AEMC

RULE

Australian Energy Market Commission

RULE DETERMINATION

NATIONAL ELECTRICITY AMENDMENT (ACCESS, PRICING AND INCENTIVE ARRANGEMENTS FOR DISTRIBUTED ENERGY RESOURCES) RULE 2021

NATIONAL ENERGY RETAIL AMENDMENT (ACCESS, PRICING AND INCENTIVE ARRANGEMENTS FOR DISTRIBUTED ENERGY RESOURCES) RULE 2021

PROPONENTS

SA Power Networks
St Vincent de Paul Society Victoria
Total Environment Centre and Australian Council of Social Service

12 AUGUST 2021

INQUIRIES

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ABOUT THE AEMC

The AMC reports to the Energy Ministers' Meeting (formerly the Council of Australian Governments Energy Council). We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the the Energy Ministers' Meeting.

SUMMARY

1 Australian consumers have led the charge on the decentralisation of energy supply by embracing distributed energy resources (DER) – in particular, rooftop solar PV systems. Between 2.6 and three million Australian households have already installed solar panels. A further three million households will follow during the next decade. By 2050, rooftop solar systems and other types of DER will contribute more than 45 per cent of Australia's electricity supply. These investments made by consumers are playing a significant role in the decarbonisation of our energy supply.

2 This significant uptake in DER offers considerable opportunities but also presents technical challenges for the existing electricity network. If changes are not made, it will not be able to cope. Distribution networks that were built to bring electricity one-way to consumers are now being used by consumers to export their surplus generation to the grid. While a network built for one-way traffic has a basic level of capacity to support exports, this capacity is rapidly being exhausted. Customers have been facing growing limitations to the amount of energy they can export as distribution network service providers (DNSPs) try to maintain grid stability during times when there are significant exports to the grid. In some parts of Australia, customers have been prevented from exporting electricity as their DNSP imposes a zero export limit to all new connecting customers.

3 In July 2020, four organisations – the Australian Council of Social Services (ACOSS), Total Environment Centre (TEC), St Vincent de Paul Society Victoria (SVDP) and SA Power Networks (SAPN) – recognised the need to address the above issues and proposed changes to the National Electricity Rules (NER) to integrate DER into the electricity grid in a way that benefits all electricity users.

4 The Australian Energy Market Commission (the Commission) acknowledges the significant contribution by stakeholders throughout this reform journey. Many consumer advocates, government officials, energy sector experts and representatives from across the industry have participated in the scoping process conducted through the Australian Renewable Energy Agency's Distributed Energy Integration Program, as well as the Commission's rule change process. Their feedback and contribution to the policy debates have greatly assisted in the development of the key components of this reform.

5 In this final determination, the Australian Energy Market Commission sets out the more preferable electricity and retail rules (final rules) made in response to the rule changes submitted by ACOSS/TEC, SVDP and SAPN. The final rules introduce a package of measures that are designed to support more DER – such as rooftop solar systems, battery storage systems and electric vehicles – to efficiently connect to the grid and move Australia's electricity distribution networks towards a smarter, enhanced system that can better manage the supply and demand dynamics of a distributed energy world.

6 The final determination also incorporates the significant feedback stakeholders provided in response to the Commission's draft determination. In particular, the final determination addresses the issues of certainty and customer protections raised in submissions. The package of reforms under the final rules has three key components:

- Clear obligations on DNSPs to provide export services
- Enabling new network tariff options that reward customers
- Strengthening consumer protections and regulatory oversight

7 The sections below provide a high-level summary of each of these components.

DNSPs to have clear obligations to support more DER connecting to the grid

DNSPs to provide export services

8 While DNSPs have been connecting a growing number of customers with DER over the past decade, they have been doing so under a regulatory framework that was developed for a one-way transportation system. This has led to a varied approach to customer connection and the level of export services provided to customers, as well as different approaches and interpretations of the type and level of expenditure to accommodate the additional demand for export services.

9 The final rules address these issues by making clear that export services are part of the core services to be provided by DNSPs. By removing references in the NER that are specific to the direction of energy, the regulatory framework will give clear guidance that 'distribution services' relate not only to sending energy to customers, but also to customers exporting the energy they generate. For customers, this gives clarity around their rights to access export services. For DNSPs, this provides clarity around what they are expected to provide in delivering those services.

DNSPs need to use the most efficient options available to provide export services

10 Recognising export services as part of distribution services does not necessarily mean that DNSPs will require significant expenditure to expand the network. Stakeholder submissions and the Commission's own investigations have shown that there are a number of relatively low-cost steps that a DNSP can use to improve its network's capacity to connect more DER before investing in network expansion.[1]

11 The recognition of export services as a distribution service means that the existing planning and investment requirements, incentive schemes and controls that currently apply to consumption services will also apply to a DNSP's provision of export services. The Australian Energy Regulator (AER) will have the ability to ensure expenditure to provide export services is efficient through the use of existing regulatory controls on network expenditure – including assessment against capital expenditure (capex) and operating expenditure (opex) objectives, regulatory investment test for distribution (RIT-D), incentive schemes, ex-post review, benchmarking and reporting.

12 In practice, this means that DNSPs need to consider all options available – both network and non-network (e.g. purchasing services from customers or third parties) solutions when

1 Some of these options include gaining a better understanding of its low voltage networks, phase balancing and implementation of dynamic export connections.

providing export services.

Export services to be an integrated part of a DNSP's planning and regulatory proposal

13 The final rules introduce measures to provide transparency on a DNSP's approach to integrating DER such as rooftop solar systems. These requirements are intended to ensure that relevant information is made accessible to network users with regard to current and future opportunities around export services.

14 As part of the overview paper for its regulatory proposal, a DNSP will need to explain its proposed approach to export-related planning and investment against alternative options. It will also need to present information specifically relating to how DER integration is managed through the different elements of its regulatory proposal (i.e. connection services, pricing, expenditure) and discuss how its proposal is appropriate to meet expected consumer outcomes. The final rules require a DNSP to include the following additional information in its overview paper:

- an explanation of the approach to identifying demand for (and providing for) distribution services for supply from DER
- the trade-offs between different options the network considered and why the network has proposed the particular approach around DER integration and management
- a comparison of the DNSP's proposed capital expenditure to support the provision of export services against its actual or committed capital expenditure and an explanation of any material difference.

15 DNSPs will also be required to report on demand for export services and identify limitations on their network caused by this forecast demand as part of the distribution annual planning process. This requirement mirrors what is currently in place for forecast load and ensures the key drivers of expenditure are made clear.

DNSPs cannot offer static zero export limits to customers seeking to connect

16 Under the final rules, a DNSP will not be able to offer a static zero export limit to a small customer who is seeking to connect DER to the network, unless it is requested by the customer, or an exception listed in the AER's connection charge guidelines applies.[2]

17 Prior to this rule change, the rules did not prevent customers from being allocated static zero export limits, even in situations where there was sufficient capacity available. While customers might be able to connect DER to the network, a static zero export limit means that a customer is prevented from accessing the network to export electricity at any time.

18 The Commission considers the ability for a DNSP to offer static zero export limits to customers without any reason is inconsistent with the overall intent of the reforms. Clear rights for customers under the framework to connect to the distribution network for exports are likely to provide for improved access to export services.

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2 It is important to note that preventing DNSPs from offering static zero export limits (subject to exceptions) does not mean they have to offer a minimum export capacity. Section 4.2 of this document provides the Commission's reasons for not requiring DNSPs to offer a minimum level of export capacity to their customers.

19 The Commission considers it is inappropriate to introduce a complete prohibition on DNSPs offering static zero limits as there may be circumstances where it is efficient or necessary for DNSPs to apply them. Under the final rules, static export 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 export 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 DNSP's or customer's facilities:** for example, the customer's equipment is not capable of responding to dynamic operating envelopes.

20 The final rules also requires the use of static zero export limits to be consistent with the DNSP's distribution determination (including expenditure to support export services). That is, 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.

21 To provide transparency to customers seeking connection, DNSPs will also be required to outline the circumstances under which they may offer small customers a connection with a static zero export limit as part of their proposed connection policy, and this must be consistent with the connection charge guidelines.

Enabling new tariff options that reward customers

Getting more out of existing infrastructure with the help of new tariff options

22 The uptake of DER like rooftop solar systems has fundamentally changed the way the distribution network is being used. The advent of two-way traffic means that DNSPs will now have to manage different peak 'usages' of their networks. Increasing solar generation means that many networks are seeing 'peak exports' during the middle of the day while the traditional evening consumption peak still remains. This usage pattern – often called the 'duck curve' – means we are not necessarily getting the most out of the poles and wires customers have already paid for.

23 With export services now part of distribution services, DNSPs will be expected to meet both the consumption and export needs of their customers. While the regulatory framework requires DNSPs to provide these services at the lowest possible cost to consumers, significant new expenditure will still be needed if the network is to accommodate peak usage for only small parts of the day.

24 Price signals are an effective potential tool to promote efficient use of and investment in export services. The aim is to smooth demand for consumption and export services as much as possible. When used together with other regulatory control measures (e.g. investment tests), pricing can be used to reward customers for actions that better use existing infrastructure or improve network operations, benefiting all customers.

25 Finding better ways to use the grid means higher productivity and lower average network

costs for all system users. New investment in the grid may be deferred or avoided. In addition, solar customers are able to increase the benefits they receive through increasing the use of their own generation. Pricing structures can help deliver this outcome by rewarding customers who either change their behaviour to avoid export charges – like consuming more of their rooftop PV generation on-site when there is excess demand for use of network export services – or shift exports to periods of high demand for electricity to receive additional payments. Customers can access these benefits through low-cost means such as a time-delay function on dishwashers or using timers to turn on/off air-conditioners to preheat or pre-cool their homes.

26 The Commission considers that effective price signals cannot be developed when the regulatory framework only allows DNSPs and the AER to consider consumption pricing. The final rules therefore remove the provision in the NER that prohibits DNSPs from developing pricing options for energy exported to the grid. The final rules also clarify that tariffs can be used to incentivise customer actions that lead to more efficient operation of the network through reward pricing – both for consumption and export services.[3]

27 Enabling export pricing options does not mean DNSPs have a regulatory obligation to develop and implement export pricing. A proposal to implement export pricing for a DNSP would need be part of the regulatory determination process and would require the AER's approval. In assessing the DNSP's proposal, the AER must be satisfied that it is in the interest of consumers. Export pricing is optional for each DNSP.

28 Enabling export pricing options is also foundational to support effective DER integration and future market designs, such as a two-sided market. Allowing export pricing opens up a range of potential service options that better integrate DER into the energy system. This reform package as a whole promotes incentives for DNSPs to develop mechanisms such as flexible export limits and dynamic operating envelopes. Pricing can enhance these mechanisms.

Measures to help transition and protect customers

29 Enabling DNSPs to develop export pricing options is a significant policy change. The Commission acknowledges stakeholder feedback on its draft determination and has introduced additional customer safeguards and measures to help with the transitions.

Export tariff transition strategy

30 A DNSP must develop and include an export tariff transition strategy as part of its tariff structure statement (TSS) that forms part of its regulatory proposal to the AER. The strategy needs to describe the plan it has adopted to phase-in any proposed export pricing over time. This requirement must be met even if the DNSP does not seek to introduce export tariffs in the short term. This is because the Commission considers it is important that DNSPs are transparent about their long-term intentions.

3 Reward pricing can be done through 'negative charges' where customers are paid for the actions that benefit the network. For example, 'negative' consumption charges would pay customers to consume from the grid when there is time of excess supply. Similarly, a 'negative' export charge would pay customers to export electricity to the grid when there is a high demand for electricity.

31 This measure builds on an existing consumer impact principle in the NER that expressly allows DNSPs to phase-in new pricing structures over more than one regulatory control period, and to consider the impact on customers when transitioning them to new tariffs. As part of its TSS consultation, a DNSP could seek stakeholder feedback on: its ongoing customer and stakeholder engagement approach; possible tariff trials for export services to inform future TSS proposals; and, most importantly, transitional measures to progress implementation of cost reflective pricing and manage change. Ultimately, the DNSP's transition policy must be approved by the AER.

32 To support this new requirement and promote stakeholder engagement, the final rules also require each DNSP to include a description of the proposed TSS, including its export tariff transition strategy, in the plain language overview paper that accompanies its regulatory proposal.

No mandatory assignment to export pricing options until 1 July 2025 for existing customers

33 In response to stakeholder feedback, the Commission has introduced restrictions to prevent a DNSP from assigning an existing DER customer to an export tariff unless the customer or its retailer has elected to be placed on the tariff.

34 This restriction means that customers who either are already connected to the grid and able to export, or have an open or accepted connection offer at the time of this decision, will not need to change their pricing plan until 1 July 2025 at the earliest. The Commission considers this measure provides clarity and certainty to customers who have already made significant investments in DER. In conjunction with a DNSP's export tariff transition strategy, this measure also allows existing customers a period of time to consider their own strategies to take advantage of the potential new pricing options that the DNSP may offer.

35 This restriction does not prevent DNSPs from conducting export pricing trials where customers opt-in to export tariffs for the period of the trial.

A basic export level must be offered to all exporting customers for a 10-year period

36 The final rules require DNSPs to include a basic export level for each proposed export tariff. This is a time-limited requirement that allows a retail customer to export to the grid without charge up to a 'basic level' for the DNSP's two upcoming regulatory control periods (10 years in total).

37 The basic export level should be set at a level where a DNSP can provide export services with minimal or no additional investment and the forecast use of export services by exporting customers.[4] The basic export level can vary between and within jurisdictions.

38 The final rules provide significant regulatory flexibility for DNSPs and the AER to determine what the basic export level means in practice for each network. For example, the basic export level applicable to an export tariff may be determined based on the capacity to supply into the distribution network at a connection point, or the quantity of supply into the distribution

4 This reflects the base level of DER hosting capacity that all networks currently provide, because network assets constructed to supply load have an inherent capacity to support some reverse power flow without any additional investment.

network from a connection point. And it could vary by reference to the location of the connection point or tariff class. The aim is to be flexible so the basic export level could be the same for all tariffs, or specified by tariff class, or different for each tariff.

Increasing trial tariff thresholds to support innovation

39 The NER includes arrangements that allow DNSPs to develop and trial new, innovative network tariffs in response to consumer requests or changing consumption patterns. These arrangements permit DNSPs to implement new network tariffs that are under a certain materiality threshold within a regulatory period.

40 The Commission considers the 'individual' and 'cumulative' thresholds of 0.5 per cent and 1 per cent of the DNSP's annual revenue requirement, respectively, can act as a barrier to undertaking export pricing trials concurrently with other initiatives, and to scaling up trials to progress implementation of cost-reflective pricing for both consumption and export services. This threshold may also limit innovative network tariffs in response to consumer requests or changing consumption patterns, given export pricing is now an option.

41 For a DNSP's current and upcoming regulatory control periods, the final rule increases the individual threshold from 0.5 per cent to 1 per cent of the DNSP's annual revenue requirement, and the cumulative threshold from 1.0 per cent to 5 per cent of the DNSP's annual revenue requirement.

42 The Commission considers this transitional arrangement could also enable a valuable input into TSS proposals – informing the DNSPs' benefit–cost, customer impact and customer behaviour analysis. Further, extending the DNSPs' ability to undertake tariff trials could assist the change management process, and progress export pricing in a more timely way – especially for those DNSPs that are due to submit their next round of TSS proposals later in the regulatory cycle.

Strengthening regulatory oversight

43 As discussed above, recognising export services as a distribution service means that the existing regulatory arrangements such as the planning and investment frameworks, incentive schemes and performance monitoring will now apply to export services. However, given the relatively new and evolving nature of export services, there is a need for some changes to existing arrangements and additional regulatory oversight. Under the final rules, the Commission has introduced a number of requirements to ensure DNSPs are providing export services that meet customer expectations efficiently.

Export service performance reporting

44 The final rules require the AER to prepare and publish a report annually providing information about the performance of each DNSP in providing export services to customers over the previous year. This report can be published as a standalone report, or can be published together with existing performance reports – such as the Electricity Network Performance Report or the Annual Benchmarking Report.

45 This reporting framework is intended to enhanced transparency of export service

performance, support more informed regulatory and policy decisions by government agencies, as well as investment and operating decisions by customers and solar installers.

46 The final rules provide the AER with discretion to determine the relevant performance reporting metrics and adjust them as needed to suit changing circumstances. It is envisaged the performance report will include information relevant to assess the performance, such as the:

- relative performance of DNSPs in providing export services
- performance of DNSPs against their own export tariff parameters
- use of static zero export limits
- impact of system limitations on availability or use of export services.

AER to review incentive arrangements

47 The Commission considers that incentive frameworks in the NER, if left unchanged, could incentivise DNSPs to reduce expenditure through the application of incentive schemes such as the capital efficiency sharing scheme (CESS) and the efficiency benefit sharing scheme (EBSS) without providing effective incentives for DNSPs in relation to export service performance.

48 This is because currently the service target incentive performance scheme (STPIS) does not include performance measures reflecting the relevant attributes of export services. For example, one of the potentially desirable attributes of an export service could be the capacity that is available to customers to export. However, the current STPIS does not include performance parameters for export capacity. This means there could be an incentive for DNSPs to reduce costs at the expense of export service quality.

49 If there are no incentive schemes with performance parameters for export services, there is a risk that DNSPs may decide to not incur or to defer the expenditure needed to deliver efficient levels of export service. The provision of lower than desirable levels of export service performance would not be in the long term interests of consumers.

50 The final rules therefore require the AER to undertake a review to consider arrangements, which may include a STPIS, to provide incentives for DNSPs to provide efficient levels of export services. The final rules require the AER to consider arrangements that incentivise DNSPs to efficiently deliver export services rather than solely focusing on maintaining and improving services. For example, under a scenario where it is not economical to increase DER hosting capacity but more customers are forecast to use export services, then the efficient level of service to be delivered to each customer on average may be lower than it was for the previous regulatory control period.

51 The AER's report is to be published by 31 December 2022. The review should consider the practical feasibility of extending the STPIS to exports and outline an approach to providing balanced incentives for export services.

AER guidelines

52 The final rules require the AER to develop and publish a number of guidelines as part of the

implementation of this package of reforms. The guidelines will set out the AER's expectation on how DNSPs will need to meet requirements set out in the final rules.

Export tariff guidelines

53 The final rules require the AER to consult on and publish a guideline specific to export services (the Export Tariff Guidelines) by 1 July 2022. This is an important mechanism to ensure ongoing stakeholder consultation on reforms introduced under the final rules and to manage change beyond the consultation undertaken as part of this rule change process. The guidelines also help address stakeholder concerns about how export pricing is implemented over time.

54 The Commission considers the guidelines can promote confidence in the TSS process by creating greater transparency and certainty of:

- the AER's decision-making process and criteria, including how it interprets the network pricing principles under the NER and the new tariff requirements discussed above
- expectations of how DNSPs should both develop their TSS proposals, possibly including examples of 'best practice' consultation by DNSPs, and present information to the AER
- how customer and other stakeholder views and preferences should be taken into account in the process.

55 The AER is required to prepare and publish the Export Tariff Guidelines under the distribution consultation procedures. This requires the AER to publish the proposed guideline, an explanatory statement and an invitation for written submissions on the proposed guideline.

Connection charge guideline

56 The AER is required to update the connection charge guideline to reflect the final rules' restriction on DNSPs ability to offer static zero export limits and describe the circumstances under which a DNSP may offer a customer a static zero export limit.

57 The final rules enable this update by extending the purpose of the connection charge guideline under NER Chapter 5A so that the static zero export limits only apply to export connections where they are consistent with both the safe, secure and efficient provision and use of export services, and the DNSP's distribution determination (including proposed expenditure to support export services).

AER to develop a customer export curtailment value methodology

58 The final rules require the AER to develop customer export curtailment values (CECV). These values will help guide the efficient levels of network expenditure for the provision of export services and serve as an input into network planning, investment and incentive arrangements for export services. These values will be different from the value of customer reliability (VCRs), as they are not intended to measure the value to customers of having a more reliable export service or consumption service – but rather the detriment to customers and the market from the curtailment of exports.

59 The CECVs are expected to play a similar role to the VCRs under the current framework. The

Commission considers that measures providing for the valuation of different levels of export services may be needed to support the relevant planning, investment and incentive arrangements for export services.

60 The AER is required to both develop and review the CECV methodology in accordance with the Rules consultation procedures and consult with a wide range of stakeholders – including AEMO, each jurisdictional regulator, registered participants, and other people with an interest in the CECV methodology and values (which would include exporting customers).

61 The first CECV is required to be published by 1 July 2022, with the value to be updated annually. The methodology for determining the CECV will need to be reviewed every five years.

Timeline for implementation

62 The final rules have introduced a number of changes to the NER and NERR as well as new requirements on the AER and DNSPs. The implementation dates for the key aspects of the final rules are outlined in the table below. The full implementation timeline can be found in section 2.5 of this document.

Table 1: Key implementation date

DATE	KEY CHANGE/REQUIREMENT

19 August 2021	• Changes to the NER. Key requirements include:
	  • Changes to recognise export services as part of distribution services take effect
	  • Changes requiring DNSPs to include DER integration information as part of its plain language overview paper of its regulatory proposal, including the export tariff transition strategy
	  • Removal of prohibition on DNSPs to charge for export services
	  • Changes to prohibit DNSPs from offering static zero export limit to new connections
	• Transitional measures (Chapter 11 of the NER). Key requirements include:
	  • Prohibition on DNSPs assigning customers to export tariffs until 1 July 2025
	  • Requirements on DNSPs to have a basic export level for export tariffs during the next two regulatory control periods, and prohibition on charging retail customers for export services up to the basic export level
	  • Increases to thresholds for trial tariffs for the current and next regulatory period
	  • Provisions allowing DNSPs at least 12 months before they need to report new information in their Distribution Annual Planning

DATE	KEY CHANGE/REQUIREMENT
	Reports

1 July 2022	• Provisions relating to the export tariff guidelines and customer export curtailment values (including new cl 6.8.1B and new rule 8.13)
	• By 1 July 2022, the AER must
	  • publish export tariff guidelines
	  • publish initial CECV methodology and public initial CECV value
	  • consult on changes to the annual benchmarking reports
	  • review and amend where necessary the following guidelines
	  — Expenditure Forecast Assessment Guidelines
	  — Distribution Service Classification Guidelines
	  — Cost Allocation Guidelines
	  — Connection charge guidelines

31 December 2022	• By 31 December 2022, the AER must conduct a review and publish its report on incentive arrangements for export services

1 July 2023	• By 1 July 2023, the AER must review and amend where necessary the following guidelines:
	  • Distribution Reliability Measures Guidelines
	  • Demand management incentive scheme
	  • Demand management innovation allowance mechanism

31 December 2023	• By 31 December 2023, the AER must publish the first DER network service provider performance report

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APPENDICES

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1 INTRODUCTION

1.1 Reforms to better integrate distributed energy resources

The Australian Energy Market Commission (the Commission) has made more preferable final electricity and retail rules (final rules) in response to rule change requests from SA Power Networks (SAPN), the St Vincent de Paul Society Victoria (SVDP), and Total Environment Centre (TEC) together with the Australian Council of Social Service (ACOSS).

These rule change requests were submitted to the Commission following a nine-month consultation process that was conducted as part of the Australian Renewable Energy Agency's (ARENA's) Distributed Energy Integration Program (DEIP). This DEIP process was led by a steering group of consumer representatives, industry associations and market bodies. This consultation saw a wide range of stakeholders collaborating to identify knowledge gaps and work priorities, and to develop and test reform options. There were three large workshops and six technical reference group meetings. Over 120 stakeholders participated in this process. The final Outcomes report made 12 findings and proposed next steps based on the stakeholder feedback, including written submissions.

Building trust in the sector is key to long-term success. DEIP has proven to be an important initiative to promote a customer-centric culture and collaborative approach to stakeholder engagement – through openness and transparency, and by taking the time to listen and understand each other. It paved the way for the major rule changes in this final determination. Implementation of reforms that impact the provision of DER services is a significant change management exercise, especially given renewable generation is a big part of Australia's commitment to reduce emissions.

The Commission is very grateful for the high level of commitment demonstrated by key stakeholders throughout the DEIP and rule change processes to explore ideas and find common ground to accelerate reforms in the interests of consumers.

The Commission has continued to work extensively with a range of stakeholders through our rule change process – including two public forums, seven technical working group (TWG) meetings and submissions. The TWG was established with representatives from key stakeholder groups to support the development of the rule determination. The knowledge and expertise of our stakeholders is invaluable and has significantly influenced our final determination. Through the many discussions, we have considered different perspectives, underlying concerns and a range of possible solutions that seek to best promote the long term interests of consumers.

Following our final determination, the AER, DNSPs, retailers, consumer groups, governments and other key stakeholders will be responsible for then implementing these reforms. There will be continued consultation, led by the AER, and the expectation is for the sector to work with retail customers in each jurisdiction to develop network service and pricing options that meet customer needs and preferences.

1.2 Rule change requests

The three rule change proposals are outlined in detail in chapter 2 of the draft determination. Below is a high-level summary. The proponents all made subsequent submissions.

1.2.1 SAPN

SAPN's proposal sought to update the regulatory framework to directly recognise and consider export services. The objectives are:[5]

1. Ensure recognition of all services that customers value – including use of the network by customers to consume energy, and use of the network to export energy they generate.
2. Encourage efficient investment, and prevent potential over-investment, by DNSPs to support the service levels that customers desire.
3. Enable customers to make informed choices with regard to their energy consumption and export decisions – including the DER they invest in and how these are operated and used.

SAPN proposed changes to the NER to:[6]

- amend existing definitions relating to 'distribution services' and any other amendments to the rules as necessary to recognise that customers now not only consume but also export energy, and that services distribution networks provide now also include export services – this is to allow for effective application of the existing NEM regulatory framework
- remove the current rule that prevents networks from proposing tariffs that include an export component, to allow such tariffs to be considered through the TSS process in future, and amend the Distribution Pricing Rules to provide specific guidance on the application of such tariffs.

SAPN considered these changes will lead to improved outcomes for all customers in the long term, as Australia's energy system continues its world-leading community-led transition to distributed renewable energy.[7]

1.2.2 SVDP

SVDP considered that DER participants (the direct beneficiaries of DER integration) should pay their fair share of the costs associated with the measures implemented to integrate DER.[8] SVDP stated NER clause 6.1.4 impedes DNSPs from recovering export service costs from these customers – potentially leading to inefficient and inequitable allocations of costs and benefits.[9]

SVDP proposed to remove these impediments by removing clause 6.1.4 from the NER.[10] SVDP stated it is not necessarily advocating for an approach where DER participants have to

5 SAPN rule change request, p. 10.
6 ibid, p. 8.
7 ibid, p. 8.
8 SVDP rule change request, p. 4.
9 ibid, p. 9.
10 ibid, p. 1.

pay for using the networks. SVDP is proposing to explore a solution that allows exporters to choose between paying or being constrained. This, SVDP said, is an important distinction as some DER participants may prefer being constrained, rather than paying a distribution use of system charge for export.[11]

SVDP expected the benefits of its proposal include enhanced opportunities for distributed energy providers and other participants in the market, greater options and choices for energy consumers and communities, and increased participation of DER in the wholesale and other markets. SVDP stated that its rule change enables options rather than proposed solutions, so the costs will be minimal.[12]

1.2.3 TEC and ACOSS

The objective of TEC/ACOSS's request was to create a regulatory framework that efficiently and equitably optimises the expanding role of DER exports to support a rapid, fair and affordable transition to a zero net carbon energy system.[13] TEC/ACOSS aimed to prevent 'prosumers' (defined as consumers who also produce energy) from facing export limits or being shut off (preventing even self-consumption),[14] and to optimise existing and incentivise additional DER hosting capacity.[15]

TEC/ACOSS proposed incremental reforms focused on two aspects of DER exports:[16]

- Planning and investment – to make the best use of existing network capacity to integrate DER and encourage efficient network investment in new DER hosting capacity.
- Access – to allow choices for 'prosumers' to increase their export capacity in return for a guaranteed level of service (but not firm access rights), and ensure the equitable distribution of hosting capacity between prosumers.

TEC/ACOSS said that the proposed rule changes are intended as a first step to creating a fit-for-purpose regulatory framework that will "support greater investment in and better operation of DER to facilitate faster decarbonisation of the energy system and deliver more equitable and efficient outcomes for all energy users."[17]

1.3 The Rule making process

On 30 July 2020, the Commission published a notice advising of its commencement of the rule making process and consultation in respect of the rule change request.[18] A consultation paper identifying specific issues for consultation was also published. Submissions closed on 10 September 2020.

The Commission received 52 submissions as part of the first round of consultation.

11 ibid, p. 7.
12 ibid, p. 9.
13 TEC/ACOSS rule change request, p. 2.
14 ibid, p. 3.
15 ibid, p. 10.
16 ibid, p. 3.
17 ibid, p. 2.
18 This notice was published under s.95 of the National Electricity Law (NEL) and 251 of the National Energy Retail Law (NERL).

On 12 November 2020 the Commission published a consolidation notice related to the consolidation of ERC0311, ERC0310 and ERC0309 and extended the timeline for publishing a draft determination to 25 March 2021.

The Commission published the draft rule determination on 25 March 2021. Subsequently, the Commission extended the due date for the second round of consultation to provide stakeholders more time to prepare their submissions. The timeline was extended by two weeks with the submission closing on 27 May 2021. The Commission held a virtual public forum on 20 May 2021 to provide stakeholders an overview of the draft determination and to inform the discussion on the proposed reforms.

In the second round of consultation, the Commission received 47 submissions from organisations, 100 from private individuals and a bundle of 912 private individual submissions. The Commission considered all issues raised by stakeholders in submissions – which are discussed and responded to throughout this final rule determination. A more detailed discussion of the issues raised in the first round of consultation can be found in the draft rule determination.

On 2 July 2021, the Commission extended the timeline for publishing a final determination to 12 August 2021.

1.4 Structure of this determination

This final determination sets out what is proposed by the rule change requests, the Commission's final decision and the reasons for making our decision. The determination is structured as follows:

- **Chapter 2** sets out the rule making tests, assessment framework, assessment of the final rules against the assessment framework, and the rule implementation timetable.
- **Chapter 3** outlines the Commission's final determination with regard to updating the regulatory framework so that the range of services, including export services, provided by DNSPs to their customers are recognised in the regulatory framework.
- **Chapter 4** outlines the Commission's final determination with regard to the export service levels that DNSPs are expected to provide customers and the incentive arrangements for efficient delivery of export services.
- **Chapter 5** sets out the reasons the Commission has accepted SAPN and SVDP's proposals to enable export pricing, and made further rule amendments to support these reforms – including additional customer safeguards to promote confidence in the DNSP and AER consultation processes for deciding whether to implement export pricing.
- **Appendices A–D** include legal requirements of this final determination under the NEL and NERL, and supporting material. This includes a summary of the changes to the NER and NERR, and the Commission's customer bill impact analysis.

The amendments to the NER and NERR as a result of this final determination are separately published on the rule change project's web page.

2 FINAL RULE DETERMINATION

2.1 The Commission's final rule determination

The Commission's final rule determination is to make a more preferable final electricity rule and a more preferable final retail rule, which are published with this final rule determination.[19] Key aspects of the more preferable final rules include:

1. Updating the regulatory framework to clarify that distribution services are two-way and include export services, and that as such the current rules relating to distribution services (including standard terms for distribution contracts under the NERR) apply to export services.
2. Providing for incentives for efficient investment in, and operation and use of, export services, including by requiring the AER to regularly calculate the values of DER curtailment to guide investment and regulatory decisions and providing protections to customers from inefficient zero export limits.
3. Removing the prohibition on DNSPs pricing for export services, allowing for both positive and negative charges.

The Commission's reasons for making this final rule determination are summarised below. Further details on the Commission's analysis and reasoning are set out in chapters 3–5. Further information on the legal requirements for making this final rule determination is set out in appendix A, and the final rules are summarised in appendix B.

In relation to the electricity rule's application in the Northern Territory, the Commission has determined to make a uniform rule.[20]

This chapter outlines:

- the rule making tests for changes to the NER and NERR, including the more preferable rule test and the revenue and pricing principles (section 2.2)
- the assessment framework for considering the rule change request (section 2.3)
- the Commission's consideration of the more preferable final rules against the national electricity objective and national energy retail objective and other relevant criteria (section 2.4)
- commencement dates and key transitional provisions for the final more preferable rules (section 2.5)

19 In accordance with sections 102-103 of the NEL and 259-261 of the NERL.

20 See sections 2.2.5 and 2.4.4 of this determination for the definitions of a uniform and differential rule and the reasons for the Commission's decision.

2.2 Rule making tests

2.2.1 Achieving the NEO

Under the NEL the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the national electricity objective (NEO).[21] This is the decision-making framework that the Commission must apply.

The NEO is:[22]

> to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system.

Under the Northern Territory legislation adopting the NEL,[23] the Commission must regard the reference in the NEO to the "national electricity system" as a reference to whichever of the following the Commission considers appropriate in the circumstances having regard to the nature, scope or operation of the proposed rule:[24]

(a) the national electricity system

(b) one or more, or all, of the local electricity systems[25]

(c) all of the electricity systems referred to above.

For the final electricity rule, the Commission has determined that the reference to the national electricity system in the NEO is a reference to (c) (noting that the final rule will have effect in relation to all of the electricity systems referred to above).

2.2.2 Achieving the NERO

Under the NERL, the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the national energy retail objective (NERO).[26] This is the decision-making framework that the Commission must apply.

The NERO is:[27]

> to promote efficient investment in, and efficient operation and use of, energy services for the long term interests of consumers of energy with respect to price, quality, safety, reliability and security of supply of energy.

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21 Section 88 of the NEL.
22 Section 7 of the NEL.
23 *National Electricity (Northern Territory) (National Uniform Legislation) Act 2015* (**NT Act**).
24 Clause 14A of Schedule 1 to the NT Act, inserting section 88(2a) into the NEL as it applies in the Northern Territory.
25 These are specified Northern Territory systems, listed in schedule 2 of the NT Act.
26 Section 236(1) of the NERL.
27 Section 13 of the NERL.

The Commission must also, where relevant, satisfy itself that the rule is compatible with the development and application of consumer protections for small customers, including (but not limited to) protections relating to hardship customers (the 'consumer protections test').[28]

Where the consumer protections test is relevant in the making of a rule, the Commission must be satisfied that both the NERO test and the consumer protections test have been met.[29] If the Commission is satisfied that one test, but not the other, has been met, the rule cannot be made.

There may be some overlap in the application of the two tests. For example, a rule that provides a new protection for small customers may also, but will not necessarily, promote the NERO.

2.2.3 Making a more preferable rule

Under section 91A of the NEL and section 244 of the NERL, the Commission may make a rule that is different (including materially different) to a proposed rule (a more preferable rule) if it is satisfied that, having regard to the issue or issues raised in the rule change request, the more preferable rule will or is likely to better contribute to the achievement of the NEO or the NERO (as applicable).

In this instance, the Commission has made more preferable final electricity and retail rules. The reasons are summarised below in section 2.4.

2.2.4 Revenue and pricing principles – electricity rule

In addition to the NEO, the Commission must take into account certain other principles and factors when it makes rules on particular topics.

Under section 88B of the NEL, the Commission must take into account the revenue and pricing principles when making a rule for or with respect to distribution system revenue and pricing.[30]

The Commission must therefore take into account the revenue and pricing principles in this rule change project. The revenue and pricing principles are set out in section 7A of the NEL. The Commission considers the following revenue and pricing principles are the most relevant to the final electricity rule:

- A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes:
  - efficient investment in a distribution system or transmission system with which the operator provides direct control network services
  - the efficient provision of electricity network services

28 Section 236(2)(b) of the NERL.

29 That is, the legal tests set out in s. 236(1) and (2)(b) of the NERL.

30 Section 88B of the NEL refers to items 25 to 26J of Schedule 1 to the NEL, which cover distribution system revenue and pricing and regulatory economic methodologies.

  - the efficient use of the distribution system or transmission system with which the operator provides direct control network services
- Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.
- Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a regulated network service provider provides direct control network services.

In making the more preferable final electricity rule, the Commission has taken the revenue and pricing principles into account by reflecting them in the assessment framework (section 2.3) and using that framework to assess the rule (section 2.4).

Under section 88A of the NEL, the Commission must take into account the form of regulation factors[31] when making a rule that confers a function or power on the AER to specify under a network revenue or pricing determination an electricity network service (to which the relevant determination applies) as a direct control service or a negotiated network service. In the final electricity rule, the Commission clarifies that distribution services include export services. The AER is able to classify distribution services, including export services, under its existing functions and powers in Part B of NER chapter 6. As the Commission has not conferred a new function or power on the AER in this regard, and given the AER must itself have regard to the form of regulation factors in classifying distribution services,[32] the Commission is not required to take the form of regulation factors into account in making the final electricity rule.

2.2.5 Rule making in the Northern Territory – electricity rule

The NER, as amended from time to time, apply in the Northern Territory, subject to modifications set out in regulations made under the NT Act.[33] Under those regulations, only certain parts of the NER have been adopted in the Northern Territory.[34]

As the final electricity rule relates to the parts of the NER that apply in the Northern Territory, the Commission has assessed whether to make a uniform or differential rule (defined below) under Northern Territory legislation.

Under the NT Act, the Commission may make a differential rule if it is satisfied that, having regard to any relevant MCE statement of policy principles, a differential rule will, or is likely to, better contribute to the achievement of the NEO than a uniform rule.[35] A differential rule is a rule that:

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31 These factors are set out in NEL section 2F.

32 NER cl 6.2.1(c).

33 The regulations under the NT Act are the National Electricity (Northern Territory) (National Uniform Legislation) (Modification) Regulations 2016.

34 The version of the NER that apply in the Northern Territory is available on the AEMC website at www.aemc.gov.au/regulation/energy-rules/northern-territory-electricity-market-rules/current.

35 Clause 14B of Schedule 1 to the NT Act, inserting section 88AA into the NEL as it applies in the Northern Territory.

- varies in its terms as between:
  - the national electricity system; and
  - one or more, or all, of the local electricity systems; or
- does not have effect with respect to one or more of those systems,

but is not a jurisdictional derogation, participant derogation or rule that has effect with respect to an adoptive jurisdiction for the purpose of s. 91(8) of the NEL.

A uniform rule is a rule that does not vary in its terms between the national electricity system and one or more, or all, of the local electricity systems, and has effect with respect to all of those systems.[36]

As noted above, the Commission has determined to make a uniform rule. The reasons for this decision are summarised in section 2.4.4.

2.3 Assessment framework: criteria applied for this final rule determination

Investing in and operating the networks in the long term interests of consumers means that reliability, safety, security and quality requirements for network services are met at efficient long term cost. The Commission considers that this outcome will be achieved, thereby contributing to the achievement of the NEO and NERO, if a number of conditions are met:

1. **Efficient provision of electricity services** – The regulatory framework should facilitate the efficient provision of electricity services. A key consideration in the Commission's assessment of the rule change requests and the more preferable final rules is how likely they are to contribute to the lowest possible total system cost, taking into account the revenue and pricing principles.[37]
2. **Efficient pricing** – Prices should signal to consumers the costs of providing network services. Price signals can provide opportunities for consumers to adjust their usage patterns in ways that can reduce their own costs of using the network as well as contribute to reducing future network costs more broadly. Price signals can include negative prices (eg, payments or credits to customers) to reward customers for actions that better utilise the network or improve network operations. The Commission has considered whether the more preferable final rules will provide for efficient pricing outcomes.
3. **A regulated network service provider should be provided with effective incentives to promote economic efficiency** – Efficient outcomes can be best promoted by aligning the commercial incentives on businesses with the interests of consumers – consistent with the revenue and pricing principles. Financial incentives provide an understandable and transparent approach to influence behaviour. Businesses

36 Clause 14 of Schedule 1 to the NT Act, inserting the definitions of "differential Rule" and "uniform Rule" into section 87 of the NEL as it applies in the Northern Territory.

37 See section 2.2.4 above. These principles are set out in NEL section 7A.

that face financial incentives therefore have the best ability to respond to the regulation. Financial incentives are likely to lead to more efficient outcomes.

4. **Risks should be allocated to those best placed to manage them** – The party holding the risk should have: incentives to manage the risk, because it stands to gain or lose from doing so, and there is a clear link between its actions and the outcomes of the risk; more information than other parties to manage risk since it can use this information to better mitigate the impact of the associated loss; the ability to better manage risk than other parties, so it can take actions to avoid or reduce the impact of the associated loss; and the ability to improve risk management over time through experience. Risks should be borne by, or allocated to, parties who are in the best position to manage them and have the incentives to do so. This ultimately leads to lower costs for consumers.
5. **Robustness to climate change mitigation and adaptation risks** – In order to make decisions that promote the NEO and NERO, the Commission considers whether its decisions are robust to the impacts of climate change, or climate change mitigation or adaptation measures, on the price, quality, safety, reliability and security of supply of energy or energy services.
6. **Regulatory clarity and certainty** – A lack of clarity and certainty in regulatory arrangements can affect the confidence of stakeholders to invest and participate in energy markets. Similarly, the framework needs to provide clear rights for customers to allow them to make optimal consumption choices and investment decisions in behind the meter devices.
7. **Regulatory burden** – The Commission has considered whether the implementation and administrative costs arising from the more preferable final rules are proportionate to the benefits. Where possible, rules should minimise additional regulatory burden or the increase in administrative costs.
8. **Promote consumer choice** – Market-based outcomes, which broadly promote the NEO, are best achieved when consumers are put at the centre of things. Consumer empowerment is a key driver of the transformation of the energy sector currently underway – whereby consumers can both buy and sell energy services, and participate in different markets under a variety of new business models. The regulatory framework should provide for flexibility for energy sector participants to respond effectively to changes in technology and market developments over time. Consumers should have the opportunity to make informed decisions or choices about which electricity services they use and the way they use them, based on the benefits that the services provide to them. Transparent and understandable information on prices and other terms and conditions of access are important, so consumers can weigh up different options available to them, adjust consumption and dispatch accordingly, and make informed decisions about their use of the network and DER-related investments. Ultimately, consumers will be in the best position to decide what works for them and how they engage in energy markets, which promotes allocative and dynamic efficiency.

2.4 Summary of reasons

The Commission is satisfied that, having regard to the issues raised in the rule change requests and during consultation, the more preferable final rules will, or are likely to, better contribute to the achievement of the NEO and NERO for the reasons set out below.

2.4.1 Updating the regulatory framework to recognise the provision of export services to customers

The Commission has considered the merits of expanding the definition of distribution service to include export services. This has been considered in the context of the development of the national regulatory framework, which was established at a time when energy flows were not bidirectional, and the need for this framework to be flexible to accommodate change and continue to evolve with customer demand for emerging DER technologies. As a result, we have concluded it is appropriate to clarify that export services form part of a distribution service. The Commission considers that this is likely to advance the NEO as it would provide regulatory clarity and certainty for customers in relation to access to export services and to DNSPs regarding expectations to provide export services.

As export services are now recognised as forming part of a distribution service, the final rule enables existing planning and investment arrangements to be adapted for export services. Consequential changes to enable the application of existing regulatory mechanisms, such as incentive schemes, have been made where required. These changes support the application of the existing framework by broadening the application of relevant rules in the NER and NERR to export services. As such, the Commission considers that these changes are consistent with achieving the NEO and the NERO as they clearly establish the application of the existing regulatory framework to export services, improving regulatory clarity and certainty. This supports the effective application of existing processes to export services and should therefore minimise any associated regulatory burden and administrative cost that may result.

Given the emerging nature of export services, and the fact that they are not essential services in the same way as consumption services, the Commission also considers there should be some further guidance in the NER to support transparency and efficiency with regard to planning and investment decisions around export services. On this basis, the more preferable final rule supplements the existing framework with a number of new reporting requirements to increase transparency around planning and investment opportunities for export services. As such, the final electricity rule takes into account the assessment criteria relating to regulatory clarity and certainty by providing clear guidance as to the regulatory arrangements that are to apply to export services.

To support additional requirements around the type of information that DNSPs would be required to provide in relation to planning and investment for export services, the Commission's final rule requires that the AER, through its Expenditure Forecast Assessment Guidelines, develops guidance to assist DNSPs in their expenditure proposals (e.g. by outlining the type of information and analysis that should be included) and provides clarity with regard to the assessment of export related expenditure so as to provide support to

DNSPs in the efficient provision of export services. In this regard the final electricity rule takes into account the assessment criteria relating to the efficient provision of electricity services.

The more preferable final rules are likely to better achieve the NEO and NERO than the rule changes sought by the proponents because they not only utilise the existing regulatory framework, which enables existing regulatory mechanisms to be adapted for export services, but also take into account the need to integrate export services in the context of the future development of the rules, particularly in light of the move to two-sided market arrangements. This will likely result in a more cost-effective solution that creates consistency with future market developments and is administratively efficient.

The more preferable final retail rule is compatible with the development and application of consumer protections for small customers because it clarifies the extent to which the consumer protections under the NERR apply to export services. In particular, the retail rule:

- allows retail customers to access metering data about exports in the same way that they are given access to consumption data
- clarifies DNSP and retailer liability for export services and the terms and conditions of export services
- clarifies the circumstances and means by which the DNSPs may temporarily interrupt or curtail export services
- requires DNSPs to publish 'plain language' information about technical requirements for small generator connections and related information.

These changes will support DER customers, DNSPs and retailers understanding and fulfilling their obligations regarding the provision of export services. This is likely to result in improved protection and certainty for retail customers of export services.

2.4.2 Incentives, service levels and connections for export services

In relation to incentives, service levels and connections for export services, the Commission's more preferable final electricity rule:

- Supports the application of incentive arrangements for efficient delivery of export services by introducing requirements under NER clause 11.141.3 for the AER to undertake a review to consider arrangements, which may include the STPIS, for providing performance incentives for export services (see section 4.1.4). This is consistent with assessment criteria on providing DNSPs with effective incentives to promote economic efficiency, as discussed further below.
- Provides greater flexibility to the AER in providing export service performance incentives by:
  - amending the factors that need to be considered by the AER in developing the STPIS, including under NER clauses 6.6.2(b)(3) and (5) (see section 4.1.4).
  - amending other relevant parts of incentives framework to provide more scope for the AER to consider the application of the DMIS, DMIA and the small-scale incentive scheme to export services under NER clauses 6.6.3(b), 6.6.3A(c) and 6.6.4(b)(3)

respectively (see section 4.1.4). This is consistent with assessment criteria on providing DNSPs with effective incentives to promote economic efficiency, as discussed further below.

- Protects customers from inefficient static zero export limits. A DNSP cannot offer a small customer seeking to connect to the distribution network for exports a connection with a static zero export limit, unless one of the exceptions contemplated in the AER's connection charge guideline applies or the customer requests that limit. These changes promote regulatory clarity and efficient use of export services.
- Promotes greater transparency of export service performance delivered to customers by requiring reports on DER network services performance under the existing network service provider performance reporting framework. The AER will be required to report on the performance of DNSPs in providing export services to customers (see section 4.2.4). This is consistent with assessment criteria on the regulatory burden for the parties involved, as discussed further below.
- Introduces 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 Commission considers these values are more likely to contribute to achieving the NEO than a measure for the value customers place on export service reliability because customer export curtailment values would better reflect the benefits to all customers from exporting customers being able to access greater levels of export capacity (see section 4.3.4). This is consistent with assessment criteria on the efficient provision of electricity services and regulatory burden for the parties involved, as discussed further below.

These aspects of the Commission's more preferable final electricity rule are likely to better contribute to the achievement of the NEO than the rules proposed by the proponents because the Commission's more preferable final electricity rule:

- Includes provisions for increasing the transparency of export service performance. Enhanced transparency of export service performance will provide for more informed regulatory, policy decisions and DER investment decisions by customers.
- Amends the factors that need to be considered by the AER in developing the STPIS to provide greater flexibility to the AER in providing incentive arrangements for export services and improves regulatory consistency.
- Does not specify in the NER a minimum level of export capacity that DNSPs must offer to customers. The Commission considers that, in this respect, the final rule is more likely to promote the NEO than the rule proposed by SAPN and TEC/ACOSS as it would provide greater ability for DNSPs to meet differing network circumstances and reduce the likelihood of inefficient network expenditure.

The elements of the Commission's final electricity rule summarised above, and in more detail in chapter 4, contribute to the achievement of the NEO in the following ways:

1. **Efficient provision of electricity services** – The Commission considered the impact of defining export service levels, the proposal for requirements on DNSPs to provide minimum export capacity to customers and the development of customer export curtailment values on efficient provision of electricity services. The Commission

determined that development of customer export curtailment values would support efficient provision of electricity services and contribute to the lowest possible system costs by enabling the assessment of whether increasing hosting capacity leads to lowest overall system costs. Similarly, defining export service level requirements, for example through the STPIS, will support efficient provision of export services. Limiting the use of zero export limits supports the efficient provision of electricity services by preventing inefficient curtailment of customer exports. These changes also promote the efficient use of export services by customers through improving customer access to export services.

2. **A regulated network service provider should be provided with effective incentives to promote economic efficiency** – In assessing the incentive arrangements for export services the Commission considered the need to provide effective incentives to promote economic efficiency. The Commission considers that the amendments under the final electricity rule to support export service performance incentives for DNSPs will lead to a better alignment of commercial incentives of DNSPs with the interest of consumers. The DNSPs will be incentivised to reduce the cost of delivery of export services, share the efficiency benefits with customers and deliver a superior export service that is better able to meet their customers' export needs.
3. **Regulatory clarity and certainty** – The Commission considers that defining service level requirements, for example through the STPIS, and changes to avoid the inefficient use of static zero export limits will improve regulatory clarity and certainty by clarifying how service levels for exports would be set and by providing clearer information for customers seeking to connect to the network for exports. The final rule avoids the risks of overlap and confusion that could be caused by applying minimum export capacity requirements concurrently with the STPIS.
4. **Regulatory burden** – In considering the arrangement for customer export curtailment values, the export service performance reporting framework and the proposal for supplementary connection arrangements for additional hosting capacity, the Commission has been cognisant of minimising regulatory burden on the stakeholders involved. The regulatory burden of the CECV framework and the performance reporting requirements is likely to be proportionate to the benefits to the market.

2.4.3 Distribution network pricing arrangements for export services

In relation to distribution network pricing for export services, the Commission's more preferable final electricity rule:

- Removes the prohibition on DNSPs charging for energy exported into the grid by deleting NER clause 6.1.4. This creates regulatory flexibility to enable pricing options for DER that send efficient signals for future expenditure and incentivise customers to best utilise existing infrastructure. This is a way to integrate DER more effectively into the electricity system and lower costs for all distribution network users (see section 5.2.2).
- Clarifies that distribution tariffs may reflect the efficient negative costs for both export and consumption services by including a note to NER cl. 6.18.5(a). This creates regulatory flexibility for DNSPs to reward customers for actions that better utilise infrastructure or improve network operations (see section 5.2).

- Strengthens consultation requirements through the tariff structure statement (TSS) process (see section 5.3.1). This will help customer and stakeholder views, preferences and priorities to be reflected in network proposals and regulatory outcomes. In particular:
  - DNSPs must develop and consult on an export tariff transition strategy as part of their TSS process to phase-in any proposed export pricing over time, under amendments to NER cl. 6.8.2(c1) and cl. 6.18.1A.
  - Under NER clause 6.8.2(c1), a DNSP's proposed TSS for both consumption and export services must be accompanied by an overview paper, written in reasonably plain language understandable to retail customers, which includes a summary or description of:
    - the proposed TSS, including the export tariff transition strategy
    - the interrelationship between the proposed TSS and relevant elements of the regulatory proposal – including the proposed connection policy and capital expenditure or operating expenditure
    - how the DNSP has engaged with distribution service users and other key stakeholders – including consumer groups, retailers, aggregators and jurisdictional governments – in developing both the proposed TSS and transition strategy
    - the relevant concerns identified as a result of that engagement
    - how the DNSP has sought to address those concerns identified as a result of that engagement
    - the key risks and benefits of the proposed TSS, including the export tariff transition strategy.
  - These strengthened consultation requirements also apply to NER clause 6.18.1B, which sets out the process DNSPs must undertake to amend a TSS (in-period) with the AER's approval.
- Requires the AER to consult on and publish a TSS guideline specific to export services (the *Export Tariff Guidelines*) by 1 July 2022 (see section 5.3.2). The guidelines will promote confidence in the TSS process by creating greater transparency and certainty of:
  - the AER's decision-making process and criteria
  - expectations of how DNSPs should develop their TSS proposals
  - how customer and other stakeholder views and preferences should be taken into account in the process.
- Introduces transitional arrangements that protect customers who have already made significant investments by not permitting DNSPs to assign existing DER customers to export tariffs before 1 July 2025, unless the customer requests it (see section 5.3.3).
- Requires DNSPs to offer a basic export level without charge. A retail customer can export to the distribution network up to this level at no additional charge for the next two regulatory periods (see section 5.3.3).
- Supports innovation and future market developments by:

  - increasing the 'individual' and 'cumulative' thresholds for tariff trials as a transitional arrangement over the next two regulatory periods under NER cl. 11.141.8 – which is preferable to facilitate more informed TSS proposals taking into account potential customer impacts (see section 5.3.4)
  - amending a pricing principle so that DNSPs are able to design more advanced network tariffs targeting retailers and intermediaries for end customers under NER cl. 6.18.5(i) (see section 5.2.9).
- Improves the adaptability of the pricing framework to emerging network issues relating to the increased use of DER – especially minimum demand periods – by broadening the reference to cost drivers under NER clause 6.18.5(f)(2) (see section 5.2.10).
- Makes consequential rule changes required to support the above amendments, including to:
  - the NER clause 6.18.4 principles governing assignment or re-assignment of retail customers to tariff classes and assessment and review of the basis of charging (see section 5.2.10)
  - the billing and credit risk pass through arrangements under chapter 6B of the NER to support the implementation of export tariffs (see section 5.2.10).

These aspects of Commission's more preferable final electricity rule, outlined in more detail in chapter 5, better contribute to the achievement of the NEO in the following ways:

- **Efficient pricing** – The Commission considers enabling export pricing promotes efficient investment in both network electricity services and 'behind-the-meter' investments made by retail customers. These price signals can provide opportunities for consumers to adjust their usage patterns in ways that can reduce their own cost of using the network, as well as contribute to reducing future network costs more broadly.
- **Risks should be allocated to those best placed to manage them** – implementation of price signals allocates the risk of excessive demand for network services, which could lead to inefficient network expenditure, to the customers making those demands. Non-DER households (who, in the absence of export pricing, contribute to DER-related costs) do not have the ability to take actions to manage the risk of excessive demand for network export services. DER owners will have an incentive to manage the risk because they will seek to minimise bill impacts. Increasingly, it is expected retail customers will have the ability to adjust their usage or exports during times when there are network constraints. Customers will be rewarded for this flexibility by avoiding export charges and/or receiving additional payments (negative charges).
- **Robustness to climate change risk and climate change mitigation and adaptation risks** – Enabling export pricing, as well as addressing incentives for providing export services (discussed above), creates greater regulatory flexibility and opens up a range of potential service options to efficiently manage the integration of DER into the energy system. This flexibility is robust to jurisdictional measures to promote DER and complementary investments in behind-the-meter appliances – including batteries, EVs and demand management devices – as part of climate change mitigation programs. Without these changes to the rules, jurisdictional measures to increase DER

may affect the price and reliability of the supply of electricity. Efficiently integrating DER into the energy system, so that greater exports from DER can be accommodated, is also robust to climate change risks affecting reliability, such as severe weather events which may interrupt supply from large centralised generators.

- **Regulatory clarity and certainty** – The Commission considers the requirements on the AER to publish Export Tariff Guidelines, and on DNSPs to develop a transition strategy, promote understanding and confidence in regulatory arrangements, and strengthen the forum for customers and other stakeholders to express their concerns and preferences.
- **Regulatory burden** – The Commission has considered whether the implementation and administrative costs arising from the more preferable final rule are proportionate to the benefits. In particular, the Commission considers the new consultation and reporting requirements on DNSPs and the AER are the minimum necessary steps to manage stakeholder concerns in implementing export pricing reforms. Further, the existing pricing framework, which is well understood by the sector, will largely apply to export pricing – minimising additional regulatory complexity.
- **Promote consumer choice** – In the context of the major transformation underway, the Commission considers enabling export pricing creates regulatory flexibility for the sector to respond to changing customer and jurisdictional preferences, network circumstances, and technology and market developments as they emerge. The Commission's decision to strengthen consultation requirements promotes consumer engagement and stakeholder management. Further, enabling export pricing allows DNSPs to offer customers a 'menu of options' to be considered as part of the TSS process – providing options to customers on the level of export service they desire and are willing to pay for.

2.4.4 Northern Territory rule making: uniform rule for final electricity rule

The Commission has determined to make a uniform rule for the more preferable final electricity rule, as it does not consider that a differential rule will, or is likely to, better contribute to the achievement of the NEO than a uniform rule. The Commission considers that there are no relevant differences between the NEM and the local NT systems that would necessitate a differential rule. While the systems have different physical characteristics, these should not impact the implementation of the rule.

2.5 Commencement dates and transitional provisions for final more preferable rules

The following tables outline the implementation timelines and key transitional provisions for amendments under the final more preferable rules.

Table 2.1: **Amendments to the NER**

SCHEDULE OF AMENDING RULE	INCLUDES AMENDMENTS TO THESE PROVISIONS OF THE NER	COMMENCEMENT DATE
1	All NER changes other than those below	19 August 2021
2	Provisions relating to the export tariff guidelines and customer export curtailment values (including new cl 6.8.1B and new rule 8.13)	1 July 2022
3	Transitional rules in chapter 11, including: • Requirements on the AER to update guidelines (by 1 July 2022 or 1 July 2023), develop export tariff guidelines (by 1 July 2022), conduct a review of incentive arrangements for export services (by 31 December 2022), publish the first DER network service provider performance report (by 31 December 2023), consult on changes to the annual benchmarking reports (by 1 July 2022), and develop an initial CECV methodology and value (by 1 July 2022) • Increases to the thresholds for trial tariffs for the current and next regulatory control period • Provisions allowing DNSPs at least 12 months before they need to report new information in their Distribution Annual Planning Reports. • A prohibition on DSNPs moving existing DER customers to export tariffs until after 30 June 2025, unless requested. • Requirements on DNSPs in relation to basic export levels, including a requirement to include a basic export level for each proposed export tariff in a TSS during the next two regulatory control periods, and a prohibition on charging retail customers for export services up to the basic export level. • Requirements on the AER in relation to basic export levels, including a requirement to develop basic export level guidelines by 1 July 2022. • A provision specifying that the new clause on when DNSPs may give customers static zero export limits does not apply to a connection offer made before 1 July 2022, the date by which the AER must amend the connection charge guidelines to include guidance	19 August 2021

SCHEDULE OF AMENDING RULE	INCLUDES AMENDMENTS TO THESE PROVISIONS OF THE NER	COMMENCEMENT DATE
	on when DNSPs may give such limits.	

Table 2.2: **Amendments to the NERR**

SCHEDULE OF AMENDING RULE	INCLUDES AMENDMENTS TO THESE PROVISIONS OF THE NERR	COMMENCEMENT DATE
1	New rule 147A on information DNSPs must provide on small generator connections (however, DNSPs have until March 2022 to comply, under a transitional rule). A definition of "small generator" is also introduced.	19 August 2021
2	New rule 147B on immunity for failure to take supply of electricity from premises (however, the transitional rules modify how this applies to existing contracts).	21 October 2021
3	All other changes to the NERR, including the changes to the terms of the standard retail contract and deemed standard connection contract in NERR schedules 1 and 2, but excluding the transitional rules.	31 March 2022
4	Transitional rules (Schedule 3 Part 17), which provide that: • retailers and distributors must update their contract terms and conditions by and effective from 31 March 2022 • distributors do not need to comply with the new rule on providing information on small generator connections until 31 March 2022 (however, they may choose to provide this information earlier) • the new immunity applies to existing deemed standard connection contracts, standard retail contracts and deemed customer retail arrangements, but does not affect any rights or obligations that have accrued under such contracts as of 21 October 2021 • the new immunity does not apply to other types of contracts that were entered into before 21 October 2021.	19 August 2021

3 UPDATING THE REGULATORY FRAMEWORK TO RECOGNISE THE PROVISION OF EXPORT SERVICES TO CUSTOMERS

This chapter outlines the Commission's final rule determination with regard to updating the regulatory framework so that the range of services, including export services, provided by DNSPs to their customers are recognised in the regulatory framework. It sets out the Commission's final decision to recognise export services within the existing regulatory framework. It also explains the Commission's final decision in respect of enabling DNSPs to efficiently provide the services that customers require, for example, through clarifying the treatment of export services in the existing planning and investment frameworks.

Other than expressions of general support, the Commission received limited stakeholder feedback on the draft rule's requirements to enable existing regulatory mechanisms to be adapted for export services. Consequently, the Commission's positions in the draft rule on changes to definitions and existing planning and investment framework to accommodate export services have largely been retained and included in the final rule. In response to stakeholder comments, a number of consequential change have been made (where necessary) to clarify the Commission's intention. An overview of the Commission's final decision in provided below in Box 1.

BOX 1: OVERVIEW

- The evolving nature of DER technologies (e.g. storage, EVs, communications, PV) and the rapid pace of change in these technologies means that the regulatory framework needs to be flexible to accommodate change and continue to evolve with customer demand for emerging technologies.
- While there is a well-established regulatory framework for the provision of services that involve the connection and supply of energy to customers, growth in DER has increasingly required DNSPs to manage customers seeking to export energy to the market.
- Historically, it has not been clear how these 'export services' are treated within the regulatory framework.
- To clarify the regulatory treatment of export services and to support DNSPs to achieve efficient planning and investment outcomes in respect of export services, the Commission's final rule introduces a number of changes to existing definitions in the NER and existing planning and investment arrangements to increase clarity and transparency around both the opportunities for, and decisions made in respect of, export services.

Changes to definitions

- To clarify that export services form part of a distribution service, the Commission's final rule changes the definition of "network" in the NER. This change is also intended to enable existing regulatory mechanisms to be adapted for export services.

- To support the application of existing incentive schemes to export services, the Commission's final rule replaces, where relevant:
  - references to electricity consumers with references to "distribution service end user" (a new defined term covering end-users of electricity and embedded generators who are not registered participants), and
  - references to the demand for electricity with references to the demand for distribution services (which would include consumption and export services).
- For greater clarity and flexibility, recognising that retail customers increasingly have generation facilities as well as load, the final rule applies the definition of "retail customer" currently used in chapter 5A throughout the NER (with a few exceptions). This definition clarifies that "retail customer" includes embedded generators who are not registered participants.

Changes to existing planning and investment frameworks

- The Commission's final rule introduces new requirements for a DNSP to provide information related to (i) how it intends to manage the integration of DER through the different elements of its regulatory proposal (i.e. connection services, pricing, expenditure); and (ii) an explanation of the DNSP's proposed approach to DER integration against alternative options.
- To support additional requirements around the type of information that DNSPs would be required to provide in relation to planning and investment for export, the Commission's final rule also requires the AER, through its Expenditure Forecast Assessment Guidelines, to develop guidance to assist DNSPs in their expenditure proposals (eg by outlining the type of information and analysis that should be included) and provide clarity with regard to the assessment of export related expenditure, with particular consideration to how the benefits arising from expenditure to provide for export services are to be valued.

Changes to the NERR

- To extend some aspects of the existing NERL section 316 immunity to export services, the final rule includes an immunity provision in the NERR (reflected in the terms of the standard contracts) to clarify DNSP and retailer liability for export services.
- To clarify the circumstances in which DNSPs may temporarily interrupt or curtail the supply services provided for export, the final rule amends some provisions of the deemed standard connection contract.
- To support DER customers understanding their obligations regarding export from their DER, the final rule requires DNSPs to publish a 'plain language' document giving information about technical requirements for small generator connections and related information such as export limits and the use of any remote control equipment.
- To clarify that retailers remain responsible for communicating retail pricing structures and associated terms and conditions to customers (including any future export charges the retailer passes through from the DNSP), the final rule amends NERR provisions on retailer information disclosure.

- The Commission's final rule makes changes to the NERR to clarify that retail customers should be given access to metering data about exports in the same way they are given access to consumption data and to recognise the provision of export services by distributors.

This chapter sets out the proponents' proposed changes to clarify the regulatory treatment of export services, stakeholders' views on recognising export services and enabling their regulatory treatment under existing mechanisms, and the Commission's assessment in respect of these issues.

3.1 What changes did the proponents put forward?

3.1.1 What problems did the rule change requests seek to address?

In its rule change request, SAPN proposed that current definitions in the NER create ambiguity as to customers' rights to export services, and the status that regulation affords these services in the planning that DNSPs need to undertake. In its rule change request, SAPN stated:[38]

- there is ambiguity in the NER as to whether 'distribution services' only relate to the *consumption* of energy and the conveyance of electricity *to* customers.
- guidance provided in the NER as to the provision of services to 'retail customers' is unclear. This is on the basis that there is some ambiguity in the meaning of the term stemming from different definitions in the NEL, NER and NERL.[39]

TEC/ACOSS proposed amendments to the NER in order to optimise existing DER hosting capacity and incentivise additional hosting capacity. TEC/ACOSS consider:[40]

- DNSPs are increasingly constraining DER exports using static export limits– noting DNSPs appear to be managing their constraints in different ways, and there is no clearly established set of principles for them to follow
- the existing regulatory framework remains inflexible, as existing access and pricing arrangements create barriers to efficient and equitable cost recovery.

3.1.2 What were the proponents' proposed solutions?

SAPN and TEC/ACOSS presented different approaches to clarifying the treatment of export services in the regulatory framework. SAPN suggested making definitional changes to allow for the adaptation of the existing mechanisms to export services, while TEC/ACOSS proposed a number of new obligations in the framework to guide network planning and investment around export capacity.

38 SAPN, rule change request, p. 11.

39 SAPN notes that this is the case for rules relating to the Demand Management Incentive Scheme, the Value of Customer Reliability (VCR), and the distribution pricing rules. The Service Target Performance Incentive Scheme (STPIS) rules refer more generally to 'customers' and the Efficiency Benefit Sharing Scheme (EBSS) to 'network users'.

40 TEC/ACOSS rule change request, p. 7.

This section outlines these proposed solutions and identifies points of overlap or divergence.

Proposed definition changes

TEC/ACOSS state definitions should be updated to recognise "prosumers" as the export equivalent of retail customers via amendments to chapter 5A (Part A) and Chapter 10 of the NER.[41]

At a high level, SAPN proposed for the Commission to:[42]

- amend the definition of terms applicable to 'distribution service', so that these terms explicitly recognise that the distribution network now not only conveys electricity to customers but also conveys electricity from customers
- make any such changes to the NER as required so that the regulatory framework explicitly recognises that customers who purchase electricity from retailers now not only consume energy but also export energy to the distribution network, so that the regulatory framework (including existing incentive schemes, distribution pricing rules and other guidance the NER provides to the AER) can apply to export services
- consider any other terms present in the NEM regulatory framework that may intersect with terms as to what comprises a customer and the services that a DNSP can provide.

Proposed changes to service classifications

TEC/ACOSS stated that service classifications should be amended to recognise the export of DER as a distribution service via amendments to Chapter 10 (glossary) of the NER.[43]

SAPN considered with export services being linked to 'distribution services', the AER would be able to classify these services through the framework and approach and distribution determination processes.[44] In SAPN's view, as export services involve the use of the grid to export energy, these are natural monopoly services that should be regulated and provided for in DNSPs' regulated revenue allowances as 'standard control services', in accordance with the AER's current approach to service classification.[45]

Proposed obligations on DNSPs to guide network planning and investment in export services

An important difference between SAPN and TEC/ACOSS's proposals relates to the necessary obligations on DNSPs to provide export services and the treatment of expenditure assessment.

Application of existing planning and investment frameworks for export services

SAPN suggested that if export services are classified as a standard control service, DNSPs will be required to meet or manage demand for export services, comply with any regulatory obligations or requirements (if they exist for export services), and if there are no obligations

41 TEC/ACOSS rule change request, p. 14.
42 SAPN rule change request, p. 17.
43 TEC/ACOSS rule change request, p. 15.
44 SAPN noted it does not seek to mandate the classification decision in the NER (SAPN, rule change request, p.18).
45 SAPN rule change request, p. 18.

or requirements, maintain the quality, reliability, safety and security of the distribution system, which would include export services. [46] On expenditure proposals and assessment, SAPN proposesed that these should not be limited to market benefit assessments, and should consider the extent to which customers' views support particular levels of network investment.[47]

Reflecting another approach, TEC/ACOSS proposesed that obligations should be introduced in the NER to guide DNSPs' planning for investment in export capacity and that augmentations carried out to provide capacity for export services should be assessed via a net market benefit test.[48] These points are discussed further below.[49]

Establishing a planning and investment strategy for DER integration

TEC/ACOSS considered that a new obligation on DNSPs is appropriate to encourage them to think strategically about the role of DER exports in their future planning. To this end, TEC/ACOSS suggested the introduction of a requirement for DNSPs to prepare a comprehensive DER integration strategy (DERIS).[50]

TEC/ACOSS proposed that the DERIS could work on a five yearly basis and alongside other regulatory obligations, such as the DAPR. The proposed content of the DERIS may include an outline of the current and projected DER uptake, network challenges and opportunities, and proposed investments and other actions over the coming five years and beyond.[51] A DNSP's proposed DERIS would then be considered by the AER and incorporated into its assessment of the individual elements of the regulatory proposal (connections, pricing, and expenditure). To supplement this information, the DERIS would also require an outline of how the network has consulted customers and incorporated feedback into the regulatory proposal.

Investment in hosting capacity to benefit all customers

TEC/ACOSS suggested imposing a further obligation on DNSPs to invest in additional DER hosting capacity, when it benefits all consumers, by introducing a net market benefit test to guide network planning and investment for DER.[52]

According to TEC/ACOSS, this could be achieved by extending the principles set out in the RIT-D to all network planning decisions.[53] To this end, TEC/ACOSS proposed amending NER clause 5.13.1 to expand the scope of the distribution annual planning review such that 'The distribution annual planning review must explain how the DNSP will optimise additional DER export capacity for system-wide net market benefits'.[54]

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46 SAPN rule change request, p. 18.

47 ibid p. 19.

48 The DEIP consultation process also considered the appropriateness of establishing an obligation to provide export services. DEIP Access and Pricing Reform Package: Outcomes report, June 2020.

49 TEC/ACOSS also proposed a number of obligations related to access, optimisation and the allocation of export capacity that are dealt with in the following chapters.

50 TEC/ACOSS rule change request, p. 11.

51 ibid.

52 TEC/ACOSS rule change request, pp. 11–12.

53 TEC/ACOSS developed this position based on the findings developed in CEPA's report: Distributed Energy Resources Integration Program – Access and pricing: Reform options, 9 April 2020.

3.2 Stakeholder views on the draft rule determination

3.2.1 Definitions

Including export services in the definition of distribution service

Overall, the majority of stakeholders expressed support for changes to the regulatory framework to recognise export services. In nearly all cases, this support extended to SAPN's proposal to make required changes to include export services within the definition of distribution service. [55]

ENA, SAPN and Citipower, Powercor and United Energy, while supportive of this definition change to recognise export services, expressed concern that a potentially unintended consequence of expanding the scope of 'distribution services' in the NER to include export services may expose distributors to additional liabilities, regarding interruptions to exports.[56] As such, ENA recommended an amendment to the NERR to extend the existing NERL immunity to export services. [57] Citipower, Powercor, and United energy also sought to clarify the intention of the draft rule to ensure that distributors maintain the right to curtail exports as part of network management and the efficient provision of export services.[58]

Jemena noted that the term export service is used in several rule amendments (clauses 6.6.3(b), 6.6.3A(c)(2)(i), chapter 11) but remains undefined. It considered a definition of export services should be added for the final rule change.[59]

Definition of retail customer and other amendments to terms in the NER

Stakeholders who addressed the considerations around the definition of retail customer and other changes to terms supporting the application of existing framework to export services agreed with the intent of the changes but sought clarity regarding several changes.

Jemena and SAPN both raised the consideration that the new term 'embedded generating unit operator' in Schedule 5A.1 of the NER no longer references an intention to operate or connect. [60] Under this interpretation, Jemena and SAPN suggest that connection arrangements may cease to effectively apply at the connection enquiry stage as they do as they do under current arrangements. That is, the stage of the connection process when a distributor is making a connection offer to a person, but that person is not yet operating or connected.

SAPN and Firm Power both sought clarification with regard to the application of the definition of 'distribution service end user'.[61] SAPN sought clarity on whether the AEMC intended for the

54 TEC/ACOSS rule change request, pp. 11–12.

55 Submissions to the draft determination: AGL, p. 4; Alinta, p. 2; Ausgrid, p. 2; Ausnet Services, p. 1; CEC, p. 1; DELWP, p. 1; ENA, p. 7; Essential Energy, p. 1; IEEFA, pp. 2-3; Origin, p.2; PIAC, p.2.

56 Submissions to the draft determination: ENA, p.14; Citipower, Powercor and United Energy, p. 3; SAPN, p. 11.

57 NERL, s316.

58 Citipower, Powercor, and United Energy acknowledges that Victorian distributors do not benefit from the statutory immunity provided by the NERL, s316, as the NERL does not apply in Victoria. They note that their deemed distribution contract seeks to limit liability by immunity provided by s120 of the NEL.

59 Jemena submission to the draft determination, p. 8.

60 Submissions to the draft determination: Jemena, p.7; SAPN, p. 4.

61 Submissions to the draft determination: Firm Power, p. 3; SAPN, p. 4;

definition of 'distribution service end-user' to include 'retail customers' and customers buying direct from the NEM.[62]

In its submission Enel X sought clarification on the application of the draft rule to embedded network Small Generator Aggregator (SGA) configurations. This is based on the interpretation that under the draft rule customers in SGA embedded networks configurations may be subject to multiple connection charges.[63]

3.2.2 Regulatory treatment of export services

Service classification

Views with regard to the classification of export services were strongly supportive of adopting the current process in the NER to service classification, whereby a service classification decision is arrived at during a framework and approach stage of a DNSP's regulatory determination.[64]

ENA, SAPN and Jemena, separately, raised considerations regarding the service classification of export services in the interim period between when the rules take effect and distributor's next regulatory determination wherein 'export services' would be formally classified by the AER. [65]

ENA and Jemena recommended that a transitional rule be put in place to allow for the treatment of export services as direct control services until a formal classification process occurs.[66] The stated intention of this proposal is to avoid the unintended classification of export services as unregulated or unclassified services, potentially triggering the functional separation rules under the AER's Electricity Distribution Ring Fencing Guideline.

Existing planning arrangements

The majority of stakeholders that commented on the application of the existing planning arrangements to export services supported their application.[67]

Endeavour Energy suggested that the existing planning and investment framework is largely fit for purpose for export services and that including additional reporting requirements for particular aspects of network services was to elevate them above import services and/or impose unnecessary costs.[68] Endeavour Energy also suggested that the requirement to include information in the overview document to accompany the regulatory proposal may be better included in the regulatory proposal document and attachments.[69] On the same point, SAPN and ENA suggested it would be disproportionate to require extensive detail in a plain

62 SAPN submission to the draft determination, p. 4.
63 Enel X submission to the draft determination, p. 2.
64 ENA submission to the draft determination, p. 7;
65 Submissions to the draft determination: ENA, p. 7; SAPN, p. 4; Jemena, p. 4.
66 Submissions to the draft determination: ENA, p. 14; Jemena, p. 4.
67 Submissions to the draft determination: AGL, p. 4; AEC, p. 3.
68 Endeavour Energy submission to the draft determination, p.5.
69 Endeavour Energy submission to the draft determination, p. 5.

language document, on costs and cost allocation approaches (and alternatives) for export services specifically under the NER draft rules: 6.8.2(c1)(3), (4), and (7).[70]

In a more general context, the AEC and Firm Power both raised considerations with regard to the RIT-D. The AEC suggested that the dollar threshold in the current framework for the RIT-D does not appropriately encourage DNSPs to make efficient planning and investment decisions with regard to distribution services (export or otherwise).[71] Similarly, Firm Power expressed the view that neither the RIT-D or the Demand Management Incentive Scheme (DMIS) are delivering a productive quota of non-network solutions to the market. Based on this, Firm Power suggested that there is a significant need to reform these schemes to encourage DNSP's to consider non-network solutions.[72]

Assessment process for DER related expenditure

Stakeholders also raised a number of considerations with regard to the assessment of expenditure on export related services.

The CEC supported the AER developing guidance for DNSPs to inform their proposals for export related expenditure,[73] while AGL suggested that the AER's Expenditure Forecast Guideline (EFA Guideline) doesn't currently contemplate expenditure for DER integration and suggested a number of revisions to the guideline to require specific information.[74] Similarly, Energetic Communities suggested the need for the EFA Guideline information with regard to the costs of upgrades to provide grid services and the justifications for these costs.[75] Citipower, Powercor, and United Energy recommended that the AER be required to undertake a more holistic review of the regulatory framework which considers how the provision of export services is reflected in the complementary EFA guidelines. [76]

Finally, Origin noted that there is often no clear distinction made between works to support export capacity and those to facilitate electricity supply to customers. They noted the important role of the expenditure assessment process in managing the types of investment that is then permissible.[77]

3.2.3 Amendments to the NERR

As noted in Section 3.2.1, ENA, SAPN and Citipower, Powercor and United Energy all sought clarification of the draft retail rule in order to give DNSPs the right to curtail exports as part of network management and the efficient provision of export services.[78] ENA recommended an amendment to the NERR to extend the existing NERL immunity under section 316 to export services.[79]

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70 Submissions to the draft determination: ENA, p. 5; SAPN, p. 5.
71 AEC submission to the draft determination, p. 3.
72 Firm Power submission to the draft determination, p. 4.
73 CEC submission to the draft determination, p. 1
74 AGL submission to the draft determination, p. 4.
75 Energetic Communities submission to the draft determination, pp. 4-5.
76 Citipower, Powercor, and United Energy submission to the draft determination, p. 3.
77 Origin submission to the draft determination, p. 3.
78 Submissions to the draft rule determination: ENA, p. 14; SAPN, p. 11; Citipower, Powercor and United Energy, p. 3.
79 ENA submission to the draft determination, p.14.

Related to the above issues, SAPN also recommended amendments to the Deemed Standard Connection Contract model terms to recognise, at a general level, the flexible nature of export services.[80] According to SAPN, these amendments are intended to recognise that DNSPs may need to temporarily interrupt or curtail exports services in a variety of circumstances, including where there is network congestion or if directed to do so (for example, by AEMO). To supplement this, SAPN also suggested that distributors should be allowed to develop distributor-specific terms and conditions that apply to the ongoing provision of export services.[81]

3.3 The Commission's assessment and final determination

3.3.1 Recognising export services in the regulatory framework

The Commission's final rule has been guided by its view that it is necessary to clearly recognise export services as distribution services in order to provide clarity for:

1. customers around their rights to access export services
2. DNSPs regarding expectations to provide export services.

A central outcome of the treatment of export services as distribution services is that the regulatory mechanisms under the existing arrangements – the service classification process, application of capital and operating expenditure objectives, and existing controls on network expenditure (assessment against capital and operating expenditure objectives, incentive schemes, ex post review and reporting etc) – will shape the regulatory treatment of export services. To minimise the regulatory burden and costs arising from the rule changes, the Commission concludes that an approach which continues to utilise the existing frameworks and mechanisms to support the provision of export services is appropriate and consistent with its broader approach to recognise the evolving role of DNSPs as a platform to connect, manage and enable DER integration.

To enable the effective application of the existing framework to export services, the Commission's final rule includes changes to the definition of "network" and a number of consequential changes to other terms related to what comprises a customer used in the regulatory framework. These changes and the Commission's responses to stakeholder feedback to the draft determination are discussed below.

Encompassing export services in the definition of distribution service

As a first step to recognising export services in the regulatory framework, the Commission's final rule makes changes to the NER to clarify that distribution services include export services. The Commission considers that this change is required to make clear how export services fit into the existing regulatory framework. This change is intended to provide clarity for customers around their rights to access export services and to DNSPs regarding expectations in relation to providing export services.

80 SAPN submission to the draft determination, p.12.
81 SAPN submission to the draft determination, pp.12-13.

To achieve this outcome, the final rule removes "to customers" in the definition of "network" in chapter 10 of the NER in order to remove the only direction-specific reference within the definitions related to "distribution service". This change is intended to remove any ambiguity as to whether "distribution services" only relate to the consumption of energy and the conveyance of electricity to customers.

This change in the NER (to support a clear interpretation that an export service constitutes a distribution service)should also be reflected in the AER's Distribution Service Classification Guidelines and associated Explanatory Statement. As such, the Commission's final rule includes in chapter 11 of the NER a transitional rule that the AER must review and where necessary amend that guideline to take into account the Amending Rule, by 1 July 2022.[82]

Overall, the Commission considers that these changes will provide regulatory clarity that an export service is a distribution service.

Based on stakeholder feedback, the Commission has given further consideration to the implication of expanding the scope of distribution services and the consequences of this for the liability that applies to DNSPs in the provision of export services. A discussion of the Commission's final rule and approach to DNSPs' liability for export services is located at the end of this section.

Regulatory implications of clarifying exports as a distribution service

As previously noted, an important aspect of the treatment of export services as distribution services is that the existing regulatory arrangements would then shape the regulatory treatment of export services. Taking into account stakeholder feedback, the Commission considers that the existing regulatory requirements, incentive schemes and controls that currently apply to distribution services are appropriate to be adapted to a DNSP's provision of export services. It considers that utilising existing regulatory mechanisms (where appropriate) will minimise the regulatory change and cost on industry. The approach also maintains, for the most part, a consistency in approach to the provision of distribution services by DNSPs.

In this case, the Commission is of the view that including export services within the scope of distribution services will therefore enable export services to be:

- explicitly considered by the AER in service classification;
- subject to the capital and operating expenditure objective in the NER, forming a mandate to invest effiently tto provide export services; and
- subject to existing regulatory controls on network expenditure – including assessment against capex and opex objectives, RIT-D, incentive schemes, ex-post review, benchmarking and reporting.

Service classification

On the basis that export services will be treated in a similar way to consumption services, the Commission considers that it remains appropriate that the AER should follow the process

82 NER clause 11.141.2(a).

outlined in the NER to arrive at a service classification decision during the Framework and Approach stage of a DNSP's regulatory determination.[83] Acknowledging stakeholder feedback, the Commission does not consider there is a need to specify in the rules how export services should be classified by the AER. This flexibility remains important because different aspects of export services may require a combination of standard control services (SCS) and alternative control services (ACS) classification (the current treatment of connection services differs between DNSPs). In addition, as the nature of export-based service offerings delivered by DNSPs continue to develop, the flexibility of the existing classification arrangements will provide the AER and DNSPs the ability to manage changes in the provision of export related services.

Capital and operating expenditure objectives

The Commission considers that for components of export services classified as SCS by the AER, the capital and operating expenditure objectives in the NER will apply.[84] This will mean that network businesses will have a new requirement to meet or manage customer demand for export services guided by the operating and capital expenditure objectives outlined in Box 2. The application of the operating and capital expenditure objectives will provide DNSPs with an 'identified need' – the objective the DNSP seeks to achieve by investing in the network – to meet and manage expected demand for export services. In proposing expenditure that is needed to meet target service levels based on forecast demand, DNSPs will be required to have regard to whether the expenditure associated with export services reasonably reflects the pre-determined capital and operating expenditure criteria in the NER.[85] The Commission is satisfied that the application of the capital and operating expenditure objectives and criteria to expenditure relating to export services will help define a prudent and efficient level of investment in export services and support the efficient provision of export services while minimising any additional regulatory burden associated with developing regulatory mechanism specific to export services.

BOX 2: OPERATING AND CAPITAL EXPENDITURE OBJECTIVES (NER CLAUSES 6.5.6 AND 6.5.7)

(a) A building block proposal must include the total forecast operating/capital expenditure for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to achieve each of the following (the operating/capital expenditure objectives):

- (1) meet or manage the expected demand for standard control services over that period
- (2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;

83 NER clauses 6.2.1 and 6.2.2.
84 NER clauses 6.5.6 and 6.5.7.
85 NER clauses 6.5.6 and 6.5.7.

- (3) to the extent that there is no applicable regulatory obligation or requirement in relation to:
  - (i) the quality, reliability or security of supply of standard control services; or
  - (ii) the reliability or security of the distribution system through the supply of standard control services,
  - to the relevant extent:
  - (iii) maintain the quality, reliability and security of supply of standard control services; and
  - (iv) maintain the reliability and security of the distribution system through the supply of standard control services; and
- (4) maintain the safety of the distribution system through the supply of standard control services.

Changes to support the application of incentive schemes to export services

The Commission has considered a number of terms used in the regulatory framework that present potential barriers to the application of incentive schemes to export services. Some of the rules on these matters refer to the provision of services to "retail customers" (for example, NER clause 6.6.3), as defined in chapter 10. There are also some references to "electricity consumers" (not defined) in NER Chapter 6 (for example, clause 6.5.6(e)). The Commission's final rule makes the following changes to these terms.

The definition of 'retail customer' in chapter 10 of the NER will be amended to give it an extended meaning based on the meaning it currently has in NER chapter 5A, which includes micro embedded generators and non-registered embedded generators.[86] While in many cases these will also be retail customers, that may not always be the case and extending the definitions will allow for new business models to emerge. The extended meaning would apply throughout the NER with some limited exceptions. In chapter 6, this would enable the application of incentive schemes to export services. The Commission notes it is at the discretion of the AER as to how regulatory mechanisms should apply to export services.

A new definition of 'distribution service end user' will replace 'electricity consumer' and would cover all retail customers and electricity consumers buying directly from the NEM ('Customers' under the NER) who are not retailers and have a connection to a distribution network, and electricity consumers in embedded networks.[87]

The definition of 'micro embedded generator' (used in the definition of 'retail customer') will be amended so that it extends to customers of MSGAs with micro EG connections. The result

86 The new definition excludes non-registered embedded generators who elect to connect under Chapter 5, as they are not intended to be treated as retail customers for the purposes of retail tariffs in chapter 6 or in other provisions dealing with retail customers in the NER.

87 NER Chapter 10.

will be to bring these customers within the scope of the basic connection service arrangements in Chapter 5A.

Application of Amending rule to Small Generator Aggregators (SGA) operating in embedded networks

The Commission notes Enel X's request to clarify the treatment of the changes under the draft determination to embedded network SGA configurations. Enel X raised concerns that the draft rule would require SGAs in embedded network configurations to:

- pay for connection to the DNSP, in addition to any connection charges paid by the customer via the retailer at the parent connection point,[88] and
- pay export charges at the child connection point.[89]

The Commission has considered the application of the draft rule to embedded network SGA configurations and instances where embedded generation in an embedded network may want to export to the embedded network at its child connection piont, or into the DNSP's network through the parent connection point.

In relation to connection services, the changes to chapter 5A made by the final rule are not intended to create a new basis on which a DNSP may require the payment of connection charges for connection of a generator at a child connection point in an embedded network. However, the Commission notes that under the existing arrangements in chapter 5A, such a connection may indirectly (but appropriately) result in connection charges due to connection services provided in relation to the parent connection point. For a new connection for an embedded network, the connection charges for the parent connection point may reflect export capacity sought at the parent connection point to allow export from the generator connected within the embedded network. For an existing connection, charges may be payable under chapter 5A if creating the embedded network or connecting a generator within the embedded network is a connection alteration under chapter 5A.

In relation to the ongoing provision of distribution services, under the NER, DNSPs bill retailers under chapter 6B and other Distribution Customers and Embedded Generators under chapter 6.[90]

- In relation to charges under chapter 6B, these are applicable in relation to shared customers. Under the definition of shared customer in NER clause 6B.A1.2, as amended by this final rule, a customer at a child connection point is not a customer of the DNSP. This is on the basis that a small generating unit that is connected at a child connection point is connected to the embedded network, not to the distribution network to which the embedded network itself is connected.
- In relation to charges under chapter 6, an SGA is not an Embedded Generator (as it is not registered as a Generator) and (in its capacity as an SGA) is not a Distribution Customer.[91]

88 Enel X referenced rule 5A.E.4 of the draft rule. See Enel X, submission to the draft determination, p.2.

89 Enel X gave the following clauses of the draft rule as examples: 6.18.5(i), 6.20.1(b), 6B.4A.1 and 6B.A2.2(d).

90 NER clauses 6.20.1 and 6B.A1.1(b).

91 NER chapter 10, definitions of Embedded Generator and Distribution Customer.

The DNSP would bill the Distribution Customer at the parent connection point, rather than the SGA in the embedded network, either under chapter 6B or chapter 6.

On this basis, the Commission is satisfied that the final rule is suitable in its application to embedded network SGA configurations, and will not result in double charges to the SGA.

Consequential changes to support the application of the existing framework to export services

As discussed in section 3.2.1, several stakeholders sought clarification regarding changes to terms supporting the application of the existing framework to export services. In particular, Jemena and SAPN both raised the consideration that the new term 'embedded generating unit operator' in Schedule 5A.1 of the NER no longer referred to an intention to operate or connect.[92] The Commission's final rule extends this clause to a person who proposes to be an embedded generating unit operator.[93]

A further change from the draft determination relates to the principles governing assignment or reassignment of retail customers to tariff classes, and the pricing principles that apply when tariff structures are determined. In addition to amending references to 'usage' and 'usage profile' in the principles to clarify that these refer to use of distribution services (covering import and export) and not merely to use of electricity,[94] the final rule makes changes to allow for customer choice to be taken into account as part of tariff reassignment. The final rule established this requirement by adding a customer's "intended usage" of distribution services to the principles that the AER must have regard to in formulating provisions of a distribution determination governing the assignment of retail customers to tariff classes.[95]

Other consequential changes to the NER will support the application of the existing framework to export services.

- A change to the definition of 'supply service' clarifies that it covers services provided for both export and import of electricity.[96] This change is intended to clarify the meaning for users of the NER and not change the existing meaning, since as a matter of interpretation, a 'supply service' already covers delivery of electricity to or by customers.
- In the distribution service classification provisions and in provisions dealing with distribution determinations, changes clarify that references to 'users' means users of the relevant service (which may relate to consumption or export), not users of electricity.[97]

92 Submissions to the draft determination: Jemena, p. 7; SAPN, p. 4.

93 NER Schedule 5A.1, Part B paragraph (a). The references to "embedded generating unit operator" in subparagraphs (2), (2a), (6), (7) and (8)-(13) are appropriate because these provisions relate to the time after the connection contract has been entered into, when the person has become an embedded generating unit operator.

94 NER clauses 6.18.4(a) and (b), and 6.18.5(f)(2) and (h).

95 NER clause 6.18.4(a)(1)(i).

96 NER clause 5A.A.1. Refer also to NER, Schedule 5A.1, Part B, paragraph (b)(1).

97 For example, NER clauses 6.2.2(c)(2) and 6.2.5(c)(2).

- Similarly, in the provisions related to demand management incentive schemes, innovation allowances and billing, changes clarify that 'demand' refers to demand for distribution services, not demand for electricity.[98]
- The tariff reassignment obligations of retailers are amended to remove specific reference to electricity consumption, broadening the circumstances in which the retailer may consider that the existing tariff should no longer apply.[99]

Amendments to the NERR to make clear that they apply to supply services bi-directionally

Consistent with the Commission's draft position, the final rule makes changes to the NERR to clarify that retail customers should be given access to metering data about exports in the same way they are given access to consumption data and to recognise the provision of export services by distributors.

The NERR require distributors and retailers to give a retail customer or a customer's authorised representative information about the customer's energy consumption, if requested.[100] The final rule extends these requirements to information about exports, and makes similar changes to the corresponding provisions in the model contracts in the NERR.[101]

The final rule amends the model terms and conditions for deemed standard connection contracts in the NERR to recognise the provision of export services by distributors. References to supply are replaced with references to supply services, supported by a new defined term to explain that the supply service covers both imports and exports.[102]

For the avoidance of doubt, the Commission notes that the NERR apply to retailers in relation to the sale of electricity and gas to customers, and to distributors in relation to the provision of customer connection services (including supply services) to customers.[103] For the NERR, the term 'customer' is defined in the NERL and does not cover Market Small Generation Aggregators or the customers of exempt retailers. The wider meaning of 'retail customer' in the NER will not apply under the NERR.

Amendments to the NERR to clarify DNSP and retailer liability for export services and the terms and conditions of export services

The NERL and NERR provide important customer protections relating to the supply of energy to customers as an essential service. These include rules about interruptions to supply and disconnections. The NERL also provides immunity for DNSPs and retailers in relation to any failure to supply energy, provided that this is not due to an act or omission by the DNSP or retailer in bad faith or through negligence.[104] Based on stakeholder feedback, the Commission

98 NER clauses 6.6.3(b), 6.6.3A(c)(2) and 6.20.1(a).

99 NER clause 6B.A3.2(a)(1).

100 The provisions require the data to be provided in accordance with the metering data provision procedures made under the NER.

101 NERR rules 56A and 56B (retailers), 86A and 86B (distributors); NERR Schedule 1, clause 9.4A in the model terms and conditions for standard retail contracts; NERR Schedule 2, clause 15.2A of the model terms and conditions for deemed standard connection contracts (DSCC).

102 NERR, Schedule 2, Preamble and throughout.

103 For example, see section 16 of the NERL.

104 NERL s316.

has given further consideration to the potential for DNSPs (and retailers) to be exposed to liabilities regarding interruptions to export services.

While recognising that export services are not an essential service, the Commission considers that in certain circumstances it is appropriate for immunity to extend to retailers and distributors. To this end, the Commission has included a final rule in the NERR to extend some aspects of the existing NERL section 316 immunity to export services.[105] The final rule is modelled on section 316 of the NERL which gives immunity for partial or total failure to supply energy except where due to negligence or bad faith; the new rule gives immunity for any partial or total failure to take supply of electricity from premises, with the same exceptions.[106]

Like section 316, the new rule does not allow a retailer or distributor to amend the immunity under a contract with a small customer so, for example, liability to a small customer for negligence could not be waived or capped. However, the rule allows this principle to be modified by a jurisdictional instrument. This allows for the approach taken in New South Wales and South Australia to section 316 of the NERL.

For transparency, the DSCC and standard retail contract are amended to refer to this immunity.[107]

Amendments to the NERR to clarify when export services may be interrupted or curtailed

Under the NERR, DNSPs may temporarily interrupt the supply of consumption services due to several circumstances.[108] This includes where there is a planned or unplanned interruption, or where this accords with any applicable tariff or under a contract with a retailer.[109] Based on stakeholder feedback,[110] the Commission's final rule clarifies, in the DSCC, the circumstances in which the DNSP may temporarily interrupt or curtail the supply services provided for export from small generators connected to the distribution system.[111] These circumstances include, in addition to those set out for consumption services, the ability to interrupt and curtail supply at the direction of a relevant authority or in accordance with the energy laws.

In addition, the final rule clarifies in the DSCC that DNSPs who have remote access to customer equipment have the ability to use it,[112] in accordance with the energy laws, to interrupt or curtail supply services provided to take supply from the customer's DER into the distribution system.[113] As outlined further below, DNSPs will be required to publish a 'plain

105 NERR rule 147B.

106 NERR rule 147B.

107 NERR schedule 1, standard retail contract clause 7.2; NERR schedule 2, DSCC clause 8(d).

108 NERR Part 4, Division 6; schedule 2, DSCC clause 10.

109 NERR schedule 2, DSCC clause 10.1.

110 Submissions to the draft determination: ENA, p. 14; SAPN, p. 11; Citipower, Powercor and United Energy, p. 3.

111 NERR schedule 2, new DSCC clause 10.5.

112 Submissions to the draft determination: ENA, p. 14; Citipower, Powercor and United Energy, p. 3; SAPN, p. 11.

113 NERR schedule 2, DSCC clause 10.6. "Energy laws" include jurisdictional laws and regulations; jurisdictions differ in relation to the powers given to distributors to curtail DER. This amendment to the DSCC aims to draw customers' attention to the potential for curtailment under existing regulation, without providing distributors additional curtailment rights.

language' document giving information about technical requirements for small generator connections and related information such as the use of the remote access equipment.[114]

The final rule also amends a note in the DSCC to inform customers that the energy laws may allow distributors to disconnect small generators in circumstances additional to those listed in the DSCC's general "Disconnection of supply" provision.[115]

Amendments to the NERR to clarify the ongoing terms and conditions of export services

Terms and conditions for connection services are set out in the initial connection contract (the model standing offer (MSO) for a basic connection service, and negotiated contracts for all other connections).[116] Separately from the connection contract, once customers start to receive supply through their connection, they have a deemed standard connection contract (DSCC) with their distributor.[117] The DSCC establishes the terms and conditions upon which the DNSP will provide ongoing supply services once a new connection is established.

Various stakeholders suggested that while these arrangements may be suitable for consumption services, the provision of export services may need to be more flexible and tailored to the circumstances of individual DNSPs. [118] These stakeholders were concerned that the NER and NERR framework for the connection contract and DSCC do not explain how terms and conditions of the initial connection offer are rolled forward when the customer at the connection point changes, for example due to sale of the premises. While distributor-specific terms and conditions can be added to the MSO (subject to AER approval) and to negotiated contracts, these initial contracts are not suited for establishing ongoing requirements these stakeholders considered were necessary in the provision of export services. To address this, SAPN and ENA proposed amendments to the NERR to provide a mechanism for the AER to approve alterations to a distributor's DSCC to accommodate the way export services are provided over each DNSP's network. [119]

In light of submissions and other feedback provided by stakeholders, the Commission considers it is appropriate to support DER customers understanding their obligations regarding the terms and conditions that are necessary to accommodate the provision of export services (for example, ongoing technical requirement for DER). The Commission's final rule builds on the existing processes under the DSCC which contemplate that a connection for micro-embedded generators exporting to the network may be subject to additional terms and conditions.[120]

The Commission's final rule introduces a new provision in the NERR to require DNSPs to publish a plain language description of the technical and related requirements for small

114 NERR rule 147A; schedule 2, DSCC clause 10.6.
115 NERR schedule 2, DSCC clause 12.1, note.
116 See NER chapter 5A.
117 See NERR schedule 2.
118 Submissions to the draft determination: ENA, p. 14; Citipower, Powercor and United Energy, p. 3; SAPN, p. 11.
119 Submissions to the draft determination: ENA, p. 14; SAPN, p. 14.
120 NERR schedule 2, DSCC clause 6.6(a).

generators.[121] The DSCC refers to this information and DNSPs are required to give customers a copy on request.[122] This information is intended to be an effective means to communicate DNSP expectations for, for example, ongoing servicing and inspection, information about the use of remote control equipment and data from the equipment. The Commission will recommend that the requirement to provide this information be classified as a Tier 2 civil penalty provision under the NERR, for consistency with other similar provisions in the NERR.[123]

Some stakeholders raised questions on how DNSPs would communicate the conditions of each export tariff governing export limits and service levels to customers. The Commission considers it is appropriate that, as these conditions relate to tariffs, these conditions are described as part of the export tariff, in the TSS.[124] To the extent retailers pass through export charges to customers, retailers will be responsible for explaining the charges and associated conditions to customers under the NERR, as export charges will form part of the tariffs under the retail contract. Retailer information provisions in the NERR have been amended to clarify this.[125]

As such, the Commission considers the final rule determination provides clear obligations on DNSPs to make better information available to customers about their obligations, which will help customers make optimal consumption choices and investment decisions in behind the meter devices. Accordingly, the Commission considers this approach is likely to promote regulatory clarity and certainty and the NEO and NERO.

3.3.2 Enabling the efficient provision of export services

Having regard to the views of stakeholders and its own analysis, the Commission considers that the existing distribution planning and investment framework – which includes the DAPR, demand side engagement obligations and the RIT-D – is largely appropriate and fit-for-purpose to encourage DNSPs to make efficient planning and investment decisions with regard to export services.

However, the Commission's final rule supplements the existing framework with a number of new reporting requirements to increase transparency around planning and investment opportunities for export services. Specifically, the final rule introduces requirements for a DNSP to provide, as part of the overview paper accompanying the DNSP's regulatory proposal:

- information on how it intends to manage the integration of DER through the different elements of its regulatory proposal (i.e. connection services, pricing, expenditure); and
- an explanation of the DNSP's proposed approach against alternative options.

In addition, the Commission requires the AER, through its Expenditure Forecast Assessment Guidelines, to develop guidance to assist DNSPs in their expenditure proposals (e.g. by

121 NERR clause 147A.
122 NERR schedule 2, DSCC clauses 6.6(a) and 10.6.
123 See Appendix A.
124 NER Chapter 6.
125 NERR clause 19, in relation to standard retail contracts, and clause 64(1)(a1), in relation to market retail contracts.

outlining the type of information and analysis that should be included) and provide clarity with regard to the assessment of export related expenditure.

The Commission's final rule and the reasons for its decision are explained below.

Suitability of existing planning framework for export services

As previously mentioned, TEC/ACOSS proposed the introduction of a DER integration strategy (DERIS) which sets out requirements around the type of information that DNSPs would be required to provide in relation to planning and investment for export services (see section 3.1.2).

While supportive of the intention of the DERIS, stakeholders generally considered and the Commission agreed that applying the existing framework with minor additions would achieve similar outcomes. Therefore, in addition to existing DAPR reporting requirements set out in schedule 5.8 of the NER, the Commission's final rule includes three changes to existing arrangements to further support DNSPs to achieve efficient planning and investment outcomes and increase transparency for stakeholders around DSNPs' planning and investment decisions for export capacity.

First, the final rule introduces a requirement under the distribution annual planning process for DNSPs to report on demand for distribution services by embedded generating units and identify limitations on their network caused by this forecast demand.[126] This approach mirrors that which is in place for forecast load presently and would support the provision of information to capture the key drivers of expenditure. To supplement this change, the Commission's final rule also amends the DAPR requirements to tailor the forecasting information requirements so that they are suitable in the context of distribution services provided by embedded generating units.[127]

Second, the final rule includes a new obligation on DNSPs to provide information, as part of the overview paper accompanying the DNSP's regulatory proposal, on how they intend to manage the integration of DER. The final rule requires a DNSP to present information specifically relating to how DER integration is managed through the different elements of its regulatory proposal (i.e. connection services, pricing, expenditure) and discuss how its proposal is appropriate to meet expected consumer outcomes.[128] This obligation will support DNSPs in communicating with customers and DER providers as part of planning for and undertaking investments in export services and will improve transparency for stakeholders.

Third, the final rule establishes a requirement in the overview paper for DNSPs to explain their proposed approach to export related planning and investment against alternative options.[129] Based on stakeholder feedback, the final rule clarifies that DNSPs' reporting requirements include:

126 NER clauses 5.13.1(d)(2) and (d1).
127 NER s5.8.
128 NER clauses 6.8.2(c1)(1) and (2).
129 NER clauses 6.8.2(c1)(3), (4) and (7).

- an explanation of the approach to identifying demand for (and providing for) distribution services for supply from DER;[130]
- the trade-offs between different options the network considered and why the network has proposed the particular approach around DER integration and management;[131]
- a comparison of the DNSP's proposed capital expenditure to support the provision of export services against its actual or committed capital expenditure and an explanation of any material difference.[132]

These requirements are intended to ensure that relevant information is made accessible to network users with regard to current and future opportunities around export services.

As such, the Commission considers that the final rule will contribute to achieving the criteria of regulatory clarity and certainty for DNSPs, as well as increasing transparency for consumers and other stakeholders around DNSPs' planning and investment decisions. Accordingly, it considers this approach is likely to promote the NEO.

Establishing a clearer assessment process for DER related expenditure

Having considered stakeholder views and undertaken its own analysis, the Commission continues to consider that the existing investment assessment framework in the NER is, in general, appropriate and fit-for-purpose to support the AER in assessing DER integration expenditure.

Currently, the RIT-D rules establish the processes and criteria that DNSPs are to meet as part of making an investment decision. The RIT- D rules require DNSPs to consider all credible options (network and non-network) when seeking to address identified network needs.[133] The aim is to identify the option that maximises the present value of the net economic benefit to all those who produce, consume and transport electricity in the NEM.[134] The RIT-D must also consider applicable classes of market benefit specified in the rules (and any additional classes of market benefit specified by the AER).[135] Guidance on the methodology for valuing these market benefits is set out in the AER's RIT-D Application Guidelines.[136] With regard to considerations raised by stakeholders on the treatment of non-network solutions as part of the RIT-D, these may be better considered via processes beyond this rule change.[137]

Consistent with existing arrangements, the Commission considers that DNSPs should be required to use the RIT-D and associated consultation process to test the efficiency of credible options for export related investment projects which meet the RIT-D cost threshold and are not otherwise exempt projects.

130 NER clause 6.8.2(c1)(3).
131 NER clause 6.8.2(c1)(4).
132 NER clause 6.8.2(c1)(7).
133 NER clause 5.15.2(c).
134 NER clause 5.17.1(b).
135 NER clause 5.17.1(c).
136 AER, Application guidelines regulatory investment test for distribution, 2018, pp. 35-36.
137 AEC, submission to the draft determination, p. 3.

However, it is important to recognise that the general characteristics of distribution investments have evolved over time. For example, the rise in DER and the increased sophistication of demand management capabilities have shown that distribution investments are increasingly delivering benefits that have traditionally been seen at the transmission level.[138] Consistent with previous recommendations, the Commission considers that the quantification of market benefits is becoming increasingly important as the characteristics of traditional distribution investments have evolved.[139]

Determining a consistent value (or methodology) against which DNSPs' business cases for investment in DER integration can be justified and assessed is a critical part of developing a pathway for future DER expenditures. DNSPs are already preparing or considering how to prepare business cases to justify expenditure on DER integration projects. This presents the risk of a lack of consistency in approaches but also raises considerations about how the benefits of the expenditure are likely to accrue. As such, the Commission considers there should be some further guidance provided by the AER around the type of information it would like to see from DNSPs and how this would feed into the expenditure assessment process, particularly in relation to how the benefits arising from expenditure to provide network hosting capacity are valued.

On this basis, the Commission requires the AER to update its Expenditure Forecast Assessment Guidelines to provide guidance on its approach to the assessment of DER driven investment.[140] The Commission acknowledges the ongoing work in this area by the AER, particularly through its consultation on its approach in assessing DER integration expenditure and its study on Value of DER (VaDER). This work provides a strong basis for the development of guidance on DER integration expenditure as part of updating the Expenditure Forecast Assessment Guidelines. Stakeholders are encouraged to raise considerations with regard to Expenditure Forecast Assessment Guidelines as part of the AER's consultation on this process.

This final rule is intended to support better outcomes for DNSPs through improved transparency, consistency and predictability in the regulatory process. The final rule should also improve customer outcomes by promoting efficient and prudent investment in capacity for export services and in assisting the AER in its assessment of proposed expenditures.

138 This point is discussed by the AER in its decision on the application guidelines for the regulatory investment tests for transmission and distribution. In that report, the AER acknowledges stakeholder views that DER can increasingly affect wholesale markets. See: AER 2018, Final decision, Application guidelines for the regulatory investment tests, pp. 37-38.

139 AEMC, Review of stand-alone power systems, 30 May 2019, p. 33.

140 NER clause 11.141.2(a).

4 INCENTIVE ARRANGEMENTS AND SERVICE LEVELS

This chapter outlines the issues raised in the rule change requests, and the Commission's final rule determination with regard to:

- the incentive arrangements for efficient delivery of export services
- the export service levels that DNSPs are expected to provide to customers and connection arrangements for DER
- the development of customer export curtailment values (CECV) to guide efficient export planning, investment, and incentives decisions.

Changes between draft and final

The stakeholder feedback received in response to the draft rule determination generally supported the draft rule's approach to providing efficient incentives, efficient service levels and the CECVs. The key areas of concerns raised by the stakeholders included the export service performance reporting arrangements lacking flexibility and the inefficient use of static zero export limits under the connections process denying customer access to export services.

The Commission has considered stakeholder feedback and the final determination provide flexible arrangements for improving the transparency of export service performance. The Commission considers that the final rule will provide for an enhanced performance reporting framework that delivers more relevant information. To address the continuing concerns regarding the use of static zero export limits, the Commission has made changes to the connection framework so that customers cannot be denied access to export services through inefficient use of static zero export limits.

The Commission has also adjusted the drafting of the rules aimed at supporting the development of incentive arrangements for exports to provide further clarity. An overview of the Commission's final decision is provided in Box 3.

Other relevant information

The full summary of stakeholder feedback received in response to the approach in the draft rule to incentives, efficient service levels and the CECVs can be found in Appendix C. For the relevant background information on current regulatory arrangements for these matters, please refer to the respective sections in chapter 5 of the draft rule determination.

BOX 3: OVERVIEW

Incentive arrangements

- The Commission considers that customers will benefit from the application of incentive arrangements to export services to provide for their efficient delivery to customers. 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 customers that use the network to export.

- To support balanced incentives for efficient delivery of export services, the Commission's final rule introduces a requirement for the AER to undertake a review by 31 December 2022 to consider arrangements, which may include the Service Target Performance Incentive Scheme (STPIS), for providing performance incentives for export services.
- To provide greater flexibility to the AER in implementing export service performance incentives, the final rule amends the factors that need to be considered by the AER in developing the STPIS and adjusts other parts of incentives framework to allow the AER to consider a broader range of incentive tools if necessary.

Service levels and connection arrangements

- In line with the current arrangements for consumption service reliability, an extended STPIS (if developed as a result of the AER's review) would guide export service levels that DNSPs are expected to provide to customers. Some jurisdictional authorities may also seek to set service standards covering the performance of export services that better meet their jurisdictional circumstances.
- To clarify customer rights to access the distribution network for exports, a new provision has been introduced under which a small customer seeking to connect to the distribution network for exports cannot be offered a connection with a static zero export limit, unless one of the exceptions provided in the AER's connection charge guideline applies or the customer requests the zero limit.
- The Commission's final rule does not specify minimum export capacity rights for customers seeking to connect for exports as proposed by SAPN and TEC/ACOSS. The Commission considers that changes to the planning, investment, incentive and connection arrangements under the final rule will collectively support efficient customer access to export services by promoting efficient investment in and efficient allocation of export services.
- To promote greater transparency of DNSPs' export service performance, the Commission's final rule introduces an export services performance reporting framework. The AER will be required to prepare and publish information about the performance of each DNSP in providing export services to customers over the previous year.
- The current connection arrangements provide sufficient flexibility and options for customers to negotiate additional export capacity.

Customer export curtailment values

- To support efficient investment in export services and enable customers to receive export service that better suit their needs, the Commission has also made a rule requiring the AER to develop a methodology for and to regularly calculate the customer export curtailment values (CECV).

4.1 Incentive arrangements for export services

4.1.1 Rule change requests

SAPN proposal

In its rule change request, SAPN considered that export services should be subject to financial incentive schemes that promote efficiency in their delivery and outcomes that customers support – consistent with the revenue and pricing principles and NEO.[141] SAPN considered that there is no apparent barrier to applying the majority of existing incentive schemes (providing it is clear that 'distribution services' include export services) and that the STPIS is the principal incentive scheme requiring work to adapt it to apply to export services. It did not propose for the NER to mandate the approach that the AER should take.[142]

The rule change request from SAPN also suggested that an adapted STPIS for export services would ideally be established progressively over a period of time, to build confidence in requisite measurement processes, systems and datasets, as occurred when the STPIS was first applied to consumption services. SAPN proposed that in that interim period, until the STPIS is operational, a reporting regime could be applied to encourage effective management of performance. SAPN also noted that there is also an intrinsic incentive for networks to manage performance so as to minimise customer complaints.[143]

TEC/ACOSS proposal

The TEC/ACOSS proposal seeks to encourage networks to make the best use of existing infrastructure to maximise DER exports. It suggests that the STPIS under clause 6.6.2 of the NER should be amended to include a component related to exports.[144]

4.1.2 Final rule determination on incentive arrangements for export services

Following the recognition of export services in the regulatory framework (as discussed in chapter 3), there is a need to consider the applicable incentive arrangements.

The Commission considers that like other distribution services, export services should also be subject to incentives for efficient delivery. The incentive approach to regulation used in the NER is the foundation of the regulatory framework and provides network businesses an incentive to become more efficient over time. The extension of the incentive-based approach to export services is likely to deliver long term benefits to customers in the form of reduced costs and better quality of service.

The following sections outline the Commission's approach to extending the incentives framework to export services.

141 SAPN rule change request, pp. 19–20.
142 ibid.
143 ibid, p. 20.
144 TEC/ACOSS rule change request, p. 11.

Existing arrangements are unlikely to incentivise efficient delivery of export services

The Commission considers that incentive framework in the NER, if left unchanged in this rule change, could incentivise DNSPs to reduce expenditure through the application of capital expenditure sharing scheme (CESS) and efficiency benefit sharing scheme (EBSS) without providing effective incentives for DNSPs to maintain and improve export service performance.

This is because currently the STPIS does not include performance measures reflecting the relevant attributes of the export services.[145] For example, one of the potentially desirable attributes of the export service could be the capacity that is available to customers to export, however the current STPIS does not include performance parameters for export capacity. This means there could be an incentive for DNSPs to reduce costs at the expense of export service quality.

If there are no incentive schemes with performance parameters for export services, there is a risk that DNSPs may decide to not incur or to defer the expenditure needed to deliver efficient levels of export service. The provision of lower than desirable levels of export service performance would not be in the long term interests of consumers.

How the incentives will be realigned for DNSPs - overview

To provide balanced incentives to DNSPs, the existing incentive arrangements could be adjusted to extend the STPIS to include export service performance parameters, or alternative arrangements such as a new incentive scheme targeting export services could be developed and introduced. As discussed further below, the final rule requires the AER to conduct a review of incentive arrangements (which may include a STPIS) for export services, and make its recommendation by the end of 2022.

The Commission determined not to prescribe the details of an export incentive scheme in the NER as this would be inconsistent with the approach to other incentive schemes under the current framework.

The Commission considers that the extension of an incentive scheme such as STPIS to exports is likely to promote the NEO and be in the long term interest of consumers because it will lead to a better alignment of commercial incentives of DNSPs with the interest of consumers and promote efficient delivery of export services. DNSPs will be incentivised to reduce the cost of delivery of export services, will share the efficiency benefits with customers and will deliver a level of export service that better meets their customers' expectations.

There is also strong stakeholder support for the extension of STPIS to exports.

Factors to be considered if the STPIS is extended for export services

The rules outline the factors that the AER must take into consideration in developing and implementing the STPIS.[146] The Commission considers that the factors listed in the NER, if

145 Other than the incentives to reduce unplanned network outages affecting both consumption and export services provided through the reliability component of the STPIS.

146 NER clause 6.6.2(b)(3).

not amended in this rule change, could limit the approach that the AER could take in extending the STPIS to exports.

The final rule amends these factors so that they could be applied to a STPIS covering export services as well as consumption services. The Commission considers that a common set of factors are appropriate given that the STPIS is intended to cover the service performance of DNSPs in a broad manner instead of only applying to certain performance characteristics of the services e.g. service reliability.

The Commission's final rule makes amendments to recognise that an extended STPIS would need to apply to small exporters as well as consumers of electricity, by referring to benefits to distribution service end users instead of electricity consumers.[147]

The final rule also amends the factor that previously required the AER to consider customer willingness to pay for improved performance in the delivery of the services.[148] The final rule makes this factor broader, requiring the AER to consider the value to distribution service end users of improved performance. The Commission considers that this amendment is appropriate to provide the AER greater flexibility in measuring the value to customers (and other small exporters) from improved performance. More specifically, the Commission considers that amendment is necessary to encompass the value to customers of enhanced levels of export service as captured under the Customer Export Curtailment Values (CECV) framework (see section section 4.3). The amendment also addresses stakeholder concerns regarding the current factors not being broad enough to capture the wider range of benefits associated with DER exports.

For the reliability element of the STPIS, this factor guides the AER to consider the value to customers of enhanced service reliability as established using the Values of Customer Reliability (VCR) framework. The Commission notes that there may be several different approaches to measuring the value that customers place on service reliability. While using a willingness to pay survey (as implied by the current wording of clause 6.6.2(b)(3)(vi)) is one way to measure VCR, it is not the only way. The rules on developing the VCR (rule 8.12) do not prescribe a methodology that the AER must use for calculating VCRs, apart from requiring that the AER engage directly with customers and have a mechanism for annual adjustment. The Commission considers that it could be inconsistent to provide flexibility to the AER to decide the appropriate methodology under the VCR rule while limiting the AER to a particular type of methodology under the STPIS framework. It could potentially limit the AER from choosing a preferable methodology for VCR in the future. The amendments to clause 6.6.2(b)(3)(vi) in the final rule address this issue.

The Commission notes concerns raised by some stakeholders that the AER may need to take into consideration other factors such as forecasts of the uptake of DER. To address such concerns, the Commission has amended the factors to explicitly allow the AER to take into consideration other factors that it considers relevant.[149]

147 Amending NER clause 6.6.2(b)(3)(i). The new defined term 'distribution service end user' is discussed in chapter 3.
148 NER clause 6.6.2(b)(3)(vi).
149 New clause 6.6.2(b)(5).

Minimal regulatory barriers to extending the STPIS

The Commission notes that apart from the factors to be considered by the AER needing adjustment, there are minimal regulatory barriers for the extension of STPIS to exports by the AER.

Currently under the NER, the AER is required to develop and publish a STPIS to provide incentives for DNSPs to maintain and improve performance.[150] This could also include performance of export services. The current rules also provide flexibility for the AER to amend or replace the STPIS in accordance with the distribution consultation procedures.[151] Flexibility for the AER to provide the DNSPs with incentives that promote economic efficiency is also provided under the NEL.[152]

Practical challenges in extending the STPIS

Although there are minimal regulatory barriers to extending the STPIS, there could be practical challenges and complexities to be overcome in extending it to exports, as highlighted by several stakeholders. The challenges could include defining robust performance metrics for exports, the availability of reliable and consistent performance data due to low visibility of LV parts of the network and the need to ensure DNSPs are only rewarded and penalised for factors within their control. However, it is not clear that these practical challenges would prevent the AER from being able to extend STPIS to export altogether. While there could be complexities involved in extending the STPIS, other approaches such as a new incentive scheme are also likely to have associated challenges. Other approaches are not as well developed and may lead to a departure from the current approach to incentive-based regulation in the NEM.

Final rule supports the development of incentive arrangements for exports

Given the potential practical challenges to extending the STPIS to exports discussed above, the final rule requires the AER to undertake a review to consider arrangements, which may include STPIS, to provide incentives for DNSPs to provide efficient levels of export services.[153] The final rule requires the AER to consider arrangements that incentivise the efficient delivery of export services rather than solely focusing on the maintenance and improvement of services. For example, under a scenario where it is not economical to increase DER hosting capacity but more customers are forecast to use export services, then the efficient level of service to be delivered to each customer on average may be lower than it was for the previous regulatory control period.[154]

The report on this review is to be published by 31 December 2022. The review should consider the practical feasibility of extending the STPIS to exports and outline an approach to providing balanced incentives for exports services. For clarity, the Commission notes that the

150 NER clause 6.6.2(a).

151 NER clause 6.6.2(c).

152 NEL section 16(2), referring to the Revenue and Pricing Principles in section 7A.

153 New NER clause 11.141.3.

154 It may not be economical to increase hosting capacity where the overall system wide benefits of providing additional hosting capacity are lower than the associated system wide costs.

review may suggest an approach to providing service performance incentives for export services that are not limited to an s-factor type scheme.

To undertake this review, the AER may need to collect relevant information from DNSPs and test the feasibility of certain metrics through paper trials. After this is complete, another process may need to follow to consult, design and publish the extended Scheme.

The Commission considers this rule will provide stakeholders greater certainty on the timeliness and approach for the provision of incentive arrangements for exports. The December 2022 timeline to undertake the review balances the need to have effective incentive arrangements for export services in place in a timely manner with the need to allow for sufficient time to be able to undertake a thorough review.

The Commission notes that under this timeline, the updated incentive arrangements may not apply to DNSPs in New South Wales, the Australian Capital Territory, Northern Territory and Tasmania for their 2024-2029 regulatory control period. Given the potential practical challenges and complexities involved in developing export incentive arrangements, the Commission considers that it is appropriate to provide the AER discretion on the timing of any new scheme's implementation and not require an implementation time-frame in the final rule. The Commission also considers that it would not be appropriate to provide for an early application of the export incentive arrangements prior to the arrangements being defined by the AER. The AER's review of incentive arrangements can make recommendations regarding mid-period implementation of the proposed approach.

The final rule does not require the AER to conduct this review as a standalone project. This review could be conducted as part of a broader review of incentive arrangements should the AER consider that it is desirable to conduct a more holistic review of incentive arrangements for DNSPs under the NER. The Commission notes that the AER intends to commence a broad review of the existing incentive schemes including the STPIS in the second half of 2021. The broader review of the incentive arrangements should address stakeholder concerns regarding the existing incentive arrangements and balance the provision of export services with all other incentive arrangements.

Flexibility for the AER to use other existing incentive schemes

The Commission has also considered whether regulatory barriers could limit the AER from considering other approaches to providing incentives, if deemed appropriate. The final rule provides greater flexibility to the AER to consider the use of a broader range of tools for providing incentives for efficient delivery of export services. Amendments made under the final rule provide more scope for the AER to consider the application of the DMIS, DMIA and the small-scale incentive scheme to export services.[155]

155 See amendments to NER clauses 6.6.3(b) in relation to the DMIS, clause 6.6.3A(c)(2)(i) in relation to the DMIA and clause 6.6.4(b)(3) in relation to the small scale incentive scheme.

Interim incentive arrangements

As noted by some stakeholders, it may take some time before an effective incentive scheme can be put in place to provide DNSPs with financial incentives to maintain and improve their export service performance.

Interim incentive arrangements are likely to be required if the time to extend STPIS to exports takes longer than other parts of the reform under this rule such as investment and pricing arrangements.

While interim arrangements are desirable, it is not necessary to introduce additional requirements under the Rules for them to be implemented. Such requirements on the AER could also lead to duplication and increased complexity in developing the export services incentive framework. The AER has the ability under the current framework to use tools such as reputational incentives and benchmarking to provide performance incentives to DNSPs while it undertakes the process to extend the STPIS to exports. The AER also has extensive information gathering powers under the NEL to collect the available information on DNSPs' export performance.[156]

As mentioned in its submission to the consultation paper, the AER may make use of its annual benchmarking report to provide a public comparison of DNSPs' export service performance to provide reputational incentives. The AER could also make use of the export service performance reporting provisions introduced in the final rule (as part of the network service provider performance reporting regime under the NEL) and explained in section section 4.2.2 to provide reputational incentives.

The Commission considers that this approach will allow the AER to take into account the relevant factors such as the timeline for the extension of STPIS (or equivalent) to exports, the timeline for implementation of other elements of the reform, the administrative burden of implementing reputational arrangements, and put in place interim incentive arrangements as necessary. For clarity, the Commission notes that the AER has sufficient flexibility to implement appropriate interim incentive arrangements and is not limited to relying on reporting-based reputational incentives for interim arrangements.

Metrics for export service performance

Metrics to measure the network performance of export services are not currently defined under the framework. It would be appropriate for the metrics to be used to measure the network performance of export services to be considered by the AER as part of its process to extend incentive arrangements to exports.

The AER may seek to gather the relevant information from DNSPs to undertake paper trials to test the robustness of potential metrics before deciding on how export service performance should be measured.

The Commission notes that there is a need to carefully consider how to measure a network's performance in enabling exports before financial incentives are provided to DNSPs to improve

156 Part 3, Division 4 of the NEL.

their performance against those metrics. To enable better performance of export services, the AER would need to consider whether an export service performance metric is:[157]

- Measurable, i.e. the required information is available, the metrics capture the right information, and the results are accurate and consistent over time, and methodology is transparent and replicable
- Not significantly influenced by exogenous factors i.e. factors outside the DNSPs' control
- Not gameable, i.e. it doesn't provide DNSPs perverse incentives

The Commission notes that information on magnitude of the supply voltage to customers could serve as an important input into measuring the network performance of export services. However, the metric may also need to consider the impact of other variables in DNSPs' control such as thermal constraints or export curtailment by DNSPs using dynamic or static export limits on the export service performance. Relying solely on voltage information could potentially create perverse incentives for DNSPs, whereby DNSPs could be incentivised to provide most customers seeking to connect their DER an efficiently low static export limit in order to limit voltages on their networks. A rules-based requirement for the AER to include a STPIS performance metric based on the magnitude of supply voltage as suggested by some stakeholders could inappropriately constrain the AER's development of the export service incentive arrangements.

Governance of voltage levels supplied to customers

The DNSPs are required to supply power to their customers in accordance with the voltage supply standards set by jurisdictional authorities. NEM states and territories specify a nominal supply voltage level of 230V with an acceptable range of +10% to -6%.[158]

Some stakeholders raised concerns about customers being supplied higher than desirable voltage levels and this leading to a reduced ability for DER to export. To address these concerns, it was suggested that supply voltage levels should be regulated through the national framework.

The Commission notes that higher levels of voltage supply to customers can reduce customers' ability to export. All else being equal, a DER installation supplied with a lower average voltage level will be able to export more energy before encountering the upper allowable voltage thresholds than a DER site that has higher average supply voltage levels.[159] DER exports could also be limited by network thermal limitations under some circumstances. In managing their networks, the DNSPs not only have to consider compliance with the upper allowable voltage limit but also the lower allowable limits. The voltage levels can drop along feeders during high load and low export conditions. With higher levels of DER, the networks generally need to operate over a greater range of power flows.

157 Cambridge Economic Policy Associates (CEPA), Feasibility of export capacity obligations and incentives, 20 July 2020, p. 29.

158 UNSW, Voltage Analysis of the LV Distribution Network in the Australian National Electricity Market, May 2020, p.4.

159 Dynamic Limits, The role of decentralised control for managing network constraints for DER on regional, rural and remote networks, August 2020, p.29.

The Commission considers that the overall objective for the framework should be to enable the provision of export services in the most efficient manner possible. An effective framework will drive the DNSPs to choose the best course of action for an efficient outcome. For the delivery of export services, it may be that reducing voltage levels is the cheapest approach to enabling more exports under some circumstances. The Commission considers that the investment, planning and incentive arrangements for export services provided under the final rule will provide for the efficient enablement of greater levels of exports.

The Commission notes stakeholder concerns regarding the elevated voltage supply levels and the findings from the ESB's report that maximum voltages recorded are generally towards the upper bound of acceptable range and that stakeholders have concerns regarding potential non-compliance with the voltage standards.[160] The Commission considers that compliance with the jurisdictional voltage standards is a matter for the relevant jurisdictional authorities. The Commission also notes that under the Australian Energy Market Agreement, the responsibility for distributor technical and safety authorisations rests with the jurisdictional authorities.[161]

4.2 Export service levels and connection arrangements

4.2.1 Rule change requests

Proposal for defining export service level requirements

SAPN's rule change request raised concerns that for customers who use the distribution network to receive export services, the actual performance of the service they receive is unclear. SAPN said that for export services, regulation does not provide means for distribution networks to directly consider the service performance that customers desire, and there are no standards nor service targets and incentives in regulation. According to SAPN this impedes customers from making informed service choices.[162]

The rule change request from SAPN suggested that the export service performance levels that customers can expect from their DNSP should be set by the STPIS performance targets (in line with the current arrangements for consumption).[163]

SAPN said that the STPIS should "incentivise distribution networks to maintain the performance of export services at a level that customers value". According to SAPN, the STPIS would need to establish a baseline level of service performance that networks are incentivised to maintain and improve upon.[164] SAPN added that a key consideration for establishing the baseline level of performance would include establishing appropriate performance measures that apply as averages across all customers rather than in respect of any individual customer's service level.[165]

160 ESB, ESB Cover note on UNSW Voltage reports, May 2020, p. 2; Submissions to the draft rule determination: CEC, p. 6; Enphase, p. 5.
161 Australian Energy Market Agreement, 30 June 2004 (as amended on 2 June 2006 and 9 December 2013), Annexure 2 item 16.
162 SAPN rule change request, p. 14.
163 ibid, pp. 20-21.
164 ibid, p. 20.
165 ibid.

SAPN said that a "Guaranteed Service Level (GSL) inconvenience payment should apply to customers of export services who experience service performance well outside of average levels. We consider this to be a payment for inconvenience, mirroring the payments made on the consumption side. We do not propose or consider it justified to use a GSL to compensate for lost income due to service interruptions (e.g. lost Feed-In-Tariff revenue), or any other form of financially firm access to the distribution network".[166]

Export service standards

SAPN said that:

> the STPIS would work together with any defined service standards if these are developed by jurisdictions. As is the case for consumption services, any such defined jurisdictional service standards may act as a backstop to the STPIS to avoid the risk of regional service performance deterioration

Nevertheless, SAPN considered that it might not be necessary to apply explicit service standards to export services, noting that:[167]

> There may be merit in defining service standards to set the baseline level of service that customers want distributors to provide and maintain for export services. However, an adapted STPIS may serve the same purpose.

DER export limits and minimum export capacity requirements

SAPN raised concerns that "In the absence of a clear framework enabling investment to support export services, some networks have had to actively consider (as we did in our Regulatory Proposal for the 2020-25 period) and in some cases enact, static limits of zero exports for some customers as networks have approached constraints".[168]

SAPN said that a measured approach was required for providing customers with clear access rights to export, in order to not drive excessive cost nor create inequities between customers depending on the date on which they request an export service. SAPN said that it was also impractical to assign a small customer an exclusive right to use assets that comprise a shared distribution network.

SAPN's rule change request proposed that there should be clear rights to all customers to request and be granted an offer to access the distribution network to export energy on a fair and non-discriminatory basis. SAPN explained that, "customers should be able to receive a service offer that does not explicitly deny their ability to export, such as via the setting a static export limit of zero".[169]

SAPN also proposed that for small customers, there should be a defined standard capacity level that customers can request and receive a connection offer for. SAPN clarified that it

166 SAPN rule change request, p. 20.
167 ibid, p. 21.
168 ibid, p. 14.
169 SAPN rule change request, p. 22.

could be expressed as a 'base service' and customers could either request this service or a service in excess of this service. SAPN suggested that this approach could be implemented by Government, the NER or the AER's connection guidelines.[170]

SAPN's rule change request emphasised that it did not support firm access as the costs and issues it could create between customers would be problematic.

Similarly, the rule change request from TEC and ACOSS also raised concerns that DNSPs were increasingly constraining DER exports using static limits to manage emerging technical issues. The rule change request proposed that all prosumers should have some ability to export surplus energy to the grid. ACOSS and TEC suggested that there should be a requirement for networks to offer prosumers a 'base level of service' for DER exports. ACOSS and TEC clarified this to mean that where augmentation to add hosting capacity passes the net market benefit test, it should be mandated that networks must offer some level of export (e.g. 3Kw) – i.e., they can no longer impose zero exports. ACOSS and TEC suggested that the implementation approach could include amendments to NER 5A.B.2 (Proposed model standing offer for basic connection services) to include base export services.[171]

Supplementary connection arrangements for customers seeking additional export capacity

In its rule change request, ACOSS/TEC proposed rule amendments to allow for a 'supplementary' connection agreement for a DNSP and its customer to negotiate additional capacity, if that investment is not otherwise justified under a 'net market benefits' test.[172] This, TEC/ACOSS said, will allow more equitable allocation of DER-related costs by allowing DNSPs to recover the costs associated with augmenting local hosting capacity upfront from prosumers.

4.2.2 Analysis and final rule determination

Defining export service levels

Prior to this rule change, there were no clear obligations or incentive arrangements directing the DNSPs to deliver efficient levels of export service that meet their customers' needs. Without clear guidance on service levels that DNSPs are expected to provide to customers, there is risk that customers may not receive efficient levels of export services.

The Commission considers the current framework for setting service reliability for consumption services provides a useful framework to determine the export service levels provided by DNSPs and that the extended STPIS is the appropriate mechanism for this purpose. Separately defined service standards under the national framework are not likely to be necessary, especially once STPIS has been extended to exports. It could lead to duplication with the STPIS and any jurisdictionally defined service standards. The export service performance targets under the extended STPIS could be regularly adjusted by the

170 ibid.

171 TEC/ACOSS rule change request, p. 14.

172 Alternatively, TEC/ACOSS proposed to amend or remove NER clause 6.1.4 if it involves cost recovery via ongoing tariffs for exported energy (see pp. 12–14 of their rule change request). However, TEC/ACOSS consider this option is less preferable because it would create uncertainty, risk and potential ongoing costs for prosumers.

AER taking into account network specific factors and changing conditions e.g. additional investment in hosting capacity or increased usage of export service. In relation to the approach to defining the STPIS performance targets, including whether they should be set in terms of average across a group of customers, the Commission considers that this is best considered through the AER's review process.

In line with the current service reliability arrangements, some jurisdictional authorities may also seek to set service standards covering the performance of export service that better meet the jurisdictional circumstances. Similar to the reliability arrangements for consumption services, the extended STPIS would need to be able to operate concurrently with any such service standards and GSL schemes defined through jurisdictional instruments. The extended STPIS may also support the relevant jurisdictional authorities to define appropriate export service standards once a suitable export service performance metric has been defined through the AER's review process.

Guaranteed service levels for exports

The Commission considers that it would be appropriate for the AER's extension of STPIS to export services to consider the need for GSL payments to export customers.

Similar to the current reliability arrangements, some jurisdictional authorities may also seek to set up their own GSL payment schemes for exports. As mentioned earlier, the STPIS including any GSL schemes for exports defined under the STPIS would need to be able to operate concurrently with any jurisdictionally defined GSL schemes.

To the extent to which a national GSL scheme for exports is deemed to be necessary by the AER, the Commission considers that it should not seek to fully compensate the customer for lost income due to lower levels of export service provided to a customer. That would constitute fully firm access rights for customers to export and lead to a level of access for export service that is higher than the level of access that customers receive for the essential consumption service. Firm access rights would also be inconsistent with the open access framework at the transmission level.

Connection to the network for exports

Following the recognition of export services in the regulatory framework and the clarification that DNSPs are expected to provide export services as part of distribution services, it is also important to consider the process by which customers can seek access to export services. The regulatory framework should reflect the customer expectation to be able to connect to the distribution network for exports.

The Commission considers that the framework should provide for customer access to export services on a fair and efficient basis. Clear rights for customers under the framework to connect to the distribution network for exports are likely to provide for improved access to export services and promote the efficient use of the distribution network for export services.

Static zero export limits can deny customers access to exports

Prior to this rule change, the rules did not prevent customers from being allocated static zero export limits in situations where there is sufficient hosting capacity available. While customers are able to connect DER to the network, DNSPs could give them a connection offer with a static export limit of zero. A static zero export limit means that a customer is prevented from accessing the network to export electricity at any time.

In addition to the customer impact, static zero export limits can also lead to inefficient outcomes for the electricity system as a whole as they prevent near zero marginal cost DER exports from being dispatched at all times due to network constraints that occur for only a limited period-of-time. The Commission also notes stakeholder concerns that customers can be denied access to the distribution network to export electricity with minimal regulatory oversight.[173]

The Commission recognises there may be circumstances where it is efficient or necessary for DNSPs to apply static zero export limits. However, these circumstances would likely reduce over time. As part of the package of changes introduced under the final rule, DNSPs will have a clear framework to propose investment in capabilities such as dynamic operating envelopes to relieve network constraints that may occur in limited times of the year. The AER has indicated in its draft guidance note on DER integration expenditure that such expenditure would be approved if it is considered efficient.

The Commission therefore considers there is a need to clarify the circumstances in which customers may be given static zero export limits when they apply to connect DER to the network.

Consumer protections for static zero export limits

To address stakeholder concerns, the final rule introduces protections for customer from inefficient use of static zero export limits. The final rule clarifies that a DNSP can only offer a static zero export limit to a small customer seeking to connect to the distribution network for exports, if an exception listed in the AER's connection charge guideline applies or the customer requests the zero limit. [174]

The provisions extend the purpose of the connection charge guideline under NER chapter 5A to also ensure that the static zero export limits only apply to export connections where they are consistent with the safe, secure and efficient provision and use of export services, and with the DNSP's distribution determination (including expenditure to support export services).[175] The latter requirement is intended to limit DNSPs from using static export limits to manage export constraints in their network where they have approved expenditure to support an increase in hosting capacity.

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173 Submissions to the draft rule determination: Monash Business School, p. 6; Solar Analytics, pp. 2-3; TEC/ACOSS, p. 4.

174 This new provision applies to applications for a basic connection service or a standard connection service. See new NER clause 5A.F.1(c).

175 New NER clause 5A.E.3(b1).

The final rules require that the AER's guideline must describe the circumstances under which a DNSP may offer a customer a static zero export limit.[176]

Such circumstances could include where static zero export 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 to the network or customer's facilities. For example, the customer's equipment is not capable of responding to dynamic operating envelopes.

It is important to note that the final rule doesn't constitute a complete prohibition on the use of static zero limits, or a regulatory obligation to provide a non-zero export limit to all customers seeking an export connection. There may be circumstances where it is efficient or necessary to give a customer a static zero export limit and these should be contemplated in the AER's connection charge guideline.

Under the final rule, DNSPs are required to outline the circumstances under which they may offer small customers a connection with a static zero export limit as part of their proposed connection policy, and this must be consistent with the connection charge guideline.[177] In conjunction with the changes to the small customer connection framework and connection charge guideline (NER Chapter 5A) described above, this provision will provide clarity to customers on the circumstances under which their DNSP could offer them a static zero export limit. It will also promote consistency between a DNSP's proposed use of static zero export limits and the other parts of the regulatory proposal such as any proposed investment to integrate DER. Furthermore, it will also provide an avenue for stakeholders to provide feedback on the DNSP's proposed approach to using static zero export limits and thereby promote greater accountability.

Protections from inefficient zero export limits will benefit customers

The Commission considers that the proposed changes improve regulatory clarity of the connection arrangements by supporting more efficient allocation of export capacity to customers and improving customer access to export services.

The changes clarify that customers can only be given static zero export limit under certain circumstances specified under AER's connection charge guideline and create regulatory oversight of DNSPs' decisions to offer zero export limits. This should minimise instances of customers being inefficiently limited to static zero exports and thus enable more customers to access export services. By enabling customers to receive access to export services on fairer and more efficient terms, these changes will therefore promote efficient use of export services in the long term interest of customers. The changes will also support greater uptake of DER by customers by enabling them to access export revenue streams such as feed-in-tarrifs.

176 New NER clause NER 5A.E.3(c)(8).

177 New NER clause 6.7A.1(a)(2) and existing clause 6.7A.1(b)(1)(ii).

More regulatory oversight and avenues for stakeholders to provide feedback on a DNSP's use of static zero export limits will promote customer confidence in the access arrangements for export services. The final rule also improves the transparency of the process of setting export limits. Greater transparency of when zero exports limits may apply should support customers in making efficient DER investment decisions.

The Commission considers the approach under the final rule is preferable to the suggestion by some stakeholders to prohibit the use of static zero export limits under all circumstances.[178] This approach provides a degree of flexibility for DNSPs with AER oversight and balances the need to provide new customers the ability to access export services while limiting the risk of inefficient investment. The approach is also preferable to establishing a mechanism for individual customers to challenge a static zero limit given to them, as proposed by some stakeholders.[179] The Commission considers the costs and complexity involved in the development and implementation of such a mechanism, including the establishment of an independent body to assess customers' complaints, would likely be higher than the potential benefits. The issue of compensation payments for customers being denied the ability to export is an area that the AER can consider as part of its review on extending incentive arrangements for export services.[180]

The clearer rights for customers to receive non-zero export limits are also well aligned with the changes to the planning and investment framework for export services (outlined in chapter 3) and the incentive arrangements proposed in section 4.1.2. These elements of the reform will collectively provide for improved customer access to export services, as explained in the following section.

Minimum export capacity rights

The rule change requests from TEC/ACOSS and SAPN proposed requirements on DNSPs to offer a minimum level of export capacity to all customers seeking to connect to the DNSP's network for exports in order to address concerns regarding the use of static export limits by the DNSPs impacting customer access to export.

The Commission considers that requirements in the NER for DNSPs to offer a specified minimum level of export capacity to DER customers shouldn't be introduced as they could lead to several issues. The arrangements outlined in the final rules package including clear investment, planning and incentive arrangements for the provision of export services, restrictions on offering static zero export limits and a long-term transitional requirement to offer a basic export level at no charge (see chapter 5) should address the proponents' concerns and enable efficient customer access to export services.[181]

178 TEC/ACOSS submission to the draft rule determination, pp. 4-5.

179 Submissions to the draft rule determination: Solar Analytics, p. 2; Monash Business School, p. 8.

180 Solar Analytics submission to the draft rule determination, p. 3

181 The requirements to offer basic export level at no charge should not be conflated with the minimum export capacity rights suggested by some proponents. The TEC/ACOSS and SAPN proposals seek to require the DNSPs to offer a minimum level of export capacity to all customers seeking to connect to the DNSP's network whereas the basic export allowance will require DNSPs to offer a basic export level allowing a retail customer to export up to this level without incurring an export charge.

Potential issues associated with specified minimum export capacity requirements

The Commission's *2019 Economic regulatory framework review* highlighted that DNSPs were experiencing different levels of DER penetration and that the DNSPs were affected by greater levels of DER uptake in different ways due to differing network characteristics and circumstances. The Commission considers that introducing regulatory requirements for DNSPs to offer a specified minimum level of export capacity to all DER customers (e.g. by specifying a capacity level in the NER) could limit DNSPs' ability to cater for their differing network characteristics and circumstances. Some parts of the networks may be able to easily support higher levels of export than a minimum national requirement, in which case it may not lead to a meaningful outcome for those customers, while other parts of the network could need significant expenditure to meet these minimum requirements.

Specifying minimum export capacity requirements in the NER could also drive inefficient network investment under some circumstances. Under these requirements, the DNSPs could be obliged to invest in the network to enable additional exports to meet the minimum export requirements, even when it's not economically justified. For example, the cost of upgrading some parts of the network (e.g. areas with SWER lines) to meet minimum export capacity could be significant if the DNSP is to maintain the safety, reliability and quality of supply parameters.[182] Requiring DNSPs to invest in areas where it may not be economically justified to meet the minimum capacity requirement could lead to all export customers facing higher than efficient charges for exports, especially if these costs are spread across the export customer base.

Not having minimum export capacity requirements could provide for simpler export service level arrangements and a simpler approach to extending the STPIS to exports. A specific minimum export capacity requirement on DNSPs could be defined in terms of connection capacity (e.g. 5 KW) to be offered to all customers. Such requirements being in place could lead to an overlap with STPIS export performance targets that could also be similarly defined e.g. a target for urban export customers to be able to access 5KW capacity 99% of the time in a year. A DNSP's performance against its STPIS performance targets could be impacted by obligations on the DNSP to also offer minimum export connection capacity to customers. Hence, the STPIS would need to be designed to account for any impacts of minimum export capacity requirements on STPIS performance. Having dual export service performance requirements could lead to complexity of arrangements and a lack of clarity surrounding service level requirements and confusion for customers and DNSPs.

The final rules package promotes efficient access

The Commission considers that the changes included in the final rules package collectively promote efficient access to export services. Effective planning, investment and incentive arrangements for export services, as outlined in Chapter 3 and Section 4.1, should enable the DNSPs to deliver the highest amount of export capacity feasible – in the most efficient way, and clear limits on DNSPs regarding static zero export limits should enable customers to efficiently connect to the network to access the available export capacity.

182 Single Wire Earth Return (SWER) systems are frequently used to supply power to remote and rural areas.

The Commission notes that, as observed by one of the rule change proponents, a key driver for the use of static export limits may have been the lack of a clear framework for enabling investment to support delivery of export services. The changes proposed by the Commission to recognise the evolving role of the DNSPs, as explained in Chapter 3, seek to provide a clearer planning and investment framework for the provision of export services by the DNSPs. These changes support DNSPs in proposing efficient and prudent network investment to enable customers to receive greater access to export services. Therefore, the regulatory framework enables DNSPs to plan their networks for the provision of export services and undertake investment to support greater customer access to export services.

As mentioned in section 4.1, the Commission's final rule supports the extension of the current incentive arrangements, including the service performance incentive arrangements, to export services. The application of STPIS to exports would mean that the DNSPs face a financial incentive to efficiently enhance the export service performance levels and reduce export curtailment. It is envisaged that when customers are denied export capacity using inefficient export limits, it would be factored into the DNSP's measured performance under the STPIS. The arrangements are expected to result in financial incentives for DNSPs to provide access to efficient levels of export capability to customers.

As mentioned previously, the final rule provides that static zero export limits that deny customers' ability to export can only be given under certain circumstances specified under AER's connection charge guideline. These changes will safeguard customers from being denied export capacity inefficiently and thus enable more customers to be able access to the available export capacity.

As a package, the proposed planning, investment and incentive arrangements for export services will support investment to deliver efficient levels of export capacity, and the protections from inefficient zero export limits and the incentive arrangements for exports will support efficient allocation of the export capacity. Collectively these arrangements should support efficient levels of access to export services.

Export service performance reporting

The Commission notes stakeholders' concerns regarding the lack of transparency of export service performance raised in submissions and the strong support for the need to increase the transparency of export service performance. [183]As DNSPs' roles in providing export services are being recognised under the regulatory framework, and they are provided with the option to charge customers for the provision of export services, it is appropriate that the transparency of export service performance by DNSPs is enhanced.

The Commission considers that enhanced transparency of export service performance will support more informed regulatory and policy decisions by government agencies as well as investment and operating decisions by customers and solar installers.

183 Submissions to the draft rule determination: Essential Energy, p. 6; ENA, p. 10; Endeavour Energy, pp. 4-5; AusNet Services, pp. 2-3; AGL, p. 5; IEEFA, p. 5; LGI, p. 2; Solar Citizens, The Australia Institute, Smart Energy Council, ShineHub, EcoJoule Energy, WATTever and Victoria Energy Policy Centre, pp. 1-4; Victorian Government, p. 2; Jemena, pp. 6-7; CitiPower, Powercor and United Energy, p. 4.

To this end, the final rule requires the AER to prepare and publish a report (as part of the network service provider performance reporting framework under the NEL) providing information about the performance of each DNSP in providing export services to customers over the previous year.[184]

The performance report is envisaged to include information relevant to assess the performance of DNSPs' export services and guide efficient DER investment and operating decisions. It may include information such as:

- the relative performance of DNSPs in providing export services
- the performance of DNSPs against their own export tariff parameters
- the use of static zero export limits
- the impact of system limitations on availability or use of export services.

However, it is important to note that the performance metrics to be reported are not prescribed under the final rule. The AER can determine the relevant performance reporting metrics and adjust them as needed to suit changing circumstances. To capture the relevant information from the DNSPs, the AER can make use of Regulatory Information Notices (RINs).

In preparing the report, the AER is also required to consult with the DNSPs and with stakeholders more broadly.[185] The AER can also publish the report with another network service provide performance report such as its Electricity Network Performance Report or its Annual Benchmarking Report.[186] These arrangements will provide for a flexible approach that can balance the information needs of the relevant stakeholders with the capability of DNSPs to provide that information in a manner that reduces costs and complexity for both the DNSPs and the AER.

The Commission considers that this reporting framework is preferable to the approach of prescribing the performance reporting metrics in the rules, as it provides greater flexibility to adjust the reporting metrics. The metrics may need to be adjusted to reflect changing circumstances, such as, increases in visibility of LV parts of the network or the use of dynamic export strategies by DNSPs. Under this approach, the AER can more readily make use of any additional performance data that becomes available, and also capture and publish more relevant information as the nature of export services develop over e.g. through more customers facing dynamic export limits. It could also allow for more granular information that is likely to be more useful to customers to be published, such as the locations of export constraints within a network.

Overall, the Commission considers that the DER services performance reporting framework will provide for enhanced reporting arrangements that are better suited to providing information that is more relevant to stakeholders in a low cost manner. The reporting framework will support more informed customer DER investment decisions and thereby also support efficient provision electricity services.

184 See new rule 6.27A.
185 NER clause 8.7.4.
186 New NER rule 6.27A(e).

Supplementary connection arrangements for customers seeking additional export capacity

The Commission's final determination is to not make amendments to the NER as proposed by TEC/ACOSS in relation to supplementary connection arrangements. A 'supplementary connection agreement' would duplicate existing arrangements. The Commission considers the implementation and administrative costs that would arise from the proposal would likely outweigh the benefits, as identified by some stakeholder submissions.

DNSPs are obliged to enter into and perform connection contracts if a valid connection application is made by a connection applicant under NER chapter 5A. The DNSP must advise the connection applicant of the negotiated connection process.[187] Where the connection applicant elects to negotiate the terms and conditions of the connection service, or is seeking a service that is not a basic connection service or a standard connection service, the DNSP must:

- negotiate in good faith with the connection applicant[188]
- use its best endeavours to make a negotiated connection offer within 65 business days after receiving a properly completed application.[189]

To date, the Commission is not aware of any retail customer disputes that have been raised with the AER about customers' ability to negotiate additional capacity.

More broadly, the Commission considers the regulatory framework is not a barrier to allowing retail customers to purchase additional access or capacity. In addition to the option for customers to negotiate additional export capacity, NER Chapter 5A allows DNSPs to offer standard connection services above service levels provided for in basic connections. Improved service offers could be provided through dynamic export limits when introduced (including possibly operating envelopes), new service/pricing options enabled by the Commission's final decision to allow export pricing (see chapter 5), and the service classification process to enable a group of customers to have a higher level of export capacity. DNSPs are free to design and propose to the AER a coordination mechanism for retail customers to apply for additional export capacity, if this is a network service valued by customers.[190]

A key principle of this final determination is to promote regulatory flexibility to efficiently manage the integration of DER. The Commission seeks to accommodate different network circumstances, customer preferences and government policies. We are careful not to be too prescriptive at a national framework level. The expectation is for the AER, DNSPs, retailers, consumer groups and governments to work together with retail customers in each jurisdiction to develop service and pricing options that meet customer needs. DNSPs should be responsive to community preferences and clearly communicate service options, but how this

187 NER clause 5A.D.2(b)(4).

188 NER clause 5A.C.3(a)(1).

189 NER clause 5A.F.4(a).

190 During its F&A for the 2021–26 regulatory determination, AusNet Services proposed a new service called community network upgrades to allow community groups to negotiate collectively for exportable PV connection to the network. The AER decided to classify this new service as an alternative control service and considers that it will include activities that relate to the collective customer upstream augmentation.

is achieved is a matter for individual regulatory processes. Our reform package provides more flexibility for this level of engagement.

4.3 VCR equivalent for export service: customer export curtailment values

4.3.1 Rule change request

SAPN's rule change request said that DNSPs' planning decisions should be based on the value customers place on particular service levels. SAPN considered that "network planning for the provision of export services, particularly augmentations for small customers, needs to be planned and funded on an ex-ante basis which is the case for SCS". SAPN says that this "means that the value customers place in particular service levels needs to be understood upfront and, and for consumption services this is informed by applying a VCR". SAPN said that:[191]

> Mirroring the approach used for consumption, we see merit in the AER being tasked to develop a VCR equivalent for export services (VCR-E). This would then serve as an input to:
>
> - adapting the STPIS to export services, and helping to inform the setting of the service performance baseline that DNSPs should maintain
> - the setting of any service standards if and where these are implemented
> - DNSPs' evaluation of the benefits of network expenditure that they may seek to propose in order to increase service performance above that reflected in the STPIS baseline.

4.3.2 Analysis and final determination

The Commission's more preferable final electricity rule requires the AER to develop customer export curtailment values (CECV). These values will help guide the efficient levels of network expenditure for the provision of export services and serve as an input into network planning, investment and incentive arrangements for export services. These values will be different from VCRs, as they are not intended to measure the value to customers of having a more reliable export service or consumption service but rather the detriment to customers and the market from the curtailment of exports.

Why are the CECVs needed?

The CECVs are expected to play a similar role to the VCRs under the current framework. The Commission considers that measures providing for the valuation of different levels of export service may be needed to support the relevant planning, investment, and incentive arrangements for export services.

Under the new investment framework for exports, DNSPs can be allocated revenue for export services on-ex ante basis. This means that in proposing expenditure relating to export

191 SAPN rule change request, p. 21.

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. They could also potentially inform any export service standards defined by jurisdictional authorities. The need for such common values across DNSPs was also foreshadowed in the Commission's ENERF 2019 review. The Commission also notes there is strong stakeholder support for the development of CECVs to guide efficient network planning, investment and incentive arrangements.[192]

Why can't the VCR be used?

For clarity, the Commission notes that the current VCR would not be the appropriate measure to help identify the efficient levels of network investment for exports. The VCR measures the value to customers of having a more reliable service i.e. the value customers place on avoiding a complete loss of their energy services, including for consumption. However, to guide efficient network investment, there is a need to consider the detriment to the customers and the market, of export curtailment due to network limitations (in $ per KWh of exports curtailment). The CECVs could be used to assess whether proposed steps to reduce export curtailment (such as increasing DER hosting capacity) can be economically justified.

Framework for deriving CECVs

Given that CECVs are likely to be needed, the Commission has considered the framework for determining these values. For this, the Commission considers that the rules-based framework for the VCR provides a useful example.

Responsibility for determining CECVs

In line with the current arrangements for VCR, the Commission has made a final rule that establishes the AER as the body responsible for determining the customer export curtailment values.[193]

The Commission considers this approach to be appropriate because:

- the AER is best positioned to foresee how these values are likely to be used
- having a single body responsible for establishing these values would provide consistency and transparency of estimates and avoid unnecessary duplication and administrative costs
- the responsibility for developing these values aligns with the AER's regulatory functions, including the development of the VCR.

192 Submissions to the draft rule determination: PIAC, p. 2; Alinta Energy, p. 2; Endeavour Energy, p. 3; AGL, p. 5; IEEFA, p. 1; Origin p. 2; AER, p. 6; AEC/Oakley Greenwood, pp. 3-4 .

193 New NER rule 8.13.

Objective and methodology for calculating the estimates

In keeping with the VCR framework, the Commission sees 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 final rule provides an objective that CECV methodology and customer export curtailment values should be fit for purpose for the current and potential uses of these values that the AER considers to be relevant.[194] For clarity, the Commission notes that the value would need to be fit for purpose for guiding the relevant planning, investment and regulatory decisions for exports.

The values may need to capture not only the detriment of export curtailment to the customers using the export service but also the potential detriment to all customers from lower levels of customer exports. The detriment of non-exporting customers from lower levels of exports may need to be captured in order to enable efficient levels of investment. The approach may also need to consider the extent to which the costs related to the export service are recovered solely from DER exporters. Some of the costs associated with the export service, such as that associated with the network's intrinsic capacity to host exports, are likely to be recovered from all network users.

The Commission considers that estimating the CECVs could be complex, and there may be several approaches available. As a case in point, the AER considered five different techniques for deriving VCR estimates when developing the VCR methodology.[195] There are several factors relating to the methodology that warrant consideration, such as how far into the future the values are projected and whether the values would change over the course of a day or year or across different customer groups. These need further consideration under a process dedicated to developing the methodology for calculating the values. Therefore, the Commission considers that it would not be appropriate to provide detailed guidance on the methodology in the NER; instead, a high-level approach should be adopted.

The final rule requires the AER to both develop and review the CECV methodology in accordance with the Rules consultation procedures set out in NER rule 8.9 (consistently with the approach to the VCR in rule 8.12). The Commission considers that this will provide transparency and accountability in the development of the methodology. Given that the values will be a new arrangement in the regulatory framework, it is important that the stakeholders can provide input into how they are calculated. This will provide stakeholders confidence in the values that are calculated using the methodology. The Rules consultation procedures provide a robust and well-understood consultation framework.

The final rule requires the AER to consult with a wide range of stakeholders including AEMO, each jurisdictional regulator, registered participants, and other people with an interest in the CECV methodology and values (which would include exporting customers).[196]

The Commission notes stakeholder feedback regarding the methodology:

194 New NER rule 8.13(a).
195 AER, Value of customer reliability: consultation paper, October 2018, pp. 19-24.
196 New NER rule 8.13(g).

- seeking further clarification of whether the CECVs would include the detriment of curtailment to customers using the export service and thereby support the network investment to mitigate individual export customer losses (e.g. loss of Feed-in-Tariff income).[197]
- suggesting that customer losses behind-the-meter due to increased voltage should also be considered by in the CECVs. [198]

The Commission considers that reducing the level of network export constraints may provide different types of benefits to customers. The extent to which certain of type of benefits (including bill reductions for export customers via self consumption and/or via a feed-in tariff) should be included would be best considered through the AER's consultation process to develop the CECV methodology.

Reviewing the CECV methodology

The final rule also requires the AER to review the methodology every five years.[199] The Commission notes that the evolving capabilities of DER technologies may impact how customers value export services. For example, to the extent that DER exports participate in additional markets such as the ancillary services market, then the value that customers place on being able to export and the detriment to the market of export curtailment could increase. Therefore, the Commission considers that the methodology may need to be reviewed regularly to keep up to date with the ongoing changes in the industry and the potential changes in the value of exports. The rule does not restrict the AER from reviewing the methodology more frequently.

Timing of initial values

The final rule requires the AER to publish initial CECV estimates by 1 July 2022.[200] This will allow the AER time to consult on and develop the methodology under the Rules consultation procedures and calculate the value estimates in a robust manner. It may also provide for the values to be considered in the next NSW DNSP reset process.

Frequency of updates to values

The final rule requires the AER to update the CECV estimates on an annual basis.[201] The Commission considers this provides an appropriate balance between stability of values for long term network planning and maintaining up-to-date values that reflect changing circumstances.

197 Submissions to draft rule determination: Origin, pp. 2-3; AusNet Service, p. 2.
198 CEC submission to the draft rule determination, p. 5.
199 New NER rule 8.13(f).
200 New NER clause 11.141.7(a).
201 New NER rule 8.13(d).

Publication of values and methodology

The final rule requires the AER to publish the values and the methodology, both when initially determined, and when any updates or adjustments occur.[202] The Commission considers this will improve transparency of process, and certainty of estimates for planning purposes. It will be important for the updated values to be readily available to support the relevant processes.

Conclusion

Overall, the Commission considers that requiring the AER to regularly calculate the customer export curtailment values will provide for a transparent, consistent and a low-cost approach to measuring these values. The availability of robust CECVs will support efficient investment in and efficient provision of export services, and allow customers to receive the levels of export services that better meet the needs of all customers.

202 New NER rule 8.13(d).

5 DISTRIBUTION NETWORK PRICING ARRANGEMENTS FOR EXPORT SERVICES

5.1 Introduction

5.1.1 Rule change proposals to enable export pricing

The use of export charges as a pricing tool has historically been prohibited under the regulatory framework by NER clause 6.1.4. DNSPs were allowed to recover costs, including those for the provision of export services, only through connection and consumption charges.

SAPN and SVDP proposed to enable the option for export charges to apply under the regulatory framework by removing NER clause 6.1.4. SAPN also proposed to better recognise and reward customers for the benefits their DER can provide to the grid by enabling 'negative prices' – payments to customers for exporting at certain times (separate from retailer feed-in tariffs).

The AER and DNSPs would then be required to consult with retail customers and other key stakeholders on whether and (if so) how export pricing would be implemented. SAPN proposed that the current network pricing objective and principles under the NER, which promote cost reflective pricing, should generally apply to export services.

Allowing DNSPs to include export charges in their pricing structures would not change the DNSP's total revenue allowance within a regulatory period under revenue cap regulation. An increase in one part of a tariff structure would need to be offset by a reduction in other parts.

The SAPN and SVDP proposals and relevant regulatory arrangements are outlined in detail in chapter 6 of the draft determination.

5.1.2 Stakeholder response to draft rule to remove NER clause 6.1.4

Many stakeholder submissions support the Commission's decision to enable export pricing – especially the AER, the network businesses, the retailers and some other energy service providers, and the South Australian Government. Submissions by several consumer groups, including TEC/ACOSS and ECA, support the decision but seek some stronger customer safeguards for how export pricing is implemented.

Stakeholder submissions and discussions provided diverse views on the potential risks associated with allowing export pricing. The main concerns raised are that export charges may undermine government climate change policies, reduce the value of solar PV investments already made by households, and create an overall regulatory bias in favour of transmission-level generation.

Submissions that were strongly opposed to enabling export pricing include: many private individuals (including a Solar Citizens petition), the Australia Institute, EcoJoule Energy, Enova Community Energy, IEEFA, Queensland Government, ShineHub, Smart Energy Council, Solar Citizens, VEPC, Victorian Government, WATTever and Zero Emissions Noosa. Some other submissions were not supportive of the decision, but did not necessarily oppose it for various reasons.

5.1.3 Summary of final decision

The Commission's final determination maintains the draft rule's position to enable export charges by removing NER clause 6.1.4, and more explicitly allowing for negative prices to enhance rewards to customers.

Rule amendments made by the Commission go beyond SAPN and SVDP's proposals to remove NER clause 6.1.4. The aim of this more preferable final rule is to create greater regulatory flexibility to efficiently manage the integration of DER, and promote confidence in the pricing framework. The Commission has made several consequential rule changes and introduced transitional arrangements to support implementation of these reforms. Export pricing options can apply to *all* distribution-connected generators.

To be clear, enabling export pricing options under the regulatory framework is not a decision to mandate export pricing. The AER, as the economic regulator, oversees revenue determinations and pricing proposals for each DNSP. A decision to implement export pricing for a DNSP would be part of the AER's regulatory process and must promote the NEO.[203] Export pricing is optional for each DNSP.

The Commission's decision has the potential to result in significant long term benefits to consumers. There are good economic reasons to introduce export pricing – both in the short term to manage new DER-related investment, and the longer term to take advantage of future market and technology developments. Pricing is a common regulatory tool to send efficient signals for future expenditure, and reward customers for actions that better utilise existing infrastructure or improve network operations. Moreover, export pricing provides a way to integrate DER more effectively into the electricity system, which will deliver benefits to all distribution network users.

Implementation of export pricing is a significant change for the energy sector. Submissions highlight any decision to implement export charges could involve significant trade-offs and potentially conflicting objectives – which will need to be carefully considered by DNSPs as well as the AER.

The Commission considers the regulatory process for deciding each DNSP's pricing structure, the tariff structure statement (TSS) process, is robust. DNSPs are required to undertake significant consultation in developing their TSS proposals. The framework provides flexibility to accommodate different network circumstances, customer preferences and government policies.

Nevertheless, to balance the need for regulatory flexibility while addressing uncertainty about how export charges may be implemented, the Commission has decided to:

- require DNSPs to develop and consult on an export tariff transition strategy, which will outline both how DNSPs intend to engage their customers and other stakeholders on the TSS proposals, and transitional measures to phase-in export pricing over time

203 That is, if implementation of export pricing for a particular DNSP would lead to poor outcomes for its customers (for example, several submissions raise the concern that solar export charges could be higher than feed-in tariffs), the AER may conclude that this decision would not promote the NEO. Therefore, the AER would not allow that DNSP to introduce export charges.

- strengthen consultation requirements through the regulatory and TSS processes, building on the customer safeguards already built into the pricing framework
- require the AER to consult on and publish *Export Tariff Guidelines*, which will create greater transparency and certainty of the AER's decision-making process and criteria
- introduce transitional arrangements that protect customers who have already made significant investments by not permitting DNSPs to assign existing DER customers to export tariffs before 1 July 2025, unless the customer requests it
- require DNSPs to offer a basic export level without charge – whereby a retail customer can export to the distribution network up to this level at no additional charge for the next two regulatory periods.

The final two measures above have been introduced in this final determination in response to stakeholder concerns. The Commission received strong feedback in discussions and submissions to the draft determination that additional customer safeguards are required to address uncertainty about how export pricing will be implemented – including to protect recent customer investments and promote consumer choice.

5.2 Why the Commission has decided to enable export pricing

The final rule is part of the Commission's strategic plan to progress long-term reforms that support the integration of DER into the electricity system – taking advantage of the significant opportunities presented by a high DER future, and to deliver benefits to all electricity system users.

The Commission considers the regulatory framework should have the flexibility to respond to changing customer preferences, and technology and market developments as they emerge. The final rule aims to provide this flexibility, and enables DNSPs to design tariff and service options that meet retail customers' future needs and expectations.

These reforms are needed to meet the upcoming challenges facing the energy sector (section 5.2.1). The AER states:[204]

> 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.

The Commission's final determination clarifies that export services are part of distribution services (chapter 3). When significant new network expenditure is required to maintain or

204 AER submission to draft determination, p. 2.

improve these services, price signals can help to ensure it will be the result of customers making informed decisions about the costs that they impose on distribution networks. The Commission's decision enables this option by removing NER clause 6.1.4, which prohibited export charges from being applied (section 5.2.2).

Allowing 'negative prices' for export services similarly promotes efficient use of and investment in the grid. The proponents and stakeholders widely support the idea that DNSPs should consider the network benefits as well as the costs of DER exports. The Commission's final rule provides this flexibility for both export and consumption services under the network pricing objective[205] to allow charges in respect of the provision of direct control services to reflect efficient negative costs.[206]

There is now flexibility for DNSPs to offer new service options that reward customers for better utilising and supporting the grid. For example, customers may choose a service option with higher average export limits on the condition that they are willing to agree to face pricing structures that reflect network costs. This could include export charges during periods of high demand for export services, and negative export prices (eg, payments to the customer) during periods of high demand for consumption services.

More advanced pricing structures that integrate DER are expected to be a key feature of future market designs (section 5.2.3). Small retail customers have had limited ability to date to be rewarded for adjusting their usage or exports during times when there are network constraints. Looking forward, through digitalisation, smart meters, home-based or mobile (EV) battery storage, advancing technologies and greater data flows, customers will increasingly be able to adjust their usage or exports to benefit the system as a whole without impacting their day-to-day lives. This can provide valuable services to the grid and, as a result, reduce costs for everyone. The decision to enable export pricing allows customers to be rewarded for their flexibility.

The Commission considers the pricing framework is generally fit-for-purpose to support the introduction of export pricing (section 5.2.4).[207] DNSPs and the AER, through the TSS process, are best placed to develop new pricing options based on the network circumstances and jurisdictional policies at the time (section 5.2.5). Consumer preferences should also be strongly reflected in network services and tariff designs to meet customer needs in each jurisdiction (section 5.2.6). Local communities can now have a say on what is a fair and equitable way to allocate DER-related network investment costs – including whether the main 'beneficiaries' should pay more to support export services (section 5.2.7).

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205 NER clause 6.18.5(a).

206 In their submissions to the draft determination, Firm Power (p. 4; 6), Flow Power (p. 2), LGI (p. 2; 4) and Tesla (p. 5) propose several conditions on the way export pricing can be implemented – such as to achieve a balance between positive and negative export charging components. The Commission has sought to minimise prescription of certain outcomes to provide regulatory flexibility for the AER and DNSPs to develop pricing options that best promote the NEO. This notwithstanding, while positive and negative charges, for either export or consumption services, can both be used to promote efficient use of and investment in the grid, a decision to apply these regulatory tools may be made on a very different, and not necessarily related, economic basis. So, there is a significant risk that the proposed conditions could lead to inefficient outcomes.

207 This view is supported by farrierswier's *Insights report*, which considered the experience of the TSS process for consumption pricing reforms to date, and undertook scenario analysis designed to test how export pricing may be implemented under the current pricing framework (see appendix D of the draft determination report).

Although not proposed by SAPN and SVDP in their rule change requests, the Commission has decided export pricing options can apply to *all* distribution-connected generators – not just retail customers (section 5.2.8). Further, the Commission has made consequential rule changes and enhancements to the pricing framework required to support implementation of export pricing (section 5.2.9 and section 5.2.10).

The Commission's view of how our decision meets the assessment criteria applied for this final rule determination is summarised in section 2.4.3 and explained below.

5.2.1 The need for change

There is a base level of DER hosting capacity that all networks currently provide, because network assets constructed to supply load have an inherent capacity to support some reverse power flow without any additional investment. Customers have already paid for this intrinsic capacity to an extent through consumption charges.

But as distribution networks are increasingly used for the upstream transport of energy exported from customers' solar PV, the networks are approaching the limit of their intrinsic hosting capacity, and the desire to further increase the use of the networks in this way is expected to become a driver of new expenditure.

Some submissions to the draft determination question both whether network voltage issues caused by solar PV are overstated,[208] and whether significant investment will be required to manage higher DER penetration.[209]

In contrast, the AER considers networks with greater DER penetration are more likely to experience voltage or thermal violations,[210] and "it is clear that DER exports are currently impacting upon DNSP network capability with consequential costs to consumers in relation to network augmentation."[211] Moreover, the AER states:[212]

> 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.

The AER recently approved significant DER-related expenditure for SAPN ($82 million) and the Victorian DNSPs ($237 million). This is just the start. These proposals prompted the AER

208 These submissions reference a University of NSW study, Voltage Analysis of the LV Distribution Network in the Australian National Electricity Market (May 2020), which found voltage issues are due to a wide range of factors. That said, this study did not attempt to establish strict correlations and causation between PV generation and voltage, but nevertheless found distributed PV generation is clearly contributing to existing issues, and some level of PV curtailment is now present (p. 168).

209 See: Enova, p. 3; IEEFA, p. 2; MBS, pp. 11–12; VEPC, p. 3; Victorian Government, p. 4; Joint submission by Solar Citizens, the Australia Institute, Smart Energy Council, ShineHub, EcoJoule Energy, Wattever and VEPC, p. 2.

210 AER, Draft DER integration expenditure guidance note: Explanatory statement, July 2021, p. 29.

211 AER submission to draft determination, p. 6.

212 AER submission to draft determination, p. 5.

to develop a guidance note on DER integration expenditure for future network revenue determination processes.[213] The draft guidance note was recently published by the AER.[214]

These AER views are consistent with submissions by ENA[215] and the DNSPs (including case studies),[216] AEC (attaching an independent report by expert consultant Oakley Greenwood),[217] and several consumer groups (including ECA).[218] SAPN stated:[219]

> The most immediate constraint in most areas is voltage management at customers' premises. Networks were designed only to accommodate the drop in voltage that occurs as load increases, and hence have little headroom to absorb the rise in voltage that now occurs when customers' inverters feed energy back into the grid.
>
> Addressing this is not as simple as 'lowering the voltage' across the network, as this would cause under-voltage at peak demand times. Networks need to invest to upgrade their voltage management capabilities to operate over a much greater 'dynamic range' of power flows than they were originally designed for, to manage both positive and negative extremes. This in turn requires investment in improved monitoring of voltage performance across the network.

The Victorian Auditor-General's office, which considered the impact of increased solar PV penetration from the Government's rebates program, found:[220]

> The state's electricity grid was not designed to accommodate high levels of DER, such as solar PV panels.
>
> While existing infrastructure can usually accommodate low levels of energy exported from solar PV panels, high levels of penetration result in voltage rises, which can lead to damage and deterioration of the current network. Unmanaged solar energy exported from residential rooftops can lead to power failures and lower quality electrical supply across the network. ...
>
> The complex and significant work required to upgrade grid infrastructure to minimise adverse grid impact and maximise the benefits of solar energy requires considerable time and resources.

The AER is independent and has deep regulatory, economic and engineering experience and expertise. The Commission relies on the AER's judgement that DNSPs are expected to undertake significant expenditure going forward to address increasing DER penetration on

213 AER submission to draft determination, pp. 4–5.
214 See: www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/assessing-distributed-energy-resources-integration-expenditure
215 ENA submission to draft determination, p. 6.
216 For example, see Essential Energy submission to draft determination, p. 4.
217 AEC submission to draft determination.
218 ECA submission to draft determination, p. 2.
219 SAPN rule change request, p. 4.
220 VAGO, Delivering the Solar Homes Program: Independent assurance report to Parliament, June 2021, pp. 24–25.

the networks. This is consistent with the Commission's own consideration of these issues, as outlined in the 2019 Economic regulatory framework review.[221]

It is therefore timely to consider whether cost reflective pricing signals for efficient investment – in both the grid and 'behind-the-meter' – should apply to export services, as they already do for consumption.

5.2.2 Pricing is an economic tool to send efficient signals for future expenditure

Pricing structures that reflect the underlying economic costs of supplying infrastructure services promote efficient infrastructure use and investment. Prices can signal the costs to DNSPs of providing network services and the need for future investments, and efficiently ration network capacity during peak times.

For example, tariffs can be designed to optimise use of the distribution networks by rewarding customers who either change their behaviour to avoid export charges – like consuming more of their rooftop PV generation on-site when there is excess demand for use of network export services – or shift exports to periods of high demand for electricity to receive additional payments (negative charges).[222]

This smoothing of demand for consumption and export services – making best use of existing capacity – means higher productivity and lower average network costs for all system users. New investment may be deferred or avoided.[223] Such outcomes achieve the assessment criteria established for this rule change (see section 2.4.3).

Other regulatory 'tools', including incentive schemes, can also be used and may better address network issues depending on the circumstances. PIAC recommends export pricing reforms should follow, not precede, the full implementation of cost reflective consumption pricing.[224] But the Commission considers the use of pricing signals for export services, as an option, has the potential to be the most effective way to promote efficient use of and investment in export services, to the benefit of all customers.[225] Removing the barrier created by NER clause 6.1.4 therefore advances the NEO. As stated by the South Australian Government:[226]

> By providing the enabling architecture, including regulatory guidance and scrutiny of proposals, options such as charging for export services can be explored where, when and to the degree appropriate for each network and the value consumers place on those services. Equally, through, the framework would also allow alternative, non-tariff options for minimising DER-related expenditure and achieving DER integration

221 AEMC, Economic regulatory framework review, September 2019.

222 Customers can shift exports by making complementary investments, such as in battery storage, or even by choosing to install solar panels on west-facing roofs.

223 More detail on the potential value of pricing signals and how they can promote the NEO is outlined in appendix C of the draft determination.

224 PIAC submission to draft determination, p. 2.

225 Cost reflective consumption pricing may not always be the best regulatory tool because these charges must reflect the long run costs of consumption services, not export services. The AER submits there is a limit to what consumption tariff reforms can achieve in the context of the scale of DER investment expected over the coming decade (p. 9).

226 SA Government submission to draft determination, p. 1.

> outcomes to operate in parallel or in place of export tariffs.

The AER notes the introduction of export tariffs is part of a broader network tariff reform program that commenced in 2017 to promote cost reflective pricing.[227] The network pricing principles go as far as to recognise the marginal costs of electricity network services can vary between customers, times of use and location. Although there has been limited implementation of locational pricing for consumption pricing to date, this may be a feature of future market designs.[228]

5.2.3 New service options and the future grid

Allowing export pricing opens up a range of potential service options that better integrate DER into the energy system (meeting the assessment criteria in section 2.4.3).

For example, customers who seek a higher level of export service than is typically offered now, based on the intrinsic capacity of the network, may have the option to choose higher service levels. This could include higher average export limits, if the customer agrees to face pricing structures that reflect increased network investment costs needed to support the additional demand for export services.[229] And DNSPs can now pay customers to consume or export (in addition to feed-in tariffs) at times that help alleviate network constraints. This in turn may incentivise customers to make efficient, complementary investments in 'behind-the-meter' appliances – such as batteries, EVs and demand management devices – to maximise the value of their solar PV system investments.

The AER submits:[230]

> 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.

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227 AER submission to draft determination, pp. 9–10.

228 The Commission understands there are currently jurisdictional prohibitions on locational network pricing for small customers in NSW, South Australia and Tasmania, and also measures applied outside the TSS process in Queensland to achieve an equivalent effect.

229 As noted by farrierswier, consistent with current arrangements for access by generators to distribution and transmission networks, optional services with higher levels of exports would not provide 'firm' access to the network for exports or a 'guaranteed' level of exports. This is clarified in the final retail rule which amends the deemed standard connection contract to refer to circumstances in which export services may be curtailed or interrupted. However, similar to current broadband products, consumer laws may also be relevant if customers paid more for an optional export service but were regularly given lower than the advertised level of service. State and territory guaranteed service level schemes (GSL) do not currently apply to export services, but may do so in the future. (Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, p. 35) This issue was also highlighted in CPU (p. 5) and Jemena's (p. 2) submissions to the draft determination.

230 AER submission to draft determination, p. 9.

This reform package as a whole promotes incentives for DNSPs to develop mechanisms such as flexible export limits and dynamic operating envelopes.[231] Export pricing is complementary to these outcomes.[232] While operating envelopes are potentially a low cost way of increasing overall network capacity, where constraints still occur, export pricing can both send efficient signals for future investment required to further improve export services, and reward customers for actions that better utilise existing infrastructure or improve network operations.[233] SAPN states the implementation of flexible export limit capabilities will enable an increased range of service options with commensurate network tariffs that customers can choose from.[234]

The Commission considers enabling export pricing options is foundational to support effective DER integration and future market designs that have been considered as part of the ESB post-2025 reforms, such as a two-sided market.[235]

In the future, affordable automated home energy management systems with 'set and forget' technologies are expected to be able to respond to more complex price signals with minimal customer impact.[236] This will allow DER services to deliver the most value to distribution networks at a point in time, and maximise the returns/benefits to households. Enabling export pricing and increasing the flexibility of the network pricing principles is a step forward towards this vision.

5.2.4 The existing pricing framework provides a robust mechanism to implement export prices

The Commission engaged an independent expert consultant, farrierswier, to consider the experience of the TSS process for consumption pricing reforms to date, and undertake scenario analysis to test how export pricing may be implemented under the current pricing framework.[237]

Farrierswier found the TSS process and pricing principles are robust to introducing export pricing, and there is no reason to expect that material consumer harms would remain after the application of the existing safeguards.[238] Farrierswier considered:[239]

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231 Dynamic rather than fixed export limits could enable higher levels of energy exports from customers' solar and battery systems by allowing higher export limits at times of day when there is more hosting capacity on the local network.

232 As noted by Discover Energy (p. 2), Enphase Energy (p. 4) and SAPN (p. 7) in their submissions to the draft determination.

233 In its submission to the draft determination, the Victorian Government asks: how will export pricing interact with dynamic operating envelopes? If they are set in such a way as to avoid DER systems imposing costs on the network, would consumers still pay export charges – and if so, what are they paying for (p. 4)?

234 SAPN submission to draft determination, p. 7.

235 In a joint submission, Solar Citizens, the Australia Institute, Smart Energy Council, ShineHub, EcoJoule Energy, WATTever and VEPC submit the rule change preempts the ESB's DER/DSP plans for the NEM redesign, and the best outcome would be to pass on this rule change to the ESB's Post 2025 redesign (pp. 2–3). This rule change is part of the ESB's DER Integration workplan. The ESB has worked closely with the market bodies to leverage existing processes where possible as part of the Post-2025 program (ESB, Post 2025 Market Design, Directions Paper, January 2021, p. 76).

236 In its submission, Enphase Energy notes with the implementation of dynamic connection agreements and wholesale electricity prices for customers, a smart algorithm can be created so that customers do not have to constantly monitor their energy use and make their own energy decisions (p. 4).

237 Details of the relevant regulatory arrangements, including an explanation of the TSS requirements, are outlined in section 6.3 of the draft determination.

238 Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, p. 65.

239 ibid, p. 2.

> The TSS process is currently designed to deal with a mass of complex situational detail and variance for each DNSP. This includes consideration of economic principles for efficient pricing, customer impacts, legacy pricing arrangements, legacy metering capabilities, pace of transition, jurisdictional requirements, customer and stakeholder engagement, and the desire for pricing predictability.

The AER considers the pricing framework is appropriate to manage the introduction of export tariffs and highlights successful consultation outcomes as part of the most recent TSS processes:[240]

> 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.

The AER has requested changes to most DNSP TSS proposals for consumption services to date – including to the form of transition (ie, arrangements for mandatory assignment, opt-out, opt-in) and pace of transition. Farrierswier highlighted in its Insights report examples of the AER intervening in TSS processes to give greater weight to the customer impact principles.[241] As such, farrierswier found the existing TSS process and pricing principles:[242]

- provide for a range of different transitional tools and other mechanisms that can be used by DNSPs and the AER (in consultation with customers) to mitigate the impact of introducing export pricing on customers
- are likely to steer DNSPs towards scenarios that include measures to mitigate potential harm for exporting consumers during transition
    - moreover, there is a high likelihood that scenarios that have higher potential for customer harm would not be proposed by DNSPs or approved by the AER, especially if consumers raise significant concerns with them during the consultation that is required as part of the TSS process.

Having regard to farrierswier's findings and stakeholder feedback both in submissions and through members of our technical working group (TWG), the Commission considers the TSS

240 AER submission to draft determination, pp. 2–3.
241 Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, p. 17.
242 ibid, pp. 65–66.

process is the appropriate mechanism to make regulatory decisions relating to the implementation of export pricing:

- The TSS process provides significant flexibility for DNSPs and the AER to develop pricing structures that meet a network's specific circumstances and customer preferences.
- DNSPs are required to undertake significant consultation, customer education, and consideration of both the potential impacts on customers and how tariff classes will be communicated.
    - The DNSPs' TSS consultation provides a forum for retail customers and stakeholders to raise concerns with how tariffs, both for consumption and export services, are structured.
    - If a DNSP has not adequately identified and addressed those concerns in its regulatory proposal, stakeholders then have an opportunity to influence the AER's decision on whether or not to approve the DNSP's proposal.
- The NER require the AER to take account of the DNSPs' consultation and stakeholder submissions, and one of the network pricing principles requires the TSS to comply with applicable jurisdictional regulations.[243]
- The TSS process is well understood. Creating a new regulatory process to implement export pricing would create unnecessary complexity and regulatory burden, which would not meet the assessment criteria established for this rule change (see section 2.4.3).

Nevertheless, the Commission has received strong stakeholder feedback that a transition pathway is required to address uncertainty about how export pricing will be implemented. The Commission considered stakeholder feedback and introduced two new customer safeguards in the final rule to help manage change and provide greater assurances (see section 5.3.3 below).

5.2.5 'Horses for courses'

There may be varying views on whether the introduction of export pricing promotes the long term interests of consumers from jurisdiction-to-jurisdiction. Indeed, while the South Australian Government sees value in price signals for export services,[244] other jurisdictional governments may consider the introduction of export charges is inconsistent with their economic or social policy objectives for a given regulatory control period.

One size does not fit all. There is not necessarily one right answer. Factors include:

- the jurisdictional circumstances at the time – including DER penetration rates and forecasts, the level of network capacity and the cost of improving hosting capacity, if needed
- consumer views and preferences on the connection service options that should be available to retail customers in the relevant DNSP's area

243 NER clause 6.18.5(j).

244 SA Government submission to consultation paper, p. 3.

- customer, stakeholder and government views on how future DER-related investment costs should be allocated – including what the community considers to be fair and equitable (discussed further below).

The Victorian Government considers the rule change process is limited in its ability to assess important social and environmental factors beyond the NEO that will interact with, and influence the outcomes of, these reforms.[245] The Tasmanian Government states:[246]

> I am pleased to see that the AEMC is acknowledging that the regional and jurisdictional differences across the NEM often require variation in how the regulatory arrangements apply. The NEM operates as one market, but there are significant differences across the NEM in terms of generation mix, climate, local supply demand balance, and customer needs and expectations. A flexible approach that accommodates the need for jurisdictions to apply the NEM rules in a way that is complementary, rather than uniform, helps to ensure that the interests of customers in all regions are better served.

The Commission considers the regulatory framework must accommodate such jurisdictional differences to promote the NEO – so each network can respond to their particular circumstances, and account for different state and territory government policies. Removing NER clause 6.1.4 and allowing affected customers and relevant stakeholders to have a say on AER decisions to implement export pricing, through the TSS process, provides this flexibility.[247]

Modelling of bill impacts on customers

Appendix D looks at the potential bill impacts export charges may have on retail customers. The analysis is used for indicative purposes based on several assumptions to better understand the range of potential financial impacts on customers. This high-level risk assessment has informed the Commission's decision – including the extent to which additional customer safeguards are required.

Some submissions consider the draft determination did not provide adequate modelling or quantification of the benefits and costs of introducing export pricing for each jurisdiction.[248]

The possible tariff designs and outcomes for each jurisdiction could vary significantly depending on the network circumstances, customer preferences and jurisdictional policies – which will change over time. Detailed consideration will need to be undertaken as part of each TSS process based on the specific circumstances before any decision is made to implement export pricing. As recognised by the Tasmanian Government, "we would anticipate

245 Victorian Government submission to draft determination, p. 4.

246 Tasmanian Government submission to draft determination, p. 1.

247 VEPC submits the Commission's decision "does precisely the opposite": it does not give consumers and governments a greater say because customers will have no legal basis to refuse injection charges and, if jurisdictional governments are opposed to it, the onus will rest with them to derogate (pp. 6–7). In the Commission's view, NER clause 6.1.4 provided no flexibility for DNSPs to apply export charges, so consumers and governments did not have the option to consider export tariffs through the TSS process.

248 See: Victorian Government, pp. 2–4; Joint submission by Solar Citizens, the Australia Institute, Smart Energy Council, ShineHub, EcoJoule Energy, WATTever and VEPC, p. 2.

that a more detailed evaluation of the relative costs and benefits for all classes of customers would be required as part of the evaluation of any proposals by networks prior to the approval of any new tariff arrangements."[249]

5.2.6 Customer-centric tariff designs

Consumer choices and uptake of DER are driving the transformation of the energy sector. As consumers' interactions with the electricity system evolve, so will their expectations and required standard of service. Consumers should have the opportunity to make informed decisions or choices about which electricity services they use and the way they use them, based on the benefits that the services provide to them. Ultimately, consumers will be in the best position to decide what works for them and how they engage in energy markets. It is therefore increasingly important for *real* customer views, preferences and priorities to be reflected in network proposals and regulatory outcomes.

Consumer engagement is a fundamental part of the TSS process. In designing tariff structures, DNSPs should be reaching out to customers to understand their changing needs, and developing new products and services to meet those needs.[250] Consultation also provides a safeguard against unwanted outcomes. So, it is important for DNSPs and the AER to have robust consultation processes and forums to gain consumer insights – and their confidence.

Submissions generally supported the need for DNSPs to consult closely with their customers. CALC states regulatory bodies and network providers must genuinely engage with all consumers, including vulnerable and disadvantaged consumers, so that their voices and interests are at the centre of decision-making processes.[251] The South Australian Government submitted any framework implemented by the Commission will require a strong role for consumer engagement, as there is likely to be a broad range of consumer views in relation to network investment to support export capacity.[252] The Victorian Government highlighted the critical role of DNSPs' ongoing consultation and engagement with their customers.[253]

However, some submissions to the draft determination have questioned the effectiveness of consumer engagement in the TSS process, especially given funding constraints on consumer representatives.[254] In particular, TEC/ACOSS state the Commission should closely consider how consumer advocates could be properly resourced for the considerable additional engagement required during TSS processes pursuant to these reforms.[255] Others consider the draft rule gave too much discretion to DNSPs and the AER to identify and address customer concerns.[256] Submissions also highlighted the need for behavioural studies on how customers

249 Tasmanian Government submission to draft determination, p. 1.
250 Faruqui, A., Refocusing on the Consumer, Regulation, 2020, 43(1), p. 26. Available at: www.cato.org/regulation/spring-2020/refocusing-consumer
251 CALC submisssion to draft determination, p. 2.
252 SA Government submission to consultation paper, p. 3.
253 Victorian Government submission to consultation paper, p. 5.
254 See: Energetic Communities, pp. 5–6; TEC/ACOSS, pp. 5–6.
255 TEC/ACOSS submission to draft determination, pp. 5–6.
256 MEU, p. 2; VEPC, p. 6.

would respond to export pricing signals before any decision is made to introduce them more widely.[257]

We are seeing major cultural change in the sector

It is widely acknowledged that there are significant barriers to effective consumer engagement in regulatory processes, which are not easily overcome. The inherent complexity of the regulatory framework and resource imbalances between consumer representatives and the DNSPs create challenges for the consumer voice to be adequately heard, considered and ultimately reflected in regulatory outcomes. Jurisdictional consumer representatives generally have a wide remit covering a range of essential services, with competing priorities and sometimes very limited resources.

But there are good reasons to be optimistic about the effectiveness of consumer engagement in the TSS process. The Commission introduced requirements for DNSPs to better engage with consumers in 2012. As reported in the Commission's Economic regulatory framework reviews, DNSPs have made significant improvements to the way in which they engage with consumers in recent years – especially direct engagement with their end-use customers. DNSPs are broadly demonstrating a commitment to ongoing and genuine consumer engagement. DNSPs and the AER are making continual improvements and innovating to push the boundaries of consumer engagement.[258]

This is consistent with farrierswier's finding that there has been improved consultation in the development of network tariffs, whereby DNSPs' engagement is:[259]

- starting on average three years before the new TSS periods
- involving a broad range of customers and stakeholders
- influencing tariff structures and arrangements for tariff transition
- driving customer and consumer representative support.

Notably, Essential Energy has undertaken a dedicated engagement program with small customers and stakeholders to co-design acceptable tariffs to take to trial – including 'sun soaker' and export tariffs to manage growing solar energy exports across its network. Essential Energy states while significant work is still to be undertaken as part of these tariff trials, the engagement program was highly rated by the customers who participated and resulted in trials that were wholly supported by Essential Energy's independent Tariff Advisory Panel.[260] Commission staff attended some of these Essential Energy forums.

Behavioural studies are being undertaken by DNSPs

DNSP behavioural studies can be an input into tariff design options and used to support TSS proposals. Importantly, they can inform how responsive customers are to price signals –

257 CEC, p. 3; ECA, p. 3; MBS, pp. 13–14; Queensland Government, p. 2; Victorian Government, pp. 2– 3.

258 AEMC, Economic regulatory framework review, 2019, pp. 54–63; 129–135. In the 2020 Economic regulatory framework review, the Commission explored reform options to enhance process-based incentives to create greater leverage for the consumer voice in regulatory determination processes.

259 Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, p. viii; 23.

260 Essential Energy submission to draft determination, p. 2.

which is a key consideration for the potential efficiency benefits of cost reflective pricing. The final rule requires DNSPs, in a plain language overview, to describe the key risks and benefits for customers of the proposed TSS (see section 5.3.1).[261]

There have been several examples of DNSPs undertaking customer behaviour studies – including as part of in-period tariff trials to inform TSS consultation and proposals. For instance, TasNetworks' 2017 emPOWERing You Trial was designed to gain a better understanding of how customers respond to cost reflective pricing.[262] Essential Energy has a behavioural economist advising on its current tariff trials, and will undertake a study to test whether simple communication and education material results in sufficient behavioural change without the need for significant changes to network tariffs.[263] Evoenergy's upcoming tariff trials for residential and large-scale batteries will look at customer responsiveness to different pricing structures, as well as how home energy management devices and batteries may allow for a response to peak periods without changing in-house consumption behaviour.[264]

The AER has discretion to further encourage these behavioural studies in its *Export Tariff Guidelines* (section 5.3.2). And the final rule increases the thresholds for in-period tariff trials to give DNSPs greater scope to undertake customer impact studies, among other things (section 5.3.4).

Resourcing of consumer groups

The Commission considers it is not appropriate to consider TEC/ACOSS' proposal to embed additional resource requirements for consumer representatives through this rule change process. These decisions should be made by governments on behalf of the community – with a whole-of-government perspective. Energy Ministers initiated a review in 2017 of options to improve resourcing available to consumer groups to support more effective engagement in AER revenue determinations, but the outcomes of this process have not yet been made public.[265]

Stakeholder submissions that question the ability of the AER to assess the robustness of the DNSPs' consultation do not recognise that significant institutional arrangements have been put in place to support consumer engagement:

- The AER instituted the Consumer Challenge Panel to provide input into AER network regulation decisions on issues of importance to consumers, and establishes Consumer Reference Groups to represent consumer perspectives and interests on guideline review and network revenue determination processes.

261 NER clause 6.8.2(c1)(5).

262 See: www.tasnetworks.com.au/config/getattachment/15dd6c15-6386-42da-b73c-f712f598de2c/empowering-you-final-report-summary.pdf

263 Essential Energy submission to draft determination, attachment: Customer & stakeholder views on export charges.

264 As part of Evoenergy's consultation, ACTCOSS supported the inclusion of qualitative research as part of the trial. See December 2020 ECRC meeting communique here: www.evoenergy.com.au/consumer-engagement-program/energy-consumer-reference-council/ecrc-meeting-papers

265 See: https://energyministers.gov.au/publications/consumer-participation-revenue-determinations-and-associated-regulatory-processes

- ECA provides an independent, national voice for residential and small business energy consumers. ECA has built capacity and expertise to engage in network revenue decision and guideline processes.
    - Further, ECA supports consumer advocacy through its Grants Program. This allows consumer bodies to apply for a grant to engage with the networks in the development of their regulatory proposals, and with the AER in network revenue decision and guideline processes (among other things). However, ECA's overall grants budget is limited, and it needs to support a diverse range of advocacy and research work.

5.2.7 DER, equity and the NEO

Equity was a key concern highlighted by the rule change proponents. Equity issues may be raised where those that benefit the least from network expenditure to increase export hosting capacity are asked to pay an equal share of the costs. By enabling export charges, network tariff structures can be developed that allocate DER-related investment costs between users and over time, in proportion to the benefits that customers are expected to receive from these services, or costs they impose on the network.[266]

SVDP stated:[267]

> DER is central to a lower emissions energy future and it is therefore imperative that we can achieve a high DER penetration without allowing electricity to become inexpensive for some and unaffordable for others. Inefficient and inequitable allocations of costs and benefits will not deliver the desired outcomes in the long run.
>
> Non-DER participants have already subsidised this initial shift to a DER future and while this has incentivised the DER uptake, largely in the form of rooftop solar, this does not justify ongoing subsidies from non-DER participants to DER participants into the future. Rather, we need to deliver price signals that can incentivise DER participants to engage with energy management services as well as other technologies, such as storage, to deliver a sustainable DER future.

Similarly, TEC/ACOSS said, "equity issues are arising, especially because people without DER are paying a higher proportion of the costs of the grid that everyone depends upon."[268] SAPN stated:[269]

> Stakeholders, in particular vulnerable customer advocates, are also concerned that the current practice of recovering network costs via tariffs only on energy consumed from the grid will in future lead to cross-subsidies from non-DER customers, including

266 Enova submits export pricing may create greater inequality, with those who can afford personal investment in batteries being the major beneficiaries (p. 3). But customers who can self-consume or shift their solar exports away from periods of network congestion to avoid export charges, by making complementary 'behind-the-meter' investments, would not impose additional costs on the grid.

267 SVDP, rule change request, p. 9.

268 TEC/ACOSS rule change request, p. 2.

269 SAPN rule change request, p. 7.

vulnerable and disadvantaged customers, to DER customers over time. While new tariffs such as SA Power Networks' 'Solar Sponge' Time of Use tariff help to address this, some stakeholders consider that more symmetrical pricing will be necessary in the long term to avoid undesirable cross-subsidies, particularly as investment to support customer exports increases in the future.

Equity and fairness are part of the conversation

The Commission's decision to enable export pricing is broadly based on the potential economic efficiency benefits discussed in section 5.2.2 above – in accordance with the requirement under the NEL to make a rule only where satisfied that the rule is likely to contribute to the achievement of the NEO.[270] We have considered the benefits and costs to society, as distinct from private benefits to individuals.

Nevertheless, these pricing reforms have the potential to simultaneously promote efficiency and improve distributional outcomes. Minimising network investment needs, so DNSPs provide export services at the least possible cost, means lower electricity bills for all consumers. Price signals allocate the risk of excessive demand of network services, which could lead to inefficient network expenditure, to those customers. And we have sought to facilitate equity and fairness considerations within the regulatory process by strengthening the consultation requirements on DNSPs (section 5.3.1).[271] These factors are consistent with the assessment criteria established for this rule change (see section 2.4.3).

Successful implementation of export pricing relies on gaining community support. Customer preferences and behaviours, which can reflect the (changing) norms or values of society and a broad range of complex factors, should influence regulatory outcomes – including transitions. Such considerations cannot be avoided in consultation processes, especially for decisions that directly impact customer bills. All relevant stakeholder views should be facilitated and must be taken into account by DNSPs in developing their TSS proposals, and by the AER in making its decisions.[272] This has been the experience for implementation of consumption pricing reforms. Indeed, customer feedback on DNSP tariff designs to date are often based on notions of what is fair and equitable.[273]

Some question whether equity concerns are real

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270 NEL section 88. The second reading speech for the Bill containing the NEO states: "The market objective is an economic concept and should be interpreted as such." (Second reading speech, National Electricity (South Australia) (New National Electricity Law) Amendment Bill 2005, 9 February 2005.)

271 In its submission to the draft determination, Zero Emissions Noosa states "Provision of social policy outcomes should be left to Governments to administer through rebates or other retail incentives as they see fit. It is not the role of the energy market to attempt to right social wrongs or inequities." (p. 6) In contrast, NICE considers "Rules that result in inequitable outcomes will not endure just as rules that ignore emissions reduction objectives won't endure." (p. 6)

272 MBS submits the Commission should explore the extent to which the regulatory rules and practices more broadly are contributing to distributional inequities, including how sunk costs and residual revenues are recovered from consumers, and says amendments should be made to the National Electricity Law to guide these considerations (pp. 4–7). The Commission engaged an independent, expert consultant to consider the robustness of the current pricing framework (section 5.2.4). The AER has significant regulatory flexibility to consider how sunk costs and residual revenues are recovered from consumers, based on the specific circumstances. AER decisions must promote the NEO, which does not include an explicit equity objective. But DNSPs and the AER must take into account customer views and preferences as part of their consultation, which may include broader concerns. Judgements about equity and fairness are not delegated to DNSPs, as MBS suggests (p. 7). The AER has oversight.

273 For example, see: Essential Energy submission to draft determination, attachment: Customer & stakeholder views on export charges.

Submissions highlighted a range of views about how DER-related network expenditure should be allocated. Some question whether equity concerns expressed by the proponents and consumer groups are overstated.[274]

Several submissions, including by the Victorian Government, reference a 2018 VEPC study prepared for Solar Citizens that found:

- Rooftop solar PV uptake is proportionately more common in households in the middle and lower socio-economic deciles than in the higher socio-economic deciles.
- Rooftop solar PV uptake is proportionately the highest in the lowest socio-economic decile and lowest in the highest socioeconomic decile.
- Rooftop solar PV is proportionately more popular with people who live in less valuable houses than it is with people who live in more valuable houses.[275]

Further, some submissions suggest the wholesale market benefits of rooftop solar far outweigh DER-enablement costs for non-solar consumers, and that the cost of upgrading networks to accommodate DER are, and will likely remain, small relative to total expenditure.[276] So, "as all consumers gain from increased solar penetration through lower wholesale and subsequently retail prices, all consumers should share the additional costs of export services", WATTever submits.[277]

The relationship between rooftop solar PV uptake and household wealth

The Commission's review of independent, peer reviewed academic journal articles considering the relationship between rooftop solar PV uptake and household wealth in Australia provides the following insights:[278]

- higher household wealth was found to be a predictor of higher solar uptake, except for at very high wealth levels – that is, there is an inverse-U shape relationship between wealth and rooftop solar PV uptake[279]
- household wealth is positively related to the *size* of solar systems installed by households[280]
- rooftop solar PV uptake is highest among middle income households[281]
- low-income households are more likely to rent than middle- or high-income households, and renters install rooftop solar PV at lower rates than homeowners due to property right constraints and the difficulty of co-ordinating with landlords[282]

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274 See: Enova, p. 4; IEEFA, p. 3; VEPC, pp. 1–3; Victorian Government, pp. 3–4; WATTever, pp. 4–5; Zero Emissions Noosa, pp. 5–6; and many private individual submissions.

275 VEPC, Using electricity bills to shine a light on rooftop solar photovoltaics in Australia, 2018, p. 4.

276 See: Enova, p. 4; IEEFA, p. 2; VEPC, p. 3; Victorian Government, p. 4; WATTever, pp. 4–7; Zero Emissions Noosa, pp. 5–6.

277 WATTever submission to draft determination, pp. 6–7.

278 More detail is provided in appendix C.1.3 of the draft determination.

279 Best et al., Understanding the determinants of rooftop solar installation: evidence from household surveys in Australia, Australian Journal of Agricultural and Resource Economics, 63(4), July 2019, p. 936.

280 Best, R., Chareunsy, A. and Li, H., Equity and effectiveness of Australian small-scale solar schemes. Ecological Economics, Vol. 180, 2021.

281 Best et al., Evaluating the effectiveness of Australia's Small-scale Renewable Energy Scheme for rooftop solar, Energy Economics, 84, August 2019.

282 Zander, Unrealised opportunities for residential solar panels in Australia, Energy Policy, 142, July 2020.

- a major driver of solar PV uptake is concerns about rising bills, but low-income households were more likely to cite financial constraints preventing them from investing in solar.[283]

The ACCC recently found hardship and payment plan customers in the NEM have the highest electricity usage, lowest rates of solar panels, and highest bills overall.[284]

These above findings are intuitive and confirm the views expressed in many submissions – including by consumer groups such as ACOSS and the state and territory COSSes, CALC, ECA and SVDP – that there are potential equity concerns with smearing the costs of new DER-related expenditure across all customers. ECA states:[285]

> In the absence of the rule change, the additional investment in electricity distribution network capacity would need to be recovered from all consumers based on the amount (and timing) of electricity supplied to them from centralised generation. Clearly this creates an inequity for those Australians that cannot access either rooftop solar (or home energy storage) – noting that some 35% of Australians on average are renters, and some 30% do not live in detached housing.

Moreover, the South Australian Government considers there are vulnerable customers who have not had the capacity to invest in DER, and "the risk of cross subsidisation by these customers should be a paramount consideration."[286]

The Commission considers the methodology of the 2018 VEPC study is not robust given how it assesses the relationship between socio-economic status and solar PV uptake. VEPC's study analyses household data at a postcode level, which creates the risk of inferring a relationship at an aggregate level that does not necessarily hold at an individual household level.[287] That is, while low socio-economic *postcodes* may have higher rates of solar PV uptake than high socio-economic postcodes, it cannot be assumed that there is a positive relationship between socio-economic factors and solar PV uptake at an individual household level. Analysis should be undertaken at a more granular level. Indeed, Tidemann et al. (2019) found that when using 'higher resolution data', there is a "strong, positive relationship between areas with greater economic resources and increased (solar PV) penetration".[288] These findings and approach are consistent with the Best et al. studies, which also overcome aggregation issues by using household level survey data.[289]

Will the benefits of DER for all customers continue to far outweigh DER-enablement costs?

283 Bondio et al., The technology of the middle class: Understanding the fulfilment of adoption intentions in Queensland's rapiduptake residential solar photovoltaics market, Renewable and Sustainable Energy Reviews, 93, 2018, pp. 642–651.

284 ACCC, Inquiry into the National Electricity Market: May 2021 Report, 27 May 2021, p. 5; 40; 42.

285 ECA submission to draft determination, p. 2.

286 SA Government submission to draft determination, p. 3.

287 This is a commonly understood issue in spatial analyses referred to as the 'ecological fallacy'.

288 Tidemann et al., Spatial disaggregation clarifies the inequity in distributional outcomes of household solar PV installation, Journal of Renewable and Sustainable Energy 11, 035901, 2019.

289 Best et al., Understanding the determinants of rooftop solar installation: evidence from household surveys in Australia, Australian Journal of Agricultural and Resource Economics, 63(4), July 2019.

The Commission agrees rooftop solar has helped to reduce wholesale costs,[290] and that these benefits to consumers have, to date, outweighed the network costs. DNSPs have not incurred significant costs to manage higher DER penetration in the past. SAPN explained:[291]

> Distribution networks designed to support consumption services have an inherent, albeit finite, capacity to also deliver export services. While customers' take-up of DER was relatively low, networks could accommodate additional DER at near zero marginal cost. However, the inherent DER 'hosting capacity' of networks is being rapidly approached at local and system-wide levels in many NEM regions. This means that either DER customers will no longer receive the service levels for export services they have historically enjoyed, or networks will need to invest to maintain service levels.

But with now generally low (and sometimes negative) wholesale prices being experienced in the middle of the day, and the potential for new network costs to support export services that were not previously incurred, the argument that wholesale market benefits of solar PV far outweigh DER-enablement costs for non-solar consumers may not still hold. The test is forward-looking, as noted by ACOSS and the state and territory COSSes.[292]

The Commission accepts the AER's view that DNSPs are expected to undertake significant expenditure to address increasing DER penetration on the networks (as discussed above).[293] Recent DER-related expenditure approved by the AER for SAPN and the Victorian DNSPs is already significant in absolute terms. It is disingenuous to compare this capital expenditure to total network revenue, which generally dwarfs any new expenditure because it partly reflects the size of a DNSP's asset base. Notably, DER-related expenditure proposed by these DNSPs and approved by the AER was before this rule change – which explicitly recognises export services as distribution services going forward (chapter 3), and requires the AER to develop financial incentive schemes that promote efficient provision of export services (chapter 4).

Non-DER owners may still benefit overall if increased DER exports lead to lower wholesale energy and/or essential system services costs. However, the benefits resulting from the network investment may be highly unevenly distributed.[294] Further, as Oakley Greenwood says in its report to the AEC, "it may not always be the case that more distributed energy displaces more expensive fossil fuel generation, hence leading to lower costs and better environmental outcomes."[295]

Endeavour Energy states:[296]

> Rooftop solar can result in network costs and/or benefits depending on the

290 See: AEMC, Residential electricity price trends, December 2020, p. 9; 16.

291 SAPN rule change request, p. 4.

292 COSSes submission to draft determination, pp. 3–4.

293 AER submission to draft determination, pp. 5–6.

294 In their submission to the draft determination, ACOSS and the state and territory COSSes state: "While there may be some benefits for all in reduced wholesale prices and decarbonisation of the grid, those with rooftop solar benefit the most through additional direct financial gain (as well as their ongoing savings through self-consumption and avoided contributions to network costs), and those experiencing financial disadvantage and reliant on retail energy are contributing disproportionately more." (p. 4)

295 AEC/Oakley Greenwood submission to draft determination, attachment, p. 10.

296 Endeavour Energy submission to draft determination, p. 3.

circumstances. There should be an opportunity to consult with customers on the extent to which these benefits are socialised with, and costs subsidised by, non-DER customers. The draft Rule simply allows this consideration to occur and does not mandate any particular outcome from this exercise. For instance, a network in consultation with its customers and the AER can come to the view that no export charges are necessary or that only export rewards are necessary under the draft Rule.

What if DNSPs don't need to undertake significant investments?

Enabling export pricing addresses *a risk* that the economic regulatory framework for electricity networks is not sufficiently flexible and robust to continue to promote the NEO as the system transitions.

If it turns out significant new DER-related network expenditure is not needed in the future, perhaps due to the flow of consumer investment coming into small-scale batteries and electric vehicles as submitted by IEEFA,[297] then the introduction of export charges is unlikely to be justified by DNSPs, and the AER would not approve it. But it is better to get ahead of potential problems, especially given the AER's forewarning that significant new investment will be required.

In any event, two-way pricing, including negative prices, is expected to be a feature of future market design (section 5.2.3). Indeed, the ESB says the clearest opportunity from the energy transition is the development of a two-sided market, whereby energy services will be able to be bought and sold in a dynamic way, responding to consumer preferences and price signals.[298]

Commission view

In summary, the Commission considers there are legitimate equity and fairness concerns that should be considered as part of the DNSPs' and AER's consultation in designing tariff structures.

Most customers may prefer a beneficiary pays approach. For example, Essential Energy's recent consultation on export tariff options (discussed above) found the majority of customers and other stakeholders clearly supported proposed tariff options to recover DER-related network costs from exporting customers.[299] This may not be the case for all jurisdictions. But it highlights the risk of NER clause 6.1.4 setting in stone the preferences of what could be a minority of customers without giving others a say on how tariffs should be designed.

The Commission's decision means that the rules are no longer a barrier to these important conversations. In each jurisdiction, the wider community can shape DNSP and AER decisions on whether, and to what extent, export service costs should be allocated to those that benefit the most – if there is a significant imbalance in the distribution of benefits between

297 IEEFA submission to draft determination, pp. 2–3.
298 ESB, Moving to a two-sided market, consultation paper, April 2020, p. i.
299 Essential Energy submission to draft determination, attachment: Customer & stakeholder views on export charges.

customers, and equity or fairness concerns are identified as part of the consultation. Strong consideration will also need to be given to both how export charges interact with relevant government programs, such as the Victorian Government's Solar Homes Program and Energy Fairness Plan, and the social economic benefits of introducing cost reflective price signals. DNSPs and the AER will need to balance these factors in designing tariff structures that best promote the NEO.

5.2.8 Export pricing may provide useful flexibility for larger embedded generators

The Commission's decision allows export pricing options to apply to all distribution-level customers. AGL[300] and the South Australian Government agree the proposed framework should logically apply to all generation connected at the distribution system level, rather than excluding large embedded generator customers who are 'standalone' generators or applying only to small customers.[301]

Given embedded generators are already subject to 'deep' connection charges (including any necessary augmentation of the shared distribution network) and system strength costs,[302] some submissions to the draft determination question what allowing export tariffs means in practice for these generators.[303] CEC submits it is unclear whether embedded generators will be required to pay for connection costs as well as, or instead of, export charges and who will decide. This uncertainty, CEC says, could dampen new investment.[304]

There is value in the option

Export charges can be a substitute for up-front connection costs to address constraints and system security issues. Either charge can be used to recover the network costs for the provision of export services to those customers.[305] There is not a significant risk of DNSPs' 'double counting' their efficient costs, given the AER has oversight. If any constraints or system security issues are identified on a distribution network, the larger generators are already required to contribute to these costs as part of the initial connection agreement.

As advised by farrierswier, for embedded generators that are eligible for an individually calculated tariff, the rule change creates flexibility for the customer and DNSP to negotiate the relative balancing between up-front connection charges and on-going usage charges – while still ensuring the customer pays only their efficient share of the DNSP's costs.[306] In other words, the option of export pricing should encourage new connections rather than

300 AGL submission to draft determination, p. 6.

301 SA Government submission to draft determination, p. 3.

302 EnergyAustralia notes in its submission to the draft determination (p. 2), grid scale batteries and gas peaking plants incur significant connection fees to ensure their connection to the network is suitable for their operational requirements, and the connection fees are determined by DNSPs based on the availability of the network and any augmentation required.

303 See: AusNet Services, pp. 3–4; CEC, p. 4; EnergyAustralia, pp. 2–3; MEU, p. 2; Victorian Government, p. 3.

304 CEC submission to draft determination, p. 4.

305 Energetic Communities proposes in its submission to the draft determination (pp. 2–3), as an alternative to export charges for micro embedded generators, to use up front connection charges and for the Commission to investigate options to annualise up front connection charges to remove 'free ride potential'. Instead of imposing a significant upfront cost on household customers, enabling ongoing export charges creates a more practical way for retail customers to contribute to any costs they impose on the grid. Up front connection costs are expected to be prohibitive for most retail customers and creates a 'free rider' problem that can be administratively complicated to manage. Annual payments are basically the same thing as export charges.

306 Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, p. 49.

discourage them by creating greater flexibility for generators to pay for network costs over time, while they are earning export revenue.[307]

Plus, DNSPs may offer negative charges to larger generators to reward actions that better utilise the network or improve network operations – which potentially creates another stream of revenue for embedded generators.[308] As noted by the South Australian Government, "the consistent application across all distribution-connected generators could also enable embedded generators to benefit from other elements of the draft rule, such as the potential for rewarding exports that are beneficial to the grid."[309]

The risk of any unintended consequences that do not promote the NEO can be managed by the AER. The Commission's draft rule for the Integrating Storage process makes clear that in the event of a dispute, the tariffs that a DNSP charges for the provision of common distribution services for customers who are not retail customers should reflect its efficient costs of providing those services to the customer.[310]

Will export pricing create a competitive imbalance between different generators?

A broader concern raised in some submissions to the draft determination is that export charges at the distribution level could change the balance of competition between transmission and distribution-level generation.[311] Transmission-connected generators do not pay ongoing transmission use of system charges for prescribed transmission services. CEC submits:[312]

> Competitive neutrality issues will also result if wind and solar farms and gas peaking plants connected to distribution networks are required to pay export charges while competing wind and solar farms and gas peaking plants connected to transmission networks are not. This would result in a wealth transfer for distribution-connected assets to transmission-connected assets. It is unclear why there would be a benefit in tilting the playing field toward transmission-connected assets.

Competitive (or technology) neutrality refers to the principle that generation at either the transmission or distribution level should not enjoy competitive advantages or suffer from a competitive disadvantage due to the regulatory framework – since this may lead to an inefficient mix of production, and distort decisions on where to connect new generation.

It is very difficult to compare market access and network access and pricing on a like-for-like basis, while accounting for jurisdiction-specific arrangements, scheduling requirements and

307 Jemena submits the longevity of the connecting customer, and therefore the period for which the customer will contribute to the shared network, is a risk that should be borne by the connecting customer and not the broader customer base (p. 4). The Commission accepts it may not always be appropriate to substitute up front connection charges for ongoing export charges. But it will depend on the circumstances.

308 EnergyAustralia says in its submission to the draft determination, in the case of grid scale batteries, their ability to absorb the export of solar at times of congestion and then redistribute this energy at times of less congestion, is a generator attribute that should be prioritised, rather than be discouraged (p. 2).

309 SA Government submission to draft determination, p. 3.

310 AEMC, Integrating energy storage systems into the NEM, 15 July 2021, p. 111.

311 See: Enova, p. 4; MEU, p. 2; VEPC, pp. 5–6; Victorian Government, p. 4; and many private individual submissions.

312 CEC submission to draft determination, p. 4.

other compliance obligations on large generators.[313] There are many factors that can affect the balance, including government subsidy programs.

Looking at the connections arrangements under chapters 5 and 5A of the NER, it is clear transmission, embedded and micro embedded generators are not competing on a level playing field. Network connection charges for each customer type vary significantly. For example, embedded generators pay significant 'deep' connection costs created by their connection, and the full costs associated with delivering system strength commensurate to the 'harm' caused to the local fault current by a new connecting generator. But transmission generators only pay the latter, and neither of these provisions apply to micro embedded generators.

The focus and scope of this final determination is on promoting efficient outcomes relating to the distribution system. In any case, the Commission does not consider there is a significant risk that enabling export pricing for distribution-connected generation will create an overall regulatory bias strongly in favour of transmission generation – especially given the majority of DER do not actively participate in energy markets as of now. The ESB Post 2025 Market Design review has considered changes to transmission regulation that would promote cost reflective pricing to manage network congestion.

5.2.9 Facilitating innovative tariff design to meet customer preferences

Farrierswier highlighted that the pricing framework should permit DNSPs to design network tariffs for retailers and intermediaries, not just end customers.[314]

As part of the pricing framework, NER clause 6.18.5(i) states the structure of each tariff must be reasonably capable of being understood by retail customers that are assigned to that tariff, having regard to: (1) the type and nature of those retail customers; and (2) the information provided to, and the consultation undertaken with, those retail customers.

The concern is that this clause is a barrier to DNSPs developing innovative pricing options for export services, limiting the effectiveness of this reform.

Farrierswier found there may be a case for revisiting this aspect of the pricing rules to enable pricing designs that also target retailers and energy intermediaries. This, farrierswier says, may support implementation of cost reflectivity and innovation in network tariff offerings where they are designed for business-to-business application. Farrierswier noted:[315]

- network tariff structures may need to get more complex (e.g. for export services or in a future two-sided market)
- network tariffs may be sending signals to intelligent energy control devices rather than seeking behavioural change from retail customers themselves

313 For example, unlike most distribution generators, transmission-connected generators have to bid through the NEM for access to the market and are subject to non-firm access since these generators may be constrained off – even if their bid would otherwise entitle them to be dispatched.

314 Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, p. viii.

315 ibid, p. 25.

- large retailers have reported to the AER they will likely continue to package network tariffs into 'insurance style' retail tariffs
- innovative retailers and energy service providers may need to package multiple energy service value-streams into a simplified retail offer, which could require network signals to be balanced and at times traded off against other supply chain costs and benefits to provide net tariffs and rewards to retail customers.

In farrierswier's survey of TWG members, a retailer observed that pricing to retailers could see more innovative tariffs like locational or critical peak pricing that we have not seen at any scale to date:[316]

> Network tariffs are charged to individual customers. Transitioning towards a bulk wholesale network tariff approach (where the network tariff was aggregated and charged to the retailer based on the load profile of the retailer's portfolio in a particular location) would incentivise retailers to introduce locational and critical peak pricing because there would be a direct economic incentive to realise greater efficiency across the retail customer base.

That said, farrierswier noted previous customer and stakeholder feedback that "end customers' wishes should be kept in mind even if tariff structures are directed towards retailers", and "tariff structures should be able to be understood and managed by both retailers and customers".[317]

Commission's view

The Commission considers this matter relates to issues raised in the rule change requests, and should be addressed in order to improve the effectiveness of this package of reforms.

In explaining the introduction of NER clause 6.18.5(i) in our 2014 decision, the Commission stated, "Consumers will not be able to respond to the price signals that network prices are intended to send if they cannot relate their usage decisions to the price structure."[318] The Commission maintains this view at a principle level but accepts the drafting of NER clause 6.18.5(i) may have been a barrier to DNSPs developing innovative pricing options for export services.

For advanced pricing structures which would inherently target more engaged retail customers, the Commission considers that DNSPs should be able to meet their obligation under this clause by undertaking targeted consultation with customers of the relevant 'type and nature' to specifically test their ability to understand and respond to the more advance price signals. In other words, this pricing principle should not require DNSPs to ensure all tariff option designs are reasonably capable of being understood by even the least informed or engaged retail customer.

In addition, as discussed above, the Commission expects that DNSPs may increasingly seek to develop more advanced pricing structures in collaboration with retailers and/or energy

316 ibid, p. 25.
317 ibid, p. 25.
318 AEMC, Distribution Network Pricing Arrangements, Rule Determination, November 2014, p. 9.

intermediaries (such as VPPs) – including machine-to-machine tariffs, for example. Pricing structures could be designed for retailers and/or energy intermediaries to then re-package in innovative ways for end users to meet demand from customers in specific segments or with specific characteristics. This flexibility is important for the future grid.[319]

Under the version of clause 6.18.5(i) in effect prior to the implementation of this final rule, there was a high risk that such advanced tariff options would not be approved because they would not comply with that clause. Therefore, in the Commission's view, amendments to this pricing principle are required. Further, the Commission considers it would be problematic to change NER clause 6.18.5(i) for export services only – especially given the benefits of maintaining symmetry between consumption and export services to minimise regulatory complexity. It is also highly desirable for DNSPs to consider pricing options and trials holistically for consumption and export services. Consequentially, the changes to this pricing principle in the final rule apply to both services.

With limited changes from the draft determination, the Commission's final rule amends NER clause 6.18.5(i) to state:

> The structure of each tariff must be reasonably capable of being understood by retail customers that are or may be assigned to that tariff (including in relation to how decisions about usage of services or controls may affect the amounts paid by those customers), or being directly or indirectly incorporated by retailers or Market Small Generation Aggregators in contract terms offered to those customers, having regard to information available to the Distribution Network Service Provider, which may include:
>
> - the type and nature of those retail customers;
> - the information provided to, and the consultation undertaken with, those retail customers; and
> - the information provided by, and consultation undertaken with, retailers or Market Small Generation Aggregators.

Further, the AER can consult on and clarify, through the *Export Tariff Guidelines* (section 5.3.2), that NER clause 6.18.5(i), as amended, is not a barrier for DNSPs to design more advanced network tariffs targeting retailers and intermediaries for end customers.

Submissions to the draft determination supported this rule, with no specific concerns raised.[320]

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319 In its submission to the draft determination, NICE proposes that DNSPs should be required to charge retailers a cost reflective tariff for all connection points, using a derived profile for connection points where there is only an accumulation meter (pp. 14–15). Also, AEC (p. 6) and AGL (p. 7) propose the 'bulk wholesale network tariff model', whereby DNSPs charge cost reflective network tariffs to retailers based on an aggregated load profile of the retailers' customers. Although the Commission sees merit in such innovative approaches to promote cost reflective tariffs, we consider these decisions should be made as part of the AER's TSS process – rather than prescribed in the NER. It will be important to transition customers to cost reflective export tariffs over time based on specific jurisdictional circumstances and customer preferences. There is considerable regulatory flexibility for DNSPs to trial and develop different network tariffs. DNSPs should be working closely with retailers in designing export tariffs. NERL mechanisms are available to jurisdictions to require retailers to offer specified network pricing structures.

320 See: AER, p. 3; AGL, p. 7; CPU, pp. 4–5; PIAC, p. 2; SAPN, p. 9.

5.2.10 Consequential changes to support implementation of export pricing

Price signals should apply to peak consumption and export services

The Commission agrees with the AER's proposal to broaden the reference to cost drivers under NER clause 6.18.5(f)(2), which requires DNSPs to base tariffs on the long run marginal cost, to be more adaptable to emerging issues.[321] This clause referred to additional costs likely to be associated with meeting demand from retail customers at "times of greatest utilisation of the relevant part of the distribution network" – which relates more to peak consumption periods.

The growth in solar PV output in the middle of the day is lowering demand for consumption services at these times – with negative demand experienced in some cases. Minimum demand for South Australia and Victoria has continued to trend downwards, with new minimum operational demand records set in late 2020.[322]

DNSPs may need to invest to support increasing reverse power flows as customers continue connecting DER (see section 5.2.1 above).

Therefore, the final rule amends NER clause 6.18.5(f)(2) to say, "times of greatest utilisation of the relevant service", which covers minimum demand-related network constraints – providing greater clarity of the basis for which DNSPs should be developing tariff structures.

Submissions to the draft determination were generally supportive of this change.[323] However, PIAC is concerned that the above wording change may create costs for consumers who do not benefit from them – whereby times of highest generation and export to the grid may not coincide with the most impact occurring on the grid:[324]

> For example, minimum demand may be caused by oversupply of generation, or it may be a result of extremely low demand and regular amounts of generation. Changing to 'relevant service' can align the charge with maximum generation output, rather than the maximum impact on the network, meaning costs will be attributed to generation export even if it is not responsible for minimum demand issues.

The Commission does not consider this is a significant risk. Any proposed export tariffs must reflect DNSP investment costs to maintain or improve export services under the pricing principles. If proposed network expenditure relates more to consumption services (including to address minimum demand issues), these costs should not be recovered by export charges. As SAPN says, amending this NER clause helps clarify the application of this principle to peak use of consumption or export services.[325]

Assigning customers to different tariff classes

321 AER submission to the consultation paper, pp. 6–7.
322 AEMO, Quarterly Energy Dynamics: Q4 2020, p. 8.
323 See: AEC, p. 6; LGI, p. 3; SAPN, p. 9.
324 PIAC submission to draft determination, p. 3.
325 SAPN submission to draft determination, p. 9.

The Commission considers a consequential change is required to the NER clause 6.18.4 principles governing assignment or re-assignment of retail customers to tariff classes and assessment and review of the basis of charging.

Specifically, the final rule deletes NER clause 6.18.4(a)(3), which states retail customers with micro-generation facilities should be treated no less favourably than retail customers without such facilities but with a similar load profile.

Farrierswier advised the language of this clause may prevent its proper application if the prohibition on export pricing is removed. Farrierswier stated because the nature of customers' exports could become a basis for assigning customers to tariff classes and treating like customers fairly as these rules intend, this clause would likely benefit from amendment.[326]

The Commission agrees with SAPN that removing this clause enables DNSPs to consider export pricing and developing a menu of tariff options, as the nature of customers' exports could become the basis for assigning customers to a tariff class.[327]

To the extent the protection of clause 6.18.4(a)(3) is still needed, the final rule provides this by amending clauses 6.18.4(a)(1)(i) and (2). Clause 6.18.4(a)(1)(i) now provides that retail customers should be assigned to tariff classes on the basis of factors including the nature and extent of their usage or intended usage of distribution services – covering both consumption and export services (rather than just their usage of electricity). Clause 6.18.4(a)(2) now provides that retail customers with a similar connection and distribution service usage profile should be treated on an equal basis.

Billing of market small generation aggregators

The final rule makes changes to the billing and credit risk pass through arrangements in the NER to support the implementation of export tariffs – consistent with the draft determination.[328]

Chapter 6B provides for DNSPs to bill retailers for network charges relating to retail customers. The chapter includes rules relating to tariff reassignment and the provision of credit support. These arrangements were implemented as part of the 'NECF package' and where they apply, displace the operation of the billing arrangements in chapter 6 of the NER.[329]

The final rule extends the arrangements in chapter 6B to allow a DNSP to bill market small generation aggregators (MSGAs) for network charges relating to exports by the retail customer of an MSGA. This is consistent with the proposed extension of the term 'retail customer' to include micro embedded generators and non-registered embedded generators (other than those connecting under Chapter 5), and is also consistent with the proposed

326 Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, pp. 69–70.

327 SAPN submission to draft determination, p. 10.

328 In its submission to the draft determination, Jemena questions whether the amended NER clause 6.20.1(a)(2)(i) billing provision applies for both consumption and export services (p. 6). The Commission considers insertion of demand 'for *distribution services*' in clause 6.20.1(a)(2)(i) clearly covers consumption and export services (see chapter 3).

329 NER clause 6B.A1.1(b).

extended meaning of micro embedded generator to include the customers of MSGAs.[330] Changes to Retail Market Procedures may be needed to implement this change and the transitional rules provide for AEMO to review the need for amendments and initial the amendment process if necessary.[331]

The final rule also extends the billing and settlement provisions in NER Chapter 6 to allow a DNSP to bill an MSGA for network charges relating to export by the MSGA's customers who are not retail customers.[332]

The risk of a retailer failing to pay distribution charges due to insolvency is currently passed through to electricity users by including retailer insolvency events as pass through events under NER Chapter 6.[333] The final rule extends the meaning of retailer insolvency event and related definitions and make consequential changes to chapter 6 to allow pass through of unpaid network charges of a failed MSGA.[334]

5.3 New customer safeguards and transitional arrangements

The introduction of export charges is a significant policy change and implementation requires ongoing consultation and collaboration.

The Commission considers the current pricing framework, including the TSS process, is robust to changing circumstances over time and inherently provides for flexible transitional measures (as discussed in section 5.2.4 above). Further, export pricing is optional. Enabling export pricing provides additional economic 'tools' – use of which may promote the NEO depending on a network's circumstances and customer preferences. Finally, the Commission's modelling analysis shows relatively minor customer bill impacts (appendix D).

This notwithstanding, the Commission has explored the need for new customer safeguards and an appropriate transition pathway to mitigate customer risks – taking into account stakeholder feedback. To find a balance of providing regulatory flexibility while giving stakeholders confidence in the TSS process, the Commission has decided to introduce the following requirements:

- DNSPs must develop and consult on an export tariff transition strategy (section 5.3.1).
- The AER must consult on and publish *Export Tariff Guidelines* (section 5.3.2).
- DNSPs are not permitted to assign existing DER customers to an export tariff before 1 July 2025 (section 5.3.3), unless the customer requests it.
- DNSPs must offer a basic export level without charge – whereby a retail customer can export to the distribution network up to this level at no additional charge for the next two regulatory periods (section 5.3.3).

330 Final electricity rule, amendments to NER chapter 6B, particularly NER clauses 6B.A1.1 and 6B.A1.2. The changes are summarised in appendix B.

331 NER clause 11.141.9, introduced in the final electricity rule.

332 NER clause 6.20.1 as amended by the final electricity rule.

333 NER clause 6.6.1.

334 Final electricity rule, amending NER clauses 6.6.1(c)(6), 6.6.1(l) and in chapter 10, the definitions of 'billed but unpaid charges', 'failed Market Small Generation Aggregator', 'retailer insolvency costs' and 'retailer insolvency event'.

Further, the Commission has increased the monetary threshold for DNSPs to undertake tariff trials to inform TSS proposals, and promote innovation and timely implementation of export pricing (section 5.3.4). This means DNSPs will be able to develop a better understanding of the potential bill impacts of export pricing on their customers, and potential economic benefits, in developing their TSS proposals.

5.3.1 DNSP requirement to develop an export tariff transition strategy

A DNSP must include a description of the export tariff transition strategy it has adopted to phase-in any proposed export pricing over time as an element of its TSS proposal under NER clause 6.18.1A(a). Although a DNSP may not seek to introduce export tariffs in the short term, it could consult on: its ongoing customer and stakeholder engagement approach; possible tariff trials for export services to inform future TSS proposals; and, most importantly, transitional measures to progress implementation of cost reflective pricing and manage change. Ultimately, the DNSP's transition policy must be approved by the AER.

Submissions to the draft determination broadly support this requirement.[335]

The transition strategy builds on an existing consumer impact principle that expressly allows DNSPs to phase-in new pricing structures over five years or more. That is, under the pricing principles, a DNSP must already consider the impact on retail customers of changes in tariffs from the previous regulatory year, and may vary tariffs from those to the extent the DNSP considers reasonably necessary, having regard to the desirability for tariffs to comply with the pricing principles – albeit after a reasonable period of transition (which may extend over more than one regulatory control period).[336]

To support this new provision and promote stakeholder engagement, the Commission has also strengthened the consultation and information requirements on DNSPs under NER clause 6.8.2(c1).[337]

A DNSP's proposed TSS for both consumption and export services must be accompanied by an overview paper, written in reasonably plain language understandable to retail customers, which includes a summary or description of:

1. the proposed TSS, including the export tariff transition strategy

335 See: Alinta Energy, p. 2; Ausgrid, p. 2; ENA, p. 12; Essential Energy, p. 7; LGI, p. 2; SAPN, p. 9; SA Government, p. 2; SVDP, p. 1.

336 NER clause 6.18.5(h).

337 This addresses CEC's submission that the AEMC should consider whether changes are needed to ensure that the AER and representatives of industry and customers have the information they would need for to engage meaningfully in the next TSS (p. 7). Jemena submits the strengthened requirements would be better placed in a guideline rather than in the rules (p. 5). Others, such as CALC (p. 2) and SAPN (p. 5), generally support these consultation and information requirements. The Commission's final rule seeks to find a balance between providing regulatory flexibility and certainty, and minimising regulatory burden. In this case, we consider greater prescription under NER clause 6.8.2(c1) is justified to promote consumer understanding and engagement on export pricing issues. These requirements reflect minimal expectations of how DNSPs should communicate their proposals and the consultation processes they have undertaken.

2. the interrelationship between the proposed TSS and relevant elements of the regulatory proposal – including the proposed connection policy and capital expenditure or operating expenditure[338]
3. how the DNSP has engaged with retail customers and other key stakeholders – including consumer groups, retailers, aggregators and jurisdictional governments – in developing both the proposed TSS and transition strategy
4. the relevant concerns identified as a result of that engagement
5. how the DNSP has sought to address those concerns identified as a result of that engagement[339]
6. the key risks and benefits of the proposed TSS, including the export tariff transition strategy
7. the DNSP's approach to identifying demand for, and where relevant providing for, distribution services for supply from micro embedded generators and non-registered embedded generators.

A holistic summary in plain language helps consumers and other stakeholders better understand a DNSP's TSS proposal, which improves their ability to provide informed feedback to the AER.[340] It is noted that the new requirement for DNSPs to explain interrelationships of the proposal is complementary to an existing obligation on DNSPs to engage with non-network providers and consider non-network options for addressing system limitations in accordance with its 'demand side engagement strategy'[341] – which now also applies to export services (see chapter 3). Adoption of cost reflective tariff designs, including negative prices, may be an alternative or complementary to non-network options to manage network constraints.

If a DNSP does not undertake a robust consultation process with its customers and other key stakeholders in developing its TSS and transition strategy, and fails to identify and address concerns raised as a result of that engagement, the AER will have strong grounds to refuse to approve the DNSP's proposal.[342] That has been the experience for consumption pricing. In

338 These interlinkages would form part of the justification for a proposed TSS. It is important for DNSPs to clearly spell them out for all stakeholders who are engaged in the regulatory process, especially consumers. This may also assist the AER in making decisions on each constituent component of a regulatory proposal, and approving the TSS proposal and export tariff transition strategy. The additional detail prescribed by this final rule may be particularly important in the short term, given the AER will not necessarily be able to rely on effective financial incentives to overcome information asymmetries until it has updated the STPIS to incorporate export services (see chapter 4).

339 The Victorian Government submits the Commission should include a requirement for state and territory governments to consent before export pricing can be introduced in their jurisdictions (pp. 4–5). The Commission considers these NER clause 6.8.2(c1) provisions give jurisdictional governments a strong say in the TSS process. Further, it is open to jurisdictional governments to impose requirements on DNSPs, eg through licence conditions, or derogate away from the NER. The pricing principles explicitly say a tariff must comply with the rules and all applicable regulatory instruments (NER clause 6.18.5(j)).

340 Given this overview paper also relates to the broader regulatory proposal, SAPN requests clarification in its submission that the intent is for DNSPs to prepare a single overview document or two documents – with one specifically pertaining to the TSS (p. 5). The Commission considers DNSPs can reasonably interpret this NER clause as requiring one overview document, covering both expenditure and pricing plans, to minimise regulatory burden and improve accessibility to customers.

341 NER clause 5.13.1(f).

342 VEPC submits the AEMC's decision gives DNSPs the discretion to introduce injection charges if they wish to (p. 6). Similarly, MEU states the decision still lies with the DNSP (as the monopoly provider) as to what it will ultimately do (p. 2). But, as AEC/Oakley Greenwood notes (pp. 14–16), the AER has oversight and DNSP TSS proposals are constrained by the pricing principles under NER clause 6.18.5. Network regulation under Chapter 6 of the NER is fundamentally based on a propose–respond model. The AER must review a DNSP's proposal against the requirements of the NER. The AER must accept the proposal if it complies with the rules or reject it, and substitute the AER's own assessment, if it does not comply.

its submission to the draft determination supporting the new *Export Tariff Guidelines* requirement (see below), the AER states it will "require networks to engage with and respond to stakeholders, providing evidence of how they have responded to stakeholder views."[343]

These strengthened consultation requirements also apply to NER clause 6.18.1B, which sets out the process DNSPs must undertake to amend a TSS (in-period) with the AER's approval.[344]

Implementation of export pricing is dependent to an extent on whether retailers actually pass through the network pricing structures – which highlights the importance of DNSPs working closely with retailers in the TSS process. Although reliance on retailers to reflect network export tariffs in some manner in their market offers is a risk to realising the full benefits of these reforms,[345] the retailers also act as a 'last-line of defense' against unwanted outcomes. The Commission considers retailers operate in a competitive environment (albeit highly regulated), and their products and services should reflect customer preferences.[346] Notably, jurisdictions can, if they wish, use existing NERL mechanisms to ensure specified network pricing structures are offered by retailers.[347]

5.3.2 AER requirement to publish TSS guideline for export services

The Commission's final rule requires the AER to consult on and publish a TSS guideline specific to export services (the *Export Tariff Guidelines*) by 1 July 2022.

This will be an important mechanism to ensure ongoing stakeholder consultation on these pricing reforms and to manage change beyond the consultation undertaken as part of this rule change process, by addressing stakeholder concerns about how export pricing is implemented over time. This includes managing different jurisdictional policies.[348]

Further, the guidelines can promote confidence in the TSS process by creating greater transparency and certainty of:[349]

- the AER's decision-making process and criteria, including how it interprets the network pricing principles under NER clause 6.18.5 and the new requirements set out above

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343 AER submission to draft determination, p. 3.

344 The Victorian Government submits export pricing should not be introduced in Victoria over the current 2021–26 regulatory period (p. 5). As noted, there is a process DNSPs must undertake to amend their TSS, which involves significant consultation. In any case, it is highly unlikely the Victorian DNSPs will seek to introduce export pricing in the current period. AusNet Services submits it is committed to ensuring comprehensive engagement occurs on whether an export tariff should be part of a future TSS, and notes it started consulting on its current TSS four years before the start of the new period (p. 4). CPU submits it is seeking to undertake in-period tariff trials first (pp. 4–5). Jemena states it does not intend to apply to the AER to re-open its TSS (p. 3). More broadly, ENA states says DNSPs are not seeking to re-open their TSS mid-period to introduce export pricing, and export pricing will be phased in according to the DNSPs' transition strategy developed through the regulatory processes (pp. 12–13).

345 Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, pp. 33–34.

346 Energetic Communities suggests developing guidance for retailers around transparency of cost pass-through, and include a monitoring and evaluation program for retailer offers (pp. 2; 8–9).

347 NERL s 22(1a)(b) and (c).

348 Farrierswier found a key lesson from previous TSS processes is that policy constraints should be established at the commencement of TSS engagement and development processes – for example, jurisdictional preferences on export pricing could be established at the framework and approach stage of distribution determinations, so these policies can be accounted for in both service classification and TSS engagement. (Farrierwier, Insights report: Effectiveness of the TSS process and options for implementing export charges, March 2021, p. 27)

349 Consistent with the assessment criteria established for this rule change (see section 2.4.3).

- expectations of how DNSPs should both develop their TSS proposals, possibly including examples of 'best practice' consultation by DNSPs, and present information to the AER
- how customer and other stakeholder views and preferences should be taken into account in the process.

Submissions to the draft determination broadly support the introduction of the new guidelines.[350]

The AER states:[351]

> 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.

The Commission considers the above guidance is most appropriately provided by the AER through the Export Tariff Guidelines, rather than being prescribed in the NER.[352] The AER may update its guidelines from time to time.[353]

The Commission maintains its view that the Export Tariff Guidelines should not be binding on the AER and DNSPs.[354] It risks the AER taking a more legalistic approach to the drafting, and the guidelines being seen by DNSPs as a compliance exercise. This could undermine the potential for DNSPs to be innovative in the way they design service and pricing options in response to varying consumer preferences. The Commission considers stakeholder calls for more regulatory certainty have been effectively addressed through the new measures below. Under the rules, if the AER makes a determination that is not in accordance with the guidelines, the AER must state the reasons for departing from the guidelines.[355] So DNSPs will need to clearly justify their approach if it does not meet the AER's expectations.

The AER is required to prepare and publish the Export Tariff Guidelines under the *distribution consultation procedures*. This requires the AER to publish the proposed guideline, an explanatory statement and an invitation for written submissions on the proposed guideline – among other consultation requirements under NER clause 6.16.

5.3.3 Transitional arrangements to promote confidence in how export pricing will be implemented

The Commission received strong feedback in discussions and submissions that additional customer safeguards are required to address uncertainty about how export pricing will be

350 See: AER, p. 3; Ausgrid, p. 2; ENA, p. 12; SAPN, p. 9; SVDP, p. 1.

351 AER submission to draft determination, p. 8.

352 In their submissions to the draft determination, AGL (pp. 6–7), CEC (pp. 3–4), Energetic Communities, EnergyAustralia (p. 3), Origin (p. 2), SA Government (p. 3), Tesla (p. 6) and WATTever (pp. 7–8) put forward several options for more prescriptive requirements on the AER.

353 NER clause 6.2.8(e).

354 Some stakeholder submissions to the draft determination questioned this decision, including: AGL, pp. 6–7; MBS, pp. 9–10; Solar Analytics, p. 3.

355 NER clause 6.2.8(c)(1).

implemented – including to protect recent customer investments and promote consumer choice.[356] CEC states:[357]

> The proposal outlined in the AEMC's Draft Determination is too open-ended. If implemented in its current form it would create significant uncertainty until the details of the export charges are approved in the next round of Tariff Structure Statements (TSSs), which will not be decided on for three to five years. In the meantime, solar designers and retailers would be unable to provide customers with a reliable estimate of the likely return on investment (ROI) of DER investments, and how the ROI might be affected by sizing of the solar array and energy storage system.

Although ACOSS and the state and territory COSSes support the proposal to enable network operators to offer two-way pricing for export services, they "believe there is a need to provide greater certainty for households exporting energy, and would support more consumer protections being hardwired into the rules, alongside stronger consumer engagement guarantees."[358]

In its rule change request, SAPN proposed to make it explicit that tariffs applied specifically to export services should not be allowed to recover the costs of the intrinsic capacity in the network to host exports. Moreover, SAPN envisaged customers could be offered an option to receive a 'basic' service at low or zero cost – reflective of a fixed, low export capacity, aligned to the intrinsic hosting capacity of the network.[359] SVDP also did not propose to simply remove NER clause 6.1.4:[360]

> Importantly, we are not necessarily advocating for an approach where DER participants have to pay for using the networks. Rather we are proposing to explore a solution that allows DER generators/exporters to choose between paying or being constrained. This is an important distinction as some DER participants may prefer being constrained rather than paying a DUOS charge for export...

Origin submits individual consumers should be provided with some choice on the level of export charging, whereby some customers may choose to face a lower charge and have an export limit rather than a higher charge.[361] TEC/ACOSS consider solar owners should have the option of whether to take up an export tariff – noting that if they choose not to, they may be subject to static export limits, as at present.[362] ECA said it supports TEC/ACOSS' proposal:[363]

> Consumers could then make a choice of which option would be best for their particular

356 See submissions to the draft determination by: COSSes, p. 2; CEC; CALC, p. 2; ECA, p. 2; Energetic Communities; ENOVA, p. 3; Origin, pp. 1–2; Solar Analytics, p. 2; SVDP, p. 1; TEC/ACOSS; Tesla, p. 1; Victorian Government; Zero Emissions Noosa, p. 5.

357 CEC submission to draft determination, p. 1.

358 COSSes submission to draft determination, p. 2.

359 SAPN rule change request, pp. 24–25.

360 SVDP rule change request, p. 7.

361 Origin submission to draft determination, p. 2.

362 TEC/ACOSS submission draft determination, p. 1.

363 ECA submission to draft determination, p. 2.

> circumstances. For example consumers with smaller systems or consuming most of their generation may prefer an export limit, while consumers with larger systems may choose a tariff so that they can maximise their financial returns.

Others have called for stronger protections for existing customers.[364] CEC states:[365]

> If the AEMC clarifies that there will be no mandatory reassignment of customers to an export tariff and they will only apply to new connections (and additions and alterations) made after the export tariff is finalised through the TSS process, then the industry and its customers can continue to invest with reassurance regarding the likely impact of future regulatory decisions on their investment.

On the other hand, ENA and several DNSP submissions oppose any amendments that prescribe specific outcomes in the NER.[366] Ausgrid states:[367]

> In our view the AER is well-placed to oversee the transition to two-way charging if enabled by the rule change. Modifying the rules to impose any additional prescriptions (e.g. explicit grandfathering provisions) might limit the flexibility for distributors to share the benefits of flexible symmetrical charging with those customers who are able to provide flexible response (should export charges be introduced). Excessive prescription might also increase the risk of jurisdictional intervention, while maintaining flexibility in the rules would ensure that the framework is responsive to changes in jurisdictional approaches and is robust to future technological or policy changes.

The AER said it will require DNSPs, through the *Export Tariff Guidelines,* to:[368]

- 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.

Commission view

Taking the above stakeholder views into account, on balance, the Commission has determined to introduce transitional arrangements that provide regulatory clarity and certainty for customers who have already made significant investment in DER, and require DNSPs to offer a basic export level to give customers some choice – consistent with the assessment criteria established for this rule change (see section 2.4.3).

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364 See submissions to the draft determination by: CEC, p. 6; Energetic Communities; Tasmanian Government, p. 1; Tesla, p. 1; and many private individual submissions.

365 CEC submission to draft determination, p. 6.

366 See submissions to the draft determination by: Ausgrid, p. 3; ENA, p. 10; Endeavour Energy, p. 4; Essential Energy, p. 7; SAPN, p. 7.

367 Ausgrid submission to draft determination, p. 3.

368 AER submission to draft determination, p. 3.

First, under the final rule, DNSPs are prevented from assigning existing DER customers to an export tariff before 1 July 2025.[369] That is, customers who either are already able to export, or have an open or accepted connection offer at the time of this decision, will not face an export charge until 1 July 2025 at the earliest – unless they choose to take up an export pricing option through the usual process.[370] Tariff trials where customers opt-in to export tariffs for the period of the trial are still permissible.

Second, DNSPs are required to include a *basic export level* in their TSS for each proposed export tariff. A retail customer would not pay extra to export to the distribution network up to this level for the next two regulatory periods.[371] Customers can choose to avoid export tariffs by changing their behaviour, like consuming more in the middle of the day, and through their household investment decisions – such as the size of the solar PV systems and ability to shift exports to other times of the day. A customer may also seek to change their export capacity limit.

Basic export levels must be set having regard to:[372]

- the capacity of a distribution network (or part of a distribution network) to accept supply from embedded generating units to the extent the AER considers that the capacity arises from the provision of distribution services for supply to retail customers in that distribution network (or part) with minimal or no further investment
- forecast use of distribution services relating to supply from embedded generating units in the distribution network (or relevant part).

The basic export level applies to all export tariffs for all distribution-level customers – including larger embedded generators and real estate developers – and connection types (high and low voltage). The Commission considers customers who export should benefit from the capacity of the network they are already paying for through consumption charges, and this should be reflected in all export tariffs by way of the basic export level. Basic export levels will vary between and within jurisdictions. In some cases the level may be low and less than the export capacity of DER installations.

The Commission has provided for significant regulatory flexibility for DNSPs and the AER to determine what this means in practice for each network. For example, the basic export level applicable to an export tariff may be determined based on the capacity to supply into the distribution network at a connection point, or the quantity of supply into the distribution network from a connection point. And it could vary by reference to the location of the connection point or tariff class.[373] The aim is to be flexible so the basic export level could be the same for all tariffs, or specified by tariff class, or different for each tariff.

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369 NER clause 6.18.4 sets out principles governing assignment or re-assignment of retail customers to tariff classes, and assessment and review of basis of charging. A customer can be assigned to a tariff class on the basis of the customer's actual or assumed maximum demand for a network service. The customer may be reassigned by a DNSP to a tariff class that is more appropriate to their load profile if the customer demonstrates a reduction or increase in maximum demand. The DNSP must have provisions for an effective system of assessment and review of the basis on which a customer is charged, which the AER must approve.

370 NER clause 11.141.11, introduced in the final rule.

371 NER clause 11.141.12, introduced in the final rule.

372 NER clause 11.141.13(b)(1), introduced in the final rule.

373 NER clause 11.141.13, introduced in the final rule.

The AER is required to provide guidance on methodologies for determining basic export levels and related matters through the Export Tariff Guidelines. In doing so, the AER must have regard to:[374]

- historical and geographical differences between networks
- different levels of demand between networks
- inter-jurisdictional differences related to regulatory control mechanisms and classification of services
- the network pricing objective and pricing principles in NER clause 6.18.5
- other matters the AER considers relevant.

The AER's consideration of the NEO when performing this function would encompass other factors – such as the impact on network investment, efficient allocation and use of capacity, and interrelationships with other aspects of proposal (including consumption tariffs). The Export Tariff Guidelines may outline the AER's expectations of how customer and other stakeholder views and preferences should be taken into account in the process, as discussed above.

5.3.4 DNSPs should undertake in-period tariff trials to inform TSS proposals

The Commission's final determination to enable export charges allows DNSPs to consult with customers to conduct in-period tariff trials when developing their TSS proposals.

Export charges could be included in TSS proposals as part of the NSW, ACT, and Tasmanian DNSPs' regulatory proposals, which are due to be submitted to the AER in January 2023.

The five-yearly regulatory proposals for the other DNSPs are staggered over time. For example, Victorian DNSPs are due to submit their next round of regulatory proposals in January 2025.

DNSPs have the option to propose to amend their TSS in-period under NER clause 6.18.1B. But this may generally be impractical given the level of consultation required on TSS proposals, the need to consider interrelationships with other aspects of a DNSP's revenue proposal and potential impacts on cost allocations.

Alternatively, DNSPs can implement in-period trials for tariffs under a certain threshold – namely, where the forecast revenue recovered by the tariff does not exceed 0.5 per cent of the annual revenue requirement, and where the forecast revenue recovered cumulatively from all such tariffs that are not included in the TSS does not exceed 1.0 per cent of the annual revenue requirement.[375] In-period tariff trials are not required to comply with the network pricing principles.[376]

With the rapidly changing energy market and ongoing reforms underway (including through this rule change process), the use of tariff trials to inform TSS proposals may become increasingly important – especially to inform TSS proposals for export pricing.

374 NER clause 11.141.14, introduced in the final rule.
375 NER clause 6.18.1C(a).
376 NER clause 6.18.1C(b).

The objectives of trials currently planned and underway are to help integrate DER into distribution networks and achieve more cost-reflective pricing. These trials are intended to explore how to reflect the cost of serving the increasingly diverse nature of customers, as well as sending price signals to encourage behavioural change to support system operation.[377]

Commission view

The Commission considers the 'individual' and 'cumulative' thresholds of 0.5 per cent and 1 per cent of the DNSP's annual revenue requirement, respectively, can act as a barrier to undertaking export pricing trials concurrently with other initiatives, and to scaling up trials to progress implementation of cost reflective pricing for both consumption and export services. This threshold may also limit innovative network tariffs in response to consumer requests or changing consumption patterns, given export pricing is now an option.

The network pricing principles are an important customer safeguard and promote the NEO. Exempting a DNSP from complying with these principles is a risk – there is a tradeoff between providing adequate safeguards, and flexibility for DNSPs to be responsive to changing consumer preferences and technology/market developments.

On balance, the Commission considers increasing the cumulative threshold for tariff trials within a regulatory control period through a transitional arrangement could facilitate a valuable input into TSS proposals – informing the DNSPs' benefit–cost, customer impact and customer behaviour analysis. Further, extending the ability of DNSPs to undertake tariff trials could assist the change management process, promoting timely progression of implementation of export pricing – especially for those DNSPs that are due to submit their next round of TSS proposals later in the regulatory cycle.[378]

The Commission's final rule increases the individual threshold from 0.5 per cent to 1 per cent of the DNSP's annual revenue requirement, and the cumulative threshold from 1.0 per cent to 5 per cent of the DNSP's annual revenue requirement. This is a transitional measure under Chapter 11 of the NER for the current and next regulatory control periods, impacting NER clause 6.18.1C.[379]

Submissions to the draft determination are largely supportive of this change.[380]

This decision does not mean DNSPs can earn additional revenue in a regulatory control period. Any revenues earned by DNSPs through tariff trials falls within an overall revenue cap on each business, which is set by the AER.

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377 For example, possible tariff trials include: residential tariffs for homes with EVs to explore more dynamic network tariff structures to be packaged into innovative retail offers; tariffs for EV charging stations to explore how the potential flexibility in the operation of these sites could be used to support and reward more efficient utilisation of existing network infrastructure; third party owned batteries used for service provision; network owned batteries which will be rented to retailers to engage in competitive services; and community-scale battery models.

378 CPU submits a transitional rule should be introduced to allow Victorian DNSPs to undertake tariff trials in 2021-22 (p. 1). The Commission considers CPU has an opportunity to undertake trials starting in year two of its 2021–26 regulatory control period, which is already the maximum time available under the rules. The other Victorian DNSPs, AusNet Services and Jemena, did not raise this issue in their submissions.

379 NER clause 11.141.8, introduced in the final rule.

380 See: AER, p. 3; AGL, p. 7; Alinta Energy, p. 2; CPU, p. 4; ENA, p. 12; Energetic Communities, p. 6; Firm Power, p. 4; LGI, p. 2; SAPN, p. 10; SVDP, p. 1.

ABBREVIATIONS

ACOSS	Australian Council of Social Service
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ARENA	The Australian Renewable Energy Agency
CEC	Clean Energy Council
CESS	Capital Expenditure Sharing Scheme
CECV	Customer Export Curtailment Values
Commission	See AEMC
CPU	CitiPower, Powercor and United Energy
DAPR	Distribution Annual Planning Report
DEIP	Distributed Energy Integration Program
DMIA	Demand Management Innovation Allowance Mechanism
DMIS	Demand Management Incentives Scheme
DNSP	Distribution network service providers
EBSS	Efficiency Benefit Sharing Scheme
ENA	Energy Networks Australia
ESB	Energy Security Board
EV	Electric Vehicle
GSL	Guaranteed Service Level
MBS	Monash Business School
MCE	Ministerial Council on Energy
MSGA	Market Small Generator Aggregator
NEL	National Electricity Law
NEO	National electricity objective
NERL	National Energy Retail Law
NERO	National energy retail objective
NGL	National Gas Law
NGO	National gas objective
NICE	Network of Illawarra Consumers of Energy
PV	Photovoltaic
RAB	Regulated Asset Base
RINs	Regulatory Information Notices
RIT-D	Regulatory Investment Test for Distribution
SAIFI	System Average Interruption Frequency Index
SAIDI	System Average Interruption Duration Index

SAPN	SA Power Networks
STPIS	Service Target Performance Incentive Scheme
SVDP	St Vincent De Paul Society Victoria
TEC	Total Environment Centre
TSS	Tariff Structure Statement
VEPC	Victoria Energy Policy Centre
VCR	Values of Customer Reliability

A LEGAL REQUIREMENTS UNDER THE NEL AND NERL

This appendix sets out the relevant legal requirements under the NEL and the NERL for the Commission to make this final rule determination.

A.1 Final rule determination

In accordance with s. 102 of the NEL and s. 259 of the NERL the Commission has made this final rule determination to make a more preferable final electricity rule and more preferable final retail rule, in relation to the rules proposed by SAPN, SVDP and TEC/ACOSS.

The Commission's reasons for making this final rule determination are set out in section 2.4.

Copies of the more preferable final rules are attached to and published with this final rule determination. Their key features are described in section 2.4 and chapters 3-5 of this determination, and summaries of the rules are set out in appendix B.

A.2 Power to make the rule

The Commission is satisfied that the more preferable final rules fall within the subject matter about which the Commission may make rules.

The more preferable final electricity rule falls within s. 34 of the NEL as it relates to:

- the activities of persons (including Registered participants) participating in the national electricity market or involved in the operation of the national electricity system[381]
- the provision of connection services to retail customers.[382]

The more preferable final retail rule falls within the matters set out in s. 237 of the NERL as it relates to regulating the provision of energy services to customers, including customer retail services and customer connection services.[383]

A.3 Commission's considerations

In assessing the rule change requests the Commission considered:

- its powers under the NEL and NERL to make the rules
- the rule change requests
- submissions received during the first and second rounds of consultation
- the ways in which the rules will or are likely to contribute to the NEO and NERO
- the extent to which the retail rule is compatible with the development and application of consumer protections for small customers
- the revenue and pricing principles in the NEL.

381 Section 34(1)(a)(iiI) of the NEL.
382 Section 34(1)(a)(iv) of the NEL.
383 Section 237(1)(a)(i) of the NERL.

There is no relevant Ministerial Council on Energy (MCE) statement of policy principles for these rule change requests.[384]

A.4 Civil penalties

The Commission cannot create new civil penalty provisions. However, it may (jointly with the AER) recommend to the Energy Ministers Meeting that new or existing provisions of the NER or the NERR be classified as civil penalty provisions.

The NEL and NERL set out a three-tier penalty structure for civil penalty provisions in the NEL, NERL, NER and NERR.[385]A Decision Matrix and Concepts Table,[386] approved by Energy Ministers, provide a decision-making framework that the Commission applies, in consultation with the AER, when assessing whether to recommend that provisions of the NER and NERR should be classified as civil penalty provisions, and if so, under which tier.

The Commission will make the following civil penalty recommendations to the Energy Ministers Meeting in relation to the final electricity rule and final retail rule. The AER has indicated it supports these recommendations.

Provision	Recommendation	Reason
NER cl 5.13.1(d1), requiring DNSPs to prepare forecasts of demand for distribution services by embedded generating units	CPP Tier 1	For consistency with similar provisions in clause 5.13.1(d) (noting that the information in (d1) is used in (d)(2)).
NERR rule 147A, requiring distributors to publish information about standards and other technical requirements that apply to household solar panels connected to their network	CPP Tier 2	For consistency with similar provisions in rule 80.

Where the final rules amend provisions that are currently classified as civil penalty provisions, the Commission does not propose to recommend to the Energy Ministers Meeting any changes to the classification of those provisions.

A.5 Conduct provisions

The Commission cannot create new conduct provisions. However, it may (jointly with the AER) recommend to the Energy Ministers Meeting that new or existing provisions of the NER or the NERR be classified as conduct provisions.

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384 Under s. 33 of the NEL and 225 of the NERL the AEMC must have regard to any relevant MCE statement of policy principles in making a rule. The MCE is referenced in the AEMC's governing legislation and is a legally enduring body comprising the Federal, State and Territory Ministers responsible for energy.

385 Further information is available at https://www.aemc.gov.au/regulation/energy-rules/civil-penalty-tools

386 The Decision Matrix and Concepts Table are available at: http://www.coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/Final%20-%20Civil%20Penalties%20Decision%20Matrix%20and%20Concepts%20Table_Jan%202021.pdf

The final rules do not amend any rules that are currently classified as conduct provisions under the NEL or NERL. The Commission will not recommend to the Energy Ministers Meeting that any of the amendments made by the final rules be classified as conduct provisions.

A.6 Review of operation of final rules

The more preferable final rules do not require the Commission to conduct a formal review of the operation of the final rules. The Commission may however self-initiate a review of the operation of the rules at any time if it considers such a review would be appropriate, pursuant to s. 45 of the NEL and s. 232 of the NERL.

B SUMMARY OF AMENDMENTS TO THE RULES

This appendix outlines the amendments to the National Electricity Rules (NER) and the National Energy Retail Rules (NERR) made under the final rules.

B.1 Amendments to the National Electricity Rules

Table B.1: Changes to NER Chapter 5

NER CHAPTER 5 PROVISION	COMMENTARY
5.1.2	Here and elsewhere in Chapter 5, the final Rule italicises the term 'non-registered embedded generator' because the term is to be defined in chapter 10.
5.1.2(d)	The table in this clause is an overview of connection processes under the NER. The final Rule adds a reference in row 13 to a Market Small Generation Aggregator applying for connection on behalf of a micro-embedded generator. This is consistent with the change to the definition of 'micro embedded generator' which extends it to customers of MGSAs who are not retail customers.
5.3.1A(a)	The final Rule deletes the cross reference in paragraph (a) to the definition of 'non-registered embedded generator' in chapter 5A, as the term is to be defined in chapter 10.
5.3A.A1(a)	The final Rule deletes the cross reference in paragraph (a) to the definition of 'non-registered embedded generator' in chapter 5A, as the term is to be defined in chapter 10.
5.13.1(d)(2) and new (d1).	A new paragraph (d1) requires the DNSP to prepare forecasts covering the forward planning period of demand for distribution services by embedded generating units at sub-transmission lines, zone substations and to the extent practicable, primary distribution feeders. The final Rule extends existing paragraph (d)(2) to require DNSPs to identify network limitations based on this information, in addition to those arising from load.
5.17.1(c)(4)(v)	Under this paragraph, the classes of market benefits to be considered by a RIT-D proponent includes changes in load transfer capacity and the capacity of Embedded Generators to take up load. The final Rule replaces the reference to 'Embedded Generators' with a reference to 'embedded generating units' which covers embedded generating units in general, not just those registered in the NEM.
Schedule 5.8 (b)(2A)	Clause S5.8(b) deals with information to be included in a DAPR. A new paragraph (2A) extends the requirements to information about forecast use of distribution services by embedded generating units. The new paragraph is modelled on paragraph (2) which has equivalent information

NER CHAPTER 5 PROVISION	COMMENTARY
	requirements for load.
Schedule 5.8 (b)(4)	The final Rule replaces the reference to 'reliability targets' in relation to STPIS with 'applicable performance targets', as performance targets for export service would not be based on reliability measures.
Schedule 5.8 (c)(5)	Paragraph (c) deals with information about system limitations. The final Rule amends subparagraph (c) to refer to changes in forecast load or generation from embedded generating units that would defer a forecast system limitation. Prior to the change the clause referred only to reductions in load.
Schedule 5.8 (d1)	The final Rule inserts a new paragraph (d1) which requires the DAPR to identify primary distribution feeders experiencing system limitations due to demand for distribution services from embedded generating units or forecast to do so within two years and to provide information about the extent of the system limitation, potential solutions and the impact of an estimated reduction in demand for the services that would defer the forecast system limitation for 12 months. The new paragraph is modelled on paragraph (d) which has equivalent information requirements for load.
Schedule 5.8 (l)	Clause S5.8(l) deals with information on a DNSP's demand management activities. The final Rule extends the clause to activities relating to embedded generating units and specifies that the information must include the number of connection enquiries or applications to connect under chapter 5 from non-registered embedded generators, and the number of connection enquiries or applications to connect under chapter 5A relating to micro embedded generators or non-registered embedded generators.

Table B.2: **Changes to NER Chapter 5A**

NER CHAPTER 5A PROVISION	COMMENTARY
5A.A.1 'basic connection service' and elsewhere	Here and elsewhere in chapter 5A, the final Rule italicises the term 'non-registered embedded generator' as the term is now defined in Chapter 10.
5A.A.1 'connection policy'	The final Rule makes a consequential change to the definition due to changes in chapter 6 extending the content of the connection policy.
5A.A.1	The final Rule deletes 'embedded generator' and replaces it with a new

NER CHAPTER 5A PROVISION	COMMENTARY
'embedded generator'	term defined in chapter 10, 'embedded generating unit operator'. This avoids confusion with the term Embedded Generator.
5A.A.1 'micro embedded generator'	The final Rule moves the definition of 'micro-embedded generator' from chapter 5A to chapter 10 and extends the definition to cover, in addition to small customers and large customers, MSGA customers. The change ensures customers of MSGAs who are not small customers or large customers are included within the scope of the definition and so able to request basic connection services under chapter 5A.
5A.A.1 'MSGA customer'	A new defined term 'MGSA customer' is inserted to refer to the owners, operators and controllers of small generating units who are customers of MSGAs. This group is currently identified indirectly in clause 5A.A.3 and the new definition is based on that clause.
5A.A.1 'non-registered embedded generator'	The final Rule moves the definition to chapter 10, in an amended form that uses the new term 'embedded generating unit operator'.
5A.A.1 'retail customer'	The final Rule moves the definition to chapter 10 and uses the extended definition throughout the NER.
5A.A.1 'supply service'	A reference to 'import or export' is added to 'supply service' to clarify that a 'supply service' may be either.
5A.A.3	The clause specifies that MSGAs are agents for their customers. The final Rule amends the clause to use the new term 'MSGA customer' and to clarify that the agency arrangement applies for the purposes of chapter 5A. The clause heading is amended to align with the amended clause.
5A.B.1(b)(1)	The clause deals with submission of model standing offers for basic connection services. Under the final Rule, the new term 'embedded generating unit operator' replaces 'embedded generator'. The change is not intended to change the meaning of the clause.
5A.B.3(a)(1)	The clause deals with approval of model standing offers for basic connection services. Under the final Rule, the new term 'embedded generating unit operator' replaces 'embedded generator'. The change is not intended to change the meaning of the clause.
5A.B.3(a)(5)	The final Rule inserts a new subparagraph (5) which requires the AER to consider whether the proposed model standing offer for a basic micro EG connection service is consistent with applicable requirements in the DNSP's tariff structure statement and the tariff assignment arrangements in chapter 6B.

NER CHAPTER 5A PROVISION	COMMENTARY
	The intention is for model standing offers to be consistent with the process by which a micro-embedded generator may be assigned to, or (through its retailer) opt in to, an export tariff.
5A.B.5(a)(4)	The final Rule inserts a new subparagraph (4) which requires the AER to consider whether the proposed model standing offer for a standard connection service for an embedded generating unit operator or a person who proposes to be an embedded generating unit operator is consistent with applicable requirements in the DNSP's tariff structure statement and the tariff assignment arrangements in chapter 6B. The intention is for model standing offers to be consistent with the process by which embedded generating unit operators may be assigned to, or (through its retailer) opt in to, an export tariff.
5A.E.3(b)	The final Rule inserts an additional purpose for the connection charge guidelines made by the AER under this clause. The new purpose is to ensure that static zero export limits apply to micro EG connections only to the extent consistent with the safe, secure and efficient provision and use of distribution services and the relevant DNSP's distribution determination (including expenditure to support the provision of distribution services for supply from micro embedded generators).
5A.E.3(c)(8)	Paragraph (c) of clause 5A.E.3 deals with the content of the connection charge guidelines. New subparagraph (8) requires the connection charge guidelines to describe the circumstances (or how to determine the circumstances) under which a DNSP may offer a static zero export limit to a micro embedded generator for the purposes of new clause 5A.F.1(c)(2).
5A.E.3.(d1)	New paragraph (d1) requires the AER, when developing guidelines dealing with static zero export limits for the purposes of paragraph (c)(8), to 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 system limitations or due to limitations on the capabilities of plant or equipment of DNSPs or retail customers (intended to cover matters such as equipment for remote control of inverters).
5A.E.4	The clause deals with payment of connection charges. The final Rule provides for MSGAs to pay connection charges on behalf of their customers, consistent with the MSGA acting as agent under clause 5A.A.3.
5A.F.1(c)	This clause applies where a connection service sought by a connection applicant is a basic connection service or a standard connection service

NER CHAPTER 5A PROVISION	COMMENTARY
	and the applicant does not elect to apply for a negotiated connection contract. The clause deals with the timing and content of connection offers. The final Rule adds a new paragraph (c) that specifies that a connection offer for a micro-embedded generator must not specify a static zero export limit except where requested by the connection applicant or in circumstances permitted by the connection charge guidelines.
5A.F.7	The clause deals with the initial request to energise a new connection. The final Rule amends the clause to allow MSGAs, as well as retailers, to request initial energisation for their customers. The heading is updated to reflect the changes to the clause.
S5A.1, Part B	This part of the schedule deals with information to be included in a connection offer involving embedded generation. The new term 'embedded generating unit operator' replaces 'embedded generator' throughout. The change is not intended to change the effect of the schedule. For the final Rule the opening words in paragraph (a) of Part B of Schedule 5A.1 have been amended to refer to 'an embedded generating unit operator or person who proposes to be an embedded generating unit operator'. It is also clear from the context and the underlying clause in chapter 5A that connection offers subject to this schedule are required to meet the requirements of the schedule whether the applicant is a current or intending embedded generating unit operator.
S5A.1, Part B(b)(1)	The reference to 'supply of electricity to the connection point' is replaced with a reference to 'supply services at the connection point' to reflect the scope of the supply services that will be provided.

Table B.3: **Changes to NER Chapter 6**

NER CHAPTER 6 PROVISION	COMMENTARY
6.1.4	This clause prohibits DUOS for the export of energy and is deleted by the final Rule.
6.2.2 and 6.2.5	The final Rule amends references to 'users or potential users' to clarify that the phrase refers to users of services, not users of electricity.
6.2.8(a)(1)	The clause deals with general matters relating to guidelines made by the AER under chapter 6. The final Rule adds a reference to the Export Tariff Guidelines in the list of AER Guidelines in this clause.

NER CHAPTER 6 PROVISION	COMMENTARY
6.4.5(a)	The clause deals with the Expenditure Forecast Assessment Guidelines. The final Rule amends the wording to refer to the 'approach or approaches' the AER could propose to use to assess expenditure forecasts, to recognise more clearly that different approaches may be used for different services. Clause 11.1141.2(c) in chapter 11 specifies that the need for different approaches must be taken into account when reviewing the need for amendments to the Expenditure Forecast Assessment Guidelines to take into account the amending rule.
6.5.6(e)(5A) and 6.5.7(e)(5A)	The matters the AER takes into account in assessing expenditure forecasts includes the extent to which the expenditure forecasts include expenditure to address the concerns of electricity consumers. The final Rule replaces the term 'electricity consumers' with the new term 'distribution service end users' to cover electricity consumers (both retail customers and those buying direct from the NEM), micro embedded generators and non-registered embedded generators, other than those who have made an election under clause 5A.A.2(c) for connection under Chapter 5. In relation to customer engagement, the final Rule includes a reference to 'distribution service end users or groups representing them' to be clear that engagement may occur with consumer representative groups, including those with mandates to represent the interests of sub-groups of retail customers.
6.5.8(c)(1)	The clause relates to the efficiency benefit sharing scheme. The final Rule replaces the term 'electricity consumers' with 'distribution service end users'.
6.6.1(c) and (l)	As export tariffs are no longer prohibited, DNSPs will charge MSGAs for the distribution charges payable by MSGA customers connected to the DNSP's network, under the amendments to clause 6.20 and Chapter 6B. Consistent with this, the retailer insolvency event pass through event definition in chapter 10 has been amended to extend it to MSGA insolvency. Consequential changes to clause 6.6.1 insert references to MSGAs where relevant.
6.6.2(b)(3)	The clause deals with the matters the AER must take into account when developing STPIS. The final Rule replaces the term 'electricity consumers' in paragraph (b)(3)(i) with the new term 'distribution service end users'. In paragraph (b)(3)(vi), the final Rule replaces the reference to customer 'willingness to pay' for 'improved performance in the delivery of services'

NER CHAPTER 6 PROVISION	COMMENTARY
	with a reference to the 'value to distribution service end users of improved performance'. In paragraph (b)(4), the final Rule adds 'where relevant' as the Distribution Reliability Measures Guidelines may not be relevant to exports. The final Rule inserts a new paragraph (b)(5) to allow the AER to take into account other matters it considers relevant.
6.6.3(b)	The final Rule amends the demand management incentive scheme objective in paragraph (b) to clarify that it may include management of demand for export services.
6.6.3A(c)(2)(i)	The final Rule amends the matters to be taken into account by the AER in developing a demand management incentive scheme to clarify that these may have the potential to reduce demand for use of distribution services to supply into a distribution network.
6.6.4(a)	The final Rule amends the description of the small-scale incentive scheme to clarify that different schemes may apply to different DNSPs.
6.6.4(b)(3)	The final Rule replaces the term 'electricity consumers' with the new defined term 'distribution service end users'.
6.7A.1(a)	The final Rule inserts a new requirement for a DNSP's connection policy to set out the circumstances in which the DNSP may specify a static zero export limit in a connection offer for a retail customer. This new provision should be read in conjunction with the new provisions in chapter 5A limiting the circumstances in which a static zero export limit can be offered to a micro embedded generator and inserting new requirements for the connection charge guidelines to set out circumstances in which that may occur.
6.8.1B	This new clause sets out the requirement for the AER to make the Export Tariff Guidelines. The clause describes the objective of the guidelines and the information and guidance that may be included. The Export Tariff Guidelines are not binding. Clause 11.141.14 in Chapter 11 extends the scope of the Export Tariff Guidelines during the tariff transition period.
6.8.2(c1) and 6.8.2(c1a)	These paragraphs describe the information that must be included in the overview paper accompanying a regulatory proposal. The final Rule replaces the two paragraphs with a new paragraph that requires all matters to be in reasonably plain language and provides more detail about what must be in the overview paper, including: •

NER CHAPTER 6 PROVISION	COMMENTARY
	• information to explain the interrelationship between different parts of the proposal, • information about the customer engagement process, including reference to engagement with distribution service end users or groups representing them and (in relation to the TSS) retailers and MSGAs, the concerns raised and how they were addressed, • a summary to explain the DNSP's approach to identifying demand for, and where relevant providing for, distribution services for supply into the distribution network from micro embedded generators and non-registered embedded generators, • a summary of the other approaches considered by the DNSP, • a description of the key risks and benefits for distribution service end users of the regulatory proposal and the proposed tariff structure statement including the export tariff transition strategy, • as currently required, a comparison of the DNSP's proposed total revenue requirement with its total revenue requirement for the current regulatory control period and an explanation for any material differences between the two amounts, • a new requirement for a comparison (on a backward looking basis) of the DNSP's proposed capex to support the provision of distribution services for supply into the *distribution network* from micro embedded generators and non-registered embedded generators and its actual or committed capital expenditure for that purpose and an explanation for any material differences between the two amounts.
6.18.1A(a)(2A)	Clause 6.18.1A sets out the elements to be included in the TSS. A new paragraph (a)(2A) requires the TSS to include a description of the strategy or strategies the DNSP has adopted for the introduction of export tariffs (the 'export tariff transition strategy'). A new 'Note' at the end of paragraph (a) refers to the additional requirements in chapter 11 that apply during the tariff transition period. The TSS will be required to specify, for each proposed export tariff, the basic export level or the manner in which the basic export level will be determined and the eligibility conditions applicable to each proposed export tariff.
6.18.1B(b)(6)	The paragraph deals with customer engagement when amending a TSS. The final Rule replaces the term 'electricity consumers' with the new defined term 'distribution service end users' and inserts a reference to 'groups representing them' to be clear that engagement may occur with consumer representative groups.

NER CHAPTER 6 PROVISION	COMMENTARY
	The reference to engagement with retailers is extended to refer to MSGAs.
6.18.1C(a)	The clause deals with giving notice to retailers of proposed tariff trials. The reference to retailers is extended to refer to MSGAs.
6.18.4(a) and (b)	This paragraph sets out principles that the AER must have regard to in formulating provisions of a distribution determination governing the assignment of retail customers to tariff classes. The final Rule amends paragraph (a)(1)(i) to require the AER to take into account the nature and extent of a retail customer's usage 'or intended usage' of distribution services in order to facilitate customer choice relating to export tariffs. Paragraphs (a)(1) and (b) are amended to clarify that 'usage' refers to use of distribution services and to remove the reference to 'load profile'.
6.18.4(a)(3)	The clause deals with assigning customers to tariffs. Paragraph (a)(3) states that 'retail customers with micro-generation facilities should be treated no less favourably than retail customers without such facilities but with a similar load profile.' The final Rule deletes paragraph (a)(3) as a consequence of deleting the prohibition on export tariffs.
6.18.5(a)	Paragraph (a) sets out the principle that tariffs should be cost-reflective. The final Rule inserts a new 'Note' to state that (consistent with a conventional interpretation of the principle in paragraph (a)), charges in respect of the provision of direct control services may reflect efficient negative costs.
6.18.5(f)(2)	Paragraph (f)(2) in the pricing principles refers to 'meeting demand from retail customers that are assigned to that tariff at times of greatest utilisation of the relevant part of the distribution network'. Consistent with other changes made to this chapter, the final Rule amends this paragraph to refer to 'times of greatest utilisation of the relevant service'.
6.18.5(g)	Paragraph (g) refers to 'efficient usage'. Consistent with other changes made to this chapter, the final Rule amends this paragraph to refer to 'efficient usage of the relevant service'.
6.18.5(i)	The final Rule amends pricing principle (i) to allow for tariff structures that customers can respond to under the retail or MSGA terms.
6.20.1(a)(2)	The clause deals with the measures DNSPs can use to determine use of their distribution network. Consistent with other changes made to this chapter, the final Rule amends the phrase 'half-hourly demand' to refer to 'half-hourly demand for services' and replaces 'metered or agreed energy' with 'metered or agreed energy consumption or export'.
6.20.1(b), (c) and (e)	These provisions deal with who is billed for distribution services (for example, the retailer for a retail customer) and the source of data used

NER CHAPTER 6 PROVISION	COMMENTARY
	for billing. The final Rule inserts references to MSGAs to provide for DNSPs to bill MSGAs for export charges and specify the source of data to be used.
6.22.2(e)	Minor change corrects an incorrect cross-reference.
Part O	The final Rule amends the heading to Part O as the content of the Part has been extended.
6.27A	The final Rule inserts a new rule 6.27A that requires the AER to prepare and publish a network service provider performance report to provide information about the performance of each DNSP in providing distribution services for the supply of energy from embedded generating units into the distribution system over a 12-month period. The rule leaves it open to the AER to decide what information to include in the report and provides guidance about the matters that could be considered for the report.

Table B.4: **Changes to NER Chapter 6B**

NER CHAPTER 6B PROVISION	COMMENTARY
6B.A1.1	Customers with DER may include customers of retailers and customers of MSGAs. When export charges are introduced, DNSPs will need a means to invoice and collect the export charges from both retailers and MSGAs. Chapter 6B already provides for retailers to be billed by the DNSP for the charges payable by the retailer's customers. The final Rule extends Chapter 6B so that it also provides the framework for DNSPs to bill MSGAs for the network charges payable by MSGA customers. Amendments to this clause add references to MSGAs to reflect the extended scope of the chapter.
6B.A1.2	This clause sets out local definitions used in chapter 6B. To reflect the extended scope of this chapter, the final Rule extends definitions that reference retailers to include a reference to MSGAs, and a new definition extends the term 'retailer' when used elsewhere in the chapter to include MSGAs. The final Rule also extends the meaning of 'shared customer' to include a person who is a customer of an MSGA and whose small generating unit is connected to the distribution system of the DNSP. This is intended to reflect the definition of 'shared customer' under the NERL.
6B.A2.2(d)	The clause refers to a 'contract for the sale of electricity only' (meaning a contract in which the customer has elected to pay the DNSP directly for network charges). The final Rule amends the clause to refer to a contract

NER CHAPTER 6B PROVISION	COMMENTARY
	for sale *or purchase* of electricity to cover contracts between MSGAs and their customers.
6B.A3.2(a)(1)	The clause deals with tariff reassignment. The final Rule removes the phrase 'in use of electricity consumption at the customer's premises' which is not needed for the clause to operate as intended. This extends the clause to cover changes to export that may result in a tariff reassignment.
6B.A3.2(c) and (c1)	The final Rule amends this clause for clarification (paragraph (c)) and to require the DNSP, when deciding whether the tariff assignment should be changed, to have regard to the provisions of the DNSP's distribution determination governing the assignment or re-assignment of retail customers to tariffs. The note referring to the tariff assignment provisions in clause 6.18.4 (c1) has also been moved from paragraph (e)(2) to new paragraph (c1). These changes are intended to support customer choice of export tariff, if that is available under the distribution determination and TSS.
6B.A3.2	In the final Rule, the use of the italicised term 'customer' in these paragraphs (which is not a defined term) has been corrected and drafting changes in paragraphs (c), (d) and (e) are intended to clarify that the provisions deal with changes to tariff assignment, rather than a change to the tariff itself.

Table B.5: **Changes to NER Chapter 7**

NER CHAPTER 7 PROVISION	COMMENTARY
7.6.2(a)(2)	This clause describes who may appoint a Metering Coordinator for a connection point that connects, or is proposed to connect, a generating system to a distribution network but does not apply to the connection point of a retail customer. The final Rule extends the meaning of 'retail customer' as defined in chapter 10 to include micro embedded generators and non-registered embedded generators (other than those connecting under chapter 5). In this clause, the extended meaning of 'retail customer' should not apply and so the final Rule replaces 'retail customer' with 'small customer or large customer' to preserve the current operation of the clause.
7.8.10(a)(2) and (3)	Clause 7.8.10 deals with the time by which repairs must be made where there is a metering installation malfunction. More time is allowed where the repair would require interruption to the supply of another retail

NER CHAPTER 7 PROVISION	COMMENTARY
	customer. The extended meaning of 'retail customer' should not apply in the clause and so the final Rule replaces the term with 'small customer or large customer'.

Table B.6: **Changes to NER Chapter 8**

NER CHAPTER 8 PROVISION	COMMENTARY
New Part J	The final Rule inserts new Part J of chapter 8. The new Part provides for the AER to develop a CECV methodology which it will use to determine, for publication, the values of customer export curtailment. The values will be updated annually and the CECV methodology will be reviewed every 5 years.

Table B.7: **Changes to NER Chapter 10 - glossary**

NER CHAPTER 10 TERM	COMMENTARY
billed but unpaid charges	The final Rule extends the framework in chapter 6 under which DNSPs can recover distribution charges unpaid by a failed retailer to enable DNSPs to use the framework for recovery of distribution charges unpaid by a failed MSGA. The amendments to the definition of 'billed but unpaid charges' insert references to the new term 'failed Market Small Generation Aggregator'.
connection offer	A consequential amendment refers to the use of the term 'connection offer' in chapter 6.
distribution network user access	A minor change corrects the cross reference to the provision in chapter 5 from rule 5.5 to rule 5.3AA. The rule was moved in a previous rule change.
distribution service end user	The new term replaces the undefined term 'electricity consumer' in chapter 6. The final Rule includes the reference to 'electricity consumers' in the new definition and extends the term to micro embedded generators and non-registered embedded generators who connect under chapter 5A.
embedded generating unit	As currently defined, the term has two elements: connection within a distribution network and not having direct access to the transmission network.

NER CHAPTER 10 TERM	COMMENTARY
	With the use of batteries to provide network support, a potential ambiguity arises from the phrase 'connection within a distribution network' which could be interpreted narrowly to exclude DER connected through connection assets or behind the meter, since a distribution network is generally regarded as ending at the meter or connection point. To avoid a narrow interpretation of the term, the final Rule replaces 'connection within a distribution network' with 'connection within a distribution system'.
embedded generating unit operator	This new term replaces the term 'embedded generator' in chapter 5A. This avoids confusion with the defined term 'Embedded Generator' which is used to refer to entities registered in that capacity under chapter 2.
Embedded Generator	As a consequential change, the final Rule deletes the note referring to the chapter 5A definition of embedded generator.
export tariff	This new definition refers to 'a tariff for distribution services that includes a charging parameter relating to supply from embedded generating units into the distribution network'.
Export Tariff Guidelines	This new signpost definition refers to the clause in chapter 6 under which the guidelines are made.
export tariff transition strategy	A new signpost definition refers to the clause in chapter 6 under which the export tariff transition strategy is required.
failed Market Small Generation Aggregator	The final Rule extends the framework in chapter 6 that enables DNSPs to recover distribution charges unpaid by a failed retailer to failed MSGAs. The new definition refers to an MSGA in respect of whom an insolvency official (as defined in the NER) has been appointed. This aligns with paragraph (a) of the definition of 'retailer insolvency event'.
Generator	A consequential change replaces the phrase 'non-registered embedded generator as defined in clause 5A.A.1' with the defined term (in italics) 'non-registered embedded generator'.
micro EG connection	A consequential change deletes the phrase '(in the context of Chapter 5A)' as the term is now also used in chapter 10.
micro embedded generator	The final Rule moves this term from chapter 5A and makes some amendments. The current chapter 5A definition refers to a 'retail customer who operates, or proposes to operate, an embedded generating unit for which a micro EG connection is appropriate'. In the amended definition, 'retail customer' is replaced with 'small customer,

NER CHAPTER 10 TERM	COMMENTARY
	large customer or MSGA customer'. The first two terms cover the same scope as the current definition in chapter 5A. The new term 'MSGA customer' extends the definition to customers who sell through an MSGA and for whom a micro EG connection is appropriate.
MSGA customer	A new signpost definition provides a cross-reference to the definition in chapter 5A.
network	The final Rule deletes the phrase 'to customers (whether wholesale or retail)' from this definition, as distribution services relate both to the flow of energy from the grid to the distribution network users and from distribution network users to the grid.
non-registered embedded generator	The final Rule moves this term from chapter 5A and amends the definition by replacing 'embedded generator' with the new term 'embedded generating unit operator'.
retail customer	The final Rule replaces the definition with a new term based on 'retail customer' as currently defined in chapter 5A. The new defined term covers a person who is one or more of the following: • a small customer • a large customer • a micro-embedded generator • a non-registered embedded generator, other than a non-registered embedded generator who has made an election under clause 5A.A.2(c) for connection under Chapter 5. Non-embedded generators who seek a connection under chapter 5 are excluded as they are not intended to be treated as retail customers for the purposes of retail tariffs in chapter 6 or in other provisions dealing with retail customers in the NER.
Retail Market Procedures	A consequential change extends the phrase 'for or in connection with the sale and supply of electricity to retail customers' by adding a reference to 'export of electricity by retail customers' as the Retail Market Procedures need to support the provision of distribution services for exports to the grid.
retailer insolvency costs	A consequential change to paragraph (b) of the definition of 'retailer insolvency costs' extends it to cover 'the actual amount of unbilled network charges accrued by a … failed Market Small Generation Aggregator'.
retailer insolvency event	A consequential change to paragraph (b) of the definition of 'retailer insolvency costs' extends it to cover 'the actual amount of unbilled network charges accrued by a … failed Market Small Generation

NER CHAPTER 10 TERM	COMMENTARY
	Aggregator'.
Voter Category	Minor change inserts a missing 'in'.

Table B.8: **Changes to NER Chapter 11 - transitional rules**

NER CHAPTER 11 PROVISION	COMMENTARY
General	This new Part contains the transitional rules for the *National Electricity Amendment (Access, pricing and incentive arrangements for distributed energy resources) Rule 2021.*
11.141.1	The first clause in this new Part contains definitions.
11.141.2	This clause lists the AER instruments for review and amendment (if the AER considers it necessary or desirable), to take into account the amending rule. Two dates apply: • by 1 July 2022: the Expenditure Forecast Assessment Guidelines, the Distribution Service Classification Guidelines, the Cost Allocation Guidelines and the connection charge guidelines. • by 1 July 2023: the Distribution Reliability Measures Guidelines, the demand management incentive scheme and the demand management innovation allowance mechanism. In relation to the Expenditure Forecast Assessment Guidelines, the AER is required to have regard to the need for different approaches for different classes of retail customers.
11.141.3	This clause provides for the AER to undertake a review to consider arrangements (which may include a STPIS) to provide efficient levels of distribution services provided to retail customers for supply from embedded generating units to the distribution network. The final Rule provides for the report to be completed by 31 December 2022 and to include the AER's recommendations for incentive arrangements.
11.141.4	This clause provides for the AER to publish the first network service provider performance report made in accordance with new rule 6.27A by 31 December 2022.
11.141.5	This clause provides for the AER to make the initial Export Tariff Guidelines by 1 July 2022, using the distribution consultation procedures.
11.141.6	This clause provides for the AER to consult in accordance with the distribution consultation procedures about how the AER will take into account the amending rule in the AER's annual benchmarking reports

NER CHAPTER 11 PROVISION	COMMENTARY
	and to publish a report on the outcome of the consultation by 1 July 2022.
11.141.7	This clause provides for the AER to develop and publish the initial CECV methodology and determine and publish the initial customer export curtailment values by 1 July 2022.
11.141.8	This clause increases, for the regulatory control period in which the rule is made and the subsequent regulatory control period, the thresholds for tariff trials. The individual threshold increases from 0.5 percent to 1 percent, and the cumulative threshold increases from 1 percent to 5 percent.
11.141.9	This clause provides for AEMO, by 1 July 2022, to review and where AEMO considers it necessary or desirable to propose amendments to the Retail Market Procedures to take into account the Amending Rule.
11.141.10	This clause provides that a DNSP is not required to include the information in new clauses S5.8(l)(3) and (4) in a DAPR that has a DAPR date falling before the first anniversary of the commencement date.
11.141.11	This clause prevents a DNSP from assigning or reassigning an existing DER customer to an export tariff unless the customer's retailer or MSGA has opted the customer in. An existing DER customer is defined to cover: • DER in operation at the commencement date (19 August 2021), • connection offers relating to DER accepted at the commencement date but where the work is not yet complete, and • connection offers relating to DER open at the commencement date.
11.141.12	This clause prevents a DNSP from charging for exports within the 'basic export level' applicable to the customer's export tariff. The requirement applies until the end of the second full regulatory control period after the rule is made.
11.141.13	This clause requires the tariff structure statement of a DNSP to include: • for each proposed export tariff, the basic export level or the manner in which the basic export level will be determined, and • the eligibility conditions applicable to each proposed export tariff. The 'basic export level' will be determined as part of the distribution determination process. In considering proposed basic export levels, the AER will have regard to:

NER CHAPTER 11 PROVISION	COMMENTARY
	• the capacity of a distribution network (or part of a distribution network) to accept supply from embedded generating units to the extent the AER considers that capacity arises from the provision of distribution services for supply to retail customers in that distribution network (or part) with minimal or no further investment, and • forecast use of distribution services relating to supply from embedded generating units in the distribution network (or relevant part). Other principles in the clause are intended to give the AER flexibility to approve different ways to define basic export levels (by reference to capacity or energy) and different criteria for applying basic export levels to particular tariffs (for example connection point voltage or the location of a connection point in the distribution network).
11.141.14	This clause provides for the AER to develop guidelines about methodologies for determining basic export levels and related matters. In doing so, the AER must have regard to the matters in the clause or other matters the AER considers appropriate. The guidelines form part of the Export Tariff Guidelines and will remain in place for so long as the requirement for basic export levels continues.
11.141.15	This clause delays the effective commencement of the rule in clause 5A.F.1(c) until the AER has updated the connection charge guidelines. Clause 5A.F.1(c) states a connection offer for a micro-embedded generator must not specify a static zero export limit except where requested by the connection applicant or in circumstances permitted by the connection charge guidelines.

B.2 Amendments to the National Energy Retail Rules

Table B.9: Changes to the NERR

NERR PROVISION	COMMENTARY
rule 3	A new definition of 'small generator' is included as the term is now used in the rules. The definition is consistent with the existing definition in the deemed standard connection contract in Schedule 2 of the rules.
rule 19(1)(b1)	This new paragraph requires designated retailers to give a small customer with a small generator information about any conditions applicable to supply from the small generator into the distribution system under the

NERR PROVISION	COMMENTARY
	standard retail contract.
rule 56A	This requires a retailer, on a request by a small customer or a customer authorised representative, to provide information about that customer's energy consumption for the previous 2 years. The final Rule extends this to information about a customer's energy export (as well as consumption). The heading to the rule has also been amended to reflect the change.
rule 56B	This deals with the provision of historical billing or energy consumption information of a small customer. The final Rule extends this to historical billing or energy consumption or export information. The heading to the rule has also been amended to reflect the change.
rule 64	The final Rule inserts a new paragraph (a1) in subrule (1) to require a retail marketer to give a small customer with a small generator information about conditions applicable to supply from the small generator into the distribution system and how these may be changed (including where relevant, when this will result in a change to prices, charges or benefits to the customer).
rule 86A	This rule requires a distributor to provide information about a customer's energy consumption for the previous 2 years. The final Rule extends this to information about a customer's energy export (as well as consumption). The heading to the rule has also been amended to reflect the change and a minor typographical error has been corrected.
rule 86B	This provision applies to the provision of information about gas and corresponds to rule 86A. In order to maintain consistency, minor drafting changes have been made in the rule. These are not intended to alter the meaning or scope of the rule.
New Part 8A	The final Rule inserts a new Part 8A, with new rules 147A and 147B, explained below.
New rule 147A	This new provision requires distributors to publish information about technical requirements for small generator connections and related information such as the use of remote control equipment and information about export limits. The information must be in plain language. The description of what is 'plain language' follows the approach in rule 131. The other provisions mirror the provisions in rule 80 about providing information on the website or as a document and providing translations into other languages.
New rule 147B	This new provision is an immunity for distributors and retailers from civil monetary liability for any partial or total failure to take supply of energy

NERR PROVISION	COMMENTARY
	from premises, which includes taking a defective supply of energy from premises. The provision is modelled on section 316 of the NERL which gives immunity for partial or total failure to supply energy except where due to negligence or bad faith. Like section 316, the new rule does not allow a retailer or distributor to amend the immunity under a contract with a small customer with the effect that, for example liability for negligence could not be capped. However, the rule allows this principle to be modified by a jurisdictional instrument. This reflects the approach in NSW and SA to section 316.

Table B.10: **NERR Schedule 1 - Model terms and conditions for standard retail contracts**

NERR SCHEDULE 1 PROVISION	COMMENTARY
clause 7	This clause sets out the liability provisions in the model terms for retail contracts. Paragraph (c) notes the immunity for failure to supply under the NERL. The final Rule adds a new paragraph to refer to the immunity in the NERR for failure to take supply of energy. The final Rule adds headings to indicate which parts of clause 7 apply to all customers, and which are relevant to customers who export electricity to the grid.
clause 9.4A	Clause 9.4A reflects the requirements of rule 56A about the provision of consumption information. Changes to the standard clause align the clause with the amendments to rule 56A.

Table B.11: **NERR Schedule 2 - Model terms and conditions for deemed standard connection contracts**

NERR SCHEDULE 2 PROVISION	COMMENTARY
General	This schedule sets out the 'Model terms and conditions for deemed standard connection contracts'. The terms apply to the provision of 'customer connection services' which under the NERL is defined to include the provision of connection and supply services. Supply services is not defined in the NERL, but taking into account chapter 5A of the NER (put in place at the same time as the NERL and NERR), the term is broad enough to cover services that allow for delivery of electricity from the distribution system to a customer (import) or from a customer to the distributor (export).' The rule amends the model terms to clarify the application to both forms of supply service (import and export).

NERR SCHEDULE 2 PROVISION	COMMENTARY
Preamble	The Preamble is amended to refer to 'supply services for the premises' in place of 'the energy supplied to the premises'
clause 4.1	Amended to refer to use the phrase 'start to use supply services' in place of 'start to take supply of energy' and to include by way of clarification 'for example by taking a supply of energy'.
clause 4.2(a)	Amended to replace the phrase 'the supply of energy to the premises' or 'the supply of energy for the premises' with 'supply services for the premises'.
clause 5.2	Amended to refer to 'the sale of energy' in place of the 'sale of energy to your premises'
clause 6.2(c)	Amended to replace the phrase 'the supply of energy to the premises' with 'supply services for the premises'.
clause 6.3	Amended to refer to customer connection services provided 'for your premises' or 'for the premises' in place of 'to your premises' or 'to the premises'.
clause 6.6(a)	This clause refers to technical standards for small generators. It has been amended to use the phrase 'when you use supply services' in place of 'when you start to take supply of energy'. The final Rule adds a sentence referring to the information about the standards and related information published by distributors under new rule 147A.
clause 6.6(c)	A drafting correction in clause 6.6(c) deletes 'at the time' from the phrase 'at the time when'.
clause 8(a)	This clause deals with quality and reliability. Paragraph (a) has been amended to refer to the 'electricity supply service' in place of 'electricity supply' and to replace the italicised term 'relevant authority' with the term not in italics, since it is defined in the deemed standard connection contract.
clause 8(b)	The final Rule amends paragraph (b) to refer to 'the condition or suitability of your services' in place of 'the condition or suitability of energy'
clause 8(d)	A new paragraph (d) refers to the new immunity in the Rules for total or partial failure to take supply of electricity from premises.
clause 10 heading	The heading to clause 10 has been amended to refer to interruptions to 'supply services' in place of 'supply'.
clause 10.5	New clause 10.5 confirms that the distributor may temporarily interrupt or curtail the supply services provided for export from small generators connected to the distribution system, with consequential changes to the heading of clause 10.1. For the final Rule, the circumstances in which this is permitted include at the direction of a relevant authority or in

NERR SCHEDULE 2 PROVISION	COMMENTARY
	accordance with the energy laws.
clause 10.6	For the final Rule, new clause 10.6 refers to the use of remote control equipment for interruptions for small generators and directs the customer to the information about use of the equipment in the information published by distributors under new rule 147A.
clause 11.3(a)	The final Rule replaces the phrase 'the supply of energy for the premises' with 'supply services for the premises'.
clause 12.1	The final Rule amends the 'Note' to the clause to refer to the disconnection of generators under law. A drafting correction has been made to remove 'if … if' phrases.
clause 15.2A	This clause, about the provision of information, reflects the requirements of rule 86A. The final Rule makes amendments to align the clause with the amendments to rule 86A.
clause 16.1	The final Rule amends the clause to refer to 'a complaint relating to customer connection services under this contract, including supply services' in place of 'a complaint relating to the supply of energy to the premises'.
Definition: Customer connection services	In the definition of 'customer connection services', the final Rule omits the phase 'services relating to the flow of energy to your premises' and replaces it with 'supply services'.
Definition: supply services	A new term 'supply services' means 'services relating to the flow of energy to or from your premises'.

Table B.12: **NERR Schedule 3, Part 17 - transitional rules**

NERR SCHEDULE 3 PROVISION	COMMENTARY
New Part 17	New Part 17 of Schedule 3 sets out the transitional provisions for the National Energy Retail Amendment (Access, pricing and incentive arrangements for distributed energy resources) Rule 2021. The new Part comes into effect on 19 August 2021.
Part 17, rule 2	This transitional rule sets out definitions used in the transitional rules. The 'commencement date' refers to 31 March 2022. The 'effective date' refers to 21 October 2021.
Part 17, rule 2	This transitional rule requires retailers and distributors to implement the changes to their standard terms by the commencement date (31 March 2022), with effect from that date.

NERR SCHEDULE 3 PROVISION	COMMENTARY
Part 17, rule 3	This transitional rule provides that the immunity in new rule 147B does not apply with respect to a contract entered into prior to the effective date (21 October 2021) other than a deemed standard connection contract, standard retail contract or deemed customer retail arrangement. Rights accrued under these contracts before 21 October 2021 are preserved.
Part 17, rule 4	This transitional rule provides that the information published under rule 147A need not be published until the commencement date (31 March 2022).

C SUMMARY OF SUBMISSIONS RELATING TO INCENTIVES, SERVICE LEVELS AND CECV

This appendix summarises the stakeholder feedback received in response to the draft rule determination on the following issues:

- Incentive arrangements for export services
- Export service levels and export connections
- Customer Export Curtailment Values (CECVs)

Each section includes a brief description of the position taken in the draft determination, for context, followed by a summary of the feedback received from stakeholders on that position. The issues raised in the feedback are addressed in the respective sections in chapter 4.

C.1 Incentive arrangements for export services

C.1.1 Providing balanced incentives to DNSPs

Draft rule determination

The draft rule determination considered there was a need to provide balanced incentives for DNSPs for efficient delivery of export services. The draft rule included a requirement for the AER to undertake a review within 18 months to consider arrangements, which may include the STPIS, for providing performance incentives for export services. The draft rule also amended the factors to be considered by the AER in developing the STPIS, including the extension to cover export services.

Strong stakeholder support for balancing incentives

Stakeholders overwhelmingly support the need to provide service performance incentives to DNSPs.[387] For example, AGL, IEEFA and Alinta Energy consider that currently there are minimal incentives for DNSPs to reduce export constraints and there was a need for DNSPs to be held accountable for the service performance.[388] ACOSS and the state and territory COSSes support the requirement for network businesses to plan for and have incentives to more efficiently invest in, operate and use export services. Similarly, Essential Energy notes that without improved incentives, the customer experiences will be adversely impacted through the counter factual scenario.[389]

387 Submissions to the draft rule determination: IEEFA, p. 1; AGL, p. 5; Alinta Energy, p. 1; AGL, p. 5; ENA, p. 8; Ausgrid p. 1; Endeavour Energy, p. 4; EnergyAustralia, p. 3; Essential Energy, p. 4; LGI, p. 2; SAPN, p. 7; TEC/ACOSS, p. 2; AusNet Services, p. 2; AEC/Oakley Greenwood, p. 3; AER, p. 6; Victorian Government, p. 2

388 Submissions to the draft rule determination: IEEFA, p. 1; AGL, p. 5; Alinta Energy, p. 1.

389 Essential Energy submission to the draft rule determination, p. 4.

Stakeholders generally support the draft approach to providing incentives

The approach to supporting the delivery of performance incentives adopted under the draft rule determination is strongly preferred by most stakeholders.[390] Ausgrid says it strongly supports the draft decision to extend existing incentive schemes to export services.[391] The AER considers that the extension of incentive based approach to regulation to export services is likely to deliver long term benefits to consumers and better contribute to the achievement of the NEO. The Victorian Government says that proposal to promote incentives has considerable merit.[392] AGL says it agrees "with the proposed approach to extending the Service Target Performance Incentive Scheme (STPIS) to support export services".[393]

EnergyAustralia says it supports allowing the AER to consider if an incentive scheme can be developed for promoting improvement in export services. Similarly, Essential Energy and AusNet Services also express support for the development of an incentive scheme for export services and the AER being responsible for the developing the scheme progressively over time. [394] According to Essential Energy, flexibility is critical in extending the STPIS to exports. The AER also notes that it supports the NER providing it flexibility as it will allow the AER to consider this matter when it undertakes a holistic review of the incentive schemes.[395] Endeavour Energy encourages the Commission to maintain the draft approach that it considers maximises welfare through the establishment of a framework that allows for the optimisation of network incentives to provide efficient levels of export service. [396]

Some stakeholders suggest other approaches

CitiPower, Powercor and United Energy suggest that the draft approach should be adjusted to require the AER to "undertake a more holistic review of the regulatory framework which considers how provision of export services can be included and balanced with all other incentive arrangements, as well as reflected in the complementary expenditure forecasting assessment guidelines". They explain that their Customer Advocacy Panel supports a more holistic review to "ensure customers do not end up paying twice for services or fail to receive the export services they have funded".[397] The Network of Illawara Consumers of Energy (NICE) suggests that another option to consider in developing export performance incentives could be based on the approach used for the Customer Service Incentive Scheme, that is, by agreement between DNSPs and its customers. NICE also suggests that the entire field of performance management incentives (PMI) including the STPIS, DMIS, CSIS, and any other small scale incentive scheme:[398]

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390 Submissions to the draft rule determination: AGL, p. 5; AGL, p. 5; ENA, p. 8; Ausgrid p. 1; Endeavour Energy, p. 4; EnergyAustralia, p. 3; Essential Energy, p. 4; SAPN, p. 7; TEC/ACOSS, p. 2; AusNet Services, p. 2; AER, p. 6; Victorian Government, p. 2, Queensland Government, p. 2.

391 Ausgrid submission to the draft rule determination, p. 1.

392 Victorian Government submission to the draft rule determination, pp. 1-2.

393 AGL submission to the draft rule determination, p. 5.

394 Submissions to the draft rule determination: AusNet Services, p. 1; Essential Energy, pp. 1-2.

395 AER submission to the draft rule determination, pp. 6-7.

396 Endeavour Energy submission to the draft rule determination, p. 4.

397 CitiPower, Powercor and United Energy submission to the draft rule determination, p. 3.

398 NICE submission to the draft rule determination, p. 12.

> should be rewritten so that the rules contain the must dos. That would, in our opinion, include an envelope specifying how much any PMI reward could be(as a percentage of revenue) and that when two or more PMIs operate together the total value of the PMI is calculated as a geometric average of the individual components.

Although PIAC supports the need to provide performance incentives to the DNSPs, it raises concerns that the STPIS approach could lead to over-investment in export service performance. It notes that the "STPIS is subject to public and political interests that don't necessarily reflect efficient levels of supply, or consumer preferences/benefits".[399] It further raises concerns that the STPIS may result in non-solar consumers paying for export reliability they do not benefit from. PIAC supports the AER conducting a review to determine whether it is practically feasible for the STPIS to be adapted for exports as proposed under the draft. Instead of the STPIS, PIAC also supports allowing GSL payments to individual exporters when certain levels of service are not met.[400]

Firm Power raises queries regarding the scheme design including the revenue at risk for DNSPs and whether the STPIS performance metrics would include export reliability, availability and capability.[401] It also suggests that "there is a significant need to reform these schemes to encourage DNSPs to consider non-network solutions".[402]

Some stakeholders note challenges in extending the STPIS to exports

Some stakeholders note potential practical challenges associated with extending the STPIS to exports, especially those stemming from the limited visibility of Low Voltage parts of the networks. For example, Essential Energy notes that the extension of STPIS to exports will need to overcome a number of practical challenges. It explains that DNSPs do not currently have clear visibility on the extent to which their networks constrain DER exports. Essential Energy considers that alternative incentive arrangements will also be impacted by the visibility challenges.[403]

Endeavour Energy notes that significant amounts of DER metering data would be required to provide robust data to support the STPIS. It suggests the Commission strengthen metering data provision requirements to allow DNSPs to readily access metering data, either through this rule change or following the metering review.[404]

According to EnergyAustralia, considering the interoperability of a range of incentive schemes available to networks will be complex and this would be exacerbated if considering the scheme at a granular NMI or feeder level. [405]

399 PIAC submission to the draft rule determination, p. 2.
400 ibid.
401 Firm Power submission to the draft rule determination, pp. 5-6.
402 ibid, p. 4.
403 Essential Energy submission to the draft rule determination, p. 5.
404 Endeavour Energy submission to the draft rule determination, p. 6.
405 EnergyAustralia submission to the draft rule determination, p. 4.

The AER considers that there will be challenges involved in extending the STPIS to exports, but doing nothing is not an option.[406] Similarly, ENA says that although there will be challenges involved in extending the STPIS, it considers an adapted STPIS will play an important role in guiding DNSPs towards efficient service performance levels valued by customers.[407]

Meanwhile, Red Energy and Lumo Energy do not support extending the STPIS to exports because tthey consider "Unless the STPIS is precisely defined, the AER may find it difficult to differentiate expenditure allowances provided and spent on the network to achieve reliability targets for both import and export services". [408]

The proposed review timeline is generally supported

The proposed timeline for the AER to conduct the review was preferred by most stakeholders.[409] For example, AGL says it supports the proposed 18 month timeframe for the AER to undertake a review focused on the feasibility of extending the STPIS.[410] Similarly, ENA states it supports an 18 month review timeframe for the AER and that it will be important for the AER to have sufficient time to develop the scheme.[411] The AER says it accepts the Commission's view that the 18 month timeline balances the need to have effective arrangements in place while allowing sufficient time to undertake a thorough review. The AER also highlights that it intends to "commence a broad review of existing incentive schemes, including the STPIS, in the second half of 2021".[412]

SAPN supports the proposed timeline for conducting the review but also suggest the Commission specify a timeframe for the AER to produce the incentive arrangements. It adds that this would be consistent with the current and past practices where the AER has had to produce new schemes. SAPN suggests that as an alternative, the Commission should consider a review to be conducted in a few years time on the progress in implementing its envisaged framework and that it should reiterate it clear policy intent on incentives in the final determination.[413]

Endeavour Energy raises concern that timeline of the review may prove problematic given its conclusion several months after the Framework and Approach (F&A) process for the 2024-29 regulatory control period. It adds that other regulatory processes may need to follow the review. According to Endeavour Energy, this "could mean that networks subject to the 2024-29 regulatory control period do not have an opportunity to apply an amended STPIS incentive subsequent to the F&A process but prior to their revised proposals". Endeavour Energy proposes:[414]

406 AER submission to the draft rule determination, pp. 6-7.
407 ENA submission to the draft rule determination, p. 8.
408 Red Energy and Lumo Energy submission to the draft rule determination, p. 1.
409 Submissions to the draft rule determination: EvoEnergy, p. 2; AGL, p. 5; ENA, p. 8; AER, pp. 6-7.
410 AGL submission to the draft rule determination, p. 5.
411 ENA submission to the draft rule determination, p. 8.
412 AER submission to the draft rule determination, pp. 6-7.
413 SAPN submission to the draft rule determination, p. 8.
414 Endeavour Energy submission to the draft rule determination, p. 6.

> If an expedited review process is not feasible it would be prudent as part of this rule change to provide networks an ability to apply for the early application of an amended STPIS during the next regulatory control period. We note an equivalent rule amendment was made in April 2018 to bring forward the benefits of the Demand Management Incentive Scheme

Solar Analytics notes that other than the timeline for the AER to conduct a review, there isn't a timeline for the application of incentive arrangement for exports. It suggests that "the draft rule should include a requirement for tangible incentive arrangements to be in effect prior to the imposition of any positive export charges".[415]

Amendments to the STPIS factors are accepted by stakeholders

The AER states that it welcomes the draft rule requiring it to consider the "value to network service end users of enhanced service performance" instead of the customer willingness to pay. It adds that the approach would provide sufficient flexibility to the AER in measuring the value to consumers (and other small exports) from enhanced service performance.[416] While in contrast, SAPN states that it prefers retaining the reference to considering customers' willingness to pay for improved service performance but it accepts the amendments proposed under the draft subject to:[417]

- this is in fact being required to avoid unduly restricting the AER in considering appropriate measures, noting that the Draft Rules also propose allowing the AER to consider "…any other factor it considers relevant…"; and
- the AEMC Final Determination reiterating and making explicit, the policy intent provided in the Draft Determination, that consideration should be given to the value of enhanced service performance not only to all customers but to exporters specifically – noting that it is exporters who may ultimately pay for the provision of export services. This clarity will be important for future AER decision-making.

Mixed views on the approach to providing interim incentive arrangements

ENA considers that the current regulatory framework provides sufficient discretion to the AER to implement interim incentive arrangements if necessary. On the other hand, Solar Analytics questioned the effectiveness of reputational incentives, stating that "We are not aware of any compelling evidence that reputational incentives are effective for monopoly network service providers and are not satisfied that this will have a tangible impact".[418]

415 Solar Analytics submission to the draft rule determination, p. 2.
416 AER submission to the draft rule determination, p. 6.
417 SAPN submission to the draft rule determination, p. 8.
418 Solar Analytics submission to the draft rule determination, p. 2.

C.1.2 Inclusion of voltage performance in the STPIS

Draft rule determination

The draft rule determination did not specify the performance metrics to be included in the extension of the STPIS to exports. It considered that the performance metrics could be determined through the AER's STPIS review to extend STPIS to exports.

Some stakeholders suggest the STPIS should cover voltage performance

EcoJoule Energy reiterated it supports for the supply voltage performance of a network to be covered under the STPIS framework. It states that the inclusion of a voltage metric in the STPIS "leading to a reduction in system voltage to nominal (230V) levels, would conservatively save every NEM consumer an average of $210 per annum with a project payback of a few months".[419] Solar Analytics considers that export performance incentives should be based both on export curtailment and voltage performance.[420]

C.1.3 Technical impact of DER and governance of voltage

Some stakeholders note technical challenges posed by increasing DER

Some stakeholders suggest that increasing DER penetration was leading to operational challenges for the DNSPs.[421] ENA states that increasing DER penetration gives rise to different types of operational challenges including voltage swings and thermal limits.[422] Similarly, Essential Energy considers that increasing levels of DER is giving rise to specific areas reaching their thermal limits. As an example, Essential Energy notes that "one particular village on Essential Energy's network in the mid-north coast of NSW has seen a significant uptake of rooftop solar systems in the past few years, which is now reaching the networks' maximum thermal limitations."[423]

Some stakeholders raise concerns regarding high supply level voltage and the voltage governance framework

Some stakeholders raise concerns that the supply voltage levels in distribution networks have been higher than desirable and it is leading to a reduced ability for the DER to export.[424] The CEC highlights again that a report commissioned by the Energy Security Board (ESB) and undertaken by the University of New South Wales observed high voltages across the networks regardless of whether customers were exporting. Enphase states that it regularly sees "the voltage set point on the NEM and other marginal grids within Australia are consistently around the 240 Vac rather than the proposed 230 Vac supply that Australian standards require" and as these are observed in the middle of the night, the high voltage cannot be because of a high PV penetration alone. [425]

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419 Ecojoule Energy submission to the draft rule determination, p.2
420 Solar Analytics submission to the draft rule determination, p. 3.
421 Submissions to the draft rule determination: ENA, p. 6; Essential Energy, p. 4.
422 ENA submission to the draft rule determination, p. 6.
423 Essential Energy submission to the draft rule determination, p. 4.
424 Submissions to the draft rule determination: CEC, p. 6; Enphase, p. 5.
425 Enphase submission to the draft rule determination, p. 5.

The CEC raises concerns that the governance of voltage management is "currently highly fragmented and dysfunctional in the National Electricity Market".[426] It adds that in "the absence of initiative from the AEMC or the ESB we will seek leadership on regulation of voltage management from state and territory Energy Ministers and their officials". In its submission to the consultation paper, the CEC suggested that the voltage management should be regulated through the NER.

C.2 Export service levels and connections

C.2.1 Setting export service levels

Draft rule determination

The draft rule determination outlined that extension of the STPIS to exports would be the appropriate mechanism for determining the export service levels to be delivered by the DNSPs.

Strong stakeholder support for the draft approach

Several stakeholders including ENA, IEEFA as well as ACOSS and the State and Territory COSSes expressly support the approach adopted under the draft to setting the export sevice levels through the extension of the STPIS to exports.[427] For example, ACOSS and the State and Territory COSSes say they "support the introduction of a reliability standard for exports, where Networks will be required to guarantee a certain level of grid availability for exports, and would be penalised when the standard is not met." [428] IEEFA also notes that it strongly supports the change to require the development of export service standards as consumers need to be confident in the export services provided by the DNSPs.[429]

ENA says it supports the draft decision that separately defined performance standards under the national framework are not necessary. It further notes this will mean that the jurisdictions will have the flexibility to develop and apply standards meeting jurisdictional circumstances.[430]

C.2.2 Use of zero export limits and minimum export capacity rights

Rule change requests

The rule change request from SAPN proposed there should be clear rights to all customers to request and be granted an offer to access the distribution network to export energy on a fair and non-discriminatory basis. SAPN explained that, "customers should be able to receive a service offer that does not explicitly deny their ability to export, such as via the setting a static export limit of zero".[431] SAPN also proposed that for small customers, there should be a

426 CEC submission to the draft rule determination, p. 6.
427 Subsmissions to the draft rule determination: IEEFA, p. 1; ENA, p. 9; ACOSS, ACTCOSS, QCOSS, SACOSS, TASCOSS, and VCOSS, p. 5.
428 ACOSS, ACTCOSS, QCOSS, SACOSS, TASCOSS, and VCOSS submission to the draft rule determination, p. 2.
429 IEEFA submission to the draft rule determination, p. 1.
430 ENA submission to the draft rule determination, p. 9
431 SAPN rule change request, p. 22

defined standard capacity level that customers can request and receive a connection offer for. SAPN clarified that it could be expressed as a 'base service' and customers could either request this service or a service in excess of this service.

Similarly, ACOSS and TEC suggested that there should be requirement for networks to offer prosumers a 'base level of service' for DER exports. ACOSS and TEC clarified this to mean that where augmentation to add hosting capacity passes the net market benefit test, it should be mandated that networks must offer some level of export(e.g. 3Kw) – i.e., they can no longer impose zero exports. [432]

Draft rule

The draft rule did not require DNSPs to provide DER connecting customers a minimum level of export capacity and did not prohibit DNSPs from providing customers a static zero export limit.

Some stakeholders consider the draft approach provides for efficient outcomes

Several stakeholders support the approach adopted under the draft rule noting that there may be some limited circumstances where it could be efficient for a DNSP to use a static zero export limit and that minimum export capacity requirements may lead to increased costs for customers.[433]

Origin says that the Commission should be cognisant that some level of constraints for exports should be expected.[434] ENA states that prohibiting DNSPs from being able to set zero static export limits under any circumstances would limit the tools available to the DNSPs to manage their networks and that without this option customers would face higher than efficient charges.[435]

AusNet Services explains that: "While we endeavour to maximise hosting capacity to enable customers to maximise their export, and are continuing to adopt new technology and develop new ways to do this, there are circumstances where providing network capacity for additional export would require expensive network upgrades that are not proportionate to the private and broader customer benefits". AusNet Services further adds that "This may include customers on the end of single-wire earth return (SWER) lines and in particular parts of the network with already high levels of DER penetration and problems with minimum demand".[436]

SAPN states that notwithstanding its rule change proposal seeking the prohibition of static zero export limits and a base levels of export capacity, it supports the draft rule determination. SAPN explains that the "fact that regulation will not prescribe particular service options nor service levels, will not impede distributors from designing options that customers value, and will actually facilitate options being customised to individual

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432 TEC/ACOSS rule change request, p. 14.

433 Submissions to the draft rule determination: ENA, p. 9; Origin, p. 2; AusNet Services, p. 2; SAPN, p. 7; Essential Energy, p. 4.

434 Origin submission to the draft rule determination, p. 2.

435 ENA submission to the draft rule determination, p. 9.

436 AusNet Services submission to the draft rule determination, p. 2.

jurisdictional circumstances". SAPN further adds that it intends to explore with its customers and stakeholders a number of service options on the basis that:[437]

- each network has an intrinsic hosting capacity for DER, therefore customers with DER should all have access to at least this intrinsic level of export capacity, including without facing an export tariff (noting that there are no incremental costs driven by this service)
- it expects DER customers will be diverse in how they value the 'export service', with some valuing higher or lower maximum export capacity limits
- it wants to enable customer choice on service levels, as this will drive optimisation of network spend
- it expects that the implementation of flexible export limit capabilities (i.e. distributors dynamically managing the volume of exports on the network) will enable an increased range of service options with commensurate network tariffs that customers can choose from.

Essential Energy provides example of an instance where it had to enact export limits. It notes that a village in its service area with high DER uptake experienced two unplanned outages due to some solar systems in the network exporting above their approved export limits. To remediate the situation, it was required to temporarily disconnect all identified non-complying solar systems within the village. It explains that exports from some identified solar systems have been limited to zero to ensure the safety of Village residents and the broader community, until a long-term solution increasing capacity is implemented over the next 9-12 months.[438]

Several stakeholders also express support for the flexibility provided under the draft approach to accommodate jurisdictional and regional differences.[439] On this issue, ENA notes that "Prescribing a national minimum level of export capacity to all DER customers in the rules also does not recognise the differing levels of DER penetration between NEM jurisdictions, nor within individual DNSPs' own networks; thereby limiting DNSPs' ability to cater for diverse network characteristics and circumstances."[440] The Tasmanian Government also supports the draft determination acknowledging the regional and jurisdictional differences across the NEM. It adds that a flexible approach that accommodates the need for jurisdictions to apply the NEM rules in a way that is complementary, rather than uniform, helps to ensure that the interests of customers in all regions are better served.[441]

Some stakeholders remain concerned regarding the use of static zero export limits

Some stakeholders remain concerned that the framework proposed under the draft rule may not provide sufficient protections for customers from static zero export limits.[442] Solar Analytics and Monash Business School raise concerns that customer access to export services

437 SAPN submission to the draft rule determination, p. 7.
438 Essential Energy submission to the draft rule determination, p. 4.
439 Submissions to the draft rule determination: ENA, p. 9; Tasmanian Government, p. 2; Zero Emissions Noosa, p. 6.
440 ENA submission to the draft rule determination, p. 9.
441 Tasmanian Government submission to the draft rule determination, p. 2.
442 Submissions to the draft rule determination: Monash Business School, p. 6; Solar Analytics, pp. 2-3; TEC/ACOSS, pp. 4; CEC, p. 5; PIAC, p. 2.

remains under the complete discretion of a DNSP with minimal regulatory oversight. The TEC/ACOSS, CEC and PIAC consider that the framework should prevent DNSPs from implementing static zero export limits.[443]

Monash Business School states that under the current framework, export customers have only gained access to the export services at the DNSPs' discretion and that "networks have been able to deny customers access to export services free of regulatory oversight, while customers have not had recourse to an independent dispute resolution mechanism or a legal right of appeal". The School adds that there is no clear reason why this discretion should rest with the DNSPs given "they operate the natural monopoly infrastructure on which owners of DER are totally dependent if they wish to export their electricity". It suggests that "AEMC should clarify whether consumers have an explicit export access right – and if not, then it must establish the circumstances in which such rights may be denied, as well as a customer's rights to challenge a network's decision to deny access to export services".[444]

Solar Analytics raises concerns that under the current arrangements, it is at the sole discretion of the DNSP whether consumers are allowed to install DER, and if so under what conditions. It adds that it is reasonable for DNSPs to have guidelines and connection requirements such as static or dynamic export limits and technical standards. Nevertheless, Solar Analytics raises concerns that "DNSPs have opaque restrictions that are not supported by available data" and at present they are "are often unknown at time of connection application, or varied without any reason or evidence provided". It suggests that these "requirements need to be explicitly stated and evidence and data based". [445]

Solar Analytics also considers that while there may be isolated circumstances where zero export limits are required, but under those circumstances:[446]

- such zero-export limits should be subject to a requirement for a validated, public justification which may be challengeable by a customer or their representative
- customers should be appropriately compensated
- such compensation arrangements should be in place before export charges are approved in a given TSS.

TEC/ACOSS say that while the draft determination includes elements which are likely to disincentive DNSPs from offering static zero export limit to customers, it doesn't explicitly prevent DNSPs from doing so. They suggest that the final rules should prescribe a ban on the use of static zero export limits in basic connection agreements. According to TEC/ACOSS, this would improve customer confidence in the outcomes.

However, TEC/ACOSS accept that there may be problems associated with mandating a minimum level of exports including differing network circumstances, potential to lead to inefficient investment and the view that it could lead to firm access rights. Although they

443 Submissions to the consultation paper: TEC/ACOSS, pp. 4-5, CEC, p. 5; PIAC, p. 2.
444 Monash Business School submission to the draft rule determination, p. 6.
445 Solar Analytics submission to the draft rule determination, p. 2.
446 ibid, p. 3.

note that there is an inherent level of export capacity in the existing grid which would be fair for all users to have access to.[447]

According the CEC, the framework should prevent the imposition of static zero export limits by the DNSPs. It further adds that the concerns regarding inefficient network expenditure could be addressed "by expediting reforms to enable DNSPs to utilise stand-alone power systems for regulated supply".[448] It was suggested by the CEC that there should be a minimum level of export capacity available to all customers who face export charges as customers should not be "required to pay for a second-rate service".[449]

Similarly, PIAC states that it does "not support a zero-export default" as " Zero export limits can unfairly penalise efficient energy users whose efficient practices mean they have surplus energy to export even at low levels of production".[450]

C.2.3 Guaranteed service levels and firmness of access

ENA notes that a Guaranteed Service Level (GSL) inconvenience payment may apply to customers of export services who "experience service performance well outside of average levels". It explains that this should be a payment for inconvenience, mirroring the consumption arrangements. ENA clarifies it would not be justified to use a GSL to compensate customer for lost income due to service interruption (e.g. lost Feed-in-Tariff revenue) or any other form of financially firm access to the distribution network.[451]

Similarly, Jemena and CitiPower, Powercor and United Energy state that they do not support DNSPs being required to provide firm access for export services.[452] Jemena raises concerns that guaranteeing firm export access would distort market signals and further equity concerns. It also adds that "firm access for export services would be a higher level of service than the open-access regime on which the NEM operates and higher than the probabilistic planning criteria that is used in Victoria".[453] Citipower, Powercor and United Energy also raise concerns regarding competitive neutrality for generation and the inconsistency with the consumption access arrangements. They note that in the future, DNSPs may offer different export tariffs with different levels of "firmness". They recommend that the Commission "makes clear in its final determination that distributors are not expected to provide firm access under the current regulatory framework even if export tariffs are introduced". [454]

447 TEC/ACOSS submission to the draft rule determination, pp. 4-5.
448 CEC submission to the draft rule determination, p. 5.
449 The Commission understands that the final SAPS rules will be sent for Ministerial approval soon.
450 PIAC submission to the draft rule determination, p. 2.
451 ENA submission to the draft rule determination, p. 9.
452 Submissions to the draft rule determination: Jemena, p. 2; CitiPower, Powercor and United Energy, p. 2.
453 Jemena submission to the draft rule determination, p. 2.
454 CitiPower, Powercor and United Energy submission to the draft rule determination, p. 5.

C.2.4 Service performance reporting requirements

Draft rule to enhance export performance transparency

The draft rule determination sought to enhance the transparency of export service performance received by customers. To this effect, the draft rule included requirements for DNSPs to report annually in their DAPRs on a range of metrics related to their export service performance including:[455]

- average of the maximum export capacity provided to customers by type of feeder
- average of export capacity requested by customers by different feeder type
- number of enquiries related to connection of DER
- number of applications for DER connection
- the number of retail customers provided zero export limits or provided export capacity lower than requested
- the estimated volume of electricity that could not be exported due to system limitations

Strong stakeholder support for enhanced transparency

The stakeholders overwhelmingly support the need for enhanced transparency of export service performance.[456] For example, the Victorian Government says that it "strongly supports new measures to increase transparency around export service performance".[457] Similarly, Solar Citizens, The Australia Institute, Smart Energy Council, ShineHub, EcoJoule Energy, WATTever and Victoria Energy Policy Centre say they "very much welcome increased transparency and reporting around export limits". They further added that networks should report on voltage issues, hosting capacity, network congestion and the impact of Virtual Power Plants (VPPs) and there "must be greater transparency around how often static zero export limits are enforced by networks and the justifications for enforcing them".[458]

The Victorian Government also adds that "Victoria's full household smart meter penetration can support these outcomes, providing increased visibility of the low voltage network and data to support network operation and planning, as well as customer benefits through access to energy usage data and cost savings".[459]

Stakeholders seek a more flexible reporting approach

Although stakeholders generally support the enhanced transparency of export service performance, some stakeholders raise concerns regarding the implementation approach

455 Draft amending electricity rule S5.8 on the DAPR, introducing new clauses (l)(3) and (4).

456 Submissions to the draft rule determination: Essential Energy, p. 6; ENA, p. 10; Endeavour Energy, pp. 4-5; AusNet Services, pp. 2-3; AGL, p. 5; IEEFA, p. 5; LGI, p. 2; Solar Citizens, The Australia Institute, Smart Energy Council, ShineHub, EcoJoule Energy, WATTever and Victoria Energy Policy Centre, pp. 1-4; Victorian Government, p. 2.

457 Victorian Government submission to the draft rule determination, p. 2

458 Solar Citizens, The Australia Institute, Smart Energy Council, ShineHub, EcoJoule Energy, WATTever and Victoria Energy Policy Centre submission to the draft rule determination, pp. 1-4.

459 Victorian Government submission to the draft rule determination, p. 2.

adopted under the draft rules whereby the DNSPs are required to report in their DAPR on the metrics specified in the Rules.[460]

In relation to the draft rules prescribing the metrics to be reported, Endeavour Energy raises concerns that "embedding specific requirements in the NER is less flexible as changes in the type of DER information that is considered relevant over time would necessitate a rule change process" and explained that as "DER reporting is a relatively new area of regulatory focus there is an increased likelihood that the information required could change in the near future and risk that networks establish systems and incur costs on reporting less useful or relevant information".[461]

Some DNSPs consider that the inclusion of the export service performance reporting data in the DAPR didn't align with the intent of the DAPR.[462] For example, Endeavour Energy says that the "principal objective of the DAPR is to provide visibility of identified needs and investment activities on the distribution network in the forward planning period".[463] Similarly, CitiPower Powercor and United Energy say that "it doesn't reflect the intent of the DAPR, which is to forecast network constraints as opposed to tracking historical performance".[464] They also say that "data reported in the DAPR is not audited or subject to a Chief Executive Officer statutory declaration" raising concerns regarding the robustness of the reported data. They further add that by "mandating reporting requirements at this time, the AEMC is pre-empting the data the AER may requirefor their incentives review" and that "it gives rise to the potential for duplication of performance data reporting or collection of data that may prove irrelevant for the AER".[465]

Essential Energy says that the reporting metrics should be "agreed in conjunction with stakeholders and DNSPs to ensure only valid measures are required and provide consistency in reporting". Essential Energy also raises concerns that reporting will have associated costs and currently it cannot capture the required information to report on some of the prescribed metrics. Essential Energy says that it would need to develop an appropriate approach to report such metrics and "this could be a resource intensive process simply to produce an estimated value that may not actually be useful in measuring a DNSP's merits".[466]

SAPN says that "without a clear understanding at this stage on how the information is to be used, it is difficult to determine its meaningfulness". In relation to the proposed reporting metrics for the export capacity requested by customers and provided by DNSPs, SAPN says that these may not be indicative or useful:

- for large customers, as there are often large variations between capacity they initially enquire about and the capacity they are content with accepting

460 Submissions to the draft rule determination: Endeavour Energy, pp. 4-5; Jemena, pp. 6-7; CitiPower, Powercor and United Energy, p. 4.

461 Endeavour Energy submission to the draft rule determination, pp. 4-5.

462 Submissions to the draft rule determination: Jemena, pp. 6-7.; Endeavour Energy, pp. 4-5; CitiPower, Powercor and United Energy submission, p. 4.

463 Endeavour Energy submission to the draft rule determination, pp. 4-5.

464 CitiPower, Powercor and United Energy submission to the draft rule determination, p. 4.

465 ibid, p. 4.

466 Essential Energy submission to the draft rule determination, p. 6.

- for DNSPs with flexible export limits
- even for DNSPs without flexible export limits, the information may not be useful once the DNSPs start publishing hosting capacity maps.

AusNet Services raises concerns about the reporting metrics included in the draft rules needing to be clarified further. As an example it notes that the draft rule determination proposes that DNSPs report on the 'number of enquiries related to connection of DER'. According to AusNet Services:[467]

> While this could be considered a relatively simple metric, is an enquiry an initial enquiry as outlined in clause 5A.D.2, or should other communication be captured?

AusNet Services also says that it currently does not capture some of the information required to be reported under the draft rule such as the import capacity data and export capacity requested by a customer. [468]

Jemena also notes that it does not capture information on import electricity sought by customers. In relation to the timeline for publishing the information, Jemena raises concerns that "amended rule S5.8(l)(3) requires information to be reported from the preceding years, this backwards-looking requirement effectively eliminates the necessary transition rule and does not allow DNSPs to modify systems and processes to capture data to meet this new requirement".[469]

Alternative approaches suggested by stakeholders

Most of the stakeholders raising concerns regarding the draft approach propose that the AER should be responsible for setting out the detailed reporting requirements instead of them prescribed in the rules.[470]

Several stakeholders suggest that the service performance reporting should be managed through the AER's regulatory information notice (RIN) process.[471] For example, CitiPower, Powercor and United Energy says that "The data requirements related to the measurement and reporting of export services should be managed through the regulatory information notice (RIN) process".[472] Similarly, Endeavour Energy suggests that "AER's information gathering powers, specifically its ability to issue a Regulatory Information Notice (RIN), would be a more suitable reporting mechanism". It further suggests that:[473]

> The AER can separately consult on the information required in a separate DER RIN or more efficiently through the addition of a DER component to existing RINs. This would allow for the DER information requirements in a RIN to be better tailored to the

467 AusNet Services submission to the draft rule determination, p. 3.

468 ibid, pp. 2-3.

469 Jemena submission to the draft rule determination, p. 6-7.

470 Submissions to the draft rule determination: CitiPower, Powercor and United Energy, p. 1; Endeavour Energy, pp. 4-5; Jemena, pp. 6-7; SAPN, p. 6; ENA, p. 10;

471 Submissions to the draft rule determination: CitiPower, Powercor and United Energy, p. 1; Endeavour Energy, pp. 4-5; Jemena, pp. 6-7; SAPN, p. 6.

472 CitiPower, Powercor and United Energy submission to the draft rule determination, p. 1.

473 Endeavour Energy submission to the draft rule determination, pp. 4-5

requirements of any amendments the AER make as part of its various reviews referred to above.

According to Endeavour Energy, export data reported in the RINs could be "analysed and disseminated by the AER as part of its annual Electricity Network Service Report or the Annual Benchmarking Report". [474]

Some stakeholders suggest that export reporting requirements under the RINs could be considered by the AER under its review of the incentive arrangements. CitiPower, Powercor and United Energy recommend that the Commission "require the performance reporting requirements be set by the AER in their holistic incentives and expenditure guideline review and be reported through the annual RIN process".[475] Essential Energy says that there is value "in a more flexible and iterative approach to developing the metrics to be reported on to reflect customer preferences and DNSP capability". It suggests that a "natural place for this to occur may be through its inclusion as an extension to the proposed AER review of the performance incentive arrangements that may apply to export services". [476]

ENA suggests "including a data reporting obligation in the NER that requires the AER to specify the DER reporting details in a guideline/similar style document". [477]

C.3 Customer Export Curtailment Values

C.3.1 Draft rule on CECVs

The Commission made a draft rule requiring the AER to regularly calculate the customer export curtailment values (CECV). The values are intended to help guide the efficient level of network investment in export services. The rule drafting adopted a high level approach outlining an objective of the CECV framework and requiring the AER to develop the methodology in consultation with stakeholders. The draft rule required the AER to publish the first CECVs by July 2022.

C.3.2 Stakeholders support the development of CECVs

There is strong stakeholder support for the development of the CECV mechanism. Stakeholders overwhelmingly consider that it will provide for efficient levels of DER related network investment. They also support the AER's role in determining the CECVs.[478]

As an example, PIAC states that it supports "establishing a measure for the value customers place on export service reliability to inform investment, planning and regulatory decisions".[479] Endeavour Energy considers that CECVs would provide greater protections against the network over-estimation of costs.[480] AGL says that "this will support a more robust approach

474 Endeavour Energy submission to the draft rule determination, pp. 4-5.
475 CitiPower, Powercor and United Energy submission to the draft rule determination, p. 4.
476 Essential Energy submission to the draft rule determination, p. 6.
477 ENA submission to the draft rule determination, p. 10.
478 Submissions to the draft rule determination: PIAC, p. 2; Alinta Energy, p. 2; Endeavour Energy, p. 3; AGL, p. 5; IEEFA, p. 1; Origin p. 2; AER, p. 6; AEC/Oakley Greenwood, pp. 3-4 .
479 PIAC submission to the draft rule determination, p. 2
480 Endeavour Energy submission to the draft rule determination, p. 3.

to valuing the impact of network investment decisions on the market value of DER".[481] In supporting the development of CECVs, the AER notes that the values would be needed for the revenue determination processes and the STPIS framework. [482] According to Origin, "Mechanisms should be in place to protect customers from bearing the risks of overbuilding of network export capacity based on optimistic forecasts of wholesale prices leading to inflated CECVs".[483]

Alinta Energy states "the determination of CECVs by the AER aligns with the existing approach to the analogous Values of Customer Reliability".[484] Similarly, AEC/Oakley Greenwood consider the AER is best placed to determine the CECVs.[485]

C.3.3 Stakeholders generally support the overall CECV framework

Stakeholders generally support the overall framework for determining the CECVs with the objective of the framework being described in the rules and the methodology to be determined by the AER through a consultative process.[486] For example, the AER states that it agrees with the approach of outlining a high level objective and allowing the AER to consult on the methodology.

In relation to what the CECVs should measure, AEC/Oakley Greenwood state that there is a need "to consider the detriment to the customers and the market, of export curtailment due to network limitations" as proposed under the draft rule determination. Similarly, PIAC considers that CECVs "should reflect the value customers who pay for the service place on the service" and that "If the costs of export reliability are recovered from all DNSP customers, the approach should reflect the value all customers place on export reliability, rather than just the customers who have PV".[487]

AEC/Oakley Greenwood state that they support the annual review of the CECV estimates and a 5 yearly review of the methodology as proposed under the draft rule.[488]

Mixed views regarding the need for further guidance on methodology

The AER supports the flexible approach to determining the CECVs adopted under the draft rule.[489] The AER states 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 AER cautions that:

> 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

481 AGL submission to the draft rule determination, p. 5.
482 AER submission to the draft rule determination, p. 6.
483 Origin submission to the draft rule determination, p. 2.
484 Alinta Energy submission to the draft rule determination, p. 2.
485 AEC/Oakley Greenwood submission to the draft rule determination, pp. 3-4.
486 Submissions to the draft rule determination: AER, p. 8; PIAC, p. 2; AEC/Oakley Greenwood pp. 3-4; LGI, p.2.
487 PIAC submission to the draft rule determination, p. 2.
488 AEC/Oakley Greenwood submission to the draft rule determination, pp. 3-4.
489 AER submission to the draft rule determination, p. 8.

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.

Meanwhile, other stakeholders consider that additional guidance is required in relation to the methodology for determining the CECVs, more specifically in relation to what the CECVs should capture. Origin states it should be clear whether the CECVs represent the value that DER providers expect, or those of the wider consumer base, which may be different. [490] Similarly, AusNet Services states that it is currently left open whether the CECVs should measure:[491]

- The detriment of export curtailment to the customer using the export service; and/or
- The potential detriment to all (including non-exporting) customers from the lower levels of customer export.

AusNet Services considers it is a fundamental question which determines whether the standard control services (SCS) revenues fund investment only to the extent the whole customer base benefits through suppressed wholesale market prices, or if it also funds network investment to mitigate individual exporting customer losses (i.e., loss of income). AusNet Services considers that this is a policy question rather than a regulatory question.[492]

Types of curtailment to be captured under the CECVs

Some stakeholders consider further guidance is required on the type of curtailment to be captured under the CECVs. AEC/Oakley Greenwood state that "In determining where the value to customers of investment in export services can be clearly demonstrated, the AEC view is that the CECV can only apply to instructed curtailment and not to any curtailment". They suggest this definitive requirement can be captured in the rules while still leaving most of the methodology to be determined by the AER.[493]

Meanwhile the CEC raises concern that DER with AS/NZS 4777.2:2015 and AS/NZS 4777.2:2020 inverter standards will cause a PV inverter to ramp down electricity generation with increases in grid voltage due to external influences, even on a solar system that is not exporting. According to the CEC, this "means customers suffer losses, which should be considered in any estimation of the customer value of reduced curtailment".[494]

Stakeholders support the timeline for the initial CECV estimates

The stakeholders support the proposed timeline of July 2022 for the publication of the initial CECVs. For example, the AER says it agrees with the proposed timeline noting that CECV

490 Origin submission to the draft rule determination, pp. 2-3.
491 AusNet Services submission to the draft rule determination, p. 2.
492 AusNet Services submission to the draft rule determination, p. 2.
493 AEC/Oakley Greenwood submission to the draft rule determination, pp. 3-4. The submission does not clarify why the CECV should only apply to instructed curtailment.
494 CEC submission to the draft rule determination, p. 5.

methodology will need to be developed alongside its DER integration expenditure guidance note.[495] Similarly, AGL says it agreed with the proposed timeframe.[496]

Essential Energy says that in light of the short lead time between "the AER's completion of its review and the deadline for our regulatory proposal, it is imperative that the reviews occur within the nominated timeframe".[497] Evoenergy notes that "Depending on the scale of the amendments, there may be time to include them (CECVs) in Evoenergy's January 2023 proposal."[498]

495 AER submission to the draft rule determination, p. 8.
496 AGL submission to the draft rule determination, p. 5.
497 Essential Energy submission to the draft rule determination, p. 7.
498 Evoenergy submission to the draft rule determination, pp. 1-2.

D CUSTOMER BILL IMPACT ANALYSIS

D.1 DER – The potential impact of export pricing on consumer bills and the incentives for investment in solar PV and battery technology

This analysis looks at the potential impact of export pricing for DER exports, including solar PV and batteries, on the bills of customers with these assets installed, the bills of customers without these assets installed and the incentives for investment in solar PV and batteries over time.

D.1.1 Key assumptions

The Commission has developed some hypothetical scenarios, based on different solar system sizes, to assess the *upper end* of impact on customers' bills if DNSPs chose to implement export pricing. We asked DNSPs to provide an estimate of export charges likely required to recover the costs of export related network upgrades. The range was $10 to a maximum of $100 per exporting customer per year. Our modelling uses the higher $100 recovery fee so as to develop the higher end estimate for a c/kWh charge to determine the largest foreseeable impact on customer bills. In practice, the extent of export charges would depend on the capacity of each network to handle exports, the need for network investment to support greater exports, and customers' self-consumption and export behaviour. If it turns out significant new DER-related network expenditure is not needed in the future, then the introduction of export charges is unlikely to be justified by DNSPs, and the AER would not approve it (see section 5.2.7).

The analysis has been updated following the publication of the draft determination. Retail tariffs and solar feed-in-tariffs have been updated to the latest tariffs available for each jurisdiction on the Energy Made Easy website and the Victorian Energy Compare website. This sees changes in the benefit of solar panel installation in each network. The benefits of solar PV installation in some networks has increased when compared to the figures in the draft determination, and the benefits in some jurisdictions have fallen. This has not had a significant impact on the outcomes of the results, in modelling the impact of solar export charges.

D.1.2 Summary of results

Based on the dataset used and the assumptions made, which represent the higher end of the expected range of export charges that might eventuate in practice, the Commission finds export pricing would lead to:

- a minor reduction in the energy bill savings from solar due to a reduction in their overall revenue from exporting for customers with solar PV systems.
- for solar PV customers with an existing battery, solar export charges have no impact on system sizes of 5 kW and below. For larger solar PV system sizes, well in excess of the size of the battery, there is a small modelled reduction in energy bill savings. Where a battery configuration is available to better match the size of the solar PV system, this modelled outcome will change.

- incentives to invest in a new battery, where the owner also has solar PV, are marginally higher.
- a small beneficial impact on the energy bills of customers without solar PV/batteries. Where upgrades to the network are required to accommodate large solar PV exports, customers without solar PV would no longer share the cost of upgrading the network.
- customers with large system sizes, in excess of 6 kW, derive proportionally more of their benefits from export, in contrast to smaller system sizes which derive most of their benefits from offsetting retail bills. The more larger solar PV customers can shift their use of solar output to own use consumption, rather than export, the more they can offset the impact of export charges, the greater return they can make from solar, and the lower the need for augmentation of networks at a wider level.

Overall, the Commission's analysis concludes that, notwithstanding the application of export pricing, solar PV would remain a good investment for small customers and large customers alike. This conclusion holds even while using the higher end of the expected range of export charges and assuming consumers do not alter their export behaviour in the face of export pricing. Consumers with smaller system sizes pay little for export, while consumers with larger system sizes still derive a substantial annual return from their solar investment.

D.1.3 Data used

The Commission used AEMO Net System Load Profile (NSLP) data to generate the profile for 12 different networks with total consumption based on an annual usage of 5 MWh. To provide a benchmark of actual data to validate these outcomes, actual customer data in the Ausgrid and SAPN networks was analysed.

The Ausgrid data contained usage and solar generation information data on 3,567 residential customers in 30 minute intervals between May 2017 and May 2018.

The SAPN data contained usage and solar generation information on 1,586 residential customers in 30 minute intervals for the 2019 financial year.

Current time of use (peak, shoulder and off-peak) and flat retail tariffs for each network were sourced from the Energy Made Easy and Victorian Energy Compare Website.

Current time of use (peak, shoulder and offpeak) and flat network tariffs for each network were calculated based on pricing proposals.

The submission from Victorian Energy Policy Centre (VEPC) claimed that the bill impact analysis included in the draft determination issue failed to use contemporary feed-in rates and the submission from the Victorian Government raised concerns that the analysis did not take into account declines in feed-in tariffs over time.[499]

The bill impact analysis included in the draft determination made use of contemporary feed-in-tariffs (FiT) that were drawn from the Energy Made Easy and Vic Energy Compare websites, and reflected current tariffs at that time.

499 Submissions to the draft determination: VEPC, p. 4; Victorian Government, p. 3.

In undertaking the following updated analysis, the latest Solar FiT tariffs have also been sourced from the Energy Made Easy and the Victorian Energy Compare Website. The latest available tariffs used for the analysis, updated in late July 2021, are shown below. The update of the solar TOU FiT tariffs does not have a material impact on the conclusions from the analysis.

Table D.1: Solar TOU FiT used

DNSP	SOLAR TOU FIT - $/KWH
Ausgrid	0.0500
Ausnet	0.0670
CitiPower	0.0670
Endeavour Energy	0.0500
Energex	0.0500
Essential Energy	0.0500
Evoenergy	0.0950
Jemena	0.0670
Powercor	0.0670
SA Power Networks	0.1050
TasNetworks	0.0650
United Energy	0.0670

Source: Energy Made Easy and Vic Energy Compare latest offers in each jurisdiction, as at late July 2021.

For solar PV installation and operation, Bureau of Meteorology (BOM) weather and irradiance data from the 2018 calendar year was processed and restructured into a format that the System Advisory Model (SAM) would accept. The analysis then took the 12 different network locations, 10 different system PV sizes, and 2 azimuth angles (240 scenarios in total) and then requested PV output from SAM throughout the year. The load and PV output was then merged and used to calculate the retail and network costs before and after Solar PV installation.

For battery installation and operation, an optimisation was developed, for each customer with a battery installed, based on a Tesla Powerwall 2 with 14 kWh of capacity, 90 per cent efficiency, and a 3.3 KW charge/discharge rate.

The analysis is conducted over twelve different DNSP networks across the NEM, covering Victoria, South Australia, Queensland, Tasmania and New South Wales. While the financial outcomes are presented on a NEM-wide basis, the analysis does take account of the tariffs, solar installations and solar generation characteristics of each state. Submissions to the draft determination noted the cost impost on customers was calculated on a NEM-wide basis and a breakdown by jurisdiction may be more useful to stakeholders considering the costs and

benefits of the proposed changes.[500] The Commission notes that each jurisdiction has been taken into account in the analysis, however, a more detailed bill impact analysis is expected to be undertaken as part of the TSS process for each jurisdiction.

D.1.4 Approach to the analysis

The Commission used this data to calculate network bills for each representative customer in this data set. Retail bills for each customer were then created using the standard market offer in each jurisdiction in the timeframe.

Solar PV systems up to 10 kW in size were considered in increments of 1 kW from 0 to 10. For battery installation, a single 14 kW system was considered with a maximum discharge rate of 3.3 kW.

These representative bill outcomes were then used to assess:

- How solar PV, and different sizes of Solar PV alters the bill for these customers
- How much each representative customer exports to the grid, depending on different sizes of solar PV installation.
- The impact of export charges on the bills of these customers, depending on different sizes of solar PV installation.
- The impact of export charges on the bills of these customers, with a battery installation and different sizes of solar PV installed.

D.1.5 How are export charges determined and applied

The Commission considered how export charging might alter customer bills considering three different approaches for determining and applying the charge:

- Volumetric (c/kWh)
- Volumetric time of use with charges for export during the day and payments, or rebates, for export during the evening (c/kWh)
- Demand charges ($/kW) based on maximum output

These charges were applied with a target recovery from each solar exporting customer, in each year of $10-$100, based on indicative input from networks on the charges that would be required from each exporting customer in order to recover the cost of the upgrade to networks required. The results presented here assume the top end of this range or $100 per annum per exporting customer, for a typical 5 kW system.

For volumetric charges, the export charge total is divided by total solar output of a 5 KW system to give an export charge in c/kWh to apply to all PV system sizes.

For volumetric time of use (c/kWh) charges the export charge total is divided by total system output between 10 am and 4 pm. This charge is then applied to the kWh output of all system sizes during the solar PV output period. Outside these times, the solar exporter is assumed to

500 Tasmanian Government submission to draft determination, p. 1.

receive a rebate of 10% of the network tariff for each kWh exported. Were the rebates to be higher, the net export charge would be proportionately lower.

For demand charges ($/kW), the export charge total is divided by the maximum measured kW output of a 5 KW system. This value is then multiplied by the maximum kW output of all the other PV system sizes analysed.

This provided a range of charges according to the total export charge targeted between $10–100 per annum as follows:

- Flat export charge 0.00–0.02/$/kWh
- TOU export charge 0.00–0.02/$/kWh
- Max export capacity 2.93–29.31/$/KW

The submission to the draft determination from the Victorian Energy Policy Centre claims that the export charge would be equivalent to 4.8 cents per kWh, with an annual cost of $100 divided by 2.1 MWh of exports.

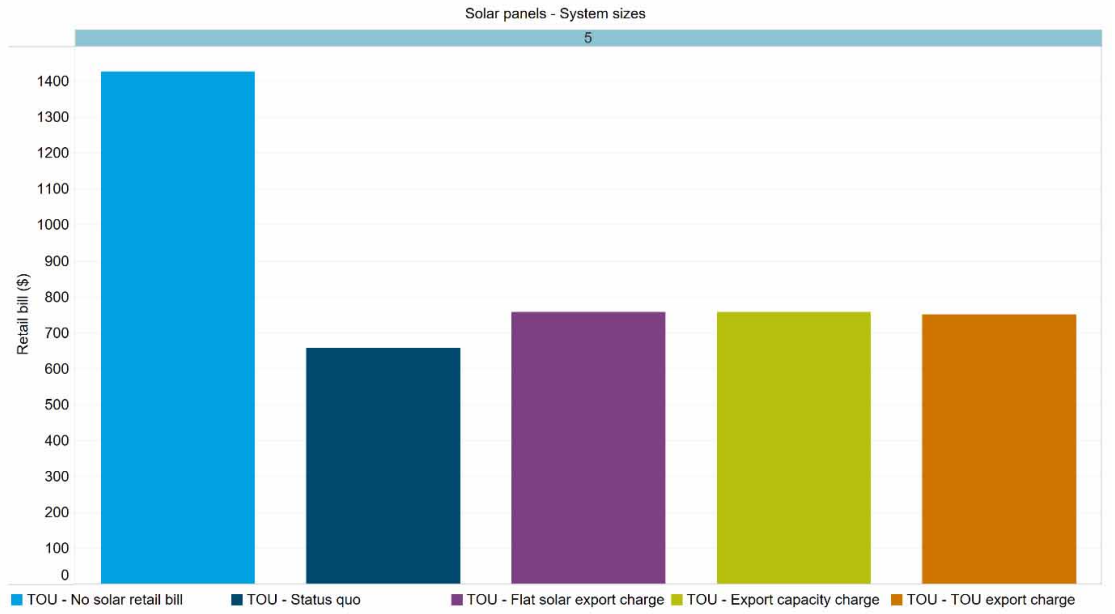
This is not supported by the Commission's analysis. While total consumption for the consumer is assumed to be 5,000 kWh, the portion of consumption that can be offset by the solar PV system is close to one third. This leaves over 5,000 kWh to be exported, some during peak solar hours when export charges would apply and some during offpeak solar hours where solar export rebates would apply.[501] Therefore, the TOU export charge calculated is between 0.00-0.02/kWh shown above and not the higher figure reported in the submission.[502]

Modelling the impact of recovering the assumed $100 total fee using the three different methods reflects that while charges do change customer outcomes, savings from solar PV installation are still significant. Furthermore, the TOU export charge has the least impact on incentives for the installation of solar PV and the ongoing benefits derived from that installation, as can be seen in the figure below.

501 The VEPC's own analysis notes that "a typical 5 kW solar home in Sydney will self-consume at most 2,100 kWh and export at least 5,000 kWh". VEPC, Analysis of the impact of proposals to charge solar homes to export electricity to the grid, April 2021, p. 10.

502 VEPC submission to draft determination, p. 4. For example, it can be seen that even if a customer faces an annual $100 cost total, with an annual export of 5,000 MWh, the export charge would be 2c/kWh and not 4.8c/kWh.

Figure D.1: Customer bills with and without PV and three export charge approaches



Source: AEMC analysis, AEMO, Ausgrid and SAPN data
Note: Assumes 5 kW system, no battery, Ausgrid network, north facing, 5 MWh total household consumption, TOU retail tariff

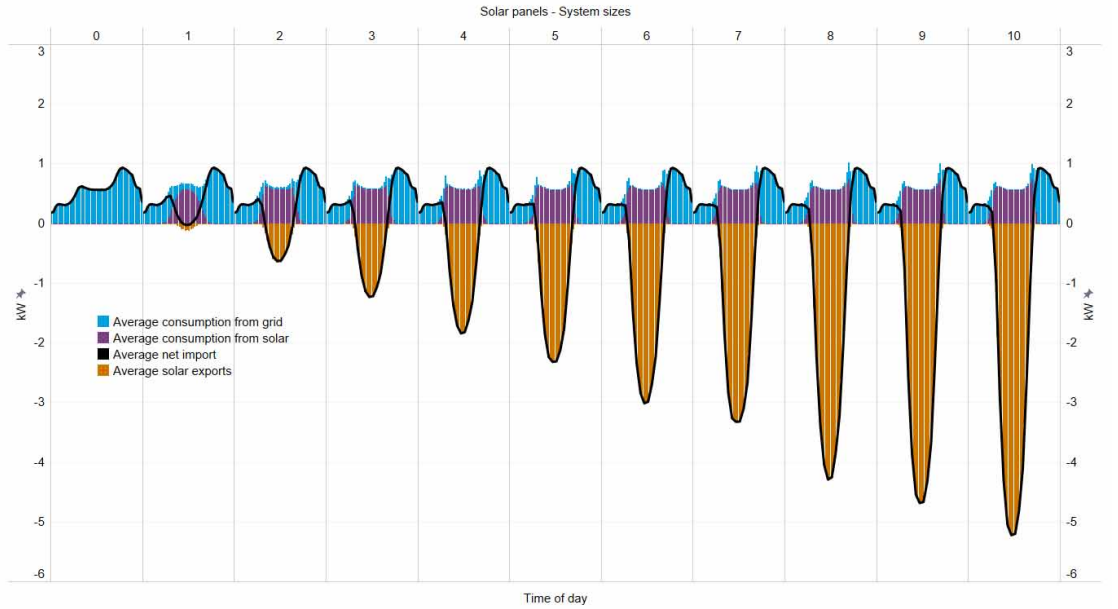
As can be seen from figure D.2 below, for a 5 kW system, the savings from solar PV are balanced between own usage and export. For larger systems export earnings are more significant as a proportion of overall savings.

D.1.6 Analysis findings

Significant exports from Solar PV

Broadly we can see from the analysis that exports exceed self consumption for most systems, and for moderate and larger systems there are significant net exports to the grid.

Figure D.2: Solar PV exports to the grid for different system sizes

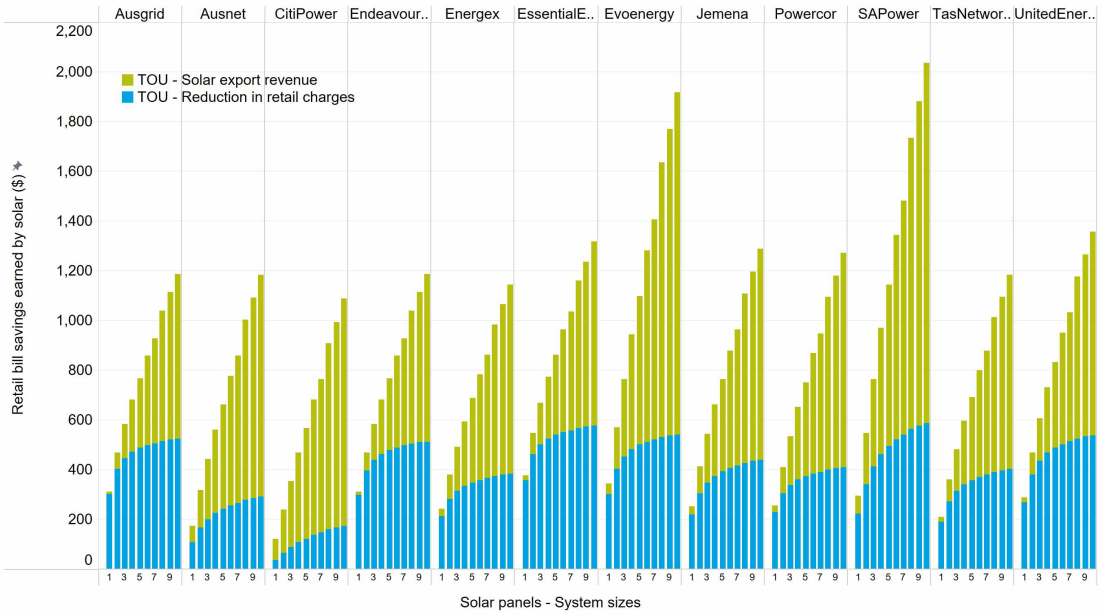


Source: AEMC analysis, AEMO, Ausgrid and SAPN data
Note: Assumes 5 MWh customer in Ausgrid, all PV system sizes

Export benefits increase with system size

The benefits of solar PV to the asset owner increasingly come from export as system size increases. The chart below demonstrates that for systems in excess of 5 kW, export revenue provides the majority of the annual return for a solar PV installation.

Figure D.3: Retail bill savings for solar PV sizes, through self consumption and export



Source: AEMC analysis, AEMO, Ausgrid and SAPN data
Note: Shows retail bill savings by export or reduced self consumption, 5 MWh customer, TOU tariff

These benefits should be considered in the context of submissions to the draft determination that claim a $100 total bill from export charges will extinguish the export income that the typical solar home in Victoria can expect when revised feed in rates apply soon.[503] VEPC claims in its submission that a 4.8 cent export charge will leave income of just 1.9 cents per kWh or a little over $30 per year for a typical solar home.

Figure D.3 above reflects the most up to date feed in tariffs available. Earnings from export are only small for smaller system sizes. As can be seen from the analysis in this section, the smaller the system size, the smaller the export charge that is likely to apply. It is only customers with larger system sizes of 6–8 kW and greater that are likely to pay a charge approaching the assumed $100 total per annum, based on the most conservative assumptions. These larger system sizes, with the latest feed-in-tariff information, earn well in excess of $100 per year. Benefits of solar export, after the application of export pricing, range from $400 per annum for a 6 kW system to $692 per annum for a 10 kW system. Total benefits, after export charges are applied, are over $800 per annum and $1,100 per annum for these system sizes respectively.

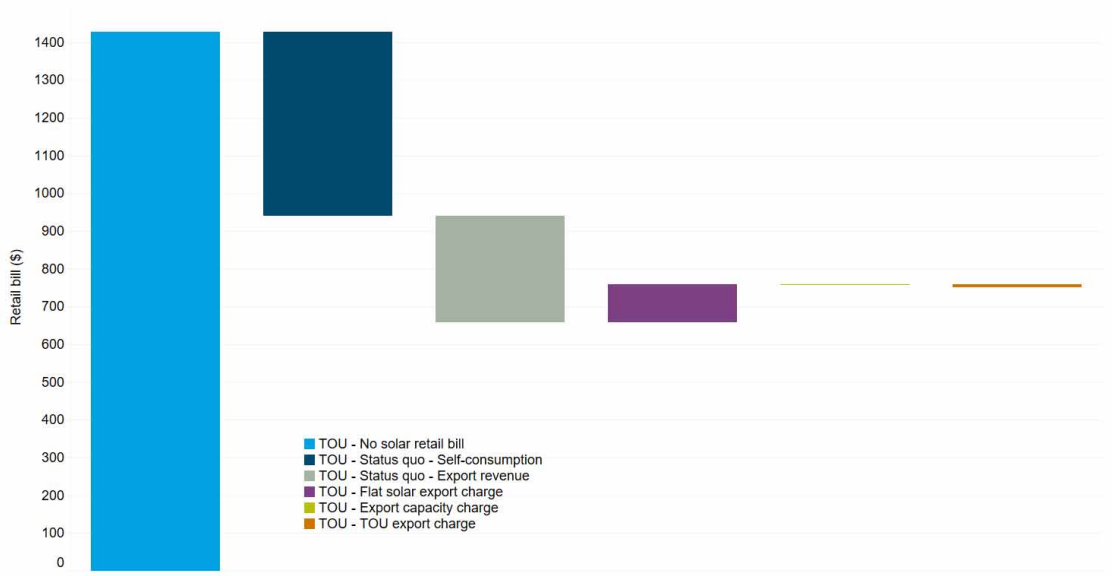
Benefits of solar PV to owner are more balanced for average and smaller system sizes

Customers can benefit from solar through self consuming their generation and by earning revenue from exporting such as through feed-in-tariffs. For system sizes of 5 kW and below,

503 See submissions to the draft determination by: Clean Energy Council, p.3; VEPC, pp. 4–5.

the benefits of solar PV are predominantly from self consumption. Figure D.4 illustrates that for a 5 kW north facing system in the Ausgrid network, the benefits are evenly balanced between self-consumption and export.

Figure D.4: Customer bills with and without PV - split between self-consumption and export revenue



Source: AEMC analysis, AEMO, Ausgrid and SAPN data Note: Assumes 5 MWh customer in Ausgrid, 5 KW system, north facing

Table D.2 below illustrates the balance of earnings for all system sizes between self-consumption and export, across the NEM. Any export pricing will impact a customer's export revenue, but will not directly impact customer savings from self consumption. For system sizes of 5 kW and below, the benefits are predominantly from self-consumption.

Overall the analysis shows that export charges will have a small impact. This is assuming no change in consumer behaviour in response to export charges. Where consumers can increase their self-consumption of solar PV generated, the impact of export charges can be offset by a corresponding increase in the benefit from self-consumption.

The analysis of total value excluding export charges below does not take into account the potential for customer exports to be constrained due to network limitations. If customer exports are constrained, it would lead to reduced revenue from exporting. If networks are augmented to address these constraints and the costs are recovered from all consumers, the total value excluding export charges would be $15 lower for all system sizes under our assumptions.

Table D.2: **Solar PV returns before and after solar export charges ($ per annum per consumer)**

SYSTEM SIZE KW	SELF-CONSUMPTION VALUE	EXPORT VALUE	TOTAL VALUE EXCL. EXPORT CHARGES	EXPORT CHARGES	NET EXPORT VALUE	TOTAL VALUE INCL EXPORT CHARGES
1	228	36	**264**	7	29	**258**
2	315	117	**432**	26	91	**407**
3	358	210	**568**	45	165	**523**
4	384	309	**693**	65	244	**629**
5	402	398	**800**	85	312	**715**
6	415	505	**920**	105	400	**815**
7	425	581	**1006**	125	456	**882**
8	437	722	**1159**	150	572	**1009**
9	444	807	**1251**	174	633	**1076**
10	448	898	**1346**	206	692	**1140**

Source: AEMC analysis, AEMO, Ausgrid and SAPN data.
Note: Figures shown are an average across the 12 DNSP regions considered. The analysis is indicative only. Actual bill impact may vary based on circumstances.

Batteries help to reduce the import profile and curb exports

Battery installation reduces draw from the grid during peak times and impacts the export profile of a PV system, regardless of size. This has a bearing on the impact of export charges, in particular where the battery system is sized optimally to match the output of the solar PV generation.

The impact of export charges on solar PV, and solar PV with a battery installed

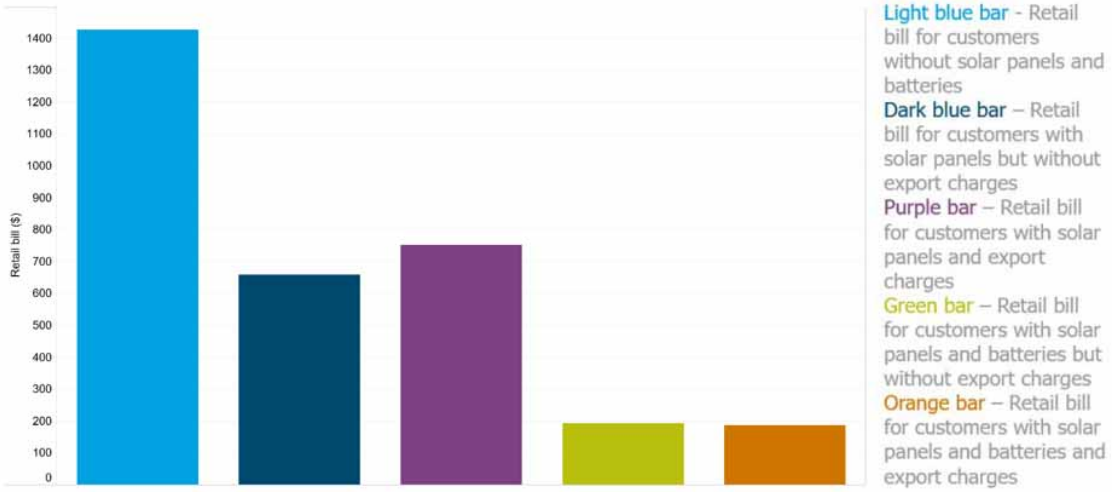
Export charges have an impact on customer savings from the installation of solar PV, but this is a small portion of the overall savings. In the chart below, the move from the light blue to the dark blue column denotes the benefit of installing a 5 kW system for a 5 kWh customer. The move to the purple column denotes the impact of a $100 assumed fee being levied on this customer.

The move to the green bar from the dark blue bar denotes the benefit of installing a battery, in terms of the impact on the annual bill. The move to the orange bar then reflects that for a 5 kW system, export charges would in fact further reduce the bill for this customer, largely due to the rebate paid to the exporter during off peak hours, and the fact that during peak hours the battery helps the customer to better manage its export profile in order to minimise export charges.

The impact is minimised where export charges are levied as a TOU tariff.

The impact of export charges is at its greatest for larger system sizes.

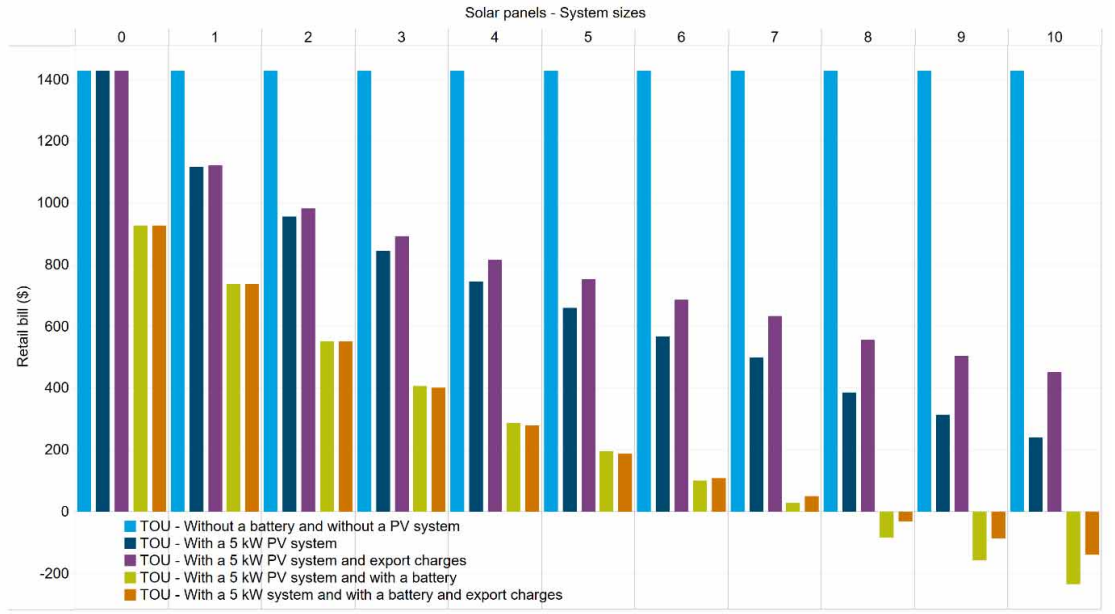
Figure D.5: The impact of export charges on customer bills for a 5 kW system



Source: AEMC analysis, AEMO, Ausgrid and SAPN data Note: Assumes 5 MWh customer in Ausgrid, 5 KW system, north facing

Export charges for customers with a battery have little or no impact on the return from solar PV and battery installation, as can be seen above. This varies with size, however. A small impact can be observed for sizes above 7 kW, as can be seen in the chart below between the green (PV plus battery, no export charge) and orange (PV plus battery plus export charge). Where a battery configuration is available to better match the size of the solar PV system, this modelled outcome for larger system sizes will change.

Figure D.6: The impact of export charges on customer bills for all system sizes analysed



Source: AEMC analysis, AEMO, Ausgrid and SAPN data
Note: Assumes 5 MWh customer in Ausgrid, All system sizes, north facing

Export charges create a small additional incentive for customers with PV to invest in a battery. This incentive is also for the battery system to be reasonably matched with the solar PV output. Compared to the overall incentive for a battery, this additional incentive is small.

D.1.7 The impact of export charges on solar PV, and solar PV with a battery installed

Export charges have an impact on customer savings from the installation of solar PV, but this is a small portion of the overall benefit of solar PV installation.

Where network augmentation is required to accommodate growth in solar rooftop PV exports, this cost needs to be recovered from consumers. There are different options for how these costs can be recovered. Export charges are one of those options. Customers with no solar or batteries can be expected to pay less under export charging, given the additional costs associated with solar export are paid for by exporting consumers.

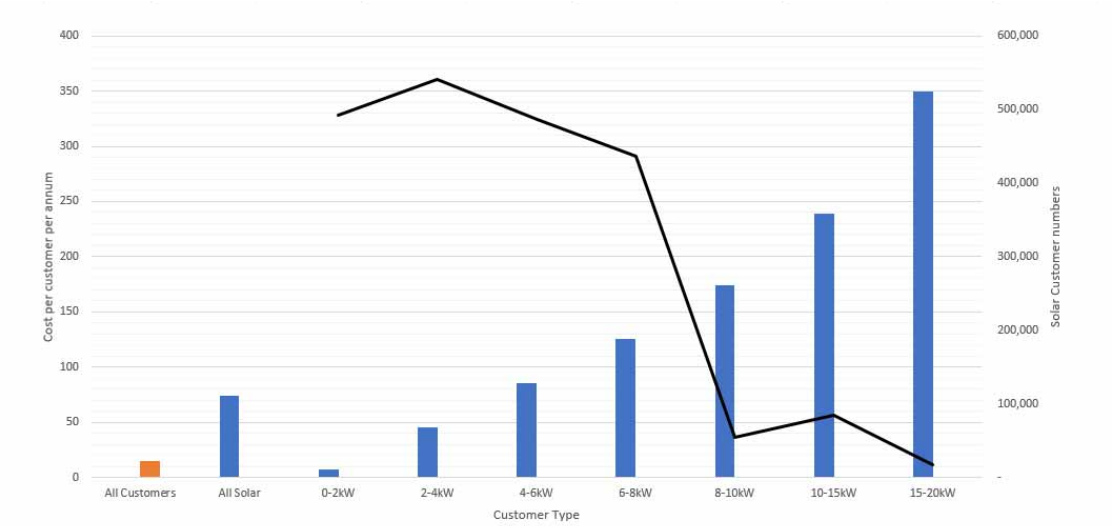
Where the costs of export are recovered from all consumers, consumers without solar PV and batteries would have a tendency to subsidise solar PV customers, but in particular large solar PV customers and large solar PV customers without battery technology. And yet the burden of the export charge, as can be seen from this analysis, is small compared to the revenue derived from export. In other words, those customers deriving the most benefit, pay the most, but this is still small as a portion of the overall benefit of installing a large solar PV system.

There are in effect three potential scenarios for consumers, in a world with greater installed solar, and greater capacities associated with rooftop systems.

1. No upgrade to the distribution network is undertaken. There is no additional investment in the network to accommodate solar PV export. There is no investment cost, no customers are required to pay additional network charges, however, solar PV rooftop generation is constrained off, further investment in large systems for export is disincentivised and wholesale prices are higher over time than they would otherwise be as a consequence.
2. The distribution network is upgraded by DNSPs to accommodate the increased solar PV export, but the costs are spread over all customers, including customers with neither solar nor batteries installed.
3. The distribution network is upgraded by DNSPs, but the cost is recovered through export charges on customers exporting into the grid. Customers without solar and batteries, who are not exporting to the grid, are not charged any additional cost for the augmentation of the distribution network.

The Commission's analysis of total revenue recovered under scenarios 2 and 3, indicates that under a scenario of export pricing, a fairer distribution of costs is made. In particular customers with no solar PV or battery are not subsidising customers with large or very large solar PV systems.

Figure D.7: Cost recovery for network augmentation for export, all customers and solar customers at different sizes



Source: AEMC analysis, AEMO, Ausgrid, SAPN and CER data
Note: Assumes an average across all networks, and an export charge of approximately 2c/kWh per customer for a 5 kW system.

Figure D.6 above shows the outcome of the analysis of these two scenarios. Under the first scenario, where all customers pay, in orange above, the average cost per customer across all

networks is $14 per annum. All customers pay this cost to allow for the growth in solar export to the grid.

Under the second scenario, only solar PV households pay export charges. Even though the export charge is set based on a figure of $100 per annum, the top end of the range of costs, for a typical 5 kW system and then multiplied by the actual output of the system (either larger or smaller), this provides for $85 per customer per annum where customers have solar capacity of 4–6 kW installed, $45 per customer per annum for 2–4 kW systems and $7 per annum for 0–2 kW systems, in part due to the rebates solar customers earn under the TOU methodology. These customers in paying solar charges would avoid the $14 per annum that would otherwise need to be charged to all customers.

It is only the larger solar customers, particularly those above 6–8kW that pay a more significant export charge each year, and this would impact the least customers across the NEM at the current time. (Although it should be noted, this assumes total household load of 5 MWh per annum. Where large solar owners have greater consumption of electricity, they will be exporting less solar PV generation to the grid than is assumed in this analysis). Where these costs seem large, in excess of $200 for a 10 kW system for example, these should be taken in the context of the significant export revenue earned by systems of this size. Comparing export charges in figure D.7 with export revenue in figure D.4 demonstrates that export costs are still a small portion of the export revenue earned by very large system sizes. As such export charges have a small impact on the incentives for new solar PV systems, particularly small and moderate systems sizes, and even at large sizes, the majority of the revenue incentive remains. The incentives for solar PV installation with a battery, are relatively unchanged, or slightly improved given the ability of a battery system to better manage the export profile, and export for rebates, under a system of export charges.

In reviewing the results of the analysis it is important to take a number of factors into account, particularly in the context of feedback received on the analysis published with the draft determination. Firstly, the impacts shown in figure D.7 reflect the impact across the NEM as a whole, and are not confined to a single network. Results may vary by network region.

Secondly, our analysis considers the benefits of solar uptake from both self-consumption and export. Export charges should not be applied to the entire output of any solar panel installation. As shown in figure D.4, the benefits of solar panel installation relate to self-consumption as much as to export. For smaller system sizes the benefits are predominantly from self-consumption. For these system sizes and for all system sizes, export charges should only be applied to that proportion of solar PV output that remains after self consumption has been taken into account.

Furthermore, for larger system sizes, our assumptions around self-consumption are conservative. Further analysis is needed on the relationship between PV system sizes installed and self-consumption. AER data on typical household consumption would indicate that larger households of 3 or 4 people and households with additional water heating loads would tend to consume well in excess of 5,000 kWh per annum. Households with greater self

consumption in general, and for large water heating loads, would be better able to utilise their solar PV output and manage their exports during peak solar hours.

Third, the assumed recovery of $100 total from an export customer is based on a representative 5 kW consumer. It does not apply to all system sizes. In parts of the NEM, where system sizes are predominantly smaller than this, export charges would be proportionately smaller depending on the system size addressed.

Finally, the scenario presented in this analysis reflects the top end of the range of costs that a solar PV customer might expect from export charges. It assumes $100 from the range of $10–$100 needed by networks to provide for the appropriate degree of network augmentation. This is applied to a 5 kW system to derive the charges per unit of output that then apply across all system sizes. This range is based on indicative input from networks on the charges that would be required from each exporting customer in order to recover the cost of the upgrade to networks required.

The extent of rebates shown in this analysis for export outside peak hours, 10 per cent of network costs, is also conservative. Were rebates to be provided at the level of 30 per cent of network charges for export outside peak hours, the impact of export charges for 4–6 kW systems would fall from $85 per customer on average to $56 per customer.

Households with larger loads in general and with large water heating loads have a number of options to manage the profile of solar PV output that they would be looking to export to the grid during peak solar hours. A recent study conducted by the University of NSW "Analysis of electricity consumption and thermal storage of domestic electric water heating systems to utilize excess PV generation" looked at the role of Domestic Electric Water Heating Systems (DEWH) in absorbing excess solar PV generation.[504] The study looked at 410 households in Adelaide, Brisbane and Sydney and concluded that for a typical working family hot water demand profile, on average 48 per cent of daily hot water can be provided via excess PV without requiring a sophisticated control tool and maintaining 100 per cent customer comfort, corresponding to 28 per cent of the excess solar PV generated that can be consumed at home.

In addition, households with gas water heating may be able to switch to electricity water heating. Households with swimming pools may be able to use the additional electricity load to absorb solar PV output during peak hours. Electricity load associated with a swimming pool varies by region. Figures from the Energy Made Easy website would indicate a range of 2,500 kwh to 4,000 kwh annually associated with a swimming pool. Were this load to be used to absorb peak solar output to some degree, the impact of solar export charges would be reduced from the figures shown in this analysis.

504 https://www.sciencedirect.com/science/article/pii/S0360544221015735?dgcid=author#sec1