Final Version 3.0*, April 2023.

⁴ NER, cl. 5A.E.3(a).

⁵ Available at <https://www.aemc.gov.au/rule-changes/access-pricing-and-incentive-arrangements-distributed-energy-resources>

the proposed connection policy to align with the final connection charge guideline. Endeavour Energy has agreed with these changes (along with other minor amendments).

A connection policy must be consistent with our connection charge guideline for electricity retail customers to ensure that connection charges:

- are reasonable and consider the efficient costs of providing the connection services arising from the new connection or connection alteration
- provide, without undue administrative cost, a user-pays signal to reflect the efficient costs of providing the connection services
- limit cross-subsidisation of connection costs between different classes (or subclasses) of retail customers, and
- are competitively neutral if the connection services are contestable.

18.1 Draft decision

We do not approve Endeavour Energy's connection policy as it:

- does not contain all the necessary information required under the NER, and
- contains conditions that are inconsistent with our connection charge guideline.

We have identified various deficiencies in the policy in that:

- It does not contain the new conditions set out in our amended connection charge guideline on how it may impose a static zero export limit on new rooftop solar.
- It lacks clarity for the connection applicants that the policy applies to both the inter-connection network and regulated standalone power systems.

For this draft decision, in consultation and agreement with Endeavour Energy we have amended its connection policy to the extent necessary to meet the NER requirements and our connection charge guideline.⁶

18.2 Endeavour Energy's proposal

Endeavour Energy's connection policy provides an outline of its connection services, when connection charges may be payable by its retail customers and how those charges are calculated.⁷

18.3 Stakeholder consultation and Framework and Approach

Following stakeholder consultation, we classified standard connection services and connection management services as direct control services, and further as alternative control

⁶ NER, clause 6.12.3(j)(2); Endeavour Energy, *email to AER re: Further slight amendment to Endeavour Energy - information request END #IR022 – [Connection Policy] – 20230504*, 30 May 2023.

⁷ Endeavour Energy, *Connection Policy Applicable for 2024-2029*, January 2023.

services. Basic connection services are an unregulated distribution service as we have no role in regulating these contestable distribution services.⁸

No submissions were received related to the connection policy.

18.4 Assessment approach

We examined the proposed connection policy against the requirements of Part DA of chapter 6 of the NER as stated above—whether it:

- Is consistent with the connection charge principles set out in chapter 5A of the NER, and our connection charge guideline, and
- contains all the information for new customers as prescribed by the NER.

In addition, we also examined whether:

- other connection related charges included in the connection policy, such as metering installation charges, are consistent with the service classification of this preliminary determination, and
- the connection policy contains terms that are not fair and reasonable.

18.5 Reasons for draft decision

We are not satisfied that Endeavour Energy's connection policy is compliant with the NER. Amongst other things, we have amended Endeavour Energy's connection policy to the extent necessary to enable it to comply with the NER and our connection charge guideline, which:

- clarify how it may impose a static zero export limit on new rooftop solar as per the connection charge guideline,
- clarify how Endeavour Energy will charge for removing export constraint on request from a micro embedded generator as per the connection charge guideline, and
- clarify that the policy applies to both the inter-connection network and regulated standalone power systems.

We have discussed these changes with Endeavour Energy, which has agreed with our amended connection policy.⁹

We consider that the amended connection policy is consistent with our connection charge guideline. Specifically, the purpose of the connection charge guideline includes:¹⁰

- to provide, without undue administrative cost, a user-pays signal to reflect the efficient cost of providing the connection services; and

⁸ AER, *Final framework and approach, Ausgrid, Endeavour Energy and Essential Energy (New South Wales)*, July 2022, pp. 3-8.

⁹ Endeavour Energy, *email to AER re: Further slight amendment to Endeavour Energy - information request END #IR022 – [Connection Policy] – 20230504*, 30 May 2023.

¹⁰ NER clauses 5A.E.3(b)(2) and 5A.E.3(b)(3)

- to limit cross-subsidisation of connection costs between different classes (or subclasses) of retail customer.

18.6 AER approved connection policy

We have modified Endeavour Energy's proposed connection policy to reflect the above draft decision on this matter.¹¹ This amended connection policy is appended to this chapter.

¹¹ Clause 6.12.3(j)(2) provides that we may amend the proposed connection policy to the extent necessary to enable it to be approved in accordance with the NER.

AER approved connection policy for Endeavour Energy

Connection Policy

Applicable for 2024-2029

Showing amendments by the AER



Contents

1.	INTRODUCTION	3
2.	CONNECTION SERVICES PROVIDED BY ENDEAVOUR ENERGY	<u>65</u>
3.	CONNECTION OFFERS	<u>87</u>
4.	CONTESTABLE SERVICES PROVIDED BY ASPS	<u>1240</u>
5.	CONNECTION CHARGES	<u>1442</u>
6.	DISTRIBUTED ENERGY RESOURCE CONNECTIONS	<u>1846</u>
	APPENDIX 1 PIONEER SCHEME	<u>2149</u>

1. Introduction

1.1 Connection to Endeavour Energy's distribution system

A connection service allows premises to be supplied with electricity from the Endeavour Energy's electricity distribution system and to export electricity from their own generating systems. To obtain a new connection to Endeavour Energy's electricity distribution system or an alteration¹ to an existing connection, a customer (also known as a Connection Applicant) must apply to Endeavour Energy for a connection service.

Endeavour Energy provides a range of connection services under Chapter 5A of the National Electricity Rules (NER). There may be charges payable to Endeavour Energy for connection services or for work required to upgrade the shared network including stand-alone power systems (SAPS) for the connection. These services and associated fees are regulated by Australian Energy Regulator (AER). There may also be charges payable to an Accredited Service Provider (ASP) for contestable services. Endeavour Energy does not provide contestable services.

ASPs provide contestable network services under the *Electricity Supply Act 1995* (NSW). A contestable network service is any work to design, construct or install assets that connect a customer's installation to the Endeavour Energy electricity network. If contestable network services are required according to the AER service classification, we will inform you and you must arrange this work to be carried out with an ASP on the list on the NSW Department of Planning and Environment website. Charges for contestable services are paid directly by the customer to the selected ASP.

1.2 Purpose and scope

The purpose of this Connection Policy is to set out the circumstances in which Endeavour Energy requires a Connection Applicant to pay for the cost of connecting their premises or real estate development to the Endeavour Energy electricity distribution system. Each of the connection services we provide and how the charges are calculated are explained in this Connection Policy. This policy applies to connections to Endeavour Energy's electricity distribution network and regulated SAPS.

Connection applicants to which this Connection Policy applies are listed in the NER as one of the following categories:²

¹ NER Clause 5A.A.1 defines a "connection alteration" as an alteration to an existing connection including an addition upgrade, extension, expansion, augmentation or any other kind of alteration.

² Different types of connection customers are described in with the NER. The definition of "connection applicant" in NER Clause 5.A.A.1 is retail customer, retailer and real estate developer and the definition of a "retail customer" is defined in NER Chapter 10 as a small customer, large customer, a micro embedded generator, or a non-registered embedded generator. NER Clause 5A.A.2 refers to connections for "registered participants" and "intending participants" acting as the agent of a retail customer or a connection in relation to a regulated SAPS. NER Clause 5.1.2 item 12 and 13 refers to the types of loads and a retail customer connecting a micro embedded generator.

Connection Policy

- a retail customer (which includes a small customer, a large customer, a micro-embedded generator³ or a non-registered embedded generator connecting a generating unit to obtain a standard connection service);
- retailer or a person acting on behalf of a retail customer;
- a real estate developer;
- a registered participant or intending participants who is:
 - acting as the agent of a retail customer, or
 - seeking connection or connection services in relation to a regulated SAPS, otherwise known as a SAPS resource provider.⁴
- a non-registered load connecting to Endeavour Energy's distribution network, or a non-registered embedded generator connection to a regulated SAPS); and
- any load connection to a regulated SAPS;

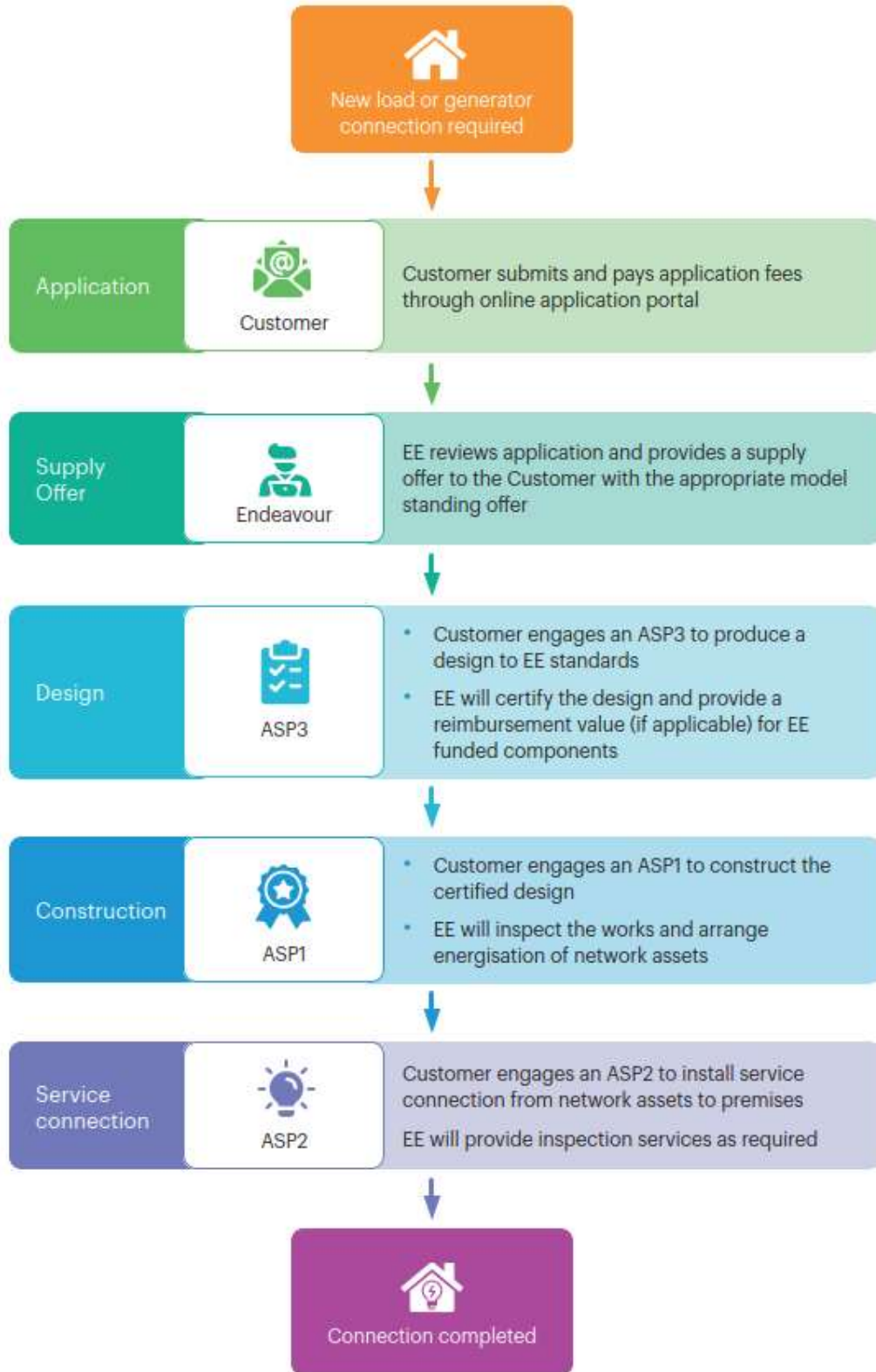
The type of connection service that you apply for will depend on what and where you want to connect. Further information about different types of connection applications is provided in Section 6.

High level connection process

³ A "micro embedded generation connection" is defined in NER Clause 5A.A.1 as a connection of the kind contemplated by Australia Standard AS 4777 (Grid connection of energy systems via inverters). This also includes a Market Small Generation Aggregator on behalf of retail customer connecting a micro embedded generator to a distribution network.

⁴ NER Chapter 10 describes a "SAPS resource provider" as a person who supplies electricity from one or more generating units that are connected to a regulated SAPS and is registered with AEMO as a SAPS resource provider.

Connection Policy



2. Connection services provided by Endeavour Energy

2.1 Applying for a connection service

Customers must apply to Endeavour Energy to obtain a new or altered connection service. The connection service offered will depend on the nature of the connection based on the details contained within the application request. The electrical load capacity, export capacity and location requested by the customer are the key factors that determine the appropriate connection service and which charges apply.

- Load means the amount of electrical power delivered at an instance at a connection point or aggregated set of connection points.
- Customer export means supply to a distribution network of electricity generated by a micro embedded generator or non-registered embedded generator.⁵ A basic export level is the threshold up to which a customer may export without charge that applies at the customer's location for different connection customers or services. The basic export level may vary over time of day and across years.⁶
- Locations are either urban or rural. Rural, which is also known as non-urban, is that part of a network where the average demand on the high voltage feeders is less than 0.3 megavolt amperes per kilometre, or the location is in an area zoned as rural under a local environmental plan (in the *Environmental Planning and Assessment Act 1979*), or the location predominantly used for agricultural purposes. Urban network is that part of a network that is not a rural network. If the zoning on your rates notice or development application is residential such as (R1, R2, R3 or R4) then you are in an urban location.

There are two categories of connection services provided by Endeavour Energy: i) Endeavour Energy Provided Connection Works and ii) Ancillary Network Services (ANS).

2.2 Endeavour Energy Provided Connection Works

Endeavour Energy Provided Connection Works are works to install electrical assets for a connection to our network and where there is a reasonable likelihood at the time of the application that in the foreseeable future those works will benefit Endeavour Energy's management of the shared network or SAPS, beyond the connection point.

⁵ As defined by NER Clause 8.13. NER Chapter 10 defines "embedded generating unit" as a generating unit connected within a distribution system and not having direct access to the transmission network. NER Chapter 10 defines "generating unit" as plant used in the production of electricity and all related equipment essential to its functioning as a single unit. The definition of generating unit is technologically neutral and includes non-traditional generation like battery storage and solar photovoltaics.

⁶ AER Export Tariff Guidelines May 2022 p.17, 19

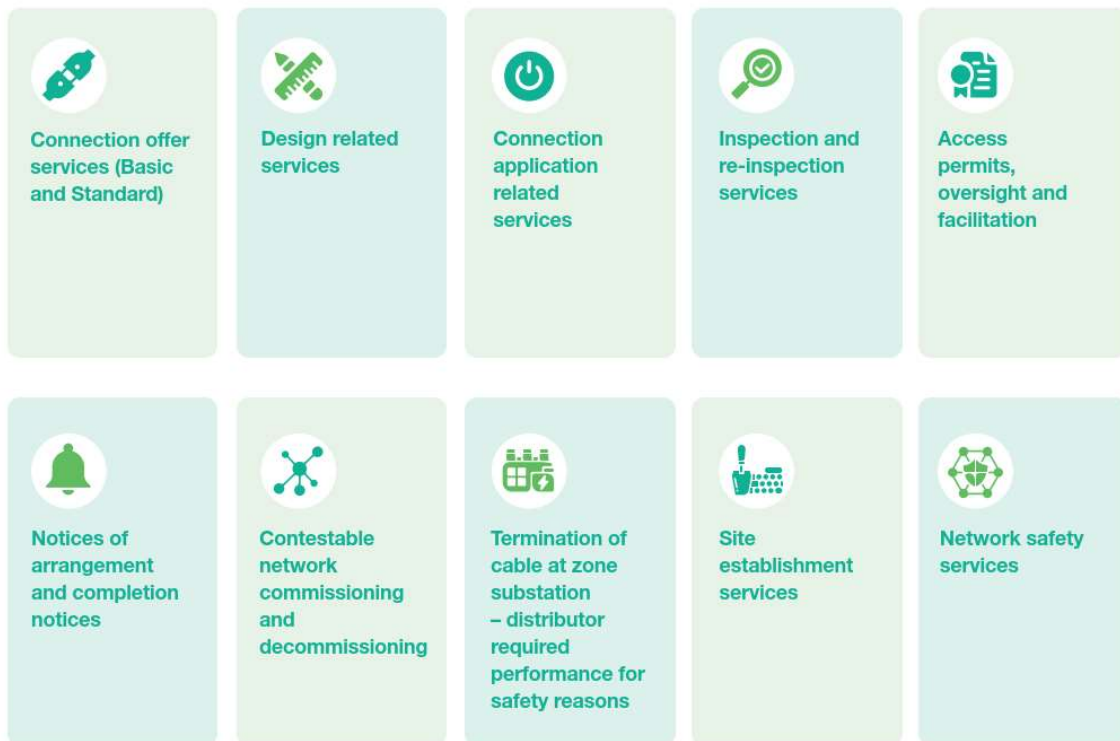
Connection Policy

There is no charge for Endeavour Energy Provided Connection Works at the time the new connection or connection alteration is made. Instead, we recover our costs for the construction of these connection assets through general distribution charges levied on all customers.

2.3 Ancillary Network Services

Ancillary Network Services (ANS) are the main connection services we provide to customers for which ANS fees are payable. Fees for ancillary services are regulated by AER and are published on our website.⁷ ANS include our interactions with ASPs to ensure that the contestable network services they provide, meet the design and technical requirements to be connected to and form part of our network.

Some of the ANS for network connections that we provide are:

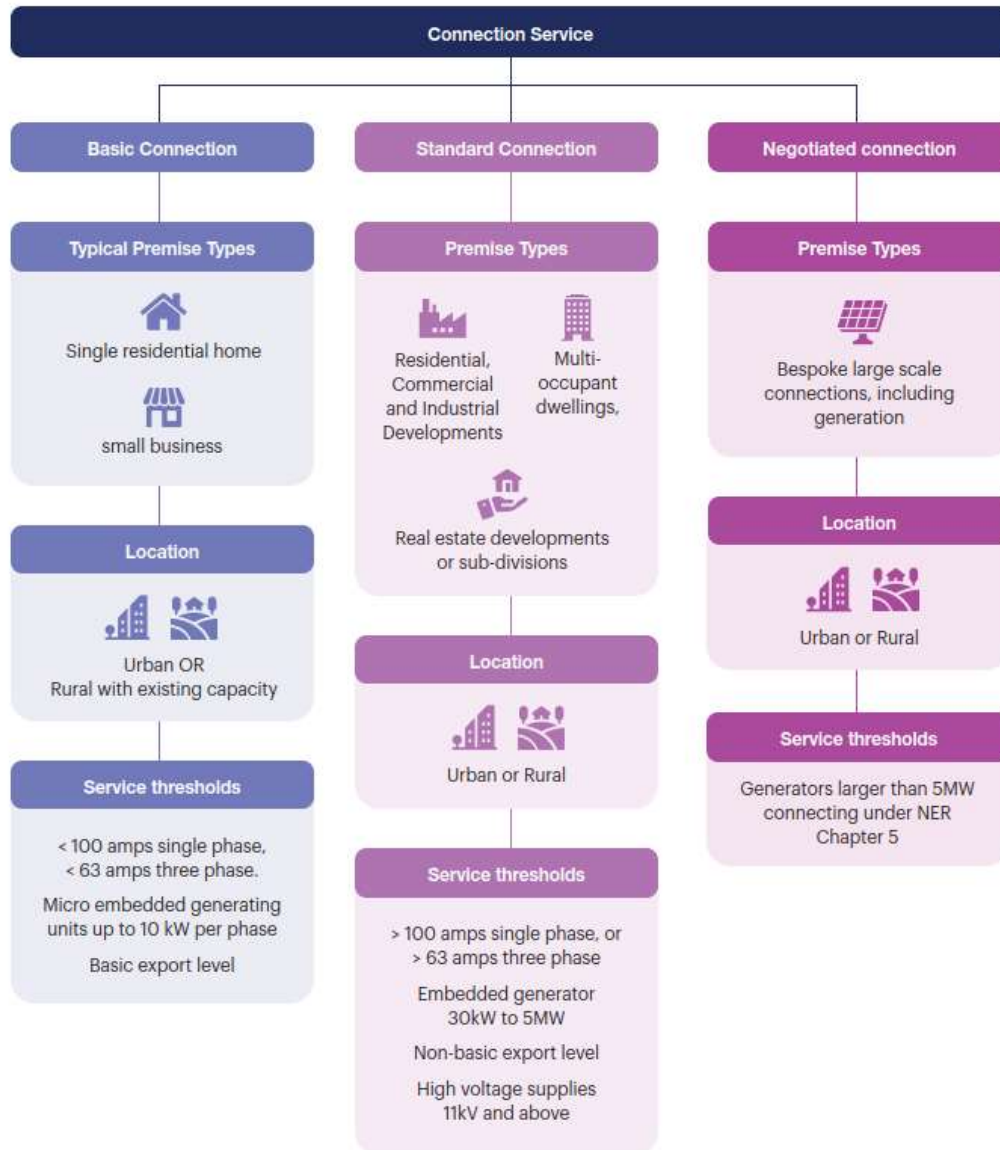


Further information about ANS is available on our website.

⁷ Endeavour Energy's Network Price List: Ancillary Network Services

3. Connection Offers

The figure below summarises the different types of customers and connection service offers. A connection offer is an offer to contract with us for the appropriate type of service based on the information provided in a customer's connection application. Endeavour Energy provides three types of connection offers for basic, standard and negotiated connections.



Connection Policy

3.1 Basic Connection Offer

Basic Connection Eligibility

Eligibility requirements for a basic connection offer are:

- a load in an urban area of less than 100 amps single phase (or 63 amps three phase). Endeavour Energy will fund any necessary augmentation to connect customers in urban areas under this threshold;
- a load in a rural area that has existing capacity with no need for augmentation of Endeavour Energy's network or system; or
- micro embedded generation up to 10kW per phase (or 30kW three phase), connected via a compliant inverter.⁸

A micro embedded generator basic connection allows a customer to export electricity generated on their side of the meter to the distribution network or SAPS. Endeavour Energy will apply static limits or dynamic export envelopes as described in Section 6.

Typical Customer Premises

Basic connection offers are typically made to single residential premises, small commercial premises and small multi-occupant developments, other than a real estate developer or a non-registered embedded generator. In rare cases Endeavour Energy may fund minimal network extensions or augmentation works to facilitate the connection.⁹ Loads in non-urban locations or loads above 100 amps single phase (or 63 amps three phase), may receive a low voltage (LV) basic connection offer if the connection can be supported by the network, without extension or augmentation.

3.2 Standard Connection Offer

Standard Connection Eligibility

Eligibility requirements for a standard connection offer are:

- a load in an urban area with maximum capacity greater than 100 amps single phase (or 63 amps three phase);
- a load in a rural area that does not have existing network capacity and has a need for augmentation of Endeavour Energy's network. The augmentation is funded by the customer;
- larger LV loads which are assessed as needing extension or augmentation;

⁸ NER Chapter 10 defines "micro embedded generation connection" as a connection between an embedded generating unit and a distribution network of the kind contemplated by Australian Standard AS 4777 (Grid connection of energy systems via inverters). Further details about connection of micro embedded generation are available on our website.

⁹ NER Chapter 10 defines "extension" is an augmentation that requires the connection of a power line or facility outside the present boundaries of the distribution network owned, controlled or operated by a Network Service Provider.

Connection Policy

- embedded generation, connected via compliant inverters that:
 - have a total inverter capacity less than 5 MW; or
 - are exempt by the Australian Energy Market Operator (AEMO) from the requirement to register as a generator.¹⁰

The export capacity offered will depend on the capacity of the network or system, the availability of a technical and economic feasible solution, the load and export amount that you specify in your application and conditions of relevant trial arrangements. Applications are individually assessed by Endeavour Energy as the operation of generators may affect other customers connected to our network. Endeavour Energy will apply a static export limit or a dynamic operating envelope as described in Section 6.

A standard connection offer fee applies for this service.

Typical Customer Premises

Standard connection offers are typically made to large multi-occupant developments, large commercial and industrial developments and rural customers requiring network extension or augmentation.

Charges that may apply, depending on the circumstances of the application, are for:

- contestable network services associated with their premises connection provided by ASPs;
- ANS associated with connection of their premises;
- network connection works that are dedicated to their premises;
- a guarantee of revenue, which may include property tenure, warranty maintenance or a guarantee of revenue to Endeavour Energy; and
- a contribution to a pioneer scheme.

Customers must provide a location for the connection assets on their site or a third party's site.

3.3 Negotiated Connection Offer

Eligibility requirements for a negotiated connection offer are:

- for connection services that are neither a basic connection service nor a standard connection service, such as an embedded generator with a capacity of between 5MW and 30MW for which the negotiated connection service will be largely based on a standard connection service; or

¹⁰ Exemption is allowed in NER Clause 2.2.1(c) if it is consistent with AEMO's latest 'Guide to Generator Exemptions and Classification of Generator Units' or equivalent. The standing exemption is for generating systems with a total nameplate rating of less than 5MW and is unlikely to cause a material degradation in the quality of supply to other network users. Exempt generators may register as Small Generation Aggregator or as a SAPS resource provider.

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- for a basic connection service or a standard connection service and the customer elects to negotiate the terms and conditions on which the connection service is to be provided.

These customers may also be required to pay a negotiation fee to cover the expenses reasonably incurred by Endeavour Energy in assessing the customer's application and preparing a negotiated connection offer.

4. Contestable services provided by ASPs

Endeavour Energy's response to a connection application may state that there is insufficient infrastructure to meet their connection requirements, requiring the applicant to engage an ASP to design and construct the connection assets. These are contestable services and are not provided by Endeavour Energy. ASPs must:

- be accredited by the NSW Government under Part 3 of the *Electricity Supply (Safety and Network Management) Regulation 2014*;
- be appropriately authorised by Endeavour Energy when working on or near the existing network. See our website for ASPs authorised to work on our electricity distribution system;
- construct the connection assets in accordance with Endeavour Energy's design, construction and installation standards;
- comply with the *Service and Installation Rules of NSW*. (Customers must also comply with these rules); and
- employ or sub-contract suitably qualified, experienced and authorised personnel.

There are three levels of ASPs:

Level 1 – Network Constructor

Level 2 – Service Mains Constructor

Level 3 – Designer

Customers must choose and engage the correct level of ASP required to address the infrastructure shortfall and ensure that they deliver the contestable services. Customers are liable to the ASP directly for their charges in carrying out contestable services. Charges for contestable services are not specified in this Connection Policy and it is customers responsibility to be aware of all the likely costs that are associated with the services.

The list below provides some examples of contestable services that ASPs may charge for:

- Environmental Impact Assessment preparation charge
- Design quotation
- Re-design quotation
- Construction quotation
- Connection quotation (to connect a customer to the distribution network)
- Project definition cost

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- Work outside the normal working hours (6:00am to 6:00pm)
- Switching fees
- Hiring and connection of generators

Upon completion of the work, the network or system assets are owned by Endeavour Energy and we take responsibility to maintain them going forward.

5. Connection Charges

5.1 Basis of charges

The level and basis for the charges are assessed and approved in the Final Decision Distribution Determination by the Australian Energy Regulator. The charges are available on the Endeavour Energy website by searching for Network Price List: Ancillary Network Services (ANS). These charges are amended from time to time.

ANS are either 'fee based' or 'quoted services', depending on how the service charge is determined. The AER determines fee-based service charges based on the cost inputs (labour rates) and the average time taken to perform each service. Quoted services are once-off and specific to a particular customer's request. Charges for quoted services are based on quantities of labour and materials, with the quantities dependent on a particular task. Charges for quoted services are determined at the time of a customer's enquiry.¹¹

For large or complex developments, customers are advised to lodge a technical review request with us to determine availability of supply and preferred linkage points and to provide preliminary information to assist in determining the feasibility of your proposals.

Charges for ANS are charged to the customer, customer's electrical professionals (such as an ASP or electrical contractor) or their retailer, depending on the service provided and the circumstances. All fees and charges are to be paid in advance of the relevant activity.

If Endeavour Energy determines that any of the required work is a contestable service, customers are required to pay ASPs for contestable network services and Endeavour Energy for associated ANS.

5.2 Reimbursement for work carried out on behalf of Endeavour Energy

Endeavour Energy may request customers to undertake works that are additional to the requirements to supply their premises, on behalf of Endeavour Energy. When this situation occurs, Endeavour Energy will pay you for the additional works we require. This situation will only occur where:

- it is economic to combine the new works associated with your new connection and Endeavour Energy's requested works; or
- the additional works requested by Endeavour Energy are necessary for the overall management of the shared network.

Where you have carried out work on our behalf, you will be reimbursed in accordance with the reimbursement rates set at the time of design certification.

¹¹ AER Final Decision Endeavour Energy Distribution Determination 2019-2024 p.7

Connection Policy

Payment will be made after:

- satisfactory completion of the works;
- payment of all fees and charges;
- receipt of all the relevant documentation for the issue of a letter of acceptance; and
- receipt of a tax invoice claiming the reimbursement.

Written permission noted on the letter of intent is required from the customer to allow Endeavour Energy to reimburse a nominated party.

Charges for removing export constraint on request from a micro embedded generator

Where a micro embedded generator wishes to fund the network augmentation to remove a static zero export limit. The embedded generator must engage a suitable ASP to undertake the necessary augmentation works.

As required by the AER's Connection Charge Guidelines, we will contribute to the relevant cost based on the following calculation method.

- Residential connections: the net present value of the export charge revenue received from the connection applicants and the projected future additional micro embedded generation connections over a 30 year period.
- Non-residential connections: the net present value of the export charge revenue received from the connection applicants and the projected future additional micro embedded generation connections over a 15 year period.

The price path for calculating the export charge revenue will be based on the export service charge rates specified in the distribution determination (where relevant) until the end of the relevant regulatory control period.

For the remaining life of the connection, we will use a flat real revenue path after the end of the relevant distribution determination. The flat price path used will be the expected real export charge rate in the final year of the regulatory control period.

The discount rate for the calculation of the net present value of the export charge revenue will be based on the real pre-tax weighted average cost of capital, as set out in the distribution determination.

Despite the time periods specified above for the purpose of calculating the net present value of the projected export service revenue, where the applicable connection period does not reflect a reasonable estimate of the time that the connection service will remain connected, we, acting in good faith, may apply an alternative assumed connection period, based on that reasonable estimate, for that connection service.

5.3 Alterations after Drawings are Submitted

If customers or their ASPs modify the real estate development plans in a way that impacts the outcomes of the electricity network construction drawings after they have been submitted for certification, we will not be liable for reimbursements of the costs of construction of the shared network assets.

Connection Policy

Endeavour Energy may charge a customer for the additional costs incurred from the customer's modifications to a development, including costs associated with the re-certification of the electricity network construction drawings.

5.4 Negotiation fee

The charge for a negotiated connection offer includes the direct expenses reasonably incurred by Endeavour Energy to assess the application and make a connection offer. We will recover this fee as a debt even if the customer does not accept the connection offer. All time involved in assessing the application, preparing estimates associated with negotiation and making the connection offer will be charged at the hourly rates set out in the Network Price List: Ancillary Network Services.

5.5 Site Inspection fee

The charge for connection offer service (basic or standard) does not include a fee for making a site inspection. If Endeavour Energy needs to determine the nature of the connection service sought by the customer by visiting a site an additional charge will apply. Similarly, if the customer requests a site be visited by our staff, an additional charge will apply based on the estimated time involved. We will recover this fee as a debt even if the customer does not accept the connection offer. All time involved in the site visit will be charged at the hourly rates set out in the Network Price List: Ancillary Network Services.

5.6 Guarantee of Revenue

Endeavour Energy will require a customer to provide a Guarantee of Revenue (GoR), which is also known as a Security Fee, where their connection requires substantial works to be funded by Endeavour Energy that are initially dedicated to only benefit the customer, and where Endeavour Energy considers there is a high risk that we may not earn the estimated revenue from the construction works.

A GoR is a legally binding agreement between Endeavour Energy and the connection applicant where the connection applicant guarantees to pay Endeavour Energy a minimum level of network charges each year for the duration of the GoR agreement, to make up any shortfall in Endeavour Energy's network charges over the period. The normal agreement period is five years, although this can be varied to between five and ten years on a case-by-case basis.

- The security amount will not be greater than the present value of the incremental costs that Endeavour Energy incurred by funding the connection works.
- The security amount under the GoR will be calculated by reference to the incremental revenue that Endeavour Energy expects to receive as charges from investing in the connection works.
- The security amount will not be greater than the amount of estimated incremental revenue which Endeavour Energy assesses as having a high risk of not being recovered as charges.

The GoR will be established prior to certification of the design and prior to the Endeavour Energy funded works being approved. This will allow the network works to proceed in parallel with the associated contestable works. The GoR is secured by a bank guarantee provided by the customer, or other suitable financial instrument as agreed by Endeavour Energy. Endeavour Energy is entitled to withdraw from the bank guarantee any shortfall in actual network charges, in accordance with the terms stated in the deed and the bank Guarantee.

Connection Policy

5.7 Pioneer Scheme

An original customer who has fully funded a network extension is entitled to have some of their costs reimbursed by Endeavour Energy when a new customer connects to that network extension within seven years of the asset being energised by Endeavour Energy. A pioneer scheme only applies to connection applicants connecting to the network extension at a point outside the boundary of the original customer's development. The pioneer scheme commences on the date the network extension asset was energised.

Endeavour Energy may recover the reimbursement amount payable to the original customer from the new customer as part of their connection charges.

The reimbursement amount is the lesser of the calculated refund and the remaining value of the pioneer scheme. The value of the refund is based on:

- the current value of the network extension assets, depreciated on a straight-line basis over a 20 year period, calculated at the date that the new customer accepts the connection offer; and
- the share of the extension used by the new customer relative to other customers already supplied by the extension in terms of maximum capacity, and/or other physical attributes (e.g. length) as applicable.

If Endeavour Energy's pioneer scheme calculates a total refund to all customers already connected to an extension that is less than \$1,250 (real \$2022), then Endeavour Energy is not required to refund those customers.

Details of this calculation and other details in relation to the Pioneer Scheme are provided in Appendix 1.

6. Distributed energy resource connections

This section provides further information about connections that are supported on our network. They are generically referred to as distributed energy resources (DER) and relate to export of energy from equipment on the customers side of their meter into Endeavour Energy's network. Unlike electricity to the premise, export services have the characteristic that they are not necessarily always available. Many of the examples in this section are relatively new types of connection arrangements.

6.1 Dynamic operating envelopes

Dynamic operating envelopes refer to connection agreements where there are periods of time when limits are placed on the levels of export and periods when export limits are removed, allowing customers to export higher volumes of electricity into the electricity distribution network and systems.¹² A dynamic export limit allows a customer to export above the basic export level during certain time periods.

The level of exports is managed by Endeavour Energy differently depending on the type of tariff the customer is charged. Customers can choose to either have:

- static export levels where a fixed amount of export at a relatively low level, called the basic export level, is allowed at any time of the day, or
- dynamic export levels, where customers are incentivised to reduce export of electricity when the sun shines such as between 10am-4pm and increase their export during the peak load period such as 4pm-9pm. The objective of the dynamic tariff is to match the level of export with the level of load across the system whilst the load fluctuates throughout the day.

For other distribution connected generation units such as large-scale generation or large-scale storage connections, any export limits that may apply will be part of a negotiated offer.

6.2 Static zero export limits

There may be rare circumstances at a premise when the export of electricity from premises is not permitted. This is known as a static zero export limit and the limit is set at the basic export level. The circumstances when static zero export limits are applied by Endeavour Energy will be only to the extent necessary to be consistent with the safe, secure and efficient provision and use of distribution services, and Endeavour Energy's distribution determination.

~~Endeavour Energy will determine the capacity available in the distribution network to host the electricity export service from the customer's premises. This assessment may be conducted before or during the connection application process or after the connection to the premises is established. Assessment will not~~

¹² AER (June 2022) DER Integration expenditure guidance note p.11. "A dynamic operating envelope is a principled allocation of the available hosting capacity to individual or aggregate DER or connection points within a segment of an electricity distribution network in each time interval. Dynamic operating envelopes vary import and export limits over time and location based on the available capacity of the local network or power system as a whole."

Connection Policy

~~be required at locations where it is clear that there is sufficient capacity to meet the levels of electricity export agreed between Endeavour Energy and the customer.~~

~~The results of the assessment will assist us to identify if the export of electricity from the premises to the distribution network is or is likely to be affected by system limitations or limitations on the capabilities of plant or equipment of Endeavour Energy or retail customers.~~

~~Where Endeavour Energy considers that the premises are impacted by the above limitations, we will apply a static zero export limit for the duration in which the limit occurs or until the connection is no longer required. We will only impose a static zero export limit in circumstances permitted under the AER's Connection Charge Guideline for Electricity Customers. Our policy on when we will impose a static zero export limit is available on our website.~~

6.3 Regulated stand-alone power system (SAPS)

SAPS typically comprise solar panels, batteries and back-up generators, and include both microgrids and individual power systems. Endeavour Energy may establish SAPS in communities where a SAPS is cheaper, safer and more reliable than grid supply. SAPS are particularly relevant for remote, bushfire-prone areas where replacement of damaged grid connections are a significant expense.¹³

A regulated SAPS refers to a stand-alone power system that forms part of the national electricity system under the National Electricity Law. A customer seeking a connection to an Endeavour Energy's SAPS is eligible for basic, standard and negotiated service offers under corresponding arrangements as for customers seeking a connection on Endeavour Energy's interconnected network. The same connection charges will apply.

6.4 Embedded network

A customer may wish to connect an embedded network to Endeavour Energy's network. An embedded network is a distribution system connected at a parent connection point that forms part of the national grid and which is owned, controlled or operated by a person who is not a network service provider. The connected premises are known as child connection points. Examples include shopping centres, retirement villages, caravan parks, apartment blocks and office buildings,

6.5 Small Resource Aggregator (SRA)

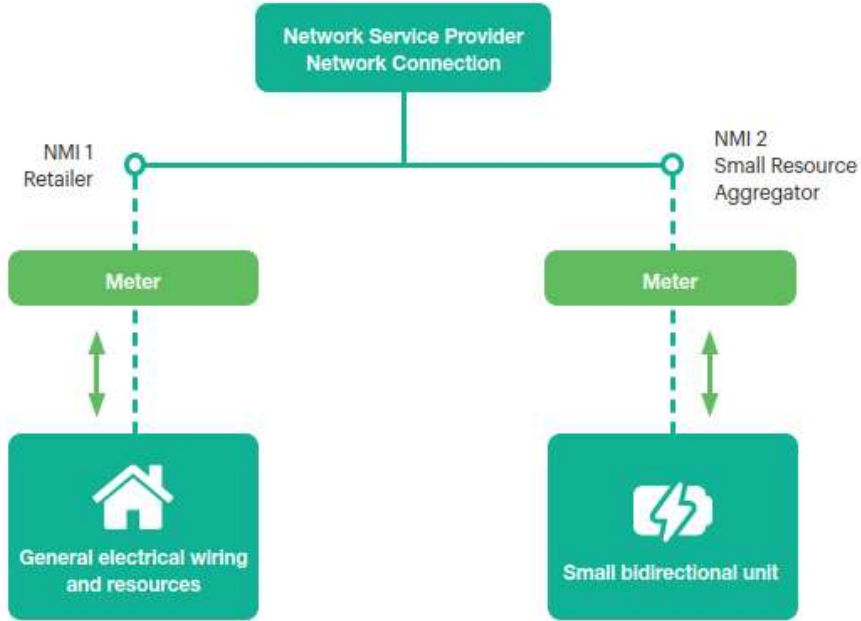
~~An owner of a battery storage unit at a premises may contract with an SRA,¹⁴ which is a type of integrated resource provider to control a solar photovoltaic inverter and/or battery at the premises. An SRA may contract directly with Endeavour Energy or through a retail customer. See Figure 2 below.~~

¹³ AEMC (24 Feb 2022) media release "New Rules allow distributors to roll out stand-alone power systems in the NEM."

¹⁴ NER Clause 5.A.A.1 defines "SRA Customer" as a person who owns, operates or controls, or proposes to own, operate or control, a small generating unit or small bidirectional unit and who has an agreement with a Small Resource Aggregator relating to the small generating unit or small bidirectional unit (as the case may be) under which the Small Resource Aggregator is financially responsible for the small resource connection point for the relevant unit. NER Chapter 10 defines a "small generating unit" as a generating unit with a nameplate rating that is less than 30MW and which is owned, controlled or operated by a person that AEMO has exempted from the requirement to register as a Generator in respect of that generating unit in accordance with clause 2.2.2(c).

Connection Policy

Figure 2 Small Resource Aggregator Example



Appendix 1 | Pioneer Scheme

Establishing Pioneer schemes

A pioneer scheme may apply to customers who have fully funded network extensions where these will be used to connect another customer to Endeavour Energy's network within seven years of the original connection. Customers who have fully funded a network extension are eligible to be reimbursed a proportion of their costs when subsequent customers connect to the network extension that they originally funded. We may recover a refund amount from any subsequent customer as a part of the connection charges payable by the subsequent customers to us.

Each scheme applies for seven years from the date of the energisation of the network connection for the exclusive use of the original customer. If the new connection or connection extension will use assets that are subject to an existing pioneer scheme, we will tell you at that time. If the new connection or connection extension requires the construction or installation of extension assets for your exclusive use, those assets may be subject to a pioneer scheme.

If the extension assets were constructed to a higher standard or capacity than the least cost technically acceptable standard required by Endeavour Energy, then only the cost of constructing the extension to the scope standard required by Endeavour Energy will be included in the Pioneer Scheme.

Endeavour Energy reimburses the current owners of connection assets subject to a Pioneer Scheme after collecting the amount to be reimbursed from subsequent customers connecting to those assets.

Cost share reimbursement calculations

The cost share reimbursement shall be calculated as follows:

- Where the subsequent customer's load (as specified in its application for Connection Services or assessed load) is equal to or less than 50 kVA, the cost share reimbursement will be the lesser of
 - the pre-calculated reimbursement; or
 - the original customer's outstanding amount
- Where the subsequent customer's load (as specified in its application for customer connection services or assessed load) is greater than 50 kVA, the cost share reimbursement will be the lesser of the pro-rata reimbursement and the original customer's outstanding amount.

The pre-calculated reimbursement is calculated:

Where the original customer's works are distribution line, an amount is calculated in accordance with the following formula:

$$\frac{C \times D}{(S + O)} \times \frac{K}{L} \times \frac{CPI_2}{CPI_1}$$

Where:

Connection Policy

C means cost of original customer's works is the value of the works calculated from the Endeavour Energy's asset valuation supplied as part of the certification package where an ASP carried out the original customer's works.

D means depreciation factor which is straight-line depreciation, over a twenty-year asset life, to determine the current day depreciated value of the asset. The depreciation factor is determined as follows:

$$\frac{(\text{Deemed asset life (20 years)} - \text{asset age})}{\text{Deemed asset life (20 years)}}$$

For example: Cost of line is \$12,000 and actual asset age is 2 years

$$D = \frac{(20-2)}{20} = 0.9 \text{ and}$$

Depreciated asset value = \$12,000 x 0.9 = \$10,800

S means number of prospective subsequent customers which is the effective number of subsequent customers, including the original customer, [thatwho](#) may use the assets or any part of them during the seven years after they were constructed or installed.

This is determined in consultation with the original customer prior to construction of the proposed original customer's works and, considering all relevant factors including but not limited to the capability of the proposed works, the current number of properties that could potentially utilise those assets, the current zoning of the area and any re-zoning proposals, any proposed subdivisions or development applications, and historical patterns of customer connection in similar areas.

O means original customer

K means length of original customer's works used by subsequent customer (km)

L means total length of original customer's works (km)

CPI₁ means inflation in period 1, measured as the average of the consumer price indices (All Groups, All Capital Cities), published by the Australian Bureau of Statistics, for the previous 4 quarters immediately prior to the date that the original customer's Connection Assets the subject of a Pioneer Scheme were completed.

CPI₂ means inflation in period 2, measured as the average of the consumer price indices (All Groups, All Capital Cities), published by the Australian Bureau of Statistics, for the previous 4 quarters immediately prior to date of the new customer's application for Connection Services.

Where the original customer's works are works other than distribution line, an amount is calculated in accordance with the following formula:

$$\frac{C \times D}{(S + O)} \times \frac{K}{L} \times \frac{CPI_2}{CPI_1}$$

The original customer's outstanding amount is to be calculated as follows:

Connection Policy

$$C \times D \times \frac{N - O}{S + O} \times \frac{CPI_2}{CPI_1} - T$$

Where:

N means number of prospective new customers

T means total cost share reimbursements paid to date by subsequent customers to Endeavour Energy in respect of those assets as at the date of the subsequent customer's application for Connection Services.¹⁵

The pro-rata reimbursement

The pro-rata reimbursement is an amount calculated in accordance with the following formula:

$$C \times \frac{U \times D}{Z} \times \frac{CPI_2}{CPI_1}$$

Where:

U means new utilisation of original customer's works, which is

- (a) where the original customer's works are distribution lines, a figure in kVA km, representing the subsequent customer's expected load, in kVA (as specified in its application for Connection Services), multiplied by the length of original customer's works used by the subsequent customer, in km; and
- (b) where the original customer's works are assets other than distribution lines, a figure in kVA, representing the subsequent customer's expected load (as specified in its application for Connection Services).

Z means total utilisation of original customer's works, which is

- (a) where the original customer's works are distribution lines, a figure in kVA km, representing the total of the loads of each customer (including the original customer and the subsequent customer) who use or will use the original customer's works, in kVA (as specified in their respective applications for Connection Services), multiplied by the length of distribution line constituting the original customer's works, in km; and
- (b) where the original customer's works are assets other than distribution lines, a figure in kVA, representing the total of the loads of each customer (including the original customer and the subsequent customer) who use or will use the original customer's works (as specified in their respective applications for Connection Services).

¹⁵ Where this calculation results in a negative number it will be assumed to be zero for the purposes of reimbursements.

Connection Policy

Minimum reimbursement

Despite any other cost share reimbursement calculations, a subsequent customer is not liable to pay any cost share reimbursement to all existing customers if the total reimbursement amount is less than:

$$\frac{\$1000 \times CPI_2}{CPI_3} \frac{\$1213 \times CPI_2}{CPI_3}$$

Where:

CPI₃ means inflation in period 3 means the average of the consumer price indices (All Groups, All Capital Cities), published by the Australian Bureau of Statistics, for the 4 quarters ending ~~30th June 2012~~ 31st December 2022.

Despite any other cost share reimbursement calculations:

- (i) The pre-calculated reimbursement, the pro-rata reimbursement and the original customer's outstanding amount are deemed not to include any references to CPI in the case where the beginning of the relevant period for the calculation of CPI(2) is less than 12 months after the end of the relevant period for the calculation of CPI(1);
- (ii) The minimum reimbursement is deemed not to include any references to CPI in the case where the beginning of the relevant period for the calculation of CPI(2) is less than 12 months after the end of the relevant period for the calculation of CPI(3); and
- (iii) if all the relevant information to calculate CPI(2) has not been published by the Australian Bureau of Statistics at the time of a subsequent customer's application for Connection Services then the most recent available rates will be used, (i.e. the rates applicable to the previous quarter).

Reimbursement payments

Where a subsequent customer pays to us an amount towards a Pioneer Scheme, we will, as soon as practicable after receiving that amount, repay that amount to the then current owners of premises connected to the original customer's Extension or Augmentation assets the subject of that Pioneer Scheme.

Where there are multiple original customers because we required those customers to jointly procure and fund the construction or installation of Extension or Augmentation assets, the repayment by us pursuant to reimbursement payments must be divided between those customers in accordance with the proportions in which they funded the Extension or Augmentation assets.

Obligation to notify

We will notify all new customers, or their representatives, who apply to us for Connection Services and who may be required to make reimbursements under an existing Pioneer Scheme.

When a new customer seeks a new connection or connection alteration that will connect to assets subject to a Pioneer Scheme, we will notify the current owners of premises connected to those assets that they may be entitled to receive a reimbursement.

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Subdivisions and multi-occupant developments

If a proposed subdivision is undertaken in a Pioneer Scheme location, the Connection Applicant will be required to make payment to comply with the Reimbursement Scheme for connection to the network in the same manner that applies for connection of loads.

Subdivision applicants (including strata title subdivisions) will not be eligible to receive reimbursements as original customers.

The load associated with such applications, for the purposes of cost share reimbursement calculations and the pro-rata reimbursement will be determined by Endeavour Energy.

Reimbursements paid by multi-occupant applicants will be regarded as payments on behalf of the declared occupants of the development and no further reimbursements will be required from those occupants when they apply for connection of load.

Further applications for provision of an electricity network or connection of load for premises that benefit from but were not declared in a previous Application for Provision of an Electricity Network may be required to pay reimbursements pursuant to a Pioneer Scheme.

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Shortened forms

Term	Definition
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
NER	National Electricity Rules
