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Our Ref: #12,194,887
Your Ref: AEMC's Access, pricing and incentive arrangements for distributed energy resources draft determination
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Ms Anna Collyer
Chair
Australian Energy Market Commission
PO Box A2449
SOUTH SYDNEY NSW 1235

27 May 2021

Dear Ms Collyer

Access, pricing and incentive arrangements for distributed energy resources draft determination

The Australian Energy Regulator (**AER**) welcomes the opportunity to comment on the Australian Energy Market Commission's (**AEMC**) Access, pricing and incentive arrangements for distributed energy resources (**DER**) draft determination (the draft determination).

We support the AEMC's draft determination as a balanced set of reforms strongly in the long term interest of consumers. The pricing elements will promote better decisions on investment in and use of DER while the incentive elements will ensure networks are rewarded for providing better service to consumers exporting electricity (and sanctioned for poorer service). The changes build upon and strengthen existing processes to ensure consumer impacts and preferences are considered. It will take time to phase in these changes through a process of guidelines, trials and approval of tariff structure statements (**TSS**) but it is important to commence the process now if it is to be implemented in the next round of network revenue determinations commencing in 2024.

This submission follows our September 2019 submission to the AEMC which expressed support for the broad objective of the National Electricity Rule (**NER**) change proposals from SA Power Networks, St Vincent de Paul Society Victoria, Total Environment Centre and the Australian Council of Social Services.

The proposals, which stem from the collaborative Distributed Energy Integration Program, reflect the need to ensure the regulatory framework enables the efficient integration of DER, including DER export services. The underlying driver for these reforms is the growth in DER exports and expectations for this to continue as the cost of distributed solar, electric vehicles and energy storage continue to fall.

The AEMC's draft rule:

- updates the regulatory framework to clarify that distribution services are two way
- facilitates incentives for efficient investment in network export capacity to support customer DER export
- allows networks to consider two way pricing as an option to manage network use
- maintains flexibility so that regional differences and a range of customer perspectives may be catered for.

The reform package will help to realise efficient levels of investment in grid hosting capacity for DER exports, and allow consumers to optimise investment in and deployment of DER assets for export purposes and for their own use. It will help to do this by encouraging DER owners to shift some DER exports into the evening peak where they are needed, thereby avoiding costly network investment and reducing the potential for exports to be curtailed.

We support extending the existing NER service incentive framework to DER export services. This will support consumers who have invested in their own DER. While methodological challenges remain in identifying appropriate metrics for export incentive schemes, we note a range of options exist to enable transparency and accountability in the quality of export services provided to DER consumers. We will assess these options and report back to the AEMC on our findings.

On pricing, doing nothing is not an option. Network impacts of unmanaged DER export are already being felt and will grow over time. It is an urgent issue in South Australia now, with actions being taken outside the regulatory framework to manage the impacts. In other National Electricity Market (NEM) regions the issues are still emerging, but if the rule change is not made now it will be too late for the upcoming round of TSS proposals and the problems will rapidly grow, meaning future responses would need to be more significant. In the meantime, the cost of inefficient investments would continue to grow. We also note that without the proposed reforms the entire cost of network augmentation in response to DER exports will be borne by all consumers, including those unable to afford DER.

Two way pricing, where and when necessary, will help ensure DER consumers (through their energy retailer or service provider) see both the costs of their network use and the benefits when network value is maximised. We are pleased the AEMC has concluded that the existing TSS process is fit for purpose to introduce export tariffs. The TSS process and the NER pricing principles balance efficiency objectives with the need to manage customer impacts. They allow stakeholder views to be considered and addressed. This flexibility in determining tariff structures allows solutions to be tailored to jurisdiction and network needs. It also facilitates agreements between networks and their consumers.

Examples of successful stakeholder engagement are apparent from our recent determinations on TSS proposals from Victorian Distribution Network Service Providers (DNSPs) for the 2021−26 regulatory period. We were pleased to see the Victorian DNSPs worked collaboratively with each other, consumers and their advocates to develop new state wide time of use tariffs for residential and small business consumers. Through our formal

NER based consultation process we confirmed this innovation had broad support, including from the Victorian Government. We then further achieved the winding up of a range of legacy cost reflective tariffs with customers to be reassigned to the new state wide time of use tariffs on 1 July 2021. Customer impact modelling undertaken by the Victorian DNSPs demonstrated that virtually all reassigned customers will benefit from being shifted to the new tariffs which incorporate tighter, better targeted, peak periods.

Because of its suitability to engage stakeholders and incorporate their views, the TSS process is appropriate to carry forward the broader tariff reform program and to manage introduction of export tariffs. With that in mind, we also support introduction of the Export Tariff Guidelines (the guidelines) as a means of further strengthening engagement with consumers in introducing better price signals for DER. We also support the draft rule requirement for the AER to develop the guidelines through a process of stakeholder consultation. While input from consumers and other stakeholders will be central to finalising the guidelines' content, we consider the guidelines should require networks to:

- engage with and respond to stakeholders, providing evidence of how they have responded to stakeholder views
- respect that consumer DER investments to date have been undertaken in good faith without export tariffs
- justify export tariffs in their specific network circumstances and demonstrate that proposed export tariff levels reflect the incremental cost of investing in DER network hosting capacity.

The bulk of network costs, incurred to provide network capacity for consumption services, should be recovered through consumption tariffs as they are now. To illustrate, we approved around $235 million in DER integration capital expenditure for Victorian DNSPs over the 2021–26 regulatory period. Across the five Victorian DNSPs this reflects between 3% and 8% of total capex over that time. While we expect these investment needs to grow, the initial cost recovery task for export tariffs is modest relative to cost recovery from consumption tariffs.

Consistent with the broader tariff reform program, future DNSP proposals for export tariffs will be subject to comprehensive consultation and assessment processes, incorporating multiple rounds of written submissions, forums and draft and final AER determinations.

Two important but sometimes overlooked elements of the AEMC's proposed rule relate to DNSP tariff trials and facilitating prices for devices type tariffs.

We support the AEMC's intention to raise the existing revenue threshold for tariff trials, from 1% of network annual revenue to 5%. This initiative is consistent with our view that tariff trials are a valuable way for networks to demonstrate the merit of innovative combinations of tariffs and new technologies. Successful trials can lead to incorporating innovative tariffs in future TSS proposals.

Similarly, amending the NER pricing principles to allow for more complex tariffs targeted not at consumers but at retailers or other third parties acting for them, will help to realise new services and unlock further benefits for both consumers and networks.

We have provided more detailed comments in **Attachment A**. Please do not hesitate to contact myself or Mark Feather, General Manager – Policy and Performance on (03) 9290 6958 or Dale Johansen, Director – Network Pricing on (07) 3835 4679.

Yours sincerely

James Cox

Jim Cox
Deputy Chair
Australian Energy Regulator

Sent by web form on: 27.05.2021

Attachment A: Detailed information

DER exports are impacting networks now – How are DNSPs responding?

Increasing DER penetration can cause network voltages to rise, and there is only a finite amount of DER that can be connected to the distribution network before congestion issues need to be addressed. DNSPs are increasingly undertaking expenditure to address increasing DER penetration on the network. This can include managing voltage within safety standards and allowing solar customers to dynamically export back into the grid. Capital expenditure that we have previously assessed and approved includes:

- new systems and communications to provide customers with greater access at times when the network has spare capacity
- augmenting the network to physically provide greater solar PV export capacity
- information and communications technology to improve visibility of low voltage networks and help manage changes in voltage due to technological developments.

Our recent distribution determinations for SA Power Networks and the Victorian DNSPs provide examples of DER integration challenges and how these challenges are being addressed.

One challenge that DNSPs face when seeking funding for a DER integration solution is demonstrating that current levels of hosting capacity are insufficient to handle forecast levels of DER. DNSPs have improved their knowledge of network hosting capacity through network studies and modelling to accurately define the hosting capacity problem. In its 2020–25 Regulatory Proposal, SA Power Networks demonstrated that its existing approach of allowing any rooftop PV system to connect that has a maximum export power of 5kW is not sustainable. Or at least not without significant new investment in network infrastructure, as this exceeds the underlying hosting capacity of the majority of its network. SA Power Networks also revealed that hosting capacity limits are already being exceeded in some areas. It found that if no action was taken by 2025, voltage limit exceedances were expected to be widespread in all network types other than small rural townships.[1]

In order to manage network hosting capacity, SA Power Networks proposed to offer dynamic export limits to DER customers rather than impose static limits or add new capacity, which would involve augmentation and operating expenditure. This solution required expenditure to improve LV network visibility and better calculate low voltage network hosting capacity, thereby increasing the utilisation of existing network assets. We approved around $82 million of capital expenditure relating to DER management, which represented around 5% of SA Power Networks' approved capital expenditure for the 2020–25 regulatory control period. This expenditure related to programs associated with distribution system operator transition, voltage regulation, low voltage monitoring and quality of supply.[2]

While DNSPs such as SA Power Networks have invested in third-party and network monitoring equipment in order to increase visibility of their low voltage networks, the Victorian DNSPs have been able to monitor customer voltage levels using smart meters. CitiPower, Powercor and United Energy (CPU) proposed Solar Enablement Plans as part of their 2021–26 regulatory proposals. Under these plans, CPU developed a model that used

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[1] SA Power Networks, LV Management Business Case (supporting document 5.18), January 2019, pp.6-7. Available on the AER website: https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/proposal

[2] AER, Final Decision: SA Power Networks Distribution Determination 2020 to 2025, Attachment 5 Capital expenditure, June 2020. Available on the AER website: https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/sa-power-networks-determination-2020-25/final-decision

over 38 billion actual AMI voltage readings to examine how often solar will trip on its transformers over a 10-year period.[3] CPU's modelling considered the impact of a Dynamic Voltage Management System as well as whether voltages could be reduced by tapping down transformers. The modelling indicated that network augmentation would be required in some other circumstances, with works involving conductor augmentation and transformer replacements. We approved a total of around $148 million of capital expenditure relating to DER integration for CPU, representing around 5% of approved capital expenditure for the 2021–26 regulatory control period.[4]

The recent increase in proposals for expenditure relating to DER integration has prompted us to develop a DER integration expenditure guidance note, which we will publish and consult on with stakeholders in 2021. This will provide guidance to DNSPs on how to quantify the benefits associated with network investments to increase hosting capacity, and ensure that their customers pay no more than is necessary for these investments.

In summary, it is clear that DER exports are currently impacting upon DNSP network capability with consequential costs to consumers in relation to network augmentation. In the AER's view, export prices that send efficient signals to owners of DER in relation to these costs should promote efficient deployment of DER including encouraging owners of DER to export at times when this would place less pressure on the network (for example, shifting exports to evening peaks). This should in turn reduce costs for all consumers in line with the National Electricity Objective by reducing the need for network investment, as well as helping existing owners to optimise the use of their DER.

Incentive arrangements

We agree that providing DNSPs rewards or penalties based on their export service performance would facilitate greater levels of DER exports in a least cost way and the delivery of a better quality export service to consumers that use the network to export electricity. We consider that the extension of the incentive-based approach to regulation to export services is likely to deliver long term benefits to consumers in the form of reduced costs and better quality of service. Incentivising DNSPs to limit export curtailment will result in lower electricity prices for all consumers, and ensure that DER owners receive the appropriate return on their investments. We consider that this will better contribute to the achievement of the National Electricity Objective.

We welcome the AEMC's draft rule amendments recognising that the extended Service Target Performance Incentive Scheme (STPIS) would need to apply to small exporters as well as consumers of electricity, by referring to network service end users instead of electricity consumers. We also welcome the draft rule requiring the AER to consider the value to network service end users of enhanced service performance. We agree that this change will provide sufficient flexibility to the AER in measuring the value to consumers (and other small exports) from enhanced service performance.

We have previously noted that we support the NER providing us with flexibility to expand the STPIS to encompass export services.[5] Maintaining this flexibility will allow us to consider this matter when we undertake a holistic review of incentive schemes, without pre-empting the outcome of such a review.

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[3] CitiPower, Enabling residential rooftop solar (supporting document 6.02), January 2020, p.30. Available on the AER website: https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/citipower-determination-2021-26/proposal

[4] https://www.aer.gov.au/news-release/revenue-for-electricity-businesses-supports-customers-and-networks

[5] https://www.aemc.gov.au/sites/default/files/documents/rule_change_submission_-_erc0311_-_aer_-_20200910_1.pdf

We have also noted that we see benefits in expanding the STPIS to incentivise performance associated with export services, and discussed the various challenges with doing this. In particular, we highlighted that DER export curtailment can be measured in different ways, making the choice of metric difficult. We note that other stakeholders, including DNSPs, have raised similar concerns about the practical challenges of extending the STPIS.

Despite these challenges, we agree with the AEMC's broad statement that "doing nothing is not a viable option", and consider that this statement applies to all aspects of the rule determination.

We note that we will be required to publish the report on our assessment of potentially broadening the STPIS to encompass export services within 18 months of the rule being made. We intend to commence a broad review of existing incentive schemes, including the STPIS, in the second half of 2021. We accept the AEMC's view that the 18 month timeline balances the need to have effective incentive arrangements for export services in place in a timely manner while allowing sufficient time to undertake a thorough review.

Customer export curtailment values (CECV)

We note that there will be a new requirement on the AER under NER rule 8.13 to develop a methodology for and to regularly calculate customer export curtailment values (CECV). The draft determination notes that CECVs are expected to play a similar role to the VCRs under the current framework. It also notes that, in proposing expenditure relating to export services, DNSPs would likely need to know ahead of time the value to customers and the market of relieving network export constraints. Therefore, such values are likely to be needed for the revenue determination processes. Similarly, these values may also be needed for the extension of STPIS to exports to link the outcome performance with the STPIS incentive.[6] We agree with this and consider it worthwhile discussing the Value of DER (VaDER) methodology that we are developing and how the new CECV methodology could operate alongside it.

In November 2020 we published the VaDER methodology study undertaken by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and CutlerMerz.[7] This study provided a methodology for assessing the value of DER unlocked by proposed network expenditures to increase DER hosting capacity. The recommended methodology compares the total electricity system costs as a result of increasing hosting capacity with the total electricity system costs of not doing so. It is important to note that the methodology recommended by CSIRO/CutlerMerz does not provide explicit values of DER, but rather higher level guidance for DNSPs to consider when calculating the costs and benefits of their proposed investments against a base case scenario.

The methodology identifies value streams for which DNSPs may include the costs and benefits associated with an increase in hosting capacity. These benefit types and value streams include:

- Wholesale market – avoided marginal generator short run marginal cost (SRMC), avoided generation capacity investment and Essential System Services.

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[6] AEMC, Access, pricing and incentive arrangements for distributed energy resources, Draft rule determination, 25 March 2021, p.107.

[7] CSIRO and CutlerMerz, Value of Distributed Energy Resources: Methodology Study, October 2020. Available on the AER website:https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/assessing-distributed-energy-resources-integration-expenditure/update

- Network sector – avoided/deferred transmission and distribution augmentation, distribution network reliability, avoided replacement and avoided transmission and distribution losses.
- Environment – including avoided greenhouse gas emissions.
- Customer – including changes in DER investment due to network investment.

The avoided marginal generator SRMC is the primary value stream identified by DNSPs in their proposals for expenditure to increase DER hosting capacity. Increased DER generation provides a customer benefit by substituting generation by marginal centralised generators, which may have higher SRMC, in the form of fuel and maintenance. This value (or set of values) could be independently calculated by the AER using a market modelling methodology, and this approach could provide the basis for the CECV methodology. However, we recognise that the development of the CECV methodology will be subject to the Rules consultation procedures.

The network sector benefits and value streams, such as avoided network augmentation, are specific to the proposed investment. We consider that the value of these benefits can be quantified by DNSPs under the VaDER methodology, but cannot be independently quantified by the AER. Therefore, DNSPs could demonstrate that a particular investment to increase DER hosting capacity provides an overall benefit that exceeds the published CECV or a value of avoided marginal generator SRMC calculated by the AER. We intend to publish our recommended VaDER methodology as part of our Draft DER integration expenditure guidance note and consult with stakeholders in 2021.

We agree that there is benefit in outlining a high-level objective for the valuation of customer export curtailment without providing detailed guidance on the methodology for calculating the values. The CSIRO/CutlerMerz VaDER methodology study raised a number of issues that would need to be considered, including the types of customer benefits to value, and how to account for customer preferences and future market developments. We consider that the CECV objective provides us sufficient flexibility to consider these issues and account for future market developments. We also agree that the regulatory burden of the CECV framework and the performance reporting requirements is likely to be proportionate to the benefits to the market.

We note that initial CECV estimates should be published by 1 July 2022. The AEMC considers that this will allow the AER time to consult on and develop the methodology under the NER consultation procedures and calculate the value estimates in a robust manner. We agree with the proposed timeline, noting that the CECV methodology will need to be developed alongside our DER integration expenditure guidance note and that it would be sensible for both this guidance note and the initial CECV estimates to be in place for the next NSW DNSP reset process.

New export tariff guideline

The draft rule requires the AER to develop and publish new guidelines. The guidelines will set out our expectations for export tariff proposals submitted to us by distribution networks. While part of the regulatory framework and therefore primarily aimed at networks, the guidelines will also help consumers and other stakeholders to understand our priorities as we regulate the introduction of export tariffs.

In developing the guidelines we welcome the opportunity to hear from DER advocates, consumer representatives, DER consumers themselves, and jurisdictional governments. We intend our guideline development process to continue the conversation begun by the Distributed Energy Integration Program policy development process and carried forward by

the AEMC. We welcome all voices and perspectives. To develop the guidelines we propose to:

- publish an issues paper shortly after the AEMC's final rule change determination is published
- host a series of online forums, one for each NEM region
- invite written submissions
- publish a draft guideline and explanatory statement
- invite a second round of written submissions
- publish the final guidelines and accompanying explanatory statement.

We intend to finalise the above process by early 2022. This will enable networks in the Australian Capital Territory, New South Wales, Northern Territory and Tasmania to incorporate the outcomes into their TSS proposals for the 2024–29 regulatory period. Those proposals are due to be submitted to us in January 2023.

Following publication of the final guidelines, DNSPs will submit to us their TSS proposals as part of their broader revenue proposals. If they consider it appropriate for their network circumstances, and in light of their own stakeholder consultation, networks may incorporate the progressive introduction of export tariffs.

Export tariffs are part of a broader tariff reform program

Introduction of export tariffs is part of a broader network tariff reform program incepted in 2017. Network tariffs for the consumption, or electricity supply, service provided by distribution networks have gradually been changing to better reflect the way networks incur costs. Time varying tariffs, such as time of use and demand tariffs, are becoming more common. These tariffs use prices to signal when networks are under stress. If passed through to customers by electricity retailers, such tariffs provide opportunity to minimise electricity bills by shifting electricity consumption into off peak times.

Export tariffs will, where implemented, further enhance the price signals that can help to optimise our shared electricity networks and minimise costs for us all. By smoothing demand peaks, by shifting consumption into periods where solar electricity is abundant, and by moving some DER exports into the evening peak where it is needed, costly network investment can be avoided.

The alternative, to fail to establish a network price signal for the supply of DER to networks, would see ever increasing DER exports flowing into the grid at times when it is less demanded. Increasing numbers of DER customers would have their export service curtailed. In trying to avoid that potential future, consumption tariff reforms can address the demand side by incentivising consumption in the high solar period in the hours around midday. But there is a limit to what this can achieve in the context of the scale of DER investment we expect to see over the coming decade.

A supply side network price signal, while measured in its introduction, will help the electricity sector realise the benefits promised by increasingly affordable rooftop solar and storage technologies. The electrification of road transport highlights the opportunities the sector faces. An electric vehicle can charge its battery during the high solar period of the day, between 9am and 5pm, and export back into the grid when demand is highest in the early evening. In doing so that electric vehicle will not only maximise use of low cost solar power, but ease pressure on networks caused by both over supply and over demand. But the electric vehicle won't behave in that efficient way unless its owner has an incentive for this behaviour. The right blend of consumption and export tariffs can provide that incentive.

Tariff reform is an incremental process that prioritises managing consumer impacts. In administering tariff reform, we have demonstrated our commitment to managing the price impacts that may be experienced by some consumers, as the NER pricing principles require us to. At times we have intervened to slow or re-shape tariff reforms proposed by networks. We have received and reflected upon countless written stakeholder submissions. And we have hosted a range of stakeholder forums on tariff reform, bringing together market participants, consumer representatives and government agencies, to hear directly from each other their concerns and descriptions of the opportunities faced by the sector.

As a further example of our placing significant weight on stakeholder views in assessing TSS proposals, the current SA Power Networks TSS was approved at the draft decision stage in large part because of broad stakeholder support. SA Power Networks demonstrated it is possible to advance tariff reform, manage consumer impacts, develop and retain the support of consumer advocates, and have the support of the local jurisdictional government for the breadth of a TSS proposal. We look forward to receiving more such examples of well developed and broadly supported TSS proposals in future.

Our approach to developing the guidelines and oversighting future network tariff proposals will match the incremental and measured approach we have taken to network tariff reform so far. We will demand that networks give proper weight to the rooftop solar investments made by consumers in good faith. Those consumers will, under the AEMC's draft rule, continue to accrue substantial benefits from their investment. It is not in our, or the sector's interest, to see those benefits undermined.