

9 September 2022

Warwick Anderson  
General Manager, Network Pricing  
Australian Energy Regulator  
Level 8, 570 Bourke Street  
Melbourne Victoria 3000

Dear Warwick

**Re: Connection Charge Guideline review: issues paper on static zero export limits**

AusNet welcomes the opportunity to engage on the Connection Charge Guideline review. The Guideline updates are an important part of implementing the AEMC's Distributed Energy Resources (**DER**) access and pricing rule changes which include consideration of setting a zero static export limit. Additionally, we appreciate the AER's time in hosting public forums, discussing the substantive issues of the review.

The Connection Charge Guideline is a pivotal instrument in governing customers' capital contributions to requested new connections or connection alterations in agreement with a Distribution Network Service Provider (**DNSP**).

The application of conditions on customers altering their connection agreement to add solar generation or batteries is essential in maintaining a safe and reliable network for the broader community. We continue to see strong growth in DER connections on our network, with the number of connections of rooftop solar on our low voltage (LV) network exceeding our forecasted growth estimates by 50% since January 2021. This forecast underpinned DER integration capex provided in our 2021-2026 regulatory determination. Enabling each new and upgraded solar system to export, whilst also managing conformance with voltage management regulations in the Electricity Distribution Code of Practice that mandate compliance with AS 61000.3.100, can be challenging and require significant network expenditure, which may not always be efficient.

As part of our efforts to balance our network voltage, and therefore facilitate additional export, we are:

- Monitoring the voltage and other technical limits each distribution substation (i.e. transformer).
- Changing the transformer tap settings when confirmed that a change can improve voltage compliance.
- Undertaking the DER enablement proactive augmentation that has been funded in our regulatory determination.
- Piloting dynamic voltage management system (**DVMS**) on transformers to adjust tap settings to suite conditions in a multi-year program.

Customers and installers are encouraged to seek pre-approval for their solar connection before making a financial commitment with our free online solar application approval tool. We assess every pre-approval application for a new or upgraded solar system up to 30kVA using this tool. Information provided is also used to inform Australian Energy Market Operator's (**AEMO**) DER register when the connection alteration is confirmed. Most applications are approved instantly with standard conditions – including the ability to export up to 5kVA per phase (except in single-wire earth return network areas where a 3.5kVA export limit applies), defined in our AER-approved basic Model Standing Offer (**MSO**) for micro embedded generators.

In some circumstances, where the grid is unable to support any more generation or export, we must export limit customers to the available static export capacity (which is often zero) or allow the customer to request a manual review with a choice of paying the cost of augmentation or establish a flexible export limit if they are eligible for our trial. Flexible export connections may be available to all customers in the future.

The technical reasons for applying export limits can either be:

- voltage management, to avoid impacting other customers generating capacity, or
- protection and thermal limits that are needed to keep our network safe and reliable.

AusNet only applies static zero export limits connection conditions where technically required and until such a time the technical limit is resolved. Where additional export capacity becomes available through our reviews, we may lift some static zero export limit constraints in the most equitable way. This can occur either through an augmentation project, where it is prudent and efficient to do so, or change to our network management approach. Also, customers can use our free pre-approval tool to see if they would be eligible for an increase to their static export limit. Ultimately, providing export constrained customers with a dynamic/flexible export limit option, in the future with individual and community batteries, is the best way to reduce the number of customers with static zero limits and promote equity amongst customers as we move to 100% renewable electricity grids.

We note that there are challenges in implementing compliance with zero export limits which increases the need for networks to limit exports and export capacity. Namely, if a static export limit is applied to a customer's connection, the customer's installer needs to implement the limit by installing a gate meter at the customer's electrical installation or adjusting the inverter settings to zero export.<sup>1</sup> Currently, less than 50% of new solar generation systems connecting to our network, with allocated with static zero export limits, have implemented in their inverter setting with a gate meter. This is part of a broader compliance issue with customer inverters not conforming to the conditions in the customer's connection agreement. Often the cause of the problem is the customer's installer not submitting a pre-approval application in advance of selling and installing the solar generation system. Ensuring compliance with inverter settings should be a key priority for policy makers in enabling equitable DER connections and exports enablement.

A more detailed response addressing the questions in the issues paper is provided in Appendix A.

We welcome further discussion with the AER on the points raised in the submission. If you have any queries on our response, please do not hesitate to contact Justin Betlehem [REDACTED]

Yours sincerely

Charlotte Eddy  
General Manager Regulation (Distribution)  
**AusNet Services**

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<sup>1</sup> A gate meter is a non-market meter that communicates measured net export at the electrical installation and sends data to the inverter which uses the data to adjust its output.

# Appendix A

## Response to consultation questions

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

AusNet agrees with the AEMC's final rule determination on DER access and pricing rule changes in establishing that static export limits can be applied in circumstances where there are limitations in DNSP's or customer's facilities ability to maintain voltage levels and network safety and security.<sup>2</sup> The example provided by the AEMC of a customer's equipment not being capable of responding to dynamic operating envelopes illustrates this point.

Additionally, we agree that the application of static zero export limits should be consistent with the DNSP's distribution determination (including expenditure to support export services). Our recent 2021-2026 electricity distribution determination approved augmentation for DER enablement where the value of the additional export exceeded the cost. This funding did not provide for all connecting DER customers to be able to export into the grid. This was presented as an option, the cost was forecast to be \$626m which greatly exceeded the benefits and would not have been efficient.<sup>3</sup> In circumstances where a DNSP's expenditure to relieve the constraints is not economically justified (based on the assessed benefits of an augmentation being lower the cost of augmentation), and the customer does not wish to fund the required augmentation themselves static zero export limits are efficient.

Needing to apply a static zero export limit to a customer could be based on either or both of the following:

- **Network design limits** based on the maximum thermal capacity or protection limits of transformers and power lines and considering all the other existing solar Inverter Energy System (**IES**) connected and assessing whether the new solar IES exceeds these maximum limits.
- **Operational constraints**, identified by Power Quality (**PQ**) data, assessing whether the voltages on the powerline would remain in compliance with voltage management requirements, without powerline or transformer augmentation.

Once our free, online pre-approval portal has indicated a static limit may be applied, customers can request a paid manual review of the requirement that may take into account other factors, such as phase re-balancing.<sup>4</sup>

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

In the context of the Open Access arrangements that underpin the regulatory framework equity between customers is secondary to the efficient use of available network export capacity resources. The framework enables customers to continue to connect generators until the network becomes technically constrained. The

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<sup>2</sup> AEMC, Rule Determination access, pricing and incentives for DER, 12 August 2021, page iv

<sup>3</sup> AER, section 9.11 in AusNet's electricity distribution price review 2022-26 proposal, Jan 2020, [https://www.aer.gov.au/system/files/AusNet%20Services%20-%20EDPR%202022-26%20Regulatory%20Proposal%20Part%20III%20-%20%2031%20January%202020\\_0.pdf](https://www.aer.gov.au/system/files/AusNet%20Services%20-%20EDPR%202022-26%20Regulatory%20Proposal%20Part%20III%20-%20%2031%20January%202020_0.pdf).

<sup>4</sup> The cost of a customer-initiated change of phase is minor cost compared to the cost of an augmentation.

use of basic connection services MSOs with standard export limits does promote some equity amongst customers, although we consider that issues remain including in lower limits remote, regional areas.<sup>5</sup>

If DNSPs were to fund inefficient investment to remove static zero export limits, then the inefficient cost would pass through to customer bills creating another equity issue. It is difficult to achieve equity amongst customers without charging every customer tariff that includes their specific incremental cost to the network.

Ultimately, the concept of equity would be better served by the universal take-up of a dynamic/flexible export initiative and by ensuring compliance with existing contracted export capacity limits. The benefit of these measures depends on number of customers participating in dynamic/flexible exports, or are within compliance, for each distribution substation.

**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?**

**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?**

We support, in principle, a standard approach for applying static zero export limit that includes a broad technical assessment that could include network design limits and operational constraints. We suggest a principle-based approach that allows DNSPs to maintain thermal, protection and voltages within safe operating limits. Given the low availability of metering installation measured voltage data outside of Victoria, the approach should be flexible enough to allow different networks to apply the technical assessment that is efficient for them. It is important that the approach is efficient and does not preclude automation in the form of a customer portal interface.

**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?**

**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?**

We would expect that customers provided with static zero limited export offers can expect to receive relevant information to understand the requirements on them (i.e. how to comply), and available options to the customer (i.e. seeking a manual review, pursuing options of funding augmentation or phase re-balancing). Presently, this information is provided to the customer or their installer by our pre-approval tool. The information is often provided to the customer through their installer and to directly to the customers, if their details are included in the online pre-approval application. Importantly, the installers are instrumental in effecting the static zero export limit at the customers electrical installation.

**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?**

At locations, where we are not funded to augment the local network in our electricity distribution determination to increase the DER hosting capacity (i.e., our limited funding will be prioritised to those projects that deliver the greatest benefits), some customers will not benefit from the additional DER enablement funding under the revenue determination. For these customers, it is important to explain the reason for the static zero export limit and other options, including installing a battery or dynamic/flexible export limits.

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<sup>5</sup> AusNet's AER approved basic MSO for micro EG limits customers to 5kVA per phase or 3.5 kVA on single-wire earth return network areas.

There will be other circumstances where DNSP's DER enablement program is yet to augment a section of network that is already export constrained, where the benefits justify the costs, and customers adding or upgrading solar IES are being allocated static zero export limits. These circumstances will occur, and when they do, it is reasonable to apply the static zero export limit for the interim period while the network is export constrained. Then the DNSP could contact the impacted customers after the augmentation has occurred to advise the customer that they can update their agreed limit with us.

**6a. What conditions must be met in the limited circumstance that a static zero limit is applied? Do you consider the above controls adequate?**

**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?**

As mentioned above, the decision to apply a static zero export limit could be based on either or both of the two pillars, network design limits and operational constraints.

Victorian DNSPs have compliance obligations to meet voltage standards AS 61000.3.100. Not being able to assign static zero export limits where required would be onerous operating burden for our business and would require an extensive, inefficient expansion of DER enablement network augmentation program, inefficiently increasing customer bills.

Applying a regular review of static zero export limits would be costly and create an inefficient burden on DNSPs for very limited benefit. A more efficient approach would be for DNSPs to review applied static zero export limits after either a material change to technical assessment standards or the completion of a DER enablement augmentation. Only customers that may benefit should have their export limits reviewed. Customers should also be able to check the online pre-approval tool or request review at any time, subject to paying reasonable costs.

This approach of "as required" reviews is expected to provide better customer outcomes than the more costly alternative of periodic review (e.g., every 3 years).

**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?**

At locations where it is not efficient to augment the local network to increase the DER hosting capacity (i.e., when the cost outweighs the benefits), if customers wish to avoid static zero export limitation, we consider that those customers should contribute to the costs of the required network augmentation.

There has been some suggestion in meetings for application of a pioneer scheme in these circumstances. We would caution against applying a pioneer scheme for customers installing solar IES (Inverter Energy Systems) to save on their electricity bills (i.e. less than 500kVA). Applying a pioneer scheme for rooftop solar would create a perverse incentive on customers subsequently connecting new or upgraded systems to not inform the DNSP to save thousands of dollars.

While a pioneer scheme for customers with smaller systems would be unwarranted and unmanageable, a pioneer scheme for customers with larger systems (i.e. larger than 500kVA) installed to make revenue from their generation may have benefits. At this level, registration avoidance is less of an issue, and it would allow small scale wind and solar farms in a local area to cooperate with the substantial cost of the HV and LV network extension and augmentations that benefits all proponents.

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

We would support the approach of considering forecast future export charge revenue over the evaluation period from the connection applicant. This is consistent with our existing approach of providing load connection services to new customers. The approach is premised on the broad application of export charge tariffs going forward.