

Connection charge guidelines for electricity customers

Under chapter 5A of the National
Electricity Rules

FinalDraft version 3.0 ~~for~~
consultation

April 2023~~October 2022~~

© Commonwealth of Australia ~~2023~~2022

This work is copyright. In addition to any use permitted under the *Copyright Act 1968* all material contained within this work is provided under a Creative Commons Attributions 3.0 Australia licence with the exception of:

- the Commonwealth Coat of Arms
- the ACCC and AER logos
- any illustration diagram, photograph or graphic over which the Australian Competition and Consumer Commission does not hold copyright but which may be part of or contained within this publication.

The details of the relevant licence conditions are available on the Creative Commons website as is the full legal code for the CC BY 3.0 AU licence.

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601
Tel: 1300 585 165

Amendment record

Version	Date	Pages
1.0	June 2012	29
2.0	August 2022	29
3.0	April -2023 October 2022	30

Contents

Nature and authority	1
Introduction.....	1
Application of this guideline	1
Requirements of the National Electricity Rules	1
Interaction with the Australian Energy Regulator’s service classification.....	3
1 Principles for shared network augmentation charge thresholds.....	4
2 Determining total connection charges.....	6
3 Charges for negotiated distribution services and unclassified distribution services	8
4 Charges for alternative control services	9
5 Capital contributions for standard control services	10
5.1 Description of the cost-revenue-test.....	10
5.2 Incremental costs under the cost-revenue-test	11
5.3 Incremental revenue under the cost-revenue-test	13
5.4 Estimating customers’ consumption and demand	14
5.5 Pre-calculated capital contributions for basic and standard connection offers.....	16
6 Method for calculating a refund of connection charges for extension assets (pioneer scheme).....	17
7 Embedded generation.....	19
7A Imposing export limits on micro embedded generator connections.....	20
8 Real estate developers, Registered Participant and Intending Participant.....	20
9 Prepayments.....	26
10 Security fee.....	27
11 Treatment of augmentation assets.....	28
12 Definitions.....	29

Nature and authority

Introduction

Clause 5A.E.3(a) of the National Electricity Rules (NER) requires the Australian Energy Regulator to develop and publish guidelines for the development of connection policies by distribution network service providers.

Application of this guideline

This guideline applies to connections of retail customers to both the interconnected national electricity system as well as for connections to regulated Stand-alone Power Systems.

Part DA of chapter 6 of the NER requires that distribution network service providers must prepare a connection policy setting out the circumstances in which they may require a retail customer or real estate developer to pay a connection charge, for the provision of a connection service under chapter 5A. The proposed policy must comply with the connection charge principles stipulated in clause 5A.E.1, and this connection charge guideline. The Australian Energy Regulator may approve the proposed connection policy if it is satisfied that the proposed policy adequately complies with the requirements of Part DA of chapter 6 of the NER.

Requirements of the National Electricity Rules

Clause 5A.E.1 outlines the connection charge principles with which a distribution network service provider's connection policy must comply. That clause provides:

- a) This clause states the connection charge principles.
- b) A retail customer (other than a non-registered embedded generator, a real estate developer, a Registered Participant or an Intending Participant) who applies for a connection service for which an augmentation is required cannot be required to make a capital contribution towards the cost of the augmentation (insofar as it involves more than an extension) if:
 - (1) the application is for a basic connection service; or
 - (2) a relevant threshold set in the Distribution Network Service Provider's connection policy is not exceeded.

Note: In general, the intention is to exclude deep system augmentation charges for retail customers.

- c) Subject to paragraph (b), in determining connection charges in accordance with its connection policy, a Distribution Network Service Provider must apply the following principles:
 - (1) if an extension to the distribution network is necessary in order to provide a connection service, connection charges for the service may include a reasonable capital contribution towards the cost of the extension necessary to provide the service;
 - (2) if augmentation of premises connection assets at the retail customer's connection point is necessary in order to provide a connection service,

connection charges for the service may include a reasonable capital contribution towards the cost of the augmentation of premises connection assets at the connection point necessary to provide the service;

- (3) if augmentation of the distribution system is necessary in order to provide a standard connection service, connection charges for the service may include a reasonable capital contribution towards the cost of the augmentation necessary to provide the service;
 - (4) if augmentation of the distribution system is necessary in order to provide a connection service under a negotiated connection contract, connection charges for the service may, subject to any agreement to the contrary, include a reasonable capital contribution towards the cost of augmentation of the distribution system to the extent necessary to provide the service and to any further extent that a prudent service provider would consider necessary to provide efficiently for forecast load growth;
 - (5) despite subparagraphs (1) to (4) if augmentation of the distribution system is necessary in order to provide, on the application of a real estate developer, Registered Participant or Intending Participant, connection services for premises comprised in a real estate development, connection charges for the services may, subject to any agreement to the contrary, include a reasonable capital contribution towards the cost of augmentation of the distribution system to the extent necessary to provide the services and to any further extent provide efficiently for forecast load growth;
 - (6) however, a capital contribution may only be required in the circumstances described in subparagraphs (1) to (5) if provision for the costs has not already been made through existing distribution use of system charges or a tariff applicable to the connection.
- d) If:
- (1) a connection asset ceases, within 7 years after its construction or installation, to be dedicated to the exclusive use of the retail customer occupying particular premises; and
 - (2) the retail customer is entitled, in accordance with the connection charge guidelines, to a refund of connection charges; the Distribution Network Service Provider must make the refund, and may recover the amount of the refund, by way of a connection charge, from the new users of the asset.
- e) For the purposes of paragraph (d), a person is taken to be a new user of a connection asset if the asset comes to be used to provide a connection to that person's premises
- f) For the purposes of this clause capital contribution includes a prepayment or financial guarantee.

Clauses 5A.E.3(b) and 5A.E.3(e) of the NER set out the purposes of the guidelines and what the Australian Energy Regulator must have regard to when developing the connection charge guidelines.

Clause 5A.E.3(c) outlines that the connection charge guidelines must:

- (1) describe the method for determining charges for premises connection assets; and
- (2) describe the circumstances (or how to determine the circumstances) under which a Distribution Network Service Provider may receive a capital contribution, prepayment or financial guarantee from a retail customer or real estate developer for the provision of a connection service; and
- (3) describe how the amount of any such capital contribution, prepayment or financial guarantee is to be determined; and
- (4) establish principles for fixing a threshold (based on capacity or any other measure the Australian Energy Regulator thinks fit) below which retail customers (not being a non-registered embedded generator, a real estate developer, a Registered Participant or an Intending Participant) are exempt from any requirement to pay connection charges (or to give consideration in the form of a capital contribution, prepayment or financial guarantee) for an augmentation (other than an extension) to the distribution network necessary to make the connection; and
- (5) describe the methods for calculating the augmentation component for the connection assets and, if the augmentation consists of or includes an extension, the extension component of a connection charge; and
- (6) describe the method for calculating:
 - (i) the amount of a refund of connection charges for a connection asset when an extension asset originally installed to connect the premises of a single retail customer is used, within 7 years of its installation, to connect other premises and thus comes to be used for the benefit of 2 or more retail customers; and
 - (ii) the threshold below which the refund is not payable; and
- (7) describe the treatment of augmentation assets; and
- (8) describe the circumstances (or how to determine the circumstances) under which a Distribution Network Service Provider may offer a static zero export limit to a micro embedded generator for the purposes of clause 5A.F.1(c)(2).

Interaction with the Australian Energy Regulator's service classification

A distribution service is a service provided by means of or in connection with a distribution network. There are three classes of distribution services—direct control services; negotiated distribution services and unclassified distribution services. Direct control services are further categorised under clause 6.2.2 of the National Electricity Rules as either standard control services or alternative control services.

As part of a distribution determination the Australian Energy Regulator classifies distribution services and decides the appropriate form of control to apply to the distribution service. These connection charge guidelines adopt the form of control determined, for each component of the connection service, in each distribution network service provider's distribution determination.

1 Principles for shared network augmentation charge thresholds

- 1.1.1 A distribution network service provider's connection policy must include a threshold or thresholds (referred to here as the shared network augmentation charge threshold) below which retail customers (other than non-registered embedded generators, real estate developers, Registered Participants and Intending Participants) will not be required to make a capital contribution towards the cost of the augmentation (insofar as it involves more than an extension).

Note: This shared network augmentation charge threshold applies to any connection offer made under Chapter 5A, regardless of the manner in which augmentation (insofar as it involves more than an extension) is classified.

- 1.1.2 All shared network augmentation charge thresholds must be based on a measure of demand and fixed for the duration of the regulatory control period.
- 1.1.3 A distribution network service provider may propose a different shared network augmentation charge threshold in each identifiably different area of its network, provided:
- a) the level of load, which the distribution network could reasonably be expected to cope with in the ordinary course of managing its network, is different in areas with different thresholds.
 - b) the different thresholds proposed by a distribution network service provider allow for historic and geographic differences between areas of the network.
 - c) the boundaries of each area can be easily identified by the connection applicants.
- 1.1.4 The shared network augmentation charge threshold for a given area should have the following characteristics:
- a) The threshold generally excludes augmentation (insofar as it involves more than an extension) charges for retail customers; and
- Note: The AER considers that the threshold should be set so that at least residential customers in an urban area would not be required to contribute towards the cost of an augmentation (insofar as it involves more than an extension).
- b) The threshold only applies in the circumstances detailed in paragraph 5A.E.3(d) of the NER; and
 - c) The threshold is set so that;
 - i) connection services below and above the threshold have identifiably different characteristics; or

Example: the threshold could be set with reference to whether or not a particular type of equipment (for example, current transformer metering equipment) is necessary for the connection.

- ii) no undue cross subsidies are created between new connection applicants and existing network users.

1.1.5 When demonstrating that a proposed shared network augmentation charge threshold meets the requirements of clause 1.1.4 of this guideline, a distribution network service provider should have regard to:

- a) the average size of the customers connected to the network and how this compares to the threshold; and
- b) the interconnectedness of the network; and
- c) the network classification.¹

Note: In most circumstances the AER considers that the following thresholds would satisfy the principles established in this guideline:

- 25 kVA on single wire earth return lines (SWER).
- The maximum capacity of a 100 Ampere 3 phase low voltage supply, elsewhere in the distribution network.

¹ For example CBD, Urban, Long Rural or Short Rural feeders.

2 Determining total connection charges

2.1.1 The connection charge that connection applicants will pay to the distribution network service provider may be comprised of charges for multiple connection services. The amount of any such connection charge is to be determined in accordance with the following formula:

$$\text{Connection Charge} = \text{AS} + \text{CC} + \text{PS}$$

Where:

- AS—is the total charge payable to the distribution network service provider for all relevant alternative control connection services (see section 4 of this guideline).
- CC—is the total capital contribution payable to the distribution network service provider for all relevant standard control connection services. This is to be calculated with reference to the cost-revenue-test set out in section 5 of this guideline.
- PS—is the total charge payable to the distribution network service provider to account for any pioneer scheme applying to the assets to which the connection applicant connects (see section 6 of this guideline).

2.1.2 Connection applicants may also be required to pay a security fee to the distribution network service provider. The circumstances in which a distribution network service provider may receive a security fee, and how the amount of that fee is to be determined, is set out in section 10 of this guideline.

2.1.3 To determine the total connection charge, a distribution network service provider must:

- a) determine the charge for each component in a fair and reasonable manner; and
- b) calculate the charge for each component based on the least cost technically acceptable standard necessary for the connection service, unless the connection applicant requests a connection service, or part thereof, be performed to a higher standard in which case the connection applicant should also pay the additional cost of providing the service to the standard requested.

Notes:

- Where a connection applicant's requirement falls between the capacity of two standard size network elements and the distribution network service provider installs the smallest standard size network element capable of meeting the connection applicant's requirement, then this would not constitute a distribution network service provider electing to perform the work to a higher standard or capacity.
- The AER considers that standard control services should only relate to the cost of providing the least cost technically acceptable standard.

- 2.1.4 If a distribution network service provider elects to perform the work to a higher standard or capacity than contemplated in clause 2.1.3(b), then the distribution network service provider must not charge the connection applicant for any cost additional to the cost of performing the connection service to the least cost technically acceptable standard or minimum required capacity, unless:
- a) The connection applicant is a real estate developer and the distribution network service provider has included the cost of providing efficiently for forecast load growth as contemplated in clause 8.1.4(d) of this guideline.
- 2.1.5 If a distribution network service provider prepares a technical specification to allow a connection service to be performed on a contestable basis, then the technical specification cannot require the connection service be performed to higher than the least cost technically acceptable standard or a capacity greater than the connection applicant's requirement, unless the distribution network service provider makes arrangements to fund the additional cost of achieving the higher standard, or capacity.

3 Charges for negotiated distribution services and unclassified distribution services

- 3.1.1 Section 3 of these connection charge guidelines only applies to connection services which are classified as negotiated distribution services or are not classified in accordance with rule 6.2 of the NER.
- 3.1.2 If the Australian Energy Regulator classifies a connection service as a negotiated distribution service or does not classify a connection service, in accordance with clause 6.2.1 of the NER, the charge for these connection services will be agreed by the connection applicant and relevant service provider.²

Note: The Australian Energy Regulator considers that these service classifications are likely to be applied in circumstances where the connection service is provided in a competitive or contestable market. A service may also be unclassified if the distribution network service provider is prevented from performing these services by jurisdictional requirements or ring fencing arrangements.

- 3.1.3 The terms and conditions applied to connection services classified as negotiated or unclassified distribution services must be in accordance with any applicable requirements of chapter 5A and must be consistent with applicable provisions in these connection charge guidelines.

² Connection applicants would be free to negotiate an outcome with the distribution network service provider, or applicable third party provider.

4 Charges for alternative control services

4.1.1 Section 4 of these connection charge guidelines only applies to connection services which are classified as direct control services and are further classified as alternative control services in accordance with rule 6.2 of the NER.

4.1.2 If the Australian Energy Regulator classifies a connection service as an alternative control service,³ the distribution network service provider is required to charge for the connection service in accordance with the relevant form of control approved by the Australian Energy Regulator.

Note: The Australian Energy Regulator considers that this service classification is likely to be applied in circumstances where the cost of the service is directly attributable to the individual customer's connection to the network. Clause 6.2.2 of the NER indicates this is an important consideration in classifying a service as an alternative control service and provides the following example:

- In circumstances where a service is provided to a small number of identifiable customers on a discretionary or infrequent basis, and costs can be directly attributed to those customers, it may be more appropriate to classify the service as an alternative control service than as a standard control service.⁴

4.1.3 The terms and conditions applied to connection services classified as alternative control distribution services must be in accordance with any applicable requirements of chapter 5A and must be consistent with applicable provisions in these connection charge guidelines.

³ A service may be classified as alternative control in accordance with clause 6.2.2 of the National Electricity Rules, which provides an example that in circumstances where a service is provided to a small number of identifiable customers on a discretionary or infrequent basis, and costs can be directly attributed to those customers, it may be more appropriate to classify the service as an alternative control service than as a standard control service.

⁴ Paragraph 6.2.2(c) of the National Electricity Rules

5 Capital contributions for standard control services

5.1 Description of the cost-revenue-test

- 5.1.1 Section 5 of these connection charge guidelines only applies to connection services which are classified as direct control services and are further classified as standard control services in accordance with rule 6.2 of the NER.
- 5.1.2 A distribution network service provider may seek a capital contribution for standard control connection services from a connection applicant, if the incremental cost of the standard control connection services exceeds the estimated incremental revenue expected to be derived from the standard control connection services.⁵

Note: The incremental cost or incremental revenue received attributable to any connection service classified as alternative control, negotiated control or unclassified services will not be included in the cost-revenue-test.

- 5.1.3 The amount of any capital contribution is to be calculated as the difference between the incremental revenue and the incremental cost attributable to the standard control services required by the connection applicant. Where the capital contribution is less than zero, no capital contribution is payable by the connection applicant, or the distribution network service provider.
- 5.1.4 The cost-revenue-test is:

$$CC = ICCS + ICSN - IR(n=X)$$

Where:

- $CC \geq 0$
- CC = Capital Contribution for standard control services.
- ICCS = Incremental Cost Customer Specific—the incremental costs incurred by the distribution network service provider for standard control connection services, which are used solely by the connection applicant. This may include extensions and augmentation of premises connection assets at the retail customers connection point. ICCS should be calculated in accordance with clauses 5.2.1 to 5.2.4 of this guideline.
- ICSN = Incremental Cost Shared Network—the costs incurred by the distribution network service provider for standard control connection services, which are not used solely by the connection applicant. This may include any augmentation (insofar as it involves more than an extension) attributable to the new

⁵ Paragraph 6.21.2(2) of the National Electricity Rules allows that: the Distribution Network Service Provider may receive a capital contribution, prepayment and/or financial guarantee up to the provider's future revenue related to the provision of direct control services for any new assets installed as part of a new connection or modification to an existing connection, including any augmentation to the distribution network.

connection. ICSN should be calculated in accordance with clauses 5.2.1 to 5.2.3 and clauses 5.2.5 to 5.2.11 of this guideline.

- $IR(n=X)$ = Incremental revenue expected to be received from the new connection—the present value of a X year revenue stream directly attributable to the new connection as described in section 5.3 of this guideline.

5.1.5 A distribution network service providers' connection charge policy must ensure that operational and maintenance costs have no net impact on the capital contribution payable by the connection applicant.

Example: distribution network service providers may:

- when estimating the incremental revenue remove the component attributable to the operational and maintenance costs from the DUoS charges and not include operational and maintenance costs in the incremental cost; or
- include an allowance for operational and maintenance costs in the incremental cost and not adjust the DUoS charges when estimating the incremental revenue.

5.1.6 Subject to section 1 and clause 5.1.5 of this guideline, the cost-revenue-test applies to all components of connection services classified as standard control, for which the distribution network service provider seeks a capital contribution.

Note: Where the connection applicant is not required to make a capital contribution towards the cost of augmentation (insofar as it involves more than an extension), in accordance with paragraph 5A.E.1(b) of the NER and clause 1.1.1 of this guideline, neither the amount of the incremental cost or incremental revenue attributable to these connection services will be included in the cost-revenue-test.

5.2 Incremental costs under the cost-revenue-test

Principles for determining the incremental cost

5.2.1 In determining the incremental cost components of the cost-revenue-test, a distribution network service provider should:

- a) determine the cost of each component in a fair and reasonable manner and ensure that the cost estimate are reflective of the efficient costs of performing the service.
- b) calculate the cost of each component based on the least cost technically acceptable standard necessary for the connection service.

5.2.2 If a distribution network service provider elects to perform the work to a higher standard than contemplated in clause 5.2.1, then the distribution network service provider must not charge the connection applicant for any cost additional to the cost of providing the service to the least technically cost acceptable standard, unless:

- a) The connection applicant is a real estate developer and the distribution network service provider has included the cost of providing efficiently for forecast load growth as contemplated in clause 8.1.4 of this guideline.

- 5.2.3 If jurisdictional regulations permit, a distribution network service provider should provide an option of conducting a tender process on behalf of the connection applicant or allow a connection applicant to conduct a tender process, to procure those connection services that can be provided by a third party. In such cases:
- a) A distribution network service provider must inform a connection applicant of the option, where available, for the distribution network service provider or connection applicant to seek tenders to perform particular parts of the construction work.
 - b) If the distribution network service provider carries out a tender process, it may charge the connection applicant for the reasonable cost of conducting the tender. The connection applicant should, however, be provided with an estimate of the cost before the tender process is commenced.
 - c) The distribution network service provider may charge the connection applicant the reasonable costs of assisting the connection applicant to conduct a tender process.

Calculation of the customer specific incremental costs (ICCS) of standard control services

- 5.2.4 The ICCS is to be calculated as the sum of the following cost items:
- a) Augmentation of premises connection assets at the retail customer's connection point.
 - b) Extension costs.
 - c) Administration costs (including any design and certification costs).
 - d) Any costs for conducting a tender process in accordance with clause 5.2.3 of this guideline.
 - e) The cost of providing any other standard control connection services which are used solely by the connection applicant.

Calculation of the Incremental Cost Shared Network (ICSN) of standard control services

- 5.2.5 Where a connection applicant is required to make a capital contribution towards the cost of an augmentation (insofar as it involves more than an extension), the ICSN will be calculated as follows:

$$\text{ICSN} = \text{Unit rate} * \text{Demand estimate.}$$

Where:

- Unit rate—is the average cost of augmentation (insofar as it involves more than an extension), per unit of added capacity. The unit rate is calculated in accordance with clauses 5.2.7 to 5.2.11.
- Demand estimate—is an estimate of the maximum electrical energy flow that will be consumed by the connection applicant. It is typically measured in either kilowatts (kW) or kilo volt-amperes (kVA). The demand estimate is calculated in accordance with section 5.4 of this guideline.

- 5.2.6 When estimating a connection applicant's Demand measure, a distribution network service provider must apply section 5.4 of this guideline.
- 5.2.7 The unit rate must be calculated as the average cost of adding a unit of capacity to the shared network and may be calculated taking into account clause 5.2.9.
- a) A distribution network service provider may apply different unit rates in different areas of its network where the cost of augmentation differs significantly between those areas.
 - b) The applicable unit rate for each area and for each year of the regulatory control period must be set out in a distribution network service provider's distribution determination.
- 5.2.8 A distribution network service provider's unit rate(s) for the cost of augmentation (insofar as it involves more than an extension) must be approved by the Australian Energy Regulator in its distribution determination before being applied by the distribution network service provider.
- 5.2.9 Subject to clause 5.2.10 of this guideline, the unit rate(s) for the cost of augmentation (insofar as it involves more than an extension) may be based on the local area's recent shared network augmentation costs for the following network components:
- a) Sub-transmission line
 - b) Zone substation
 - c) High voltage feeder
 - d) Distribution substation
 - e) Low voltage mains.
- 5.2.10 To the extent that a particular network component has been included as a customer specific cost, or if the connection does not require a particular network component, these components will not be included in the calculation of the unit rate(s) for shared network augmentation.
- Example: A customer who connects to a high voltage feeder should not be required to contribute towards the cost of the low voltage mains.
- 5.2.11 In calculating the applicable unit rate(s), a distribution network service provider must take account of the cost of augmenting each network component with reference to:
- a) The proportion of each network component used by the connection applicant; and
 - b) The useful life of the network component and the assumed period for which the connection applicant will be using the network.

5.3 Incremental revenue under the cost-revenue-test

- 5.3.1 The incremental revenue contemplated in clause 5.1.4 should be the net present value of all of the expected DUoS charges, recoverable from the connection applicant, except:
- a) For connection services which fall below the shared network augmentation threshold, distribution network service providers must remove the portion of DUoS

charges attributable to augmentation (insofar as it involves more than an extension) from the incremental revenue.

- b) Where a distribution network service provider removes the operational and maintenance costs from the DUoS charges in accordance with clause 5.1.5 of this guideline.
- 5.3.2 If the connection applicant is a residential customer, then an assumed connection period of 30 years applies when calculating the expected DUoS charges recoverable from the connection applicant.
- 5.3.3 If a connection applicant is a business customer, then an assumed connection period of 15 years should be applied when calculating the expected DUoS charges recoverable from the connection applicant. However, where a 15 year connection period does not reflect a reasonable estimate of the time that the connection service will be connected, the distribution network service provider, acting in good faith, may apply an alternative assumed connection period for that connection service.
- 5.3.4 The revenue stream arising from clause 5.3.1 to 5.3.3 of this guideline will be discounted by the relevant distribution network service provider's real pre-tax weighted average cost of capital, as set out in the relevant distribution determination, to derive the incremental revenue (IR) of a connection applicant for use in clause 5.1.4 of this guideline.
- 5.3.5 When estimating a connection applicant's incremental revenue, a distribution network service provider must:
- a) use the price path set out in the relevant distribution determination that is applicable at the time of the connection offer, until the end of the relevant distribution determination, and
 - b) use a flat real price path⁶ after the end of the relevant distribution determination, for the remaining life of the connection. This flat price path is the expected real DUoS charges in the final year of the regulatory control period.

Note: When a connection offer is made after the Australian Energy Regulator has made a distribution determination for the subsequent regulatory control period, but prior to the commencement of that subsequent regulatory control period, then the distribution network service provider must apply the price path of the subsequent regulatory control period in estimating the incremental revenue. Additionally, a flat real price path should apply from the end of the subsequent regulatory control period.

5.4 Estimating customers' consumption and demand

- 5.4.1 A distribution network service provider's connection policy should set out how it will estimate a connection applicant's consumption and demand.

⁶ This is equivalent to being escalated a by CPI in nominal terms.

- 5.4.2 A distribution network service provider's consumption and demand estimates contemplated in clauses 5.4.4 and 5.4.5 of this guideline should be fair and reasonable.
- 5.4.3 A distribution network service provider's consumption and demand estimates should be based on an assessment of the connection applicant's particular circumstances. However, a distribution network service provider may also consider actual consumption and demand information from existing connection services with similar characteristics.
- 5.4.4 The distribution network service provider's connection offer should include the distribution network service provider's estimate of the connection applicant's consumption for use in the incremental revenue calculation.
- 5.4.5 The distribution network service provider's connection offer should include the distribution network service provider's estimate of a connection applicant's peak demand or peak coincident demand for use in calculating the shared network augmentation charge.
- 5.4.6 If a distribution network service provider and a connection applicant (other than a real estate developer) cannot reach agreement on appropriate estimates of consumption and/or demand (as contemplated in clauses 5.4.4 and 5.4.5), then:
- a) A provisional estimate may be determined and applied by the distribution network service provider.
 - b) No later than three years after the connection works occur, a refund or additional charge is payable to/by the relevant connection applicant based on the difference between the estimated and actual consumption or demand experienced over the period.
 - c) The additional charge or refund will be calculated assuming the actual consumption or demand experienced over the period, will be experienced over the total connection period.
 - d) If the connection applicant becomes insolvent, or ceases to utilise the property within three years, then the distribution network service provider will not make a refund or require an additional charge based on the actual demand or consumption.

Notes:

- Clause 5.4.6 only applies in the event that the distribution network service provider and customer cannot agree on an appropriate estimate. If the connection applicant and distribution network service provider agree on an appropriate estimate, then neither party is entitled to a refund or additional payment at a later date.
- If the installed metering infrastructure does not allow for later reconciliation of actual consumption or demand, then this reconciliation process cannot apply. If the customer and distribution network service provider are unable to reach agreement, the AER may need to assess the dispute under clause 5A.G of the NER.

- This clause provides an alternative to referring a dispute to the Australian Energy Regulator under clause 5A.G of the NER. However, this clause does not prevent a customer from notifying the Australian Energy Regulator of a dispute under clause 5A.G of the NER.

5.4.7 Distribution network service providers and real estate developers may enter into private agreements with similar effect to clause 5.4.6 of this guideline if an estimate for consumption and/or demand cannot be agreed upon.

Note: The premises to which connection services are provided at the request of a real estate developer would be likely to have changed ownership before an additional charge or refund would occur and thus the approach outlined in clause 5.4.6 cannot be applied to these customers.

5.5 Pre-calculated capital contributions for basic and standard connection offers

5.5.1 If a distribution network service provider considers that all connection applicants receiving a particular basic or standard connection offer have substantially the same connection service and expected usage characteristics, then the distribution network service provider may charge a pre-determined capital contribution charge from each connection applicant within the class.

Note: Distribution network service providers are not obliged to seek pre-calculated capital contribution for any or all classes of basic or standard connection offers.

5.5.2 If a distribution network service provider chooses to apply a pre-calculated charges under clause 5.5.1 of this guideline, the amount of the pre-calculated charge must be included in a distribution network service provider's basic or standard connection offers and should:

- a) not create unreasonable cross subsidisation within the class; and
- b) be reflective of the average or typical capital contribution that would be charged to connection applicants within the class, if the cost-revenue-test was individually applied to each connection applicant's connection service.

6 Method for calculating a refund of connection charges for extension assets (pioneer scheme)

6.1.1 Each distribution network service provider should include in its connection policy and publish on its website a pioneer scheme to apply to network extensions performed to the least cost technically acceptable standard and funded by a connection applicant.

Note: the AER considers that Chapter 5A allows retail customers to have a pioneer scheme created for assets they fund, regardless of the service classification of these connection services.

6.1.2 A distribution network service provider's pioneer scheme should calculate the charge from a subsequent customer and refund to each customer already connected to an extension by:

- a) Taking into account the physical attributes (for example, length of line) of assets a subsequent customer uses of an extension asset relative to other customers already connected to the extension; and
- b) Taking into account the amount of electricity demand used by a subsequent customer relative to other customers already connected to the extension; and
- c) Depreciating extension assets over 20 years using a straight line depreciation method.

6.1.3 If a distribution network service provider's pioneer scheme calculates a total refund to all customers already connected to an extension that is less than \$1,000 (\$, real 2012), then the distribution network service provider is not required to refund those customers.

6.1.4 If a distribution network service provider does not refund customers already connected to the extension because of the operation of the threshold outlined in clause 6.1.3 of this guideline, then the distribution network service provider must not charge the customer connecting to the extension for the costs calculated in accordance with the pioneer scheme.

6.1.5 Subject to clause 6.1.3 and 6.1.4 of this guideline, when a subsequent customer connects to an extension, which is subject to a pioneer scheme, the distribution network service provider must provide the customers already connected to the extension with a refund and:

- a) A distribution network service provider may charge the subsequent customer the amount determined by the pioneer scheme.
- b) The amount refunded to each customer already connected to the extension must be determined in accordance with the distribution network service provider's pioneer scheme.
- c) In total the distribution network service provider must pay the amount received under clause 6.1.2 to the customers eligible for a refund under the distribution network service provider's pioneer scheme.

- 6.1.6 When a refund is due under a distribution network service provider's pioneer scheme, the distribution network service provider's pioneer scheme may allow the refund to either the current owner of the premises or to the original customer.
- 6.1.7 When an independent service provider performs an extension and the cost of the extension is unknown to the relevant distribution network service provider, the distribution network service provider will establish the pioneer scheme using an estimate of the amount it would have charged the original customer to perform the extension.
- 6.1.8 If an original customer requests a connection to be constructed to a higher standard or capacity than the least cost technically acceptable standard, then only the cost of constructing the connection to the least cost technically acceptable standard or capacity will be subject to the pioneer scheme.
- 6.1.9 If a distribution network service provider requires an extension be built to a higher standard or capacity than required by an original customer, other than a real estate developer, the original customer will only pay for the extension to the standard required or capacity for its connection service and only the extension necessary for the original customer will be subject to a pioneer scheme.
- 6.1.10 If a distribution network service provider requires an extension to be built to a higher standard or capacity than required by a real estate developer, and the distribution network service provider charges a capital contribution for augmentation to the network to allow for forecast load growth—as allowed by clause 5A.E.1(c)—then the extension must be subject to a pioneer scheme, unless:
- a) The real estate developer and distribution network service provider agree, as allowed by clause 5A.E.1(c), that the distribution network service provider only charge the real estate developer for the portion of the total cost attributable to the real estate developer.

Note: The equalisation schemes historically applied in some jurisdictions are an example of an agreement which may satisfy this requirement.

7 Embedded generation

- 7.1.1 Non-registered embedded generators are not eligible for the exemption from being charged for augmentation (insofar as it involves more than an extension) under subparagraph 5A.E.1(b)(2) and 5A.E.3(c)(4) of the NER.
- 7.1.2 Charges for components of an embedded generator's connection that are classified as negotiated services or are unclassified, will be calculated in accordance with section 3 of this guideline.
- 7.1.3 Charges for components of an embedded generator's connection that are classified as alternative control services will be calculated in accordance with section 4 of this guideline.
- 7.1.4 Charges for components of an embedded generator's connection that are classified as standard control services will be calculated in accordance with section 5 of this guideline, with the following exceptions:
- a) The capital contribution for non-registered embedded generators that are also load customers will be calculated based on the total cost of the works required to support both the generation (expected electricity output) and load components of the connection service.
 - b) No incremental revenue will be received by the distribution network service provider from the generation component.
 - c) The relevant load for the purposes of calculating ICSN will be the gross peak demand of the load, regardless of the embedded generator's expected electricity output.

Note: Non-registered embedded generators which seek to remove a specific network constraint, will generally be required to pay for the cost of removing the constraint. The AER considers services related to removing shared network constraints for specific users, such as embedded generators, would generally be an alternative control service, negotiated service or unclassified service. However, a DNSP's normal asset management may lead to a DNSP funding such shared network augmentation if there is a demonstrable net benefit to other network users. Non-registered embedded generators will not be charged a unit rate for shared network augmentation (based on the generation output).

7A Imposing static zero export limits on micro embedded generator connections

7A.1.1 A distribution network service provider can only impose a static zero export limit onto a new or altered micro embedded generator connection if:

- a) the export from the generator will have a high probability of resulting in the distribution network service provider not meeting a regulatory obligation or to maintain the network within its technical limits—for example, not meeting the voltage level and power quality standards, safety requirements of the relevant jurisdictional regulations and network security requirements (the technical consideration); and
- b) the cost of augmenting the distribution network service provider's network assets in order to allow a reasonable export capacity level by the micro embedded generator connection applicant outweighs the benefits arising from providing the additional export capacity to this micro embedded generator connection, taking into consideration the expected future new micro embedded generation outputs/distributed energy resources that will be able to export to the grid arising from the augmentation (the economic consideration). Notwithstanding the guidance in this subclause (b), if the cost to augment the network assets is only marginally higher than the benefits, the distribution network service provider must not impose a static zero export limit.

This subclause (b) does not apply if the connection applicant elects to fund the necessary network augmentation to meet the applicant's needs.

For the avoidance of doubt, subclause (b) must be applied/undertaken in a manner consistent with the National Electricity Objective as prevailing at the time of the assessment.

7A.1.2 A distribution network service provider may impose a static zero export limit onto a new or altered micro embedded generator connection if the connection applicant expressly/explicitly sought such connection conditions.

7A.1.3 A distribution network service provider may establish a standard assessment policy/framework for the purposes/purpose of clauses 7A.1.1-(a) and 7A.1.1(b). In establishing this policy the distribution network service provider must:

- a) publish the (b), and must display the assessment framework on its website and in its connection policy. The standard assessment policy on its website framework must contain the following principles:

b) ensure that the standard assessment policy:

(i) sets out the criteria, and a process, for theThe identification of network limitations caused by constraints in accordance with clause 7A.1.1(a), including such as-(but not limited to):

- thermal/Thermal issues
- voltage/Voltage issues
- protection/Protection systems.

(ii) provides that a static zero export limit may only be imposed where all of the following criteria are met:

1. networkNetwork expenditure that has not already been undertaken to relieve the identifiedthese network constraints;

2. the costs of augmentation to relieve the identified network constraints would more than marginally outweigh the benefits, in accordance with clause 7A.1.1(b); and

—3. if a suitable dynamic response system has been specified by theThe distribution network service provider, must undertake a cost benefit analysis to identify that a static zero export limit is the least cost option for addressing the above network constraints

Provided the connection applicant is not utilising or proposing to utilise such a system, a suitable dynamic response system, the distribution network service provider can apply a static zero export limit if it is the least cost option.

7A.1.4 Except where a connection applicant specifically seeks a static zero export limit connection condition, a static zero export limit cannot be applied to a new or altered micro-embedded generator connectionimposed if the micro embedded generator has a suitable dynamic response system. as specified by the distribution network service provider.

The restriction in thisThis clause 7A.1.4 on the application of a static zero export limit does not apply where a distribution network service provider has not identified a suitable dynamic response system suitable to the connection applicant'sin a particular location.

7A.1.5 A distribution network service provider must use its best endeavours to identify and specify suitable dynamic response systems for all locations in its distribution area.

7A.1.6 Prior to imposing a static zero export limit onte a connection applicant for a new or altered micro-embedded generator connection, the distribution network service provider must:

- a) explain, toprovide the connection applicant, reasons regarding the technical and economic considerations that led to the static zero export limit being imposedto the connection applicant; and
- b) subjectSubject to clause 7A.1.4, inform the connection applicant of the option of installing a suitable dynamic response system as specified by the distribution network service provider in order to avoid a static zero export limit being imposed; and;
- c) informInform the connection applicant about how to access an independent technical review of the distribution service provider's reasons for imposing the static zero limit; and

~~e)d) inform the connection applicant about whether there are alternative dispute resolution channels available to help negotiate a suitable export limit other than a static zero limit.~~

~~Note: for subclause (c) above such channels could include advisory services offered by State Governments. For subclause (d), such Note: Such channels could include the relevant Energy Ombudsman Scheme.~~

7A.1.76 Where a static zero export limit condition is imposed for a new or altered micro-embedded generator connection~~offered~~, the distribution network service provider's connection offer must include a review clause that provides that the connection applicant may seek a review of the static zero export limit conditions after 5 years of the initial connection being~~is~~ completed. A suitable model standing offer may be used for the purposes~~purpose~~ of this clause.

7A.1.87 The distribution network service provider must review the static zero export limit imposed on existing micro embedded generators following any-network augmentation works designed to expand micro embedded generation export capacity that will lead to the removal of the original imposed static zero export limit arising from the augmentation, where the benefits of doing so are likely to exceed the costs.

7A.1.98 After a review under clauses 7A.1.6 ~~and 7A.1.7~~ or 7A.1.8 that concludes that, in accordance with the criteria set out in this guideline and the distribution network service provider's connection policy, an existing static zero export limit should no longer be applicable under this Guideline, the distribution network service provider must inform the relevant micro embedded generators that they could have their export limits lifted subject to these micro embedded generators seeking to reapply for a new connection agreement with the static zero export limit lifted.

~~7A.1.9 A distribution network service provider must publish its policy on how it will impose a static zero export limit conditions on its website. Such policies must be consistent with the relevant connection policies approved by the AER.~~

7A.1.10 Where a micro embedded generator wishes to fund a network augmentation in order to remove the static zero export limit or other export limits imposed by the distribution network service provider for residential connections, the charge payable by the micro embedded generator should be the net cost to the distribution network service provider, calculated as between (1) the actual cost to remove the export constraint netted off by (2) the net present value (NPV) of the export charge revenue received from the connection applicants and the projected future additional micro embedded generator connections over a 30-year period for residential connections.

7A.1.11 Where a micro embedded generator wishes to fund a network augmentation in order to remove the static zero export limit or other export limits imposed by the distribution network service provider for non-residential connections, the charge payable by the micro embedded generator should be the net cost to the distribution network service provider, calculated as distributor between (1) the actual cost to remove the export constraint netted off by (2) the net present value (NPV) of the export charge revenue received from the connection applicants and the projected

future additional micro embedded generator connections over a 15-year period. ~~for non-residential connections.~~

7A.1.12 The discount rate for the calculation of the NPV of the export charge revenue stream arising from clauses 7A.1.10 and 7A.1.11 ~~of~~ must be ~~calculated~~ based on the relevant distribution network service provider's real pre-tax weighted average cost of capital, as set out in the relevant distribution determination.

7A.1.13 ~~Clauses~~Clause 7A.1.10 and 7A.1.11 do not apply if the relevant distribution service (that is, the service consisting of the removal of~~to remove~~ upstream network constraints on micro embedded generator export ~~levels~~level) is NOT classified as a standard~~alternative~~ control service in the relevant distribution determination.

7A.1.14 Despite the time periods specified in 7A.1.10 and 7A.1.11 for the purpose of calculating the net present value of the projected export charge revenue, where the applicable connection period, as specified those clauses, does not reflect a reasonable estimate of the time that the connection service will remain connected, the distribution network service provider, acting in good faith, may apply an alternative assumed connection period, based on that reasonable estimate, for that connection service.

7A.1.15 When estimating the net present value of the projected export charge revenue, a distribution network service provider must:

- a) use the price path set out in the relevant distribution determination that is applicable at the time of the connection offer, until the end of the relevant distribution determination, and
- b) use a flat real price path after the end of the relevant distribution determination, for the remaining life of the connection. The flat price path used must be the expected real export charge rate in the final year of the regulatory control period.

7A.1.16 Distribution network service providers should provide communications to its stakeholders that explain the reasons for static zero limits existing in the network. These communications should not be limited to placing material on the distribution network service providers' websites. The communications should involve sharing the reasons behind the imposition of static zero limits with local councils, relevant businesses (such as retailers and solar installers) and community groups in a way that enables a clear understanding of why static zero export limits have been imposed on micro embedded generators.

8 Real estate developers, Registered Participant and Intending Participant

- 8.1.1 This section does not apply to, or in relation to, a connection applicant that is a Registered Participant or an Intending Participant unless:
- a) the Registered Participant or Intending Participant is acting as the agent of a retail customer,
 - or
 - b) the connection applicant is seeking connection or connection services in relation to a regulated SAPS.
- 8.1.2 Real estate developers, Registered Participants and Intending Participants are not eligible for the exemption from being charged for augmentation (insofar as it involves more than an extension) under subparagraph 5A.E.1(b)(2) and 5A.E.3(c)(4) of the NER.
- 8.1.3 Charges for components of a real estate developer's, Registered Participant's and Intending Participant's connection that are classified as negotiated services or are unclassified will be calculated in accordance with section 3 of this guideline.
- 8.1.4 Charges for components of a real estate developer's, Registered Participant's and Intending Participant's connection that are classified as alternative control services will be calculated in accordance with section 4 of this guideline.
- 8.1.5 Charges for components of a real estate developer's, Registered Participant's and Intending Participant's connection that are classified as standard control services will be calculated in accordance with section 5 of this guideline, with the following exceptions:
- a) A real estate developer's incremental revenue as contemplated in section 5.3 of this guideline is the estimated revenue that a distribution network service provider will receive from all the sites/connection services within a real estate development.
 - b) The assumed connection period of a real estate developer's connection will be calculated in accordance with clauses 5.3.2 and 5.3.3 of this guideline, having reference to the intended usage of the development site.
 - c) A real estate developer is to be treated as a single customer for the purposes of calculating a capital contribution under this guideline.
 - d) In accordance with subparagraph 5A.E.1(c)(5) of the NER, a real estate developer's incremental cost (for inclusion in the cost-revenue-test) for augmentation (both ICCS and ICSN) may include the costs of the connection services and, to any further extent that a prudent service provider would consider necessary, the cost of providing efficiently for forecast load growth.

Note: Real estate developers, Registered Participants and Intending Participants are entitled to access a pioneer scheme for extension assets they fund unless, in accordance with clause 6.1.10 of this guideline, the real estate developer and

distribution network service provider agree otherwise. Any pioneer scheme would apply to connection applicants connecting to the extension assets outside the pioneer developer's site boundary and not to premises connecting within the development.

9 Prepayments

- 9.1.1 A distribution network service provider's connection policy may seek advance payment of the connection charge before commencement of the construction work as outlined in clause 2.1.1 of this guideline, unless the upfront total connection charge is greater than \$5000 (\$, real 2012) and:
- a) The construction work will not commence for 3 months or more after the connection offer is accepted; or
 - b) The construction work can be logically segmented into distinct stages of construction.
- 9.1.2 If construction work is of the nature described in clause 9.1.1(a) of this guideline, the distribution network service provider's policy can require payment at the time the connection offer is accepted for the costs that have been incurred and prepayment for any sunk costs that will be incurred immediately after the connection offer is accepted. The prepayment may include but is not limited to:
- a) The costs of specialised or non standard assets which need to be ordered by the distribution network service provider in advance and would not normally be required to perform a connection; and
 - b) Design and administration costs.
- 9.1.3 The balance of a connection charge that has not been recovered in accordance with clause 9.1.2 of this guideline may be recovered by a distribution network service provider no more than one month prior to the commencement of the construction work.
- 9.1.4 For connection services requiring multiple distinct stages of construction as contemplated in clause 9.1.1(b) of this guideline, the distribution network service provider's connection policy may only require partial prepayment of the connection charge, prior to each construction stage. Each prepayment should be reasonably reflective of the costs that will be incurred in each construction stage.

10 Security fee

- 10.1.1 A distribution network service provider may only require a security fee if it has included the method of calculating and charging a security fee in its connection policy.
- 10.1.2 Subject to clause 10.1.1 of this guideline, if a distribution network service provider fairly and reasonably assesses that there is a high risk that the distribution network service provider may not earn the estimated incremental revenue then the distribution network service provider may require a security fee.
- 10.1.3 A security fee may be in the form of either a prepayment, or a financial guarantee in the form of a bank guarantee.
- 10.1.4 A distribution network service provider's security fee scheme accord with the following principles:
- a) The amount of the security fee must not be greater than the amount of the incremental revenue which the distribution network service provider assesses as having a high risk of not being recovered.
 - b) The security fee may not exceed the present value of the incremental costs the distribution network service provider will incur in undertaking any relevant new works and augmentation.
 - c) Where the security fee has been provided as an upfront payment, the distribution network service provider must rebate the security fee annually over the period of the security fee scheme. The first rebate must be allowed in the calendar year after the connection services are provided.

Note: If the security fee scheme calculates that no rebate is due in a given year (e.g. if insufficient incremental revenue is received from the connection applicant), then no rebate need be paid in that year.
 - d) Where the security fee has been provided as an upfront payment, the distribution network service provider must pay interest on the security fee, commensurate to the manner in which the security fee is treated by the distribution network service provider. Interest is not be payable on security held in the form of a bank guarantee.
 - e) The security fee scheme must not result in a distribution network service provider recovering more than the total estimated incremental revenue, unless the actual incremental revenue realised over the period of the security fee scheme exceeds the estimated incremental revenue, and the DNSP refunds the security fee in full.
 - f) The connection applicant should not be rebated an amount greater than the security fee deposit plus interest from the distribution network service provider in total, over the security fee period.

11 Treatment of augmentation assets

- 11.1.1 Distribution network service providers must implement an accounting treatment which ensures that they do not earn a regulated rate of return on assets which are funded by customers or that were gifted to the distribution network service provider.

12 Definitions

Augmentation— augmentation of a transmission or distribution system means work to enlarge the system or to increase its capacity to transmit or distribute electricity.⁷

Business Customer—A connection service which is used for business purposes but not including residential homes from which business is conducted.

Connection applicant—connection applicant means an applicant for a connection service of 1 of the following categories:

- a) retail customer;
- b) retailer or other person acting on behalf of a retail customer;
- c) real estate developer.

Connection Charge—a charge imposed by a distribution network service provider for a connection service. In the context of this guideline this is the total amount payable by the connection applicant to the DNSPs in accordance with section 2 and may consist of charges for alternative control services or a capital contribution for standard control services.

Connection service—means either or both of the following:

- a) a service relating to a new connection for premises;
- b) a service relating to a connection alteration for premises.

Extension—An augmentation that requires the connection of a power line or facility outside the present boundaries of the transmission or distribution network owned, controlled or operated by a Network Service Provider.⁸

Intending Participant—has the same meaning as defined in the NER.

Interconnected national electricity system- has the same meaning as defined in the NEL.

Model standing offer—has the same meaning as defined in the NER.

New connection—has the same meaning as defined in the NER.

Original customer—the connection applicant who triggered the requirement and paid for the construction of an extension asset.

Peak Coincident Demand—A connection service's electricity demand at times when the network or relevant segment is experiencing its maximum demand

Peak demand—A connection service's maximum electricity demand.

Register Participant—has the same meaning as defined in the NER.

⁷ National Electricity Laws

⁸ National Electricity Rules

Regulated Stand-alone Power System—has the same meaning as defined in the NER.

Residential Customer—A connection service which is used for residential purposes.

Static Zero Export Limit—has the same meaning as defined in the NER.

Subsequent customer—A connection applicant, other than the original customer, who connects to an extension subject to the pioneer