Issues paper: Connection Charge Guideline review

Static zero limits for micro embedded generators

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AUSTRALIAN ENERGY REGULATOR

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Contents

1 Purpose of this paper

As required by changes made to the National Electricity Rules in August 2021, we are reviewing our Connection Charge Guideline to describe the circumstances (or how to determine the circumstances) under which a Distribution Network Service Provider (distributor) may offer a static zero export limit (static zero limit) to a micro embedded generator seeking to connect to the network.

Our view is that these limits should only be applied in exceptional circumstances. However, in the rest of this paper we explore the boundaries of the exceptional circumstances where static zero limits are applied.

A micro embedded generator is a generating unit contemplated by Australian Standard AS 4777 (grid connection of energy systems via inverters), which is a sub-class of distributed energy resources (DER). They are predominantly solar PV systems on residential properties (rooftop solar) but may also include larger units on commercial buildings up to 200 kW in size (the size limit permitted under AS4777) and battery systems.

A static zero limit means that a customer is prevented from accessing the network to export electricity at any time. We have identified a number of issues with this and invite stakeholders' views. Our initial thoughts and questions on these issues are discussed in the latter part of this paper.

Scope of this review

Small systems, like rooftop solar systems, and storage batteries installed behind the meter at residences are classified under the Rules as micro embedded generators, which is a form of DER. DER can also include larger units, such as grid scale community batteries.

This review applies to all forms of micro embedded generators that could inject energy into the grid, but the most common form is rooftop solar. For simplicity in this paper, we will refer to micro embedded generators as rooftop solar, recognising that when we refer to rooftop solar we are referring to the broader category.

Pre-existing rooftop solar systems are covered by the original connection contracts between customers and their distributors. However, their ability to export can be adversely affected by new rooftop solar connections in cases where network voltage is not properly managed.

Modifications to pre-existing systems, such as adding more solar panels, will be treated as a connection alteration. While a static zero limit is unlikely to be applied in such circumstances, there may be limited situations where a static zero limit could be imposed to connection alterations.

Background

Around 3 million households in Australia have already installed rooftop solar systems. We are expecting to see not only continued growth in behind-the-meter rooftop solar systems, but also the installation of batteries by households and the increased uptake of electric vehicles in the coming years. Investments in solar and batteries by households have the potential to empower customers in their interaction with the energy market and promote their long-term interests.

The large increase in the installation of rooftop solar has turned a network traditionally designed for one-way flows of electricity from centralised power stations to customers, into platforms dealing with two-way flows. Electricity networks have managed to accommodate this growth to date. We want to see the system further developed so it can accommodate more of these systems in a prudent and efficient manner to deliver outcomes in the long-term interest of customers.

Previously, the Rules did not contain specific conditions around the treatment of exports of electricity from DERs. In August 2021, the Australian Energy Market Commission (AEMC) made a change to the Rules to recognise two-way flows of electricity (rule change).[1] The Rule change introduced a package of measures designed to support more DER – such as rooftop solar systems, battery storage systems and electric vehicles – to efficiently connect to the grid and move electricity distribution networks towards a smarter, enhanced system that can better manage the supply and demand dynamics of a distributed energy world.

Prior to these changes, the Rules did not prevent distributors from imposing static zero limits, even in situations where there was sufficient capacity available. However, under the changes to the Rules, distributors will not be able to impose static zero limits, unless:

- the customer makes a request, or
- an exception listed in the Connection Charge Guideline applies.

While the focus of the Rule change was to support more DER (including rooftop solar), the AEMC also considered it inappropriate to introduce a complete prohibition on distributors imposing static zero limits because there may be limited circumstances (for example, small pockets on the network) where it is efficient or necessary for distributors to apply them.

The new Rules require us to specify in the Connection Charge Guideline 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 seeking to connect to the network.

While small customers might be able to connect rooftop solar at such locations, a static zero limit means that a customer is prevented from accessing the network to export electricity at any time.[2] We invite stakeholders' views on how to achieve a proportionate response to this challenge.

Based on initial consultation, we consider that the imposition of a static zero limit should be a rare event that happens in exceptional circumstances only. In this paper we intend to explore issues around what those circumstances should be and what protections should be around them.

The application of static zero limits for rooftop solar is separate from variable limits that distributors might apply at certain times to protect the integrity of the electricity system. Variable limits are outside the scope of this consultation and are being considered more

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1 AEMC, Access, pricing and incentive arrangements for distributed energy resources, Rule determination, 12 August 2021.

2 Ibid, p.i

broadly in our DER export tariff guidelines.[3] Attachment A sets out the relevant Rules requirements for this review. A list of other AER work related to the DER rule change is discussed in section 2.

Please provide your submissions to the questions raised in this paper to:
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Please provide submissions by 9 September 2022.

[3] https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/export-tariff-guidelines.

2 Related matters

Other AER work relevant to this guideline review is:

- DER integration expenditure guidance note

  Provides direction to distributors when developing business cases for network investment to integrate higher levels of DER and quantify DER values, developing DER integration plans and investment proposals, and quantifying DER benefits in a cost-benefit analysis. We discuss how this guidance note relates to the static zero limit issue in section 3.

- Customer export curtailment value (CECV) methodology

  The CECV methodology is a measure of the detriment to customers and the market when customer exports are curtailed and helps guide efficient levels of investment for export services.

- Export tariff guidelines

  Informs distributors about how to justify any future proposals for two-way pricing and includes how they should set the relevant basic export levels for DER. Exporting above such levels may be subject to an export charge. The networks may also provide a rebate to customers when they export at peak times.

- Dynamic operating envelopes (DOE)

  The AER is leading the DOE workstream of the Energy Security Board's (ESB) DER Implementation Plan[4] and is currently developing an issues paper for stakeholder consultation. This project will provide policy direction and advice to the ESB on the implementation of dynamic operating envelopes in the National Electricity Market. The establishment of DOEs has important implications for customers and the role of the AER in relation to distribution network investment and pricing, consumer protection, governance and associated enforcement and compliance arrangements. The DOE will inform distributors' design specifications on dynamic operating systems to be added to customers' PV systems in order to avoid a static zero export limit.

[4] https://www.energy.gov.au/government-priorities/energy-ministers/priorities/national-electricity-market-reforms/post-2025-market-design/der-implementation-plan-design-and-implementation-process

3 Exploring circumstances where a distributor may seek to impose a static zero limit

Rooftop solar can provide benefits to customers but can also contribute to voltage management, network equipment safety and power quality issues when exporting power to the electricity grid.[5,6] It can also potentially distort voltage at a customer's connection point beyond the limits set by jurisdictional regulations. As a result, how much additional rooftop solar outputs are injected into the network may need to be controlled where the local network is saturated with existing rooftop solar systems.

In addition to distributors breaching their licence conditions, sustained over-voltage events may damage customers' appliances, reduce equipment life and increase electricity bills.[7,8] High voltage can also cause other connected rooftop solar systems to trip off or cause their ability to export to be curtailed.

In making investment decisions, distributors must follow the AER's *DER integration expenditure guidance note*[9] and the capital expenditure criteria set out under Rules clauses 6.5.7(c)(1)–(3). Providing unlimited DER export hosting capacity may result in distributors overinvesting in the network, which could result in higher network tariffs than otherwise would have been the case.

If operational means cannot improve rooftop solar hosting capacity – for example, by reducing the voltage level – the other solution is for the distributor to augment its local network (mainly the local transformer and low voltage line). There will be situations where augmenting to provide additional DER integration capacity (including rooftop solar) to avoid imposing an export limit is a prudent and efficient decision by the distributor. Under these circumstances, imposing a static zero limit would be inappropriate. This view is consistent with the AEMC's policy direction, as expressed in its final determination:

> … the application of static zero export limit should be kept to a minimum (if used at all) where a DNSP's determination has approved expenditure to support improvements to the network's capacity to connect more DER.[10]

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5 The Victorian Government's *Voltage Management in Distribution Networks Consultation Paper* provides a detailed explanation on Voltage management issues (see https://engage.vic.gov.au/voltage-management-in-distribution-networks-consultation-paper).

6 At times when there is a high export levels from rooftop solar coinciding with very low energy consumption, thermal limits in some transformers may be exceed to beyond the safety limit.

7 David, Jason R.; Elphick, Sean T.; and Crawford, Matthew, "Cause and effect of overvoltage on the LV network" (2017). Faculty of Engineering and Information Sciences - Papers: Part B. 1700. https://ro.uow.edu.au/eispapers1/1700

8 The Victorian Government's *Voltage Management in Distribution Networks Consultation Paper* provides a detailed explanation on voltage management issues (see https://engage.vic.gov.au/voltage-management-in-distribution-networks-consultation-paper).

9 https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/assessing-distributed-energy-resources-integration-expenditure

10 AEMC, Access, pricing and incentive arrangements for distributed energy resources, Rule determination, 12 August 2021, p.iv.

However, there will be situations where augmentation is not a prudent and efficient investment; namely, where the costs of augmentation outweigh the benefits of doing so. Any inefficient investment will result in customers paying more than necessary for the distribution services they receive.

Question 1

Under what limited circumstances should distributors be able to impose static zero limits?

The AEMC recognised the potential impact of rooftop solar on system security, particularly when rooftop solar outputs are high when the system load demand is low. As a result, the AEMC added new clause 10.5 to Schedule 2 of the National Energy Retail Rules (NERR). This confirmed that distributors may temporarily interrupt or curtail the supply services provided for export from small generators connected to the distribution system.[11]

Although there may be circumstances where a static zero limit is warranted to protect the integrity of the network and customers, a static zero limit should be applied only in limited circumstances.

The AEMC stated that static zero limits can only be applied to export connections where consistent with the safe, secure and efficient provision and use of export services. Such circumstances could include where static zero limits may be reasonably required due to:

- **system limitations:** where there are network export constraints applicable in that particular circumstance or that part of the network
- **limitations related to the capabilities of the distributor's or customer's facilities:** for example, the customer's equipment is not capable of responding to instructions from the network operator.

We expect the impact on network voltage and network asset management issues due to increased solar exports to be transitional. More storage devices, such as batteries, integrated to absorb excess energy from solar will remove the need for static zero limits.

The mechanism for imposing a static zero limit is through the connection application process. When a customer installs a solar system, they must apply to the distributor for a connection agreement before the new rooftop solar system can be energised. The distributor may impose conditions on exports as part of the connection agreement.

The following two case studies highlight the limited circumstances where a static zero limit may be contemplated.

Case study 1

A customer submitted a single-phase connection application requesting a solar PV export limit of 5 kW. Analysis completed by the distributor showed that the distribution transformer had a high level of PV penetration, exceeding the distributor's pre-defined limit. Further analysis showed that the addition of further generation would result in voltage limits being

[11] AEMC Rule Determination, National Electricity Amendment (Access, Pricing and Incentive Arrangements for Distributed Energy Resources) Rule 2021, 12 August 2021, pp 128-129

exceeded. The cost to augment the network to allow the requested connection (including allowing for future export growth) was assessed as inefficient by the distributor. The customer was advised a static zero limit would apply unless the customer could install a suitable dynamic response system to avoid creating an unacceptable voltage rise.

Case study 2

A customer submitted a single-phase connection application requesting a solar PV export limit of 3 kW. Analysis completed by the distributor showed the customer is connected via a long span of low voltage conductor supplied by a single-wire earth return (SWER) circuit. If the customer was to export onto the low voltage (LV) line, the voltage limits would be exceeded. The cost to augment the connection would exceed the additional benefits derived by customers. The customer was advised a static zero limit would apply unless it could install a suitable dynamic response system to avoid creating an unacceptable voltage rise.

In section 4, we discuss the key issues we think may have the most bearing on static zero limits and our initial thoughts on each issue. These issues focus on the conditions that must be met before a static zero limit can be imposed (in limited circumstances) and the necessary protections for customers that must be put in place. In the circumstance that a limit may need to be imposed, we will consider:

- the National Electricity Objective (NEO) to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interest of consumers of electricity with respect to:

  (a) price, quality, safety, reliability and security of supply of electricity

  (b) the reliability, safety and security of the national electricity system

- NER clause 5A.E.3(b)(3), which provides that ‘the purpose of the connection charge guidelines is to ensure that connection charges limit cross-subsidisation of connection costs between different classes (or subclasses) of retail customer’.

We have set out some questions under each issue and invite stakeholder feedback.

4 Key issues and questions for consultation

This section outlines the key issues we consider should be explored before developing draft amendments to our Connection Charge Guideline.

4.1 Interaction between new and existing systems

This section uses the example of the interaction between new systems and existing systems to examine the underlying equity issue.

In order to export, a rooftop solar system must produce a higher voltage level than the street mains. As a result, rooftop solar systems can contribute to voltage management issues.[12] In particular, where a new rooftop solar connection is at the end of a low voltage line, it could contribute to an increase in the voltage of the street mains upstream from the point of connection of the new rooftop solar. If this happens, unless new rooftop solar systems are subject to some form of control, pre-existing rooftop solar customers will lose some of the benefits that would otherwise accrue.

This presents an equity issue between new and existing PV connections. If a new rooftop solar system connects it can adversely affect pre-existing customers, but a static zero limit can only be applied to new or significantly altered existing connections.

The AEMC's Consultation Paper[13] discussed equity issues in the context of customers who are financially able to purchase rooftop solar and reap the financial rewards as opposed to those customers who are not able to afford rooftop solar. We also consider it important to explore the equity issue in relation to customers seeking to connect rooftop solar to the network versus existing customers with rooftop solar.

Question 2

Under what circumstances should we take into account equity issues when considering the application of static zero limits?

4.2 Assessment required to impose a static zero limit

Distributors receive thousands of applications from customers to connect new rooftop solar installations and alter existing rooftop solar connections annually. Unlike a new load connection, distributors need to check more than just the size of the local network against the total demand, including the local supplying transformers (also known as distribution substations).

To decide on the terms and conditions of each new rooftop solar connection, the distributor collects all the relevant information on the supplying transformer and the associated low

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12 The Victorian Government's *Voltage Management in Distribution Networks Consultation Paper* provides a detailed explanation on Voltage management issues (see https://engage.vic.gov.au/voltage-management-in-distribution-networks-consultation-paper).

13 AEMC Consultation Paper – Distributed Energy Resources Integration – Updating Regulatory Arrangements (see https://www.aemc.gov.au/sites/default/files/documents/consultation_paper_-_der_integration_-_updating_regulatory_arrangements_1.pdf)

voltage feeder in terms of voltage, load and solar output profiles. The distributor then assesses the new connection's impact on power quality based on the physical distance from the transformer and the local network configuration.

Currently, only Victorian distributors have full operational information of their distribution transformers because of the almost 100% smart meter coverage in that state.

Distributors in other states and territories do not have a similar level of information as their Victorian counterparts. To gather such detailed information, the distributor may need to conduct a power quality survey for a few weeks at each location. This is costly and time-consuming.[14]

We understand that some distributors currently make the decision based on the percentage of rooftop solar penetration at the location rather than a definitive investigation on the precise network impacts. For example, some distributors set a threshold limit of 33% rooftop solar penetration as their trigger to consider applying an export limit.

We think there is a balance to be achieved. At the more detailed end, a full power quality survey could be costly and time-consuming. It may also be necessary to install additional equipment on the network. Conducting many thousands of these studies has the potential to raise costs for all customers and slow the connection process. At the less detailed end, a 'standard approach' may be relatively simple to apply. However, it is necessarily crude and may result in static zero export limits being applied where they are not justified.

Static zero limits impose significant constraints on customers and should therefore only be applied in limited circumstances. As such, our initial position is that there should be robust analysis to demonstrate why it is appropriate before such a limit is imposed. This might involve a review of the customer's individual circumstances with reference to network data drawn from equipment that is proximate to the customer.

A follow-on issue is whether the requesting customer should fund some or all of the cost of the assessment or whether the costs should be included in the general opex forecast to be funded by all customers of the distributor.

Question 3a

What are your views on networks using a 'standard approach' to decide on whether to impose a zero export constraint for each individual application?

Question 3b

If you consider a 'standard approach' to be inappropriate, what depth of analysis or study should networks be required to do in the limited circumstance where a static zero limit may need to be imposed? What would be the likely costs of this level of study? Should the costs of the study be charged on a requester or treated as a general network administration cost?

[14] For example, if a connection application is received in winter, a meaningful power quality survey must be done at a time later when the solar radiation level is higher.

4.3 Information to be provided to prospective customers

The effect of a static zero limit on a customer with rooftop solar may be twofold:

- The customer would be unable to access the financial benefits of a feed-in-tariff.
- Customers who would otherwise be inclined to install rooftop solar to mitigate greenhouse gas emissions may be reluctant to do so.

Customers are entitled to adequate information from a distributor when the distributor proposes a static zero limit. Such information could include:

- a clear explanation of the methodology, data and calculations used to determine that the best technical, economic and social outcome was for a static zero limit to apply in a specific part of the network
- access to independent technical expertise to review the distributor's analysis and the connection offer
- how to access dispute resolution processes.

Currently, there is no concise information to guide customers on how to choose the right rooftop solar system size. We understand that many customers seek initial advice from solar PV retailers. We also understand that sometimes customers may not be provided with sufficient information at this point of contact to enable them to make a fully informed choice.

We consider that meaningful customer information and education is important to promote good customer choice and the installation of appropriately sized rooftop solar systems that maximise benefits to customers.

We understand that most customers don't discuss their preferred solar system size with distributors before making an investment decision. Indeed, it is significantly more likely that prospective customers would expect to receive all relevant information at the point of sale.

Many customers choose systems whereby they seek to maximise the benefits from a combination of self-consumption and exports. For this reason, it is critical that prospective customers have full information up-front, before making a purchase. This would avoid ae customer's investment being significantly compromised by the unexpected imposition of a static zero limit.

Although we can mandate the information distributors that provide customers, we do not have the same powers where rooftop solar suppliers and installers are concerned. Noting the importance of this issue, we would like suggestions on how relevant information could be better made available to customers before they make a purchase.

Question 4a

What information should the distributor provide the connection applicant when a distributor proposes a static zero limit and how should that information be provided?

Question 4b

What's the best way to communicate the steps to inform customers' investment decisions? For example:

- What type of information should customers be provided with, when should it be provided and by whom?
- Who is best placed to provide effective customer education before a customer makes an investment decision?

4.4 Regulator approved expenditure and zero static limits

The network may expand over time and be funded to do so through regulatory determinations. Depending on the work and the funding provided it may be the case that a static zero limit is not warranted.

This is consistent with the AEMC's policy direction, as expressed in its final determination:

> …the application of static zero export limit should be kept to a minimum (if used at all) where a DNSP's determination has approved expenditure to support improvements to the network's capacity to connect more DER.[15]

Question 5

Are there exceptional circumstances where it would be appropriate for a distributor to impose a static zero limit where it has already been funded under revenue determinations to augment the network?

4.5 Conditions to be met in the limited circumstance where a static zero limit may be imposed

We consider there should be a clear set of conditions to be satisfied in the limited circumstance where a zero export limit is imposed. In addition to the assessment and information requirements discussed above, we consider conditions related to the state of the system and cost-benefit analysis should also be met.

The following are an initial set of proposed conditions for consultation:

1. The export from rooftop solar will result in the distributor not meeting a regulatory obligation or maintaining 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).
2. The cost of augmenting the distributor's network assets to allow a reasonable export capacity level by the rooftop solar connection applicant outweighs the benefits arising from providing the additional export capacity, taking into consideration the expected future new distributed energy resources that will be able to be exported to the grid arising from the augmentation (the economic consideration).
3. Notwithstanding meeting the technical and economic tests, a distributor cannot impose a static zero limit if the rooftop solar system has a suitable dynamic response system as specified by the distributor. Such a dynamic response system could set a limitation on the

[15] AEMC, Access, pricing and incentive arrangements for distributed energy resources, Rule determination, 12 August 2021, p.iv.

timing of export – for example, not allowing the affected rooftop solar system to export during the middle of the day when other rooftop solar systems are exporting at a maximum level and when the voltage is high, but allowing batteries to export during the evening peak load demand hours to support the network.

Distributors should also undertake periodic reviews to check whether the static zero limit can be lifted in the limited circumstance that it was imposed in the first place, for example:

- following any network augmentation work, or
- if requested by the customer.

Over time distributors will have gained knowledge and skills to improve the management of their networks – for example, effective dynamic manage tools to regulate voltage levels. As a result, we are considering whether static zero export limits should be subject to a review period in the limited circumstance it is applied in the first instance. We expect that, as the electricity system develops, there will be less need for static zero export limits to protect the system. Therefore, we are interested in exploring the inclusion of a review period in the connection agreement initially imposed on the connection applicant as a requirement of the guideline that would cause the static zero limit to fall away unless a case for its continued application is made.

Question 6a

What conditions must be met in the limited circumstance that a static zero limit is applied? Do you consider the above controls adequate?

Question 6b

In the limited circumstance that they are imposed, should static zero limits be subject to regular review? If so, what should the length of the period be?

4.6 Cost to remove network constraints

There may be locations in distribution networks where the existing level of rooftop solar has reached a saturation level.[16] At such locations, to avoid imposing a static zero limit, the relevant distributor may need to augment the network (mainly the local supply transformers).

As explained in section 3, there may be situations where augmentation is not a prudent and efficient investment to increase hosting capacity; namely, when the cost outweighs the benefits. Any inefficient investment will result in customers paying more than necessary for the distribution services they receive.

The typical costs to upgrade a local supply transformer range between:

- $25k to $50k for power pole mounted transformer upgrade, including potential upgrades to overhead hardware
- $100k to $250k for ground mounted substation upgrade.

[16] A level of concentration of DER that any further new DER connection could impact on the power quality of the local network.

The individual cost for each location may not be substantive but, when a network is approaching saturation of rooftop solar, the overall cost to increase rooftop solar hosting capacity across the entire network can be significant.

Question 7

At locations where it is not prudent nor efficient to augment the local network to increase the rooftop solar hosting capacity, should customers bear the cost for network augmentation if they wish to avoid export limitation?

4.7 Charges applicable to customers willing to pay for network augmentation that does not meet the economic test

If a connection applicant wants to pay to remove an export constraint, this distribution service will likely be charged under the alternate control service category. This is because the augmentation will not meet the capital expenditure criteria under the NER and will not benefit other network users.

We consider that the charge should be the net cost to the distributor between (1) the actual cost to remove the static zero 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 PV connections over a 30-year period.[17] That is, (1) minus (2).

The above charging method could be included in distributors' connection policies to be approved by the AER at each distribution determination. This charging method is similar to the 'cost revenue test' under clause 5.1 of the current connection charge guideline,[18] as well as the current charging method for Victorian distributors for customer-initiated network alteration works, where the net charge is the difference between the total cost and the avoided future cost as prescribed by the Essential Services Commission of Victoria.[19]

Question 8

Do you consider that the above charging practice is reasonable? If not, what do you consider is a reasonable charging practice?

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17 30 years NPV incremental revenue calculation period is the standard time frame for residential customers under the AER's connection charge guidelines.

18 AER, *Connection charge guidelines for electricity retail customers, June 2012*. Clause 5.1.2 pf this guideline specifies that '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'.

19 This charging method is specified in the Essential Services Commission of Victoria's *Guideline 14: Electricity Industry - Provision of services by electricity distributors* Electricity. This obligation will be transferred to the *Distribution Electricity Distribution Code of Practice* from 1 October 2022.

Attachment A

Relevant clauses of the NER

The NER specifies that the purpose of the Connection Charge Guideline is to ensure that connection charges:[20]

(1) are reasonable, taking into account the efficient costs of providing the connection services arising from the new connection or connection alteration and the revenue a prudent operator in the circumstances of the relevant Distribution Network Service Provider would require to provide those connection services; and

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

(3) limit cross-subsidisation of connection costs between different classes (or subclasses) of retail customer; and

(4) if the connection services are contestable – are competitively neutral.

New Rule 5A.E3(c)(8) requires that the connection charge guideline must:

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).

Notes:

Micro embedded generation connection means 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).

Predominantly micro embedded generators are solar panels on residential properties but also include battery systems.

New 5A.E.3(d1) requires that:

In developing guidelines dealing with static zero export limits for the purposes of paragraph (c)(8), the AER must ensure that static zero export limits are offered only where consistent with the purpose in clause 5A.E.3(b1), which may include where reasonably required due to:

(1) system limitations, whether in particular circumstances or at particular locations or otherwise; or

(2) limitations on the capabilities of plant or equipment of Distribution Network Service Providers or retail customers.

New 5A.F.1(c) prescribes that:

Where the connection applicant is a micro embedded generator, the connection offer must not specify a static zero export limit except:

(1) where the connection applicant requests the static zero export limit; or

(2) in circumstances permitted by the connection charge guidelines.

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20 Rule 5A.E.3(b) of the NER