

# Incentivising and measuring export service performance

Final report

March 2023

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Inquiries about this publication should be addressed to:

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

AER reference: 213108

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# 1 Executive summary

In August 2021, the Australian Energy Market Commission (AEMC) published its [Access, pricing and incentive arrangements for distributed energy resources](#) final determination (the Rule change). The Rule change amended the National Electricity Rules (NER) and National Energy Retail Rules and tasked the Australian Energy Regulator (AER) with delivery of a package of reform workstreams to strengthen customer protections and our regulatory oversight of distribution network service providers (DNSPs) provision of export services. These reforms will also provide stakeholders with useful information and insight about the quality of their export services.

## 1.1 Export service reforms subject to consultation

In August 2022 we published a consultation paper and sought stakeholder views on the following three interrelated reform workstreams:

- whether incentive arrangements for export services are fit for purpose. The AEMC found that incentive frameworks in the NER, if left unchanged, could incentivise DNSPs to reduce costs at the expense of export service quality. The Rule change requires us to undertake a review to consider arrangements (which may include a service target performance incentive scheme (STPIS)) to provide incentives for DNSPs to provide efficient levels of export services.
- the development of performance metrics to include in our first annual DNSP export performance report. These reports will consider, among other things, the relative performance of each DNSP in providing export services, DNSPs use of static zero export limits and performance relative to export tariff offerings.
- if and how to best incorporate export services into our annual benchmarking report. The efficient provision of export services may see DNSPs invest to increase network hosting capacity. While the expenditures to provide export services are counted as inputs in the benchmarking models, the outputs associated with export services may not be fully recognised.

In November 2022 we published a draft report, in which we committed to several future actions and made recommendations for each workstream that we considered will best achieve the desired outcomes of the Rule change. We received 13 stakeholder submissions in response to the draft report, which we refer to in this final report and are available on our website.<sup>1</sup> Having considered these submissions, our finalised actions and recommendations are summarised below.

## 1.2 Actions and recommendations

### Incentive arrangements

- We will not extend the STPIS to export services in the immediate term. Differences in underlying incentives and network conditions make it difficult to develop a scheme using standardised performance metrics. There is also limited evidence across distribution

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<sup>1</sup> AER, [Incentivising and measuring export service performance](#), February 2023.

networks that customers are receiving export services that do not meet their expectations, and a lack of robust data to measure export service performance. Therefore, it is not appropriate at this time to implement a standardised incentive scheme that places revenue at risk.

- We will use reputational incentives to encourage DNSPs to improve their delivery of export services. We will require DNSPs to collect and report information about export service performance and from late 2023, we will report this information as part of our annual export performance reports.
- We will introduce a new small-scale incentive scheme (SSIS) to permit DNSPs to propose bespoke incentive schemes related to the provision of export services in their regulatory proposals. This SSIS will be known as the export service incentive scheme (ESIS) and will provide DNSPs with the option to demonstrate that their own network conditions and customer expectations warrant a financial incentive to improve an aspect or aspects of export service quality. Our approval of an incentive design under the ESIS will be conditional on there being strong customer support and robust data to support the proposed performance targets. We also expect that the ESIS will be a transitional measure until it is possible to introduce a standardised scheme for all DNSPs via the STPIS. We have now commenced consultation on the draft ESIS.<sup>2</sup>
- We will initiate a future review of incentive arrangements for export services by 2027. We consider that this timing will allow DNSPs to collect and report on a consistent set of performance metrics, which could inform a common financial incentive scheme in the future. It may also allow us to consider the effects of export tariffs and flexible export limits on export service quality, and to consider DNSP proposals for bespoke incentive schemes. We will undertake the review earlier if data availability and quality improve sooner, and comment on these issues in our annual export performance reports.

## Performance reporting

- We will publish annual reports on the performance of each DNSP in providing distribution services for embedded generators to export into the distribution network. ('export performance reports').<sup>3</sup>
- Our first export performance report will be published in December 2023 ('the inaugural report') and will be contained within a version update of the 2023 electricity network performance report.
- Consultation between the draft and final report sought stakeholder views on a strawman information request for data to include in the inaugural export performance report.<sup>4</sup> Following submissions, we made minor refinements to our request for 2020-21 and 2021-22 data. These changes mainly increase clarity and flexibility, but also result in the following:

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<sup>2</sup> AER, [Export service incentive scheme](#), March 2023.

<sup>3</sup> As per the requirement under NER rule 6.27A, which refers to these publications as 'DER network service provider performance reports'.

<sup>4</sup> AER, [Export services straw man information request](#), November 2022.

- The inclusion of data to provide sample size. This is because measures can often be estimated based on a sample (for example, where smart meters or power quality data is required).
- Narrowing the scope of ‘average time to connect consumer energy resources to the distribution network’ to instead capture ‘average time for the DNSP to provide a connection offer’ (disaggregated by type of connection agreement). This is because DNSP involvement in the later stages of the connection process can be negligible and varies between DNSPs.
- We intend to consult further with DNSPs before finalising the information request to collect 2022-23 data. Several DNSPs requested more guidance to ensure they consistently estimated some of the new measures proposed for 2022-23. This particularly applies to measuring the duration of export access and total utilised consumer energy resources generated, which require modelling. This consultation will be important for ensuring we provide some useful guidance, including not only around estimation approaches, but also around acceptable error levels.

### **Benchmarking reports**

- We will not develop an interim export services operating environment factor (OEF) as there is insufficient data available to do so. We may reconsider this position in the future when more robust export services expenditure data is available.
- We will initiate a review of how the benchmarking models can be updated for export services by 2027, or earlier if sufficient data becomes available. The review will determine, subject to data availability, the materiality of export service impacts on the Productivity Index Number (PIN) model productivity results, the model adjustments needed to account for these impacts, and how any required updates can be implemented. The future review will also assess the conceptual merits and empirical feasibility of updating the econometrics models for export service impacts. Subject to the future review’s findings, we will consult with stakeholders on how best to implement required updates to the PIN models, and progress work to update on the econometric models for exports services, if feasible.
- In the interim period ahead of the future review, we will:
  - begin collecting some additional benchmarking-related data through this year’s annual performance reporting process to inform the future review.
  - use the annual performance and annual benchmarking reporting processes to monitor and consult on if / when more benchmarking-related data becomes available and is feasible and cost-effective to collect, what if any interim export service metrics could be developed using this data, and whether the timing of the 2027 review can be brought forward.
  - update the annual benchmarking report for distribution businesses to note that we are working toward a full review of if / how the benchmarking models can be updated for export services and acknowledge that, in the interim, the benchmarking results do not fully account for export services and cross reference relevant data from the annual performance reports that is indicative of DNSPs’ likely relative export services burden. Further, that while a current lack of data prevents us from establishing the size of export service impacts on the benchmarking results with greater certainty, our view based on available information and evidence is that the impacts are not likely to be material at present.

- We believe the above approach is the best, practical way forward that appropriately balances various factors including:
  - current data availability
  - the cost to businesses of collecting, estimating and reporting new data
  - the likelihood that we will need specific data in the future
  - the level of materiality of the impact of export services on the benchmarking results at present
  - the practical implications of these impacts for use of the benchmarking results by the AER in the near term
  - the likelihood that export services will have a material enough impact on the benchmarking results in the near future to warrant updating the benchmarking model specifications.

### Review of AER guidelines

The Rule change also requires us to review and amend where necessary the Distribution Reliability Measures Guidelines (DRMG), demand management incentive scheme (DMIS) and demand management innovation allowance mechanism (DMIAM) (by 1 July 2023). Given our decision not to extend the STPIS to export services, we do not propose to amend the DRMG at this stage. We also maintain that the DMIS and DMIAM remain fit for purpose and do not require amendments to account for export services. In addition, we do not consider that incentive rates and allowances under these guidelines should be increased to account for export services. However, we consider that these guidelines should be reviewed as part of the future review of incentive arrangements.

## 1.3 Next steps

**Table 1: AER actions – incentivising and measuring export service performance**

Project step	Date
Issue information request #1 to DNSPs	March 2023
Publish Final report and Draft ESIS	March 2023
Consult with DNSPs on information request #2	March/April 2023
Issue information request #2 to DNSPs	May 2023
Publish Final ESIS	July 2023
Publish inaugural export performance report (as a version update of the electricity network performance report)	December 2023
Commence additional review of incentive arrangements and benchmarking	By 2027

## 2 Introduction

### 2.1 Scope of review process

The Rule change aims to integrate more distributed energy resources (DER<sup>5</sup>) such as small-scale solar, batteries and electric vehicles into the grid. It requires DNSPs to plan for providing export services. It also strengthens customer protections and our regulatory oversight.

The scope of this review is limited to the following workstreams:

- **Review of incentive arrangements for export services.** The AEMC found that incentive frameworks in the NER, if left unchanged, could incentivise DNSPs to reduce costs at the expense of export service quality. The Rule change requires the AER to undertake a review to consider arrangements (which may include a service target performance incentive scheme) to provide incentives for DNSPs to provide efficient levels of distribution services provided to retail customers for supply from embedded generating units into the distribution network.
- **Developing performance metrics to include in the inaugural export performance report.** The AEMC considered enhanced transparency of export service performance would support more informed regulatory and policy decisions as well as more informed investment and operating decisions. To that end, the Rule change requires us to prepare and publish annual reports on the performance of each DNSP in providing export services to customers over the previous year.
- **Incorporating export services into the AER's annual benchmarking report.** To the extent export services are not adequately captured in the productivity benchmarking, some DNSPs may receive relatively lower productivity scores than would be the case if export services were better reflected in the benchmarking models. This could impact how we assess the efficiency of their operating expenditure (opex) as part of the revenue determination process.

In addition to the matters under consultation, the Rule change also tasked us with:

- **reviewing relevant guidelines to incorporate export services.** We have reviewed and consider no amendments are necessary to the:
  - Distribution Service Classification Guideline
  - Cost Allocation Guideline
  - Expenditure Forecast Assessment Guideline.

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<sup>5</sup> Where appropriate in this final report, and more generally, we are seeking to replace the term 'distributed energy resources' (DER) with 'consumer energy resources' (CER), in recognition of the engagement from consumer groups on the rapidly growing energy ecosystem. CER includes devices and systems (such as solar PV, batteries and electric vehicles) located on the customer's side of the network connection (behind the meter), that are connected to the electricity distribution network and capable of exporting electricity to the grid and/or responding to price and remote-control signals to change export or consumption patterns. These can include both residential and commercial/industrial devices. The NER refers to these devices as embedded generating units.



- **reviewing the Connection Charge Guideline.** The AEMC determined that a DNSP will not be able to offer a static zero export limit to a small customer who is seeking to connect consumer energy resources to the network, unless it is requested by the customer, or an exception listed in the AER's connection charge guidelines applies. Our review of this guideline explored the appropriate exceptions to this restriction. We published draft guidelines in October 2022 and will publish final guidelines in March 2023.<sup>6</sup>
- **publishing export tariff guidelines.** The AEMC found that price signals are an effective potential tool to promote efficient use of and investment in export services. The aim of the Rule change was to smooth demand for consumption and export services using pricing along with other regulatory control measures (e.g., investment tests) to reward customers for actions that better use existing infrastructure or improve network operations, benefiting all customers. We published our Export Tariff Guidelines in May 2022.<sup>7</sup>
- **publishing the customer export curtailment value (CECV) methodology and associated values.** The Rule change requires the AER to develop customer export curtailment values. These values will help guide the efficient levels of network expenditure for providing export services and input into network planning, investment and incentive arrangements for export services. We published our CECV methodology and associated values in June 2022.<sup>8</sup>

We also published our DER integration expenditure guidance note in June 2022.<sup>9</sup> Consultation on that guidance commenced before the AEMC's Rule change process but forms a key component of stakeholder guidance about how DNSPs provide efficient levels of export services on their networks.

Figure 1 provides a graphical representation of these various Rule change-driven workstreams in the context of the distribution network regulatory framework, highlighting the projects that are the subject of this consultation paper.

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<sup>6</sup> AER, [Connection Charge Guideline review 2022](#), October 2022.

<sup>7</sup> AER, [Export tariff guidelines](#), May 2022.

<sup>8</sup> AER, [Final CECV methodology](#), June 2022.

<sup>9</sup> AER, [DER integration expenditure guidance note](#), June 2022.

**Figure 1: Interrelationships between work streams**



Source: AER

## 3 Incentive review for export services

### 3.1 Background

Under the existing incentive framework there is a risk that DNSPs may reduce network expenditure and allow export service quality to diminish. The capital expenditure sharing scheme (CESS) and efficiency benefit sharing scheme (EBSS) provide incentives for the efficient delivery of capital expenditure (capex) and opex, and although the STPIS incentivises import service performance, it does not include measures related to the provision of export services, such as the frequency and volume of export curtailment.

Export services are part of the core services provided by DNSPs. Electricity customers that invest in consumer energy resources such as rooftop solar PV expect to be able to use the electricity that they generate and export any excess electricity that they generate to the grid. This provides benefits to all customers via cheaper and cleaner electricity.

Demand for export services (exporting electricity to the grid) is currently constrained in some locations across distribution networks. These constraints are due to:

- **Static export limits** – Static export limits are the primary source of export curtailment. A static export limit is imposed on a customer by their DNSP when they install rooftop solar PV and sets the maximum level of export that is allowed. The average size of a small-scale solar PV installation in Australia is increasing and has passed 8kW.<sup>10</sup> However, the standard export limit for a customer in most distribution networks has remained relatively static at 5kW for many years. In some locations, DNSPs are applying limits that are lower than 5kW or even zero in some locations (to protect network assets).
- **Voltage-related curtailment** – This is an emerging source of export curtailment, and automatically occurs due to standard grid support settings on solar PV inverters in response to high distribution network voltages. When this occurs, customers are unable to export electricity to the grid and self-consume their own generated electricity. It can be difficult for DNSPs to identify the location and duration of voltage-related curtailment, and low voltage network visibility and understanding of network hosting capacity is varied across distribution networks.

Export constraints are projected to increase with higher demand for export services. Currently, around 30% of homes in the NEM have rooftop solar PV. AEMO forecasts that this will increase to over 50% in 2032 and will reach 65% of homes by 2050 (with most systems complemented by battery energy storage).<sup>11</sup> Network constraints will be amplified if the uptake of batteries and electric vehicles is not actively managed so that consumption aligns with passive rooftop generation. However, current evidence suggests that even within

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<sup>10</sup> Australian Photovoltaic Institute, [Market Analyses](#), accessed 2 November 2022.

<sup>11</sup> AEMO, [2022 Integrated System Plan](#), June 2022.

networks where uptake of consumer energy resources is high, export constraints are limited.<sup>12</sup>

In theory, the STPIS could be amended to provide a financial reward or penalty for DNSPs that improve or worsen their export service performance (related to the instance and duration of export constraints). However, a performance metric such as export curtailment faces several measurement and interpretation difficulties. In addition, many DNSPs have limited access to this data as visibility of low voltage network performance is lacking (due to a lack of smart meters and other voltage measurement devices). Noting that data quality is an essential element of a financial incentive mechanism such as the STPIS, and that it will be some time before DNSPs collect and report this type of data in a consistent manner, we should consider whether the implementation of short-term or interim incentive arrangements is suitable.

In our draft report we considered stakeholder submissions to our consultation paper and provided our draft position on incentive arrangements for export services, including on potential options for incentivising export service performance. In summary, our positions were:

- not to extend the STPIS to export services, largely due to differences in network conditions and data availability.
- introduce reputational incentives via annual performance reporting on a range of export service performance metrics.
- introduce a new small-scale incentive scheme (SSIS) to allow DNSPs to propose bespoke incentive schemes.
- not to amend associated AER guidelines (specifically the DRMG, DMIAM and DMIS); and
- commence a future review of incentive arrangements for export services by 2027.

In the following sections we summarise stakeholder views on our draft position and provide our final position on the appropriate incentive arrangements for export services.

## 3.2 Stakeholder views

### 3.2.1 Extending the STPIS to export services

We did not seek stakeholder views on this issue in the draft report, as it was previously discussed in detail in our earlier consultation paper. However, some stakeholders reiterated their support for our position not to extend the STPIS to export services at this time. Energy Networks Australia (ENA) agreed that a 'one-size fits all' standardised financial incentive mechanism is not appropriate at this stage given the lack of robust data available at a national level.

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<sup>12</sup> See for example: Collaboration on Energy and Environmental Markets at UNSW, [Curtailment and Network Voltage Analysis Study Project Report](#), August 2021, & Heslop, S. et al. (UNSW), [Voltage Analysis of the LV Distribution Network in the Australian National Electricity Market](#), May 2020.

### 3.2.2 Reputational incentives

Similarly, although we did not ask additional questions about the use of reputational incentives to improve export service quality, some stakeholders commented on this aspect of proposed incentive arrangements. ENA noted that it supports the use of reputational incentives through performance reporting to help increase transparency for consumers. However, if the reputational incentives seek to facilitate comparability between the performance of DNSPs, the establishment of clear definitions and common estimation tools is required to improve data accuracy and comparability, along with the provision of supporting qualitative information to provide contextual information on networks' individual circumstances.

### 3.2.3 Bespoke incentive schemes

We sought stakeholder views on a range of issues associated with the introduction of bespoke incentive schemes, including:

- whether developing a new SSIS is the best way to facilitate DNSPs proposing bespoke incentives
- what the appropriate level of revenue at risk is for a SSIS for export services
- whether the benefits associated with a SSIS for export services will outweigh the costs of measuring performance and administering the scheme, and
- if there are any other factors we should consider when developing a new SSIS.

Stakeholders largely agreed that developing a new SSIS is preferable to amending the existing customer service incentive scheme (CSIS). ENA suggested that any SSIS for export services should apply in addition to the current CSIS (if applicable) and STPIS for consumption services to avoid weakening incentives on DNSPs to maintain/improve service performance for consumption services. SA Power Networks submitted that the use of the SSIS should only be a transitory mechanism to implement bespoke incentive schemes for exports. It submitted that, as penetration of consumer energy resources increases, the costs associated with, and value customers derive from the service, will reach a point where the rewards or penalties permitted under the SSIS may be inadequate to drive material investment and changes in service provision – warranting re-consideration of a more fulsome expansion of the current STPIS.

Stakeholders also suggested that the benefits of a new SSIS will likely outweigh the costs. CitiPower, Powercor and United Energy noted that its experience with the CSIS is that administrative costs are low relative to the benefits to customers of improved service outcomes. SA Power Networks submitted that the data requirements, and associated administration costs, will vary dependent upon the measured performance metric used and DNSPs' data capabilities. It added that the flexibility that comes with DNSPs being able to design their own customised incentives, will ensure that they can take into account the likely implementation and monitoring costs when designing these schemes to ensure that they drive overall net benefits to customers.

Stakeholders submitted mixed responses on the appropriate level of revenue at risk for the new SSIS. CitiPower, Powercor and United Energy submitted that that the revenue at risk for a bespoke export incentive SSIS should be 0.5% (of annual revenue), in line with other incentive schemes proposed by networks in the past. This 0.5% should not displace the

0.5% applicable under the CSIS. SA Power Networks commented that the appropriate amount of revenue at risk for export services will likely need to vary across distributors on the basis of the customer demand for the measured export service performance metric relative to the distributor's annual revenue requirement. Endeavour Energy submitted that there could be value in allowing DNSPs to vary the incentives of both the CSIS and export service SSIS to align with customer feedback so that the total  $\pm 1\%$  annual revenue requirement (ARR) limit is unconstrained by a scheme specific limit. This would require removing the  $\pm 0.5\%$  ARR cap on the CSIS. We recognise there are a range of views on this particular issue and consider it important to seek further stakeholder views as part of the new consultation process for the ESIS.

### **3.2.4 Amendments to AER guidelines**

Stakeholders agreed that no amendments to the DRMG are necessary, given that we are not proposing to amend the STPIS.

A number of stakeholders submitted that amendments to the DMIS and DMIAM are necessary to account for export services.

#### **Increasing allowances and incentive rates**

Several DNSPs submitted that the maximum funding allowance under the DMIAM should be increased to support innovative approaches to improving export services. Arguments in support of this suggestion are summarised below and detailed further in Appendix A.

- Endeavour Energy submitted that the DMIA was developed prior to the AEMC's Rule change and therefore is focussed on deferring demand for consumption services. Similarly, AusNet Services submitted that when the DMIA and the DMIS were designed, and then updated five years ago, the main focus and intent of the schemes were peak demand management. This does not capture the need to manage export-related challenges on the network, including (but not limited to) hosting capacity management, minimum demand and reverse flow management and power quality management. These export-related challenges require solutions and innovative approaches that may be different to peak demand management. For example, a dynamic voltage management system (DVMS) is an innovative solution that improves power quality and hosting capacity on the network but does not address peak demand challenges.
- CitiPower, Powercor and United Energy submitted that the DMIAM and DMIS were designed historically to apply to consumption services, typically to be used during maximum demand periods to avoid the need for network investment. Use of the DMIAM and DMIS for consumption services is likely to continue as electrification of transport and gas increase peak demand. As export services have been classified as part of the common distribution service, the DMIAM and DMIS can now apply to export services.
- ENA submitted that the current allowance was developed for consumption services and did not capture the need to support innovation in both imports and exports (i.e., two-way flows on the network). It is being fully utilised already by a number of DNSPs for consumption services alone, and the need for innovation with respect to consumption services is not decreasing in the energy transition.
- SA Power Networks submitted that the expansion of its role to the provision of export services will require new innovation and trials as it interacts with an increasing and

changing mix of consumer energy resources including community batteries, smart appliances and electric vehicles. It added that its customers have advocated strongly for them to explore potential co-funding models of community energy storage solutions, which alone would be of sufficient materiality to exhaust the current DMIAM funds.

- CitiPower, Powercor and United Energy added that maintaining the current incentive cap and allowance reduces the scope for networks to implement innovative technologies to manage both maximum and minimum demand, which will unduly limit the amount of value networks can deliver to customers under the schemes, particularly as innovative approaches such as flexible export services are an emerging solution but are not yet scalable.
- Most submissions did not elaborate on the appropriate size of the allowance cap under the DMIAM, or whether the base allowance or scaling factor should be increased (or both).<sup>13</sup> AusNet Services submitted that it is appropriate to double the value of the allowance, given the magnitude of new challenges facing networks, related to both imports and exports.

### **Other amendments**

Further to increasing the allowance cap, AusNet Services submitted that the DMIS requirement to tender for solutions and publish the tender to the Demand Management Register is no longer fit for purpose as network management becomes more dynamic. It noted that under its EDGE Project, it is trialling a new model for network service procurement, which includes sharing opportunities for network support through a service exchange platform. It suggested that the DMIS criteria should be updated to allow for procurement of network services through any process that demonstrates the non-network solution is efficient and the process was non-discriminatory towards any party.

The Consumer Challenge Panel submitted that the DMIS should be broadened to consider network utilisation. It submitted that while the DMIS remains valid, the approach should be extended to provide clear incentives to implement forms of demand response incentives to address falling network utilisation and collapsing load factors. It suggested we develop a longer-term strategy to feed into proposed future review of benchmarking.

### **3.2.5 Future review of incentive arrangements**

We sought views from stakeholders on our proposal to commence a future review of incentive arrangements for export services by 2027, and whether there are any factors which may prompt an earlier or later review.

SA Power Networks supported a future review by 2027, noting that by this time the impact of export service provision on networks will be better understood as:

- data availability will likely have improved across networks via the accelerated smart meter rollout and increase in the number of Dynamic Operating Envelope compliant inverters;

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<sup>13</sup> There are two components of the allowance cap under the DMIAM: a base allowance level of \$200,000 (in 2017 regulatory year-end dollars), escalated annually by CPI, and a scaling factor of 0.075% of the DNSP's annual revenue requirement, as set out in its distribution determination.

- the effects of export tariffs and flexible export limits will be apparent; and
- historical performance data will be available via the AER's annual export performance reports.

It added that it expects that the costs associated with export service enablement would have broadly increased across networks to a level which warrants the need to reconsider integrating exports in to the STPIS and potential role of the role of Guaranteed Service Level payments.

ENA submitted that it is uncertain whether the proposed timeframe of 2027 will allow sufficient time for us to consider the effects of export tariffs and flexible export limits on export service quality and monitor DNSP performance against any bespoke incentive measures. It noted that export pricing options may only largely be introduced from 1 July 2025, and therefore by 2027 there would only be one full financial year of export pricing implementation. Similarly, this timeframe may not allow sufficient time to observe the impacts of bespoke incentive measures given the regulatory determination timetable.

Other stakeholders suggested that we should be flexible and open to undertaking the review earlier or later than 2027. CitiPower, Powercor and United Energy suggested that 2027 should be a cut-off date rather than a firm date, and we should consider undertaking an earlier review if broad standardised data becomes available for all DNSPs sooner than expected. AusNet Services submitted that we monitor the quality of the export services performance data to determine if sufficient data quality improvements have occurred to warrant a holistic review. This should include monitoring of the performance of distributors' bespoke schemes and if further changes to the incentive framework are necessary.

### 3.3 Final position

On final position on incentive arrangements for export services largely affirms our draft position. In reaching our final position we considered:

- Stakeholder submissions on our draft position.
- The level of export service quality experienced by customers today, and how this may change in the future. For example, we expect that the eventual introduction of flexible export limits will better maximise network hosting capacity and benefit customers. We also expect that the forecast uptake of battery storage in the medium term will likely relieve the incidence of network constraints.
- The flexibility required to accommodate differences between DNSPs and their customers. For example, our final decision introduces reputational incentives for all DNSPs, but also provides the option for DNSPs to propose bespoke financial incentives that reflect their customers' preferences.

In the following subsections we detail our final positions for each issue.

#### 3.3.1 Extending the STPIS to export services

We will not extend the STPIS to export services at this stage. In coming to this position, we have considered stakeholder submissions highlighting:



- differences in underlying incentives, network conditions and the materiality of concern across distribution networks. This makes it difficult to develop an incentive scheme that accounts for different network circumstances.
- a lack of robust data to support the implementation of a standardised scheme. This makes it very difficult to objectively measure export service performance, and therefore rewarding or penalising networks would be inappropriate. We recognise that there are significant challenges in measuring voltage-related export curtailment.
- export tariffs and flexible export limits are at a nascent stage, and their impacts on export service quality are yet to be established.

### 3.3.2 Reputational incentives

We will require DNSPs to collect and report information about export service performance. Commencing in 2023, our annual network performance report will include our inaugural export performance report. We consider that these reports will provide transparency, accountability, and reputational incentives to DNSPs in providing export services to their customers.

Performance reporting may not immediately involve direct comparisons between DNSPs, since their export service offerings may be quite different (for example, in their approach to export tariffs and flexible export limits). However, in the short term, it should serve as useful information for customers in understanding how network investments are reducing export constraints and leading to better service quality outcomes. Over time, it may become more feasible to directly compare DNSP performance related to aspects of the export service.

In section 4 we discuss the proposed metrics for inclusion in the export performance report. Reporting on a DNSP's export service performance, where no revenue is at risk (as there would be in the case of a financial incentive mechanism), may be done using less robust data. We recognise there may be challenges in collecting and reporting some of these metrics, and so qualitative information may be useful in supporting the reporting of these metrics.

### 3.3.3 Bespoke incentive schemes

We have introduced a new SSIS specifically for export services. The ESIS will allow DNSPs to propose bespoke incentive schemes related to the provision of export services that reflect their customers' preferences. The draft ESIS and explanatory statement are now published on our website.<sup>14</sup> The final ESIS will be published by July 2023.

Our decision to allow bespoke incentive schemes recognises that a one-size fits all approach to financial incentives is not appropriate at this stage. However, a flexible approach such as this may benefit some DNSPs and their customers and contribute to the achievement of the national electricity objective (NEO). DNSPs will have the option to propose bespoke performance metrics under the ESIS, however will not be obligated to apply the ESIS. We agree with SA Power Networks' submission that data requirements and associated administration costs are likely to vary across DNSPs, and DNSPs are in the best

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<sup>14</sup> AER, [Export service incentive scheme](#), March 2023.

position to account for these costs when designing the scheme. Therefore, we consider that the benefits of introducing a new SSIS are likely to outweigh the costs.

Where we apply a SSIS to a DNSP for a regulatory control period, the aggregate rewards or penalties for a regulatory year in that regulatory control period that are imposed under that scheme and any other SSISs that apply to that DNSP must not exceed 0.5% of the annual revenue requirement for the DNSP for that regulatory year, unless the DNSP consents to the contrary, in which case the aggregate must not exceed 1% of the annual revenue requirement for the DNSP for that regulatory year.<sup>15</sup>

Our position in the draft ESIS is that rewards and penalties are capped at 0.5% of the DNSP's ARR, subject to further consultation. We consider that this amount is reasonable because it provides the same maximum level of revenue at risk for both the ESIS and the CSIS. Rewards and penalties should be commensurate with the improvements or deteriorations in export services (up to this cap). We expect that the ESIS will be a transitional measure until it is possible to introduce a standardised scheme for all DNSPs via the STPIS. We will also consider the merits of DNSPs trialling the ESIS (for particular performance parameters), with no revenue at risk. This option provides us with the flexibility to test performance metrics under the ESIS prior to including them in the STPIS.

Our approval of bespoke incentives under the ESIS is conditional on the DNSP meeting the incentive design proposal requirements set out in the draft ESIS. This includes demonstrating evidence of genuine customer engagement and robust data to support the proposed performance targets.

### **3.3.4 Amending AER guidelines**

We maintain our draft position that no amendments to the DRMG, DMIS and DMIAM are necessary at this time.

The DRMG establishes a set of common definitions of reliability measures that can be used to assess and compare the performance of DNSPs for all jurisdictions of Australia.<sup>16</sup> These measures are used to set performance targets under the STPIS. Based on our final position that we do not extend the STPIS to export services, we do not consider amendments to the DRMG are necessary at this stage.

The DMIAM and DMIS are designed to incentivise DNSPs to undertake demand management projects that are efficient and contribute to resolving network constraints. In this way, demand management projects can reduce, delay, or even avoid the need to install, replace or upgrade network assets. Recent changes to the NER confirmed that the DMIAM and DMIS do not apply exclusively to the management of demand for consumption services, and so DNSPs are permitted to propose projects and associated expenditures related to the management of demand for export services (referred to in the scheme objective as 'demand for use of distribution services to supply into a distribution network').<sup>17</sup>

### **Increasing allowances and incentive rates**

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<sup>15</sup> NER, cl. 6.6.4(d)(1).

<sup>16</sup> AER, [Distribution reliability measures guideline](#), August 2022.

<sup>17</sup> NER, cl. 6.6.3.

We do not consider that the allowance cap under the DMIAM nor the incentive rate under the DMIS should be increased. In making this decision we considered the following issues:

- **DNSPs have been managing export service demand prior to the Rule change.** We do not agree that the DMIAM was limited to deferring demand for consumption services, simply because it was developed prior to the Rule change. Rather, the DMIAM has largely been used to manage peak demand for consumption services because it has been a more pressing challenge for DNSPs than demand for export services. This is evidenced by significant levels of network augmentation and associated capex to meet peak demand, relative to very small levels of network augmentation and capex to manage demand for export services. Notwithstanding this, prior to the Rule change we approved capex to provide export services,<sup>18</sup> and demand management projects either directly or indirectly related to managing export service demand.<sup>19</sup>
- **Demand management is not just peak demand management.** Demand management projects, the subject of the DMIAM allowance, should have the potential to deliver ongoing reductions in demand or peak demand, which may include reductions in demand for use of distribution services to supply into a distribution network.<sup>20</sup> In approving projects under the DMIAM (including those mentioned above) we have recognised that many projects and programs are broad-based rather than for the purpose of managing peak demand.
- **Innovation is a dynamic concept.** We recognise that the electrification of transport and gas will create demand management challenges in the future, however what we consider to be innovative today may not be innovative in the near future, and therefore we should not simply assume that additional funding is required. For example, it is unlikely that electricity storage-related projects will remain “innovative” (under the eligible project criteria) in the future, and instead should be proposed as business-as-usual expenditure (either as capex or opex).<sup>21</sup> This will allow DNSPs to focus their demand management allowances on new challenges such as the electrification of transport and gas. Further, some demand management challenges may be solved without DNSP intervention. For example, customer investment in battery storage will lead to increased self-consumption of electricity generated by solar PV, and lower levels

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<sup>18</sup> For example, in our decision on CitiPower’s 2021-26 distribution determination, we noted that “capex required to increase DER export capacity can be considered SCS and is consistent with the capex objectives”.

<sup>19</sup> For example, [voltage management projects undertaken by Victorian DNSPs](#) have the potential to manage both consumption and export service demand, whereas projects such as [Ergon Energy’s “Evolve”](#), and [SA Power Networks’ “Residential Energy Storage”](#) more directly manage export service demand.

<sup>20</sup> NER, cl. 6.6.3A(c)(2).

<sup>21</sup> Under the project criteria of the DMIAM, an eligible project must be innovative, in that the project or program:

- i) is based on new or original concepts; or
- ii) involves technology or techniques that differ from those previously implemented or used in the relevant market; or
- iii) is focused on customers in a market segment that significantly differs from those previously targeted by implementations of the relevant technology, in relevant geographic or demographic characteristics that are likely to affect demand.

of electricity exports, which will reduce peak demand for both consumption and export services.<sup>22</sup>

- **The Rule change supports demand management for export services.** DNSPs may now design and implement export tariffs or two-way pricing. These will signal to customers when it is better to consume electricity generated by rooftop solar PV, and when it is better to export it. Furthermore, the CECV methodology is used to estimate CECVs, which measure the detriment to customers and the market from the curtailment of electricity exports. Therefore, CECVs indicate to DNSPs whether curtailment (a form of demand management) is more efficient than investing to relieve curtailment.
- **The allowance cap under the DMIAM has only recently increased.** In 2017 we amended the DMIAM, increasing the size of the fund to encourage about 30% more research and development on average.<sup>23</sup> This decision was based on stakeholder support and consumer willingness to pay for demand management activities. In making this decision, we recognised that demand management can help address challenges such as intermittent generation, distributed energy resources and bi-directional electricity flows. Since 2017, demand management innovations related to electricity storage have been the largest category of funding under the DMIAM.<sup>24</sup> Utilisation of funding varies across DNSPs, and DNSPs that have fully used their allowance have in fact undertaken export service demand management projects.
- **Other sources of innovation funding are available to DNSPs.** When we amended the DMIAM in 2017, we noted the potential for DNSPs to partner with third parties when undertaking demand management projects (reducing downside risk for DNSPs). We also noted that there have been increases to other sources of funding for demand management research and development, including from the Australian Renewable Energy Agency (ARENA). ARENA has funded, and continues to fund, numerous demand management and consumer energy resource-related projects in partnership with DNSPs.<sup>25</sup>
- **Use of the DMIS has been limited.** Most DNSPs have not identified and committed any eligible projects under the DMIS, and for those that have, the value of projects has been very low relative to the total incentive cap. Therefore, we consider there is significant scope for DNSPs to undertake export service demand management projects without exceeding the total incentive cap.

### Other amendments

AusNet Services' submission to amend the DMIS criteria (related to the procurement process for network services) appears reasonable. However, tendering is a key feature of the DMIS which ensures transparency and removing the requirement to publish tenders on

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<sup>22</sup> The AEMC noted that falling battery installation costs, longer warranty periods, and a greater incentive to store and utilise energy from a home installed battery mean that between now and 2025 battery installation may become economic for many households. See AEMC, [Turning point for incentives to invest in residential batteries](#), October 2022.

<sup>23</sup> AER, [Explanatory statement – Demand management innovation allowance mechanism](#), December 2017.

<sup>24</sup> AER, [State of the energy market 2022](#), Figure 3.28, September 2022.

<sup>25</sup> See for example: [United Energy Distribution Demand Response](#), [Project SHIELD](#), [Ausgrid Power2U](#), [evolve DER Project](#).

the Demand Management Register has the potential to result in adverse outcomes. For example, a DNSP may be able to demonstrate that the non-network solution is efficient, however an alternative solution (if the tender is published) could result in a more efficient solution. Previous stakeholder submissions have stressed the importance of designing the DMIS in a way that builds on the capacity of the competitive market to deliver demand management programs.<sup>26</sup> As we only have three years of operational experience with the DMIS, we consider it appropriate to monitor this issue as the use of the DMIS increases in the future.

We recognise the Consumer Challenge Panel's submission to address falling network utilisation and agree that this should be considered as part of the future review of benchmarking. We also note that one option to manage falling network utilisation and collapsing load factors is to undertake load shifting, and we have approved a DNSP's DMIS incentive payment in relation to load shifting.<sup>27</sup> Finally, we note that projects under the DMIS must deliver a net benefit to customers (regardless of the solution).

### **3.3.5 Future review of incentive arrangements**

We will commence a future review of incentive arrangements for export services by 2027. We agree that we should maintain some flexibility in deciding when to undertake this review, and that we should monitor the quality of export services performance data to determine if an earlier review is more appropriate. In our annual export service network performance report, we will provide some commentary on improvements in data availability and quality across DNSPs, and whether these improvements are sufficient to prompt an earlier review of incentive arrangements.

The future review of incentive arrangements will primarily consider the question of whether the STPIS can be extended to export services. It will consider (among other things):

- the availability of new data to support the implementation of a standardised incentive scheme;
- the need for financial incentives (including the potential for guaranteed service levels and the approach to calculating rewards and penalties); and
- the application of bespoke incentives under the new export service incentive scheme, and DNSP reporting against these bespoke incentives.

Along with a future review of incentive arrangements, we will also undertake reviews of the DRM, DMIS and DMIAM, as well as a full review of benchmarking models (also commencing by 2027, or earlier). This will help us to determine the materiality of export service impacts on the productivity results, the types of model adjustments need to account for these impacts, and the feasibility of successfully implementing the adjustments.

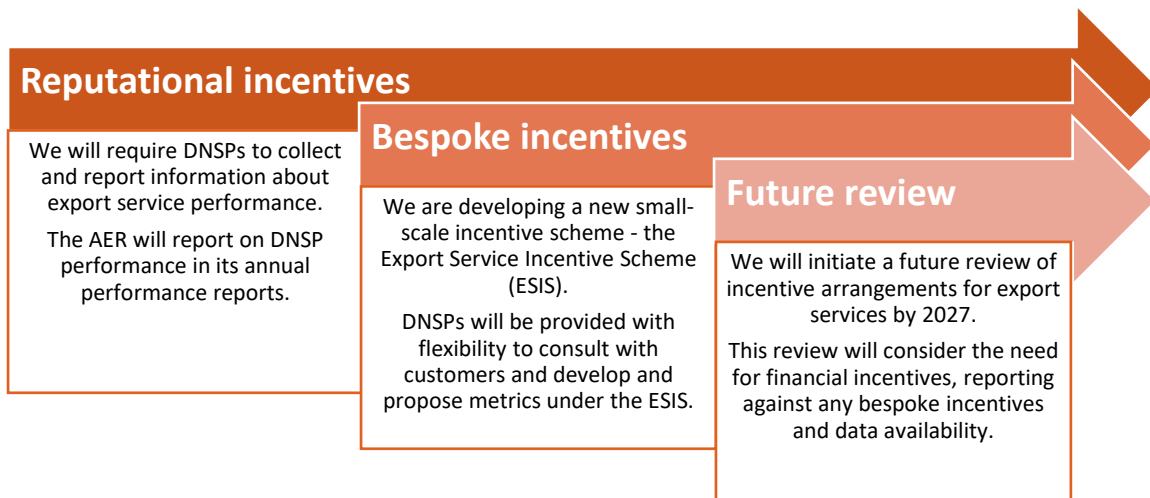
Figure 2 summarises our overall approach to incentive arrangements for export services.

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<sup>26</sup> AGL Energy, [Submission on draft demand management incentive scheme and innovation allowance mechanism](#), October 2017.

<sup>27</sup> See [Ausgrid's Gillieston Heights residential air-conditioner demand response project](#).

**Figure 2: Approach to incentive arrangements for export services**



Source: AER

## 4 Export performance reports

We will publish annual reports on the performance of each DNSP in providing distribution services for embedded generators (such as residential solar) to export into the distribution network. The NER refer to these publications as 'DER network service provider performance reports' (which we refer to as 'export performance reports').<sup>28</sup> These reports will provide transparency for export service customers in understanding the services they are accessing and accountability for DNSPs in the quality of export service they are providing their customers. Our first export performance report will be published by the end of 2023 ('the inaugural report').

As discussed in section 3.3.2, export performance reports can provide reputational incentives on DNSPs to provide efficient levels of export services. Further, reporting on a DNSP's export service performance, where no revenue is at risk (as there would be in the case of a financial incentive mechanism), may be done using less robust data.

### 4.1 Final position consistent with the draft report

Consultation between the draft and final report has been limited to what specific data we should request for inclusion in the inaugural export performance report. Our final position on these matters is set out in Section 4.2. **Error! Reference source not found.**

Other aspects of our final position generally reflect the draft report, including that:

- we would ideally measure export service performance by measuring involuntary export curtailment per exporting customer due to a network constraint. However, this ideal measure is not feasible to measure in practice, particularly in the short term.
- there are currently data reporting limitations. Some of these will require temporary workarounds; for example, limited access to smart meter data outside of Victoria will require some voltage data to be modelled. Other limitations will likely be more persistent; for example, limited visibility of involuntary export curtailment. It will be important to progressively improve our datasets over time and to establish common definitions and estimation methods if we require modelled data to be reported.
- given the presence of data limitations and factors outside of DNSPs' control, export performance reports will include a range of performance measures as well as contextual measures and qualitative analysis to help readers interpret the data.
- most of the data series we propose to report on will commence from 2020-21 – with some series starting later due to availability. This reflects that acceptably reliable data relating to export service only became available in recent years, and that we must balance the value of having a longer time series against the value of performing comparative analysis with higher-quality data.
- we intend for future export performance reports to continue to be contained within the electricity network performance reports.

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<sup>28</sup> NER rule 6.27A.

One position has changed since the draft report in that we are no longer intending to include export performance as a focus area in the first version of the 2023 electricity network performance report. Rather, we will first publish analysis on export service performance in our version update of the electricity network performance report in December 2023. This update will include a chapter that meets the requirements of the inaugural export performance report and will include 2020-21 to 2022-23 data.

We have changed our previous position, which was originally proposed in the Consultation Paper when we had planned to issue the first information request in late 2022. When the review timelines were extended at the draft report stage, we maintained our position and committed to issuing the first information request in early 2023. Given the bespoke data challenges faced by different DNSPs, we only finalised and issued the information request in early March. Following from this, we decided that the benefits of publishing some early analysis in the June release of the electricity network performance report would not outweigh the costs. A June release would require DNSPs to meet compressed response times and would likely require us to provide high-level analysis that risks missing the required level of nuance.

## 4.2 Final position following further consultation

In the draft decision, we sought stakeholder views on a strawman information request.<sup>29</sup> The request included performance and contextual measures we proposed to report on in the inaugural report. In seeking stakeholder views, we specifically asked whether:

- there was additional key data we should include
- there were any foreseeable challenges in collecting the requested data. We also requested stakeholders to identify any additional costs associated with data collection
- the proposed base years for data was feasible, and if not, what would be an achievable timeframe for certain metrics
- the level of disaggregation was appropriate – identifying any specific data that should be disaggregated at a different level to that proposed
- any of the proposed data was ambiguous – suggesting additional definitions or specification that would be beneficial

We have considered stakeholder views in determining what data to collect for 2020-21 and 2021-22 (as set out in Table ). This data differs marginally from what we proposed in the strawman information request. In our view, these changes predominately serve to provide additional clarity or flexibility as needed.

As Table illustrates, we have endeavoured to incorporate stakeholder input wherever we considered it would improve the quality and usefulness of the data. Some stakeholders raised ideas that we were unable to reflect in the immediate information request but have potential to be considered further in future years. In Appendix A, we have endeavoured to set out our response and proposed approach to each suggestion stakeholders raised.

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<sup>29</sup> AER, [Export services straw man information request](#), November 2022.



**Table 2: Content in the information request for 2020-21 and 2021-22 data**

Requested data	Comparison to strawman and reason for change
Estimated capex and opex for the primary purpose of consumer energy resource integration by reason	No change.
Net metered volume of energy exported	Maintained but added note, 'It is recognised that measurement requires the customer to have a smart meter. This field should be populated based on net metered volumes of energy exported by smart meter customers, rather than as a network-wide estimate.' We added this note having considered Endeavour Energy's submission, which raised that some export customers have basic meters.
Export customer numbers at year-end	<p>Added 'at year-end' to clarify how to report this measure. We have added this for clarity to all point-in-time measures. This responds to Ergon Energy and Energex's request for clarity (as point in time measures can also be calculated as the average of the start- and end-of period measures).</p> <p>Added note, 'The DNSP is to include in its basis of preparation commentary on any customer reclassifications that are expected to be material information for reporting export service performance measures'. We added this following Essential Energy's submission, which raised that customer allocations can often change between years due to changes in population density.</p> <p>We also expanded this measure to disaggregate by customers with and without smart meters. This captures Endeavour Energy's suggestion to collect sample size for relevant measures (and measures such as net export volumes require customers to have smart meters).</p>
Installed capacity at year-end	Added 'at year-end' to clarify how to report this measure.
Customer complaints relating to export services, complemented by complaints relating to overvoltage	No change.
Voltage-related metrics: (a) customers with measured voltage data, (b) customers measured as receiving overvoltage, (c) customers estimated as receiving overvoltage.	<p>The strawman only requested data on customers receiving overvoltage. From submissions, we understand that while Victorian DNSPs access voltage data, others DNSPs would need to estimate this measure based on a sample. To understand the quality of this measure, we consider it beneficial to understand sample size and estimation techniques, so have framed the information request to collect this information.</p> <p>This has regard to Endeavour Energy, which submitted that only 50,000 meters currently provide the requisite power quality data for this measure. This also has regard to Evoenergy's submission, which noted the challenges and costs of requesting data that requires DNSPs to procure data from metering coordinators. It is likely that a combination of procurement and estimation is reasonable and cost-effective, so we want to accommodate such approaches whilst understanding the sample size and estimation approaches used. This approach also has regard to SA Power Networks' submission, which noted that 'customers receiving overvoltage' would require estimation for customers that do not have dynamic operating envelope-capable inverters.</p> <p>The information request also now specifies that voltage data may not be available disaggregated by customer type, and in which case, a null response may be provided with reasoning in the basis of preparation. This addition has regard to Ergon Energy and Energex's submission, which noted that they do not have visibility of this information by customer type.</p>
Approved and requested export capacity for customers that	We have refined these measures to clarify that they should only capture customers that accepted a connection agreement. <sup>30</sup> We intend to combine

<sup>30</sup> Moreover, this also aligns with Ergon and Energex's view raised in its [submission to our draft report](#).

Requested data	Comparison to strawman and reason for change
requested a specific level of export capacity	these two separate measures into a ratio and therefore want them to be based on the same set of observed customers.  In the notes, we have added 'the extent this is not feasible (e.g., if connections and applications are recorded in separate databases and the data is not linked), the DNSP should identify this in the basis of preparation, along with their estimation approach'. We added this note having considered Essential Energy's submission, which raised that its connection requests and connections data are not held in the same system and do not always correspond.
Customers that requested a specific level of export capacity	We have added this measure since the strawman information request. The data we are seeking on requested to approved capacity is worded so it effectively applies to negotiated connection agreements. We did this because connection agreements otherwise often present consumers with a default level of export capacity, which may have little bearing on their preferences. Given these negotiated agreements are a sub-set of export agreements, we consider it valuable to understand the population size behind this measure.
Customers with compliant inverters at year-end	Added 'at year-end' to clarify how to report this measure.  We had previously requested this measure by 'compliant', 'non-compliant' and 'compliance unknown'. Following submissions, we understand that actual data may be limited to the inverters installed when AS4777.2 (2020) standards were in place, and DNSPs can otherwise provide estimated data on inverter compliance. <sup>31</sup> We have therefore removed the 'compliance unknown' field and now request data based on customers required versus not required to have compliant inverters, and an estimated proportion of non-compliance.
Export customers with (a) static zero export limits, (b) non-zero static export limits at year-end	Added 'at year-end' to clarify how to report this measure.
Average non-zero static export limit at year-end	Added 'at year-end' to clarify how to report this measure.
Average time to provide an offer to connect small generating units to the distribution network, disaggregated by: model standing offer, other low voltage connections, high voltage connections.  Our definition of this measure is 'the average time between the DNSP receiving a connection application and providing a connection offer'.	We have revised this measure since the strawman information request, which previously requested the average time to connect consumer energy resources to the distribution network and followed from an Energy Consumers Australia submission on our consultation paper. <sup>32</sup> In response to the strawman information request, several DNSPs raised concerns about how, in most cases, they are not involved in the installation process. <sup>33</sup> We have therefore limited the measure to capture where DNSPs have clear and consistent involvement in the connections process. We have also used the term 'small generating units' to align with the definition of 'export services' defined in the information request.

In addition to the measures in Table , we intend to collect additional measures from 2022-23, consistent with the strawman information requests. These measures include:

- Total utilised consumer energy resources generation

<sup>31</sup> See [submissions to our draft report](#) from SA Power Networks and TasNetworks.

<sup>32</sup> Energy Consumers Australia, [Submission to the AER's consultation paper on incentivising and measuring export service performance](#), 11 October 2022.

<sup>33</sup> See [submissions to our draft report](#) from SA Power Networks, Ergon Energy and Energex, and Endeavour Energy.

- Export customers with dynamic/flexible export limits, including information on the magnitude of those limits
- Duration customers experience uncurtailed access up to their set limit
- Duration of no export access

Submissions on these measures generally (except for measures relating to flexible export limits) focussed on the need to model this data. Following from this need, several DNSPs requested that we provide guidance to ensure DNSPs report these measures consistently.<sup>34</sup>

Considering these submissions, we intend to consult further with DNSPs in March and April before issuing an information request for 2022-23 data. This additional consultation will be important for ensuring we provide some useful guidance, including not only around estimation approaches, but also around acceptable error levels. We expect that the quality of our guidance may need to evolve, and we intend to use the initial years of this data cautiously for that reason. We understand that some DNSPs (for example, SA Power Networks) are advanced in undertaking this modelling and there will likely be an element of cross-industry sharing and learning by doing that will evolve with time.

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<sup>34</sup> See [submissions to our draft report](#) from Ergon Energy and Energex and Endeavour Energy.

## 5 Update to benchmarking reports

### 5.1 Background

To the extent export services are not appropriately captured in our productivity benchmarking, some DNSPs may receive lower productivity scores than would be the case if export services were better reflected in the benchmarking models. This is because while inputs such as opex increase, the outputs associated with export services may not be fully recognised. Where there are material impacts on the models' productivity results, this could lead to perverse reputational incentives for DNSPs around providing export services and affect how we assess the efficiency of their opex as part of the revenue determination process.

In the draft report we outlined our draft positions on the impact of export services on our benchmarking model and our views on:

- not developing an OEF as an interim measure to account for export service costs in the benchmarking framework.
- the possible impacts export services may be having on the productivity results, options for addressing these impacts, and how to assess the merits, materiality and feasibility of the changes on the benchmarking results.
- our revised approach of a future review to determine if / how the benchmarking models can be adjusted to better account for export services.

We sought stakeholder views on:

- not proceeding with developing an export services OEF at this time given there was no real support for this and there is insufficient data available to enable its development.
- focusing in the future on understanding the materiality of the impact of export services on our benchmarking results and how the benchmarking models may need to be modified in the future, with an initial focus on the Productivity Index Number (PIN) models.
- informing these considerations via data collection.
- initiating a full review of the benchmarking models by 2027, or earlier if data becomes available, to determine the materiality of export service impacts on the productivity results, the types of model adjustments that would be needed to account for these impacts, and the merits and feasibility of successfully implementing any required updates to the benchmarking models.

### 5.2 Stakeholder views

This section presents key themes from submissions to the draft report in relation to updating the benchmarking, while more detailed summaries of submissions can be found in Attachment A. We note that submissions generally supported the positions presented in the draft report with key alternative views related to an accelerated timetable for undertaking a full review of the benchmarking (from one stakeholder), adjusting existing PIN model outputs

to account for energy-self-consumed, and the use of alternative metrics for developing a new output to account for the level of export hosting services provided by DNSPs.

***Submissions agreed with the draft position to not proceed with the export services OEF at this time***

Many DNSPs agreed with our draft decision to not proceed with developing an export services OEF.<sup>35</sup> The Consumer Challenge Panel also agreed with our draft position of not developing an export services OEF.

***Submissions agreed with the draft position to not pursue the option of excluding exports service inputs from the benchmarking models***

CitiPower, Powercor & United Energy and AusNet Services supported the view that there should be no further consideration of the option of excluding export service inputs from the benchmarking outputs. Endeavour Energy also agreed that the exclusion of export service inputs would be an impractical task due to interrelationships between inputs and outputs in the benchmarking models.

***Submissions agreed with, or did not contest, our preliminary view that the impact of export services on the benchmarking results is not likely material at present, but noted that the level of impact is likely to increase over time***

CitiPower, Powercor & United Energy noted in their submission that the impact of export services on DNSP productivity scores is likely small at present but may increase with time. Endeavour Energy did not comment on the current materiality of the impact but noted that there is an increasing likelihood that our benchmarking results become distorted as export hosting increases if they are not taken into account. SA Power Networks submitted that export services are already impacting some networks' benchmarking results to a degree, and while it did not state this impact was material at present, it noted the impact will increase in the future as renewables penetration increases and the intrinsic capacity of the network to absorb export services is exhausted.

AGL considered that the materiality of current impacts of export services on benchmarking productivity results have not been well established.

***Submissions mostly agreed with initiating a full review of the benchmarking by 2027, or earlier if sufficient data becomes available***

Evoenergy, Endeavour Energy and Essential Energy agreed with initiating a full review of benchmarking by 2027. CitiPower, Powercor & United Energy and Energy Networks Australia also expressed agreement with our draft position but noted that they would support an earlier review if sufficient data became available sooner. TasNetworks agreed with initiating a full review in the future, but only once sufficient data has been collected on which to base the review.

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<sup>35</sup> See [submissions to our draft report](#) from Evoenergy, CitiPower, Powercor & United Energy, SA Power Networks, AusNet Services, TasNetworks and Endeavour Energy.

AusNet Services agreed with the need for a full review of benchmarking models with respect to export services, but also noted that it believed that an immediate, wider review of all aspects of our economic benchmarking needs to be undertaken.

Alternatively, SA Power Networks stated that there was a more urgent need to undertake a full review of export service impacts on the benchmarking to ensure that distributors with high export services penetration do not continue to be disadvantaged. To this end, it proposed an immediate review of benchmarking models with respect to export services with a view to completion in time for the 2024 benchmarking report.

***Most submissions highlighted the importance of determining the materiality of any impacts of export services on the benchmarking results as part of the future review***

CitiPower, Powercor & United Energy, Evoenergy, AusNet Services and AGL agreed with our position that materiality should be established before taking further steps to modify benchmarking models and broadly supported data collection to inform these considerations.

SA Power Networks noted that the need for a review should not wait until export services materially impacted all networks, stating that it is precisely now when distributors are at differing stages of the distributed energy transition that there is a need to consider how benchmarking accounts for provision of export services.

***Submissions disagreed over the merits of adjusting the definitions of existing Energy Throughput and Maximum Demand outputs to better account for energy self-consumed and / or underlying end user demand as part of the future review***

SA Power Networks and AusNet Services submitted that the existing energy throughput (ETP) and ratcheted maximum demand (RMD) outputs are impacted by export services and that these outputs should be modified to account for self-consumption. Endeavour Energy also expressed a view in support of including self-consumption in the existing metrics, stating that it was a service enabled by the distribution network and that there was no conceptual issue with adjusting ETP or RMD for self-consumed energy.

Alternatively, CitiPower, Powercor & United Energy and the Consumer Challenge Panel submitted that ETP and RMD should not be adjusted for customer self-consumption due to likely low materiality and challenges in identifying self-consumption. The Consumer Challenge Panel expressed concern regarding the extent to which self-consumption represents a service provided by the network.

***Submissions supported the idea of adding a new 'export services' output to the benchmarking, but had differing views over how the output could be measured***

AusNet Services expressed support for a new export service output and that this output could be introduced in addition to a change in the ETP and RMD definitions, provided there is no double counting. CitiPower, Powercor & United Energy agreed that a new export services output is likely to have an increasing impact on benchmarking results as solar exports increase and implicitly supported the addition of such an output.

The Consumer Challenge Panel supported the inclusion of an export service output variable provided that it is a negative output weighted by the CECV (Option 2 in the draft report).

SA Power Networks opposed both options for developing a new output presented in our draft report but agreed with the potential inclusion of an export services output based on an alternative potential set of metrics.

***Submission agreed that export services expenditures are unlikely to impact the existing reliability output***

CitiPower, Powercor & United Energy, SA Power Networks and AusNet Services all agreed that export service-related expenditures are unlikely to have a material impact on the existing reliability output.

***Comments on data availability***

DNSP's broadly acknowledged the need for additional data collection to understand the impacts of export services and export hosting services on benchmarking results with CitiPower, Powercor & United Energy, AusNet Services submissions providing more detailed information on the availability of certain data types (see Attachment A).

Endeavour Energy expressed an interest in understanding whether obtaining data dating back to 2006 will be necessary or whether a future AER review will re-visit the period over which benchmarking models are run.

***Submissions presented differing views on the use of Canadian and New Zealand DNSPs in economic benchmarking models***

CitiPower, Powercor & United Energy expressed the view that we should continue to use the econometric models as the primary measures of efficiency regardless of the impact of export services on benchmarking and that the need to reconsider the use of Canadian and New Zealand data is contingent on the finding that export services are materially impacting benchmarking models.

SA Power Networks considered it important to assess jurisdictions from the perspective of their export services penetration, climate and similarity of regulatory regimes. SA Power Networks noted that another jurisdiction like California could be considered.

Endeavour Energy accepted our benchmarking approach of Australian DNSP's but remained of the view that international data used in benchmarking models is not comparable and that the addition of export services only exacerbates the issue. Endeavour Energy proposed reviewing available data from other countries such as the United States or not relying on international data.

## **5.3 Final position**

This section outlines our final position in terms of:

- the development of an OEF as an interim measure to account for export service costs in the benchmarking framework.
- our assessment at this time of:
  - how export services are, and are not currently accounted for in the PIN models

- possible options for addressing potential gaps in how the PIN models account for exports services and the merits and materiality of these options
- suggested prioritisation of areas for further consideration in the future review.
- the need to undertake a future review in 2027, or earlier if possible, and the approach we will apply to undertake this review of how exports services are impacting the PIN models.
- the approach we will take in the interim to monitor export service impacts and collect data to inform the future review.

### **5.3.1 An export services OEF cannot be developed at this time**

Our final position is to not proceed with the development of an export services OEF at this time as there is insufficient reliable data available to do so.

As noted in section 5.2, submissions generally supported our draft report position to not proceed with the development of an OEF, with several DNSPs and the Consumer Challenge Panel highlighting that the expenditure data needed to calculate one is not currently available and not sufficiently comparable or reliable to be useful.<sup>36</sup> Given the joint nature of costs incurred for export and distribution services, the export services-related costs may not be separable from other costs and are not separately collected by the DNSPs. We agree with these views.

We note that our analysis of the incomplete and estimated 2021-22 export services expenditure data provided by distribution businesses in information responses indicates that it is unlikely that an OEF would have been sufficiently material at this time to meet our criteria for use in our base opex assessment process.<sup>37</sup>

We are proposing in section 5.3.3, to begin collecting export services opex and capex data as set out in Box 1. As the time series of export services expenditure data matures, we leave open the option of developing an export services OEF in the future, particularly if the 2027 review of the PIN models concludes that updates to the PIN model specifications to incorporate export services are not feasible.

### **5.3.2 Final report views on how export services are accounted for on the PIN models and possible options to address material gaps**

We have considered stakeholders' feedback on the issues raised in the stakeholder forum and draft report submissions and have updated our assessment of how export services interact with the PIN models and our proposed approach for a future review of the benchmarking models. Table 3 summarises our final report views on:

- the ways in which export services are accounted for and not accounted for in the PIN models

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<sup>36</sup> See [submissions to our draft report](#) from Evoenergy, CitiPower, Powercor & United Energy, SA Power Networks, AusNet Services, TasNetworks, Endeavour Energy and the Consumer Challenge Panel.

<sup>37</sup> The OEF materiality criteria typically requires typically that an OEF is material enough to applied in the base opex assessment process where a DNSP's OEF-related period average opex is greater than 0.5 per cent of total opex. See criteria for identifying OEFs in AER, [Annual benchmarking report: Electricity DNSPs](#), November 2021.



- options for addressing potential gaps in the PIN model specifications with initial views on the merits and the materiality of the impacts these gaps may have on the productivity results
- suggested priority areas for the future review of how the benchmarking models can be updated for export services (which as set out in section 5.3.3 we propose to initiate by 2027, or earlier if sufficient data becomes available).

Our views in this final report are provided in Table 3 and are refinements to those outlined in the draft report. We note that as there is limited data or information available on export services at present, the views in column two '*Possible options for change...*' are a next step in the process of determining the impact of export services on benchmarking. In particular, our views at this time on options, merits and materiality are informed by the limited data we have (noting the concerns expressed in submissions in relation to this), evidence submitted as part of this process, and our current understanding of, and judgement around, possible export service impacts.

In terms of our assessment of the likely materiality of export service impacts on the benchmarking results in Table 3, these are based on bespoke analysis using currently available information, including export service-related cost data, technical engineering views of the likely impacts of increasing exports on network operations and the evidence provided in submissions. We discuss the possible approach to determining materiality in the future review in section 5.3.3.

Also, the '*Suggested priority areas for the future review*' in column three of Table 3 flag the possible options for updating the PIN models that we currently believe have the most merit based on available data and our analysis at this time. The merits, materiality and feasibility of implementing any of these options will need to be reviewed further as part of the future review, with the final scope of the review to be informed by the analysis summarised in this final report and decided in future consultation with stakeholders.

**Table 3: Summary of our final report views on export service impacts on the PIN models, options for adjusting model specifications and suggested prioritisation of areas for the future review**

What export services are / are not accounted for in the existing PIN models?	Possible options for change with preliminary assessments of the merits and materiality of the change	Suggested prioritisation of areas for the future review
<p><b>PIN model specifications:</b> The PIN models account for all exports services inputs (i.e., export services opex and capital inputs) but may not appropriately account for all exports services outputs. As a result, DNSPs with materially higher levels of export service inputs can be disadvantaged by relatively lower productivity results compared to DNSPs with lower levels of export service inputs.</p>	<p><b>Possible option:</b> Remove export service opex and capital stock inputs from the PIN models.</p> <p><b>Merits:</b> We do not currently see merit in the approach as identifying and removing a specific sub-set of inputs from the models cannot account for the interrelated impacts export service expenditures and capital stock are likely to have on the outputs that would remain in the models.<sup>38</sup> The productivity scores generated from this type of change would likely be less holistic and less accurate. In addition, it is not clear how feasible removing inputs in this way would be given export service opex and capital investments may have more than one driver making it difficult to disaggregate or allocate opex and capital stock.</p> <p><b>Materiality:</b> The impact on the PIN model results of removing opex costs input is likely to be relatively small, as currently available export service opex cost data indicates it is a small proportion of total opex costs for those DNSPs that have provided data. It is also not clear if / how export services has impacted capital stock inputs (see below).</p>	<p>We consider this a lower priority area for the future review as we do not see merit in removing export service opex and capital stock inputs from the PIN models.</p>
<p><b>Customer Numbers:</b> This output currently measures the average number of customers connected to the distribution network in a year. It is defined as the number of active connections on a network, broadly represented by an energised national metering identifier. This output provides a measure of services such as connection, complaint handling, and resolution and benefits provided to end users</p>	<p><b>Possible option:</b> We do not consider that changes to the existing customer number output are required at present as the output accounts for both export and non-export customers in its current form.</p>	<p>We consider this a lower priority area for the future review as the existing definition of customer numbers accounts for export service customers</p>

<sup>38</sup> CitiPower, Powercor & United Energy, [AusNet Services](#) and [Endeavour Energy](#) supported our draft position to not further consider the option of excluding export service inputs from the benchmarking models.

What export services are / are not accounted for in the existing PIN models?	Possible options for change with preliminary assessments of the merits and materiality of the change	Suggested prioritisation of areas for the future review
<p>of the distribution networks regardless of how much electricity they consume.</p> <p><b>Export service:</b> The customer number output is a measure on network connectivity. DNSPs connect export service customers as well as non-exporting customers and maintain connections as part of an ongoing service to customers meaning export service customers are captured as a part of customer numbers.</p>		
<p><b>Energy Throughput (ETP):</b> The ETP or energy delivered output measures the annual total amount of energy (in GWh) transported to customers over the distribution network as measured at the customer meter.</p> <p><b>Export service:</b> ETP is a network utilisation output that measures the level of network use over a year. ETP includes energy sourced from the transmission network as well as energy exported by household solar PV generators directly into the distribution network. As a result, the annual quantity of energy exported is already accounted for in the PIN models through this output. Energy generated by consumer energy resources and self-consumed will reduce ETP.</p>	<p><b>Possible option:</b> Some DNSPs have suggested that self-consumed energy (energy generated and consumed by the same customer, without needing to pass through the DNSP's network) could be accounted for in the ETP measure, while other submissions did not support this approach.<sup>39</sup> This would in-principle change the definition of the existing output to one that proxies the level of underlying energy consumption rather than the amount of energy transported over a DNSPs network.</p> <p><b>Merits:</b> We do not currently see merit in accounting for self-consumed energy in the ETP output. As noted in section 5.3.3 below, the criteria historically used to guide the specification of outputs in the benchmarking framework include that the output:</p> <ul style="list-style-type: none"> <li>• aligns with the NEL and NER objectives</li> <li>• reflects services provided to customers</li> <li>• is significant in its impact on customers or DNSP costs.<sup>40</sup></li> </ul>	<p>We consider this a medium priority area for the future review. While the existing definition of ETP accounts for energy exported and we do not see merit in accounting for self-consumption in ETP, we acknowledge there are a variety of views in relation to self-consumption, as outlined above and summarised in Appendix A, and that this should be further considered as a part of the future review.</p>

<sup>39</sup> SA Power Networks, AusNet Services and Endeavour Energy supported accounting for self-consumption while CitiPower, Powercor & United Energy and the Consumer Challenge Panel did not.

<sup>40</sup> AER, Issues Paper, [Better Regulation: Expenditure forecast assessment guidelines for electricity distribution and transmission](#), December 2012.

What export services are / are not accounted for in the existing PIN models?	Possible options for change with preliminary assessments of the merits and materiality of the change	Suggested prioritisation of areas for the future review
	<p>Under this framework, we do not consider that self-consumption represents a service provided by the DNSP to the customer since this electricity is not transported over the distribution network and the customer pays for installation and maintenance of the CER generation. In addition, our current view, based on available evidence and our own technical engineering views, also indicates that there are likely no material incremental export service-related costs incurred by networks in facilitating self-consumption.</p> <p>We are aware that many households with solar PV currently have inverters configured to require an active connection to the network to allow self-consumption and that households may lose the ability to self-consume if power supply is lost. While this could be seen as a type of service provided by the DNSP to consumers, we do not see merit in this type of facilitation of self-consumption being reflected in the ETP output. Available evidence and our technical engineering views indicate that DNSPs do not face material incremental costs in maintaining connections to customers who self-consume compared to those who are supplied entirely by the grid so this ongoing feature of connection would not represent a significant cost to DNSPs, and as noted above, the service of connecting (export and non-export) customers and maintaining active connections is already accounted for in the PIN models via the existing customer number output.</p>	
<p><b>Ratcheted Maximum Demand (RMD):</b> The RMD output is currently measured by the non-coincident summated raw system annual maximum demand (in MW). It is measured by the summation of the annual maximum quantity of electricity to flow through each transmission connection point across a distribution network in a 30-minute period. For each connection point, the 'peak' delivery period (half-hour) may be different, and in this sense, they are non-coincident. The ratcheted nature of this output means that RMD measures the highest level of energy demand a distribution network has had to meet to that point in the</p>	<p><b>Possible options:</b> The existing RMD approach could be modified to better account for the extent to which export flows contribute to the annual maximum flows a network must accommodate.</p> <p>One way to do this would involve combining, in some way, exports carried by a DNSP in the same half hour periods during which the existing RMD flows at connection points are recorded.</p>	<p>We consider RMD to be a higher priority area for the future as we see merit in better accounting for export flows in how maximum demand is measured. The review could consider if / how RMD measures could be adjusted to better account for energy exports.</p> <p>Actual half hourly export data by DNSP over a year is likely only partially available (i.e., in jurisdictions with smart meters) and</p>

What export services are / are not accounted for in the existing PIN models?	Possible options for change with preliminary assessments of the merits and materiality of the change	Suggested prioritisation of areas for the future review
<p>time (from 2006 to present), and by doing so, reflecting the fact that DNSPs' networks have historically been built to service that level of demand.</p> <p><b>Export Service:</b> RMD is a capacity output that measures historic maximum electricity flows or peak demand that a DNSPs' entire network (i.e., across connection points) has had to accommodate to date. The focus on measuring maximum flows at connection points was adopted at a time when electricity flowed predominantly from transmission networks into distribution networks to serve connected customers. As exports increase, they displace electricity flows from connection points to lower voltage areas of the network so reducing MD measures reducing the increase in RMD. As a results, the current measures of RMD, may not fully account for the level of maximum demand actually met by the entire distribution network. Energy generated by consumer energy resources and self-consumed at the same time as RMD is measured will also reduce the amount of energy being met by the distribution network.</p>	<p>Some DNSPs have also suggested accounting for energy self-consumed in the existing RMD measure.<sup>41</sup> This type of change would create a measure of maximum demand that accounts for the level of underlying maximum demand as opposed to the level of maximum demand as recorded at transmission connection points.</p> <p><b>Merits:</b> We consider that there may be merit in accounting for exported energy in the way RMD is measured to more arcuately reflect the annual maximum flows a network must accommodate across the entire network. In the absence of this change, the existing RMD output may over time underestimate annual maximum demand (i.e., recording it as the annual maximum flow at transmission connection points rather than annual maximum flows across the network which would include transmission connection point and export flows).</p> <p>We do not consider that there is merit in adding self-consumed energy to RMD for similar reasons as presented in the ETP discussion above. Under the criteria historically used by the AER to guide the specification of outputs in the benchmarking framework, we do not consider that self-consumption of energy at times of maximum demand represents a service provided by the DNSP to the customer since this electricity is not transported over the distribution network and the customer pays for installation and maintenance of the consumer energy resource generation. In addition, our current view, based on available evidence and our own technical engineering views, indicates that there are likely no material incremental export service-related costs incurred by networks in facilitating self-consumption.</p> <p><b>Materiality:</b> The impact on the PIN model results of better accounting for exports in the RMD output is likely to be immaterial at present. RMD as currently measured uses the highest maximum demand a DNSP has had to meet historically. A revised RMD measure (with energy exported</p>	<p>would be collected by DNSPs at significant cost. Where actual data is not available estimates would need to be used. Data availability and costs to collect will change as smart meter roll-outs progress.</p> <p>To enable consideration of an approach to amend RMD in the future review we propose to monitor data availability through the annual performance reporting process and begin collection when feasible and cost effective to do so. Section 5.3.3 below summarises our approach to the future review including our approach to collecting benchmarking-related data ahead of the review.</p> <p>As noted in the ETP discussion above, while we do not see merit in accounting for self-consumption in RMD, we acknowledge there are a variety of views in relation this issue and that this should be further considered as a part of the future review.</p>

<sup>41</sup> AusNet Services and Endeavour Energy supported accounting for self-consumption while CitiPower, Powercor & United Energy and the Consumer Challenge Panel did not.

What export services are / are not accounted for in the existing PIN models?	Possible options for change with preliminary assessments of the merits and materiality of the change	Suggested prioritisation of areas for the future review
	<p>included) would have to exceed the historical maximum RMD to have any impact on the benchmarking results. However, if maximum network flows grow above historically recorded levels and exports make up a significant proportion of these flows there will be an increasing disparity between recorded maximum demand as it is currently measured and an export-adjusted maximum demand measure that could result in a material underreporting of RMD output for some DNSPs and an underestimation of their PIN model results.</p>	
<p><b>Reliability or customer minutes off-supply (CMOS):</b> This output reflects the reliability of the DNSPs' electricity supply by measuring the average number of minutes off-supply per customer, per annum, and aggregating across all customers in the network.</p> <p><b>Export service:</b> In some cases, incremental network expenditures incurred primarily to provide export hosting services may also, to some degree, improve reliability (i.e., by reducing CMOS). If so, this contribution to reliability (CMOS) would already be accounted for at some level in the benchmarking results.</p>	<p><b>Possible option:</b> We do not consider that any change to the existing reliability output is required. However, awareness of a relationship between export services expenditures and the reliability (CMOS) output is necessary to ensure we avoid double counting in case we amend other outputs in the PIN models.</p> <p><b>Merits:</b> Our current view, supported by submissions, is that there is no material relationship between exports services expenditures and the existing reliability (CMOS) output.<sup>42</sup></p> <p>Expenditures related to voltage management such as transformer tapping should not impact reliability (CMOS), while other types of export service expenditures directed at addressing capacity constraints such as splitting circuits or line replacement may. A review of currently available export services expenditure data indicates that a significant proportion of current expenditures are related to voltage management rather than capacity constraints and total overall export services expenditures are relatively low,</p>	<p>We consider this a lower priority area for the future review as we currently see no material relationship between export services expenditures and the existing reliability (CMOS) output.</p>
<p><b>Export hosting services – a new 'reliability to export' output:</b> There is currently no output in the benchmarking</p>	<p><b>Possible option:</b> Add a new output to the PIN models to account for the level of export hosting services, or 'reliability to export' provided by a network.</p>	<p>We consider the possible addition of this type of output to be a higher priority area for the future review as we see merit in adding this type of output. The review</p>

<sup>42</sup> See [submissions to our draft report](#) from AusNet Services, SA Power Networks and CitiPower, Powercor & United Energy.

What export services are / are not accounted for in the existing PIN models?	Possible options for change with preliminary assessments of the merits and materiality of the change	Suggested prioritisation of areas for the future review
<p>models that explicitly measures the level of export hosting service provided by DNSPs or the 'reliability to export'.</p> <p><b>Export service:</b> DNSPs facilitate the flow of exports onto their networks, and where constraints are hit, can incur expenditures to increase network hosting capacity. In this sense, DNSP provide customers with a level of reliable access to export into a network.</p>	<p>One option to do this involves proxying the level of 'reliability to export' using a measure of the level of hosting capacity provided by a DNSP and weighting this new output in the PIN models using a standalone output weight calculated using export services cost data (rather than the currently used econometric method<sup>43</sup>).<sup>44</sup> Options for such a metric could include export services customer numbers as a proportion of total customer numbers, or annual quantity of exports as a proportion of ETP.<sup>45</sup></p> <p>A second, more direct way of measuring 'reliability to export' would be to adopt an export curtailment measure as a negative output and use the CECV to weight this output. Given the provision of export hosting services has value in alleviating constraints to customers exporting energy, a curtailment-based measure would be a more direct measure than the proxy approach. As noted in section 4, while 'involuntary export curtailment due to network constraints' represents an ideal metric, it is not currently measurable or cost-effective to measure.<sup>46</sup></p> <p><b>Merits:</b> We consider that the provision of hosting services represents a service provided by DNSPs to their customer under the benchmarking framework<sup>47</sup> and that there is in principle merit in adding a new 'reliability to export' output to the PIN models to account for this service.</p>	<p>could consider, amongst other things, if / how a hosting service or 'reliability to export' output could be constructed.</p> <p>To enable consideration of this in the future review, we propose to begin collecting some metrics through the annual performance reporting data requests that will likely be useful to construct a proxy output. We will also monitor availability of data that will likely be useful to construct a curtailment measure through the annual performance and annual benchmarking reporting processes.</p> <p>Section 5.3.3 below summarises our approach to the future review including our approach to collecting and monitoring benchmarking-related data ahead of the review.</p>

<sup>43</sup> Consideration could be given to the feasibility of moving from using export services cost data to calculate output weights for the new export hosting services output developed to an econometric based approach.

<sup>44</sup> Export services cost data is the additional (incremental) capital and operating expenditure that would not otherwise be needed, but for the fact that part of energy throughput is 'reverse flow' electricity from exporting customers. Ensuring that these are costs that would not otherwise be incurred but for the export services is important to avoid double counting export hosting services with other outputs (such as reliability).

<sup>45</sup> AusNet Services, CitiPower, Powercor & United Energy and the Consumer Challenge Panel supported a new export hosting services output while SA Power Networks agreed with its inclusion in principle but proposed an alternative set of metrics including total utilised generation, a ratcheted minimum demand measure and the quantity of energy exported.

<sup>46</sup> The Consumer Challenge Panel supported the inclusion of a curtailment-based output while SA Power Networks opposed the approach.

<sup>47</sup> AER, Issues paper, [Better Regulation: Expenditure forecast assessment guidelines for electricity distribution and transmission](#), December 2012.

What export services are / are not accounted for in the existing PIN models?	Possible options for change with preliminary assessments of the merits and materiality of the change	Suggested prioritisation of areas for the future review
	<p>How this would be done is an issue that would require further consideration in the future review.</p> <p><b>Materiality:</b> Our current view is that it is unlikely that adding a new hosting service output to the PIN models would have a large impact on productivity results at this time as the magnitudes of the output weights that would be applied under the first and second options outlined above are likely to be small.</p> <ul style="list-style-type: none"> <li>• An output weight based on export services cost data is likely to be small given the relatively small proportion of total costs exports service expenditures account for (based on currently available expenditure data and a technical engineering review of evidence submitted to the process)<sup>48</sup></li> <li>• An output weight based on the CECV is also likely to be small and decreasing falling to zero in 2026-27.<sup>49</sup></li> </ul>	
<p><b>Transformer &amp; Other capital inputs:</b> The export service-related capex DNSPs incur to provide hosting capacity is fully accounted for within the existing five physical capital input measures used in the benchmarking, with the 'Transformer &amp; Other' capital input most likely to capture DNSP investment in export service-related capital stock.<sup>50</sup></p>	<p><b>Possible option:</b> If a case can be made that the provision of export services by DNSPs will involve 'Other' capital inputs becoming materially more important relative to 'Transformer' inputs, or the quantity of 'Other capital' inputs becoming materially less correlated with 'Transformer inputs, then it may be appropriate to disaggregate the existing 'Transformers and other capital' input into a 'Transformers capital input and an 'Other capital' input.</p>	<p><b>2027 assessment:</b> We consider this a lower priority area for the future review as preliminary analysis and available evidence does not indicate an adjustment to the existing definition of the 'Transformer &amp; Other' capital inputs is needed given the magnitude of current export services</p>

<sup>48</sup> As the quantity of exports carried by the local network rises there may be relatively small incremental costs incurred by DNSPs to manage power quality issues (i.e over voltage). These incremental costs are likely to become relatively larger and more material as local areas of the network reach congestion and thermal constraints and the intrinsic capacity of the network to carry exports is exhausted.

<sup>49</sup> Oakley Greenwood, [CECV Methodology Final Report 14 June 2022](#), prepared for the Australian Energy Regulator.

<sup>50</sup> 'Transformers' includes zone substations, distribution substations and their associated transformers. 'Other' assets include all other assets, among them digital communications and system IT assets. The quantity of 'Transformer & Other' capital input is measured by distribution transformer MVA plus the sum of single-stage and the second stage of two-stage zone substation level transformer MVA. That is, a measure of the quantity of Transformer inputs.



What export services are / are not accounted for in the existing PIN models?	Possible options for change with preliminary assessments of the merits and materiality of the change	Suggested prioritisation of areas for the future review
<p>We have considered the extent to which the existing definition of the 'Transformer &amp; Other' capital input is likely to adequately capture changes in export services-related capex and the resultant capital stock as demand for export services increases.</p> <p>At present, it is implicitly assumed that movements in the quantity of Transformer inputs are a good proxy for movements in the quantity of Other capital inputs. To the extent that the provision of export services requires a shift in the mix of capital towards using a relatively greater amount of Other capital, then movements in the quantity of Transformer inputs may no longer serve as a good proxy for movements in Other capital inputs. In that case, there may be value in disaggregating these two inputs.</p>	<p><b>Merits:</b> Our preliminary analysis and available expenditure data does not support the view that changes in export services capital inputs are likely to materially change the existing relationship between Transformer inputs and 'Other' capital inputs over time. We did not receive submissions on this issue.</p>	<p>investment its likely small impact on the 'Other' capital input.</p>

### 5.3.3 Guidance on our approach to the future review of benchmarking

Drawing on submissions, stakeholder engagement undertaken as part of this review and the analysis summarised in Table 3, we consider there is a need to undertake a future review of how the benchmarking models can be updated for export services and have set out below our final guidance on how we will review, and where appropriate, update the benchmarking framework for this purpose.

We acknowledge SA Power Networks' view that now, when DNSPs are at differing stages of the distributed energy transition, there is a need to consider how benchmarking accounts for provision of export services. However, we do not consider it is feasible to initiate a full review of the impact of export services at present due to limited availability of data. We also do not have sufficient evidence that the current level of impact of export services on the benchmarking results is materially disadvantaging DNSPs in practice.

We will initiate a review of how the benchmarking models can be updated for export services by 2027, or earlier if sufficient data becomes available. We note that data availability is crucial and the absence of relevant data may limit our ability to undertake a full review. The review will:

- determine the ways in which export services are, and are not accounted for in the PIN models
- identify the best options for addressing any gaps in the PIN model specifications using the available data
- determine the merits, materiality, and feasibility of these options for updating the PIN models
- make a final determination on what changes are required to include export services and how these changes will be implemented.

Our criteria historically used to guide and assess the merits of the specification of outputs in the benchmarking framework include that the outputs align with the NEL and NER objectives, reflect services provided by the DNSP to its customers, and are significant in its impact on customers or DNSP costs.<sup>51</sup> We will continue to use these criteria to guide our assessment in the future review.

The materiality of the impact of export services on the PIN models can be assessed in various ways. As noted in section 5.3.2, our assessment of materiality to date has been based on bespoke analysis. Due to gaps in the current availability of export services data and information, and the uncertainty around which aspects of the PIN model specifications will require adjustment, this review does not propose a more standardised approach for testing materiality at this time. We will consult with stakeholders as part of the future review about how benchmarking can be updated for export services, when better data and information is available, on how materiality can best be measured and what types of thresholds should be applied. However, we note that based on our thinking to date, in the future review we would likely consider materiality in terms of:

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<sup>51</sup> AER, Issues paper, [Better Regulation: Expenditure forecast assessment guidelines for electricity distribution and transmission](#), December 2012.

- the size of the impact(s) on one or more inputs and / or outputs in the PIN models, and the size of the impact(s) on the PIN model results
- the extent to which impacts on the PIN model results affect the reputational and / or financial incentives for a distribution business
- the extent to which impacts on the PIN model results affect the outcomes of our regulatory decision making.

Consideration of the feasibility of an option to adjust the PIN models for export services will include but not be limited to the availability of actual data to implement the option, the robustness of any estimated data required, and the cost to DNSPs of collecting, estimating and reporting data.

The future review will draw on information provided by stakeholders as part of this process, and will be informed by the findings outlined in Table 3, including that there may be merit in:

- adjusting the existing RMD definition used in the PIN models to better account for export flows on a network that occur when maximum demand is measured (rather than just measuring maximum demand flows at terminal connection points)
- adding a new export reliability output to the PIN models to measure how available a network is to accept exports from its customers.<sup>52</sup>

As noted in Table 3, we do not see merit at present in changing the way the existing PIN model output specifications account for energy self-consumed. However, we acknowledge there are a variety of views in relation to this issue, as outlined above and summarised in Appendix A, and that it should be further considered as a part of the future review.

The future review of how the benchmarking models can be updated for export services will also assess the conceptual merits and empirical feasibility of updating the econometrics models for export service impacts. Subject to the future review's findings, we will consult with stakeholders on how best to implement any required updates to the PIN models and how best to progress work to update on the econometric models for exports services, if feasible.

In the interim period ahead of the future review, we will begin collecting benchmarking-related data through this and future year's annual performance reporting process to inform the future review. The benchmarking-related data we will begin to collect and its potential uses are listed in Box 1. In this interim period, we will also:

- use the annual performance and annual benchmarking reporting processes to monitor and consult on if / when more benchmarking-related data becomes available and is feasible and cost-effective to begin collecting, what if any interim export service metrics could be developed using this data, and whether the timing of the 2027 review can be brought forward. The benchmarking-related data we will monitor availability of and its potential uses are listed in Box 1 below.
- update the annual benchmarking report for distribution businesses to note that we are working toward a full review of if / how the benchmarking models can be updated for

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<sup>52</sup> As noted earlier in this section, any change to the PIN model specifications will require consideration of the merits, materiality and feasibility of any option.

export services. Further, to acknowledge that, in the interim, the benchmarking results do not fully account for export services and cross reference relevant data from the annual performance reports that is indicative of DNSPs' likely relative export services burden. Further, that while a current lack of data prevents us from establishing the size of export service impacts on the benchmarking results with greater certainty, our view based on available information and evidence is that the impacts are not likely to be material at present.

We see the above approach as the best, practical way forward that appropriately balances:

- current data availability and the cost to DNSPs of collecting, estimating and reporting new data
- the likelihood that we will need specific data in the future
- the level of materiality of the impact of export services on the benchmarking results
- the practical implications of these impacts for our use of the benchmarking results in the near term
- the likelihood that export services will have a material enough impact on the benchmarking results in the near future to warrant updating the benchmarking model specifications.

#### **Box 1: Interim data collection to inform the future review**

Benchmarking-related data we will begin to collect through the annual performance reporting data requests to be issued this year:

- annual export services customer numbers by DNSP (potential use is developing a proxy for a new export services hosting output)
- annual total exported energy by DNSP (potential use is developing a proxy for a new export services hosting output)
- annual opex and capex for the provision of export services data by DNSP (potential use in developing a cost-based output weight for a new Export Services hosting output, or a future export services OEF).

Section 4 of this report provides further information on the above data categories.

Benchmarking-related data we will monitor availability of through the annual performance and annual benchmarking reporting processes:

- total annual export volumes - by 30-minute intervals by DNSP (potential use to adjust the existing RMD output to account for exports carried on the network when maximum demand is recorded).
- curtailment data that will likely be useful in constructing a metric to measure 'the level of export curtailment due to network constraint' (as noted in Table 3 a 'curtailment due to network constraint' metric is our preferred approach to develop a new PIN model output to account for the level of export services provided by a network or the 'reliability to export', however this metric is not currently measurable or cost-effective to measure (see section 4)).

# Appendix A: Stakeholder submissions

## Submissions on the incentive review for export services

ID	Stakeholder	Comment	Response
<b>1. Incentive arrangements – reputational incentives</b>			
1.1	Energy Networks Australia	Supported the use of reputational incentives through performance reporting to help increase transparency for consumers. However, if the reputational incentives seek to facilitate comparability between the performance of DNSPs, the establishment of clear definitions and common estimation tools is required to improve data accuracy and comparability, along with the provision of supporting qualitative information to provide contextual information on networks' individual circumstances.	<p>We recognise that clarity of definitions is important to facilitate comparability of DNSP performance. We have incorporated stakeholder input to refine the definitions and guidance provided in the 2020-21 and 2021-22 information request. We also intend to consult further with DNSPs as we finalise the information request for 2022-23 data, including the definitions and guidance provided.</p> <p>We also agree that qualitative information may provide additional context and be useful for performance reporting.</p>
1.2	Red Energy	<p>Did not support the development of reputational incentive schemes. This is because of the costs associated with implementing these schemes and the lack of a financial reward for good performance. Equally important, quantifying the impact on a DNSP's reputation under the scheme would be challenging as would determining if its reputation was impacted as a result of providing export services or other network services.</p> <p>Overall, DNSPs pay more attention to incentive schemes like the CESS and the EBSS that have significant regulated revenues at risk and the potential to deliver strong financial rewards. As such, while regulators consider that reputational incentive schemes can be effective, our experience with these schemes suggest that this is not the case.</p>	<p>We disagree with this position.</p> <p>We are now required to report on DNSP export service performance. Although this does not necessarily constitute a reputational incentive scheme, it will subject DNSPs to reputational incentives as their performance will be compared with other DNSPs and provide useful information to customers about export service performance.</p>
<b>2. Incentive arrangements – bespoke incentive schemes</b>			
2.1	CitiPower, Powercor & United Energy	Submitted that the revenue at risk for a bespoke export incentive SSIS should be 0.5%, in line with other incentive schemes proposed by networks in the past. This 0.5% should not displace the 0.5% applicable under the CSIS.	Our draft position is to set a default maximum revenue at risk of 0.5%, provided that DNSPs can demonstrate

ID	Stakeholder	Comment	Response
			that their customers support this level of revenue to be placed at risk. This is consistent with the existing CSIS. We recognise that this issue will be subject to further consultation.
2.2	AGL Energy	Recommended the AER in their next round of consultation on developing the small-scale incentive scheme provide networks with clear guidelines and overarching principles on how the bespoke schemes should be designed by DNSPs in their application to ensure fair access for all consumers and reduce resourcing burdens on the AER.	We agree that the new SSIS should be principles-based. We are not significantly concerned about the potential resource burden on the AER, because the onus will be on DNSPs to consider data requirements and associated administration costs when proposing bespoke incentives. We recognise that these matters will be subject to further consultation.
2.3	AGL Energy	Urged the AER in its consultation on the development of a small-scale incentive scheme to ensure that DNSPs are required to demonstrate their utilisation of low-cost steps to improve their network capacity before investing in pure network expansion. In practice, this means that a DNSP should also be required to consider all options available, including both network and non-network solutions when investing export services.	We agree that DNSPs should demonstrate they have taken low-cost steps to improve network capacity (if necessary). However, this should occur absent any small-scale incentive scheme. In our DER integration expenditure guidance note we highlighted that DNSPs should demonstrate that they have considered all credible investment options, including non-network investment options.
2.4	SA Power Networks	The use of the SSIS should only be a transitory mechanism to implement bespoke incentive schemes for exports. As penetration of consumer energy resources (CER) increases, the costs associated with, and value customers derive from the service, will reach a point where the rewards or penalties permitted under the SSIS may be inadequate to drive material investment and changes in service provision – warranting re-consideration of a more fulsome expansion of the current STPIS.	We agree with this comment – the SSIS (ESIS) will be a transitional measure until it is possible to introduce a standardised scheme for all DNSPs via the STPIS.
2.5	SA Power Networks	For incentives to drive outcomes that customers value, the revenue at risk should be commensurate with the customer value for the aspect of service performance measured. Failing to allocate the appropriate revenue at risk creates the following risks of:	We agree with this aspect of the submission and recognise that this issue is subject to further consultation.

ID	Stakeholder	Comment	Response
		<ul style="list-style-type: none"> <li>• too little revenue at risk will incentivise a distributor to seek cost reductions at the expense of service performance; or</li> <li>• too much revenue at risk will incentivise a network to increase service performance beyond what customers are willing to pay for the service.</li> </ul> <p>The appropriate amount of ARR at risk for export services will likely need to vary across distributors on the basis of the customer demand for the measured export service performance metric relative to the distributor's ARR.</p>	
2.6	Endeavour Energy	<p>Submitted the NER caps the total revenue at risk of all SSISs that apply to a DNSP in a regulatory period at <math>\pm 1\%</math> of its ARR. This means the power of an export service SSIS would be impacted by a CSIS which may be operating in parallel. Given the CSIS incentive is capped at <math>\pm 0.5\%</math> of ARR, the incentive of any export service SSIS would also be notionally capped at <math>\pm 0.5\%</math>.</p> <p>This level of revenue at risk may prove insufficient for DNSPs with higher levels of CER penetration now or in the near future. It is likely that a higher revenue at risk will be necessary as CER ownership becomes ubiquitous or representative of the average customer.</p> <p>Whilst this can be considered further as part of a future review of incentive arrangements, there could be value in the interim in allowing DNSPs to vary the incentives of both the CSIS and export service SSIS to align with customer feedback so that the total <math>\pm 1\%</math> ARR limit is unconstrained by a scheme specific limit. This would require removing the <math>\pm 0.5\%</math> ARR cap on the CSIS.</p>	<p>In the draft ESIS we have capped rewards and penalties at 0.5% of ARR, however this is subject to further consultation.</p>
2.7	Red Energy	<p>Did not support the introduction of bespoke incentive schemes that seek to improve export services. The main reason for this is developing and defining the appropriate parameters to be applied in an incentive export scheme is very challenging with DNSPs well positioned to benefit from these schemes. In addition, for these schemes to have legitimacy they must incorporate the genuine engagement of consumers which is difficult due to their complexity. These problems raise legitimate questions on whether these schemes should be developed at all.</p>	<p>We consider there are sufficient protections to support developing the new SSIS. It is also important to note that developing the new SSIS does not automatically mean we will approve DNSP proposals.</p> <p>DNSPs will need to satisfy the SSIS criteria when proposing bespoke incentives. If DNSPs cannot develop and define appropriate parameters, we will not approve the application of the scheme.</p> <p>They will also need to demonstrate strong customer support for the scheme.</p>

ID	Stakeholder	Comment	Response
			We consider that our proposed approach is preferable to doing nothing, which potentially will result in customer benefits not being realised.
2.8	Consumer Challenge Panel	Any scheme should be consistent with a review of incentives to encourage better network utilisation overall, whether through an extension of the SSIS or linking with the DMIS.	Rather than focusing on network utilisation, bespoke incentive proposals (and associated performance parameters) should reflect the DNSP's own customer engagement.  Our future review of incentive arrangements will consider the issue of network utilisation.
<b>3. Incentive arrangements – amending AER guidelines</b>			
3.1	CitiPower, Powercor & United Energy	<p>The DMIAM and DMIS were designed historically to apply to consumption services, typically to be used during maximum demand periods to avoid the need for network investment. Use of the DMIAM and DMIS for consumption services is likely to continue as electrification of transport and gas increase peak demand.</p> <p>As export services have been classified as part of the common distribution service, the DMIAM and DMIS can now apply to export services. These schemes will typically be used during minimum demand periods to avoid the need for network investment. The frequency and scale of minimum demand periods is also expected to increase as more rooftop solar is exported onto our networks in the middle of the day. However, the DMIAM and DMIS were only designed with consumption services in mind, and in particular the incentive cap under the DMIS and allowance under the DMIAM.</p> <p>It is appropriate to increase the current incentive cap under the DMIS and allowance under the DMIAM to reflect that their scope has now expanded beyond initial expectations. Doing so would allow more customer value to be derived from innovations and non-network investments, particularly in electrification of transport and rooftop solar exports.</p> <p>Maintaining the current incentive cap and allowance reduces the scope for networks to implement innovative technologies to manage both maximum and minimum demand, which will unduly limit the amount of value networks can deliver to customers under the schemes, particularly as innovative</p>	We recognise that use of the DMIAM and DMIS for consumption services is likely to continue as electrification of transport and gas increase peak demand. However, we disagree that there is a need to increase the incentive cap under the DMIS and allowances under the DMIAM. A complete list of our reasons is provided in section 3.3.4.



ID	Stakeholder	Comment	Response
		<p>approaches such as flexible export services are an emerging solution but are not yet scalable.</p>	
3.2	Energy Networks Australia	<p>The current allowance (0.075% of annual revenue) was developed for consumption services and did not capture the need to support innovation in both imports and exports (i.e., two-way flows on the network). It is being fully utilised already by a number of DNSPs for consumption services alone, and the need for innovation with respect to consumption services is not decreasing in the energy transition. Therefore, the DMIA threshold should be increased to ensure that the regulatory framework also supports innovative approaches to improving export services.</p> <p>It is important to highlight that there are strong protections in the current regulatory framework to safeguard against any potential duplication between incentive schemes. For example, DNSPs need to apply to the AER for DMIA funding and it must be approved by the regulator to be accepted, and a DNSP's Chief Executive Officer must sign a statutory declaration that confirms that there is no double counting when applying for DMIA funding.</p>	<p>We disagree with this aspect of the submission. See response to 3.1 and reasons for decision in section 3.3.4.</p>
3.3	AusNet Services	<p>When the DMIA and the DMIS were designed, and then updated five years ago, the main focus and intent of the schemes were peak demand management. This does not capture the need to manage export-related challenges on the network, including (but not limited to):</p> <ul style="list-style-type: none"> <li>• hosting capacity management</li> <li>• minimum demand and reverse flow management</li> <li>• power quality management.</li> </ul> <p>These export-related challenges require solutions and innovative approaches that may be different to peak demand management. For example, a dynamic voltage management system (DVMS) is an innovative solution that improves power quality and hosting capacity on the network but does not address peak demand challenges.</p> <p>As both peak demand and export related challenges will only continue to grow, with the electrification of gas/transport and the growing penetration of CER, we encourage the AER to further consider whether the DMIA and the</p>	<p>We disagree with this aspect of the submission. See response to 3.1 and reasons for decision in section 3.3.4.</p>

ID	Stakeholder	Comment	Response
		DMIS are still sufficient and fit for purpose to continue to encourage innovation and investment in flexible solutions.	
3.4	AusNet Services	<p>Submitted we should increase the DMIA to account for growing need for innovation in both imports and exports (two-way flow management).</p> <p>Anticipates significant innovation will be required in areas related to dynamic network management of two-way flows, implementation of remote controls of exports and imports, dynamic pricing and management of new loads such as electric vehicles and smart appliances, transition to use of dynamic limits on imports, and similar. Trials of these technologies are likely to cost an order of magnitude of the current DMIA funding, which may stifle innovation in the absence of government subsidies. It is appropriate to double the value of the DMIA, given the magnitude of new challenges facing networks, related to both imports and exports.</p>	We disagree with this aspect of the submission. See response to 3.1 and reasons for decision in section 3.3.4.
3.5	SA Power Networks	<p>Submitted that the current allowances under the Demand Management Innovation Allowance Mechanism (DMIAM) should be increased to recognise the broader need for innovation in service provision – both in the provision of consumption services which is undergoing significant change via increased electrification, and the expansion of the distributor’s role in enabling CER.</p> <p>As a distributor who has consistently utilised all of its DMIAM funding we expect that:</p> <ul style="list-style-type: none"> <li>• there will be a continued need for innovation in respect of our consumption services, particularly as the demands on the network evolve such as via increased electrification which we expect may dominate our likely innovation trials in coming years; and</li> <li>• the expansion of our role to the provision of export services will require new innovation and trials as we interact with an increasing and changing mix of CER including community batteries, smart appliances and electric vehicles and as we look to evolve the level of sophistication relating to how we interact with customers such as via dynamic operating envelopes. Through our consumer engagement program in respect of our 2025-30 Regulatory Proposal, customers have also advocated</li> </ul>	We disagree with this aspect of the submission. See response to 3.1 and reasons for decision in section 3.3.4.

ID	Stakeholder	Comment	Response
		strongly for us to explore potential co-funding models of community energy solutions, which alone would be of sufficient materiality to exhaust the current DMIAM funds.	
3.6	Endeavour Energy	Submitted that the AER expand the DMIA scope and funding to account for export services. The DMIA was developed prior to the AEMC's Rule change and therefore is focussed on deferring demand for consumption services. Endeavour Energy supported the increased use of both the DMIA and DMIS for projects which trial and improve export service quality. A broader scope and increased funding that accounts for export services and the increasing need for innovation in network services may therefore better promote dynamic efficiency in export services.	We disagree with this aspect of the submission. See response to 3.1 and reasons for decision in section 3.3.4.
3.7	Evoenergy	Recommended that we consider increasing the DMIA as the remit of the DMIS will expand from managing demand of consumption services to include export services management. An increase would support innovation to manage export services more efficiently.	We disagree with this aspect of the submission. See response to 3.1 and reasons for decision in section 3.3.4.
3.8	AusNet Services	Submitted changes to the DMIS criteria to allow for any procurement process that is non-discriminatory.  The DMIS requirement to tender for solutions and publish the tender to the Demand Management Register is no longer fit for purpose as network management becomes more dynamic. The DMIS criteria should be updated to allow for procurement of network services through any process that demonstrates the non-network solution is efficient and the process was non-discriminatory towards any party.	We consider that this aspect of AusNet Services' submission appears reasonable, however it is possible that removing the requirement to publish tenders on the Demand Management Register will result in adverse outcomes. Because of this possibility, we do not intend to amend the DMIS at this point in time but prefer to monitor the issue as the application of the DMIS increases.
3.9	AusNet Services	If the AER and stakeholders are concerned with double counting under multiple incentive schemes, this can be addressed through use of conditions in the development of the new incentives (e.g., a requirement the incentive scheme does not reward networks for investment funded through other mechanisms).	We recognise that there are protections to prevent double counting of allowances under multiple incentive schemes.  The final report no longer provides this as a reason not to increase demand management allowances.
3.10	Consumer Challenge Panel	While the DMIS remains valid, the approach should be extended to provide clear incentives to implement forms of demand response incentives to address the falling network utilisation and collapsing load factors. This may not need to be immediately addressed, but a longer-term strategy by the AER	We recognise this concern and will commit to a wider review of the DMIS and DMIAM when we undertake the future review of incentive arrangements and benchmarking.

ID	Stakeholder	Comment	Response
		to feed into the proposed review of benchmarking would help by reducing the need to change 'mid-stream.'	
<b>4. Incentive arrangements – future review</b>			
4.1	Evoenergy	<p>The AER should provide guidance, subject to industry consultation, on the common metrics that DNSPs should develop to inform performance metrics in a future incentive scheme for export services.</p> <p>The enabling capabilities (performance metrics, export tariffs and flexible export limits) are as important for the actual performance of export service as they are for the development of incentive arrangements. Further consideration should be given to how consistency can be achieved across DNSPs.</p>	We cannot say with certainty what the particular metrics may be, or whether a future standardised incentive scheme for export services will even be necessary. However, we see value in collecting data on a range of metrics to best inform the future review of incentives.
4.2	CitiPower, Powercor & United Energy	Submitted that 2027 is a cut-off date for performing the future review, rather than a firm date, meaning the AER would have the ability to review the scheme earlier than 2027 if that was deemed appropriate. One such instance might be if broad standardised data becomes available for all DNSPs sooner than expected, then it might be prudent to undertake the review sooner.	We agree with this suggestion and have provided further detail in section 3.3.5 on the commentary to be provided in the annual export performance reports.
4.3	Energy Networks Australia	<p>Supported the AER initiating a future review of incentive arrangements for export services. It is uncertain, however, whether the proposed review initiation timeframe of 2027 will allow sufficient time for the AER to consider the effects of export tariffs and flexible export limits on export service quality and monitor DNSP performance against any bespoke incentive measures.</p> <p>For example, under the AEMC's access and pricing rule change, export pricing options may only largely be introduced from 1 July 2025, and therefore by 2027 there would only be one full financial year of export pricing implementation. Similarly, a timeframe of 2027 may not allow for sufficient time to observe the impacts of bespoke incentive measures given the regulatory determination timetable.</p> <p>Therefore, while ENA supported a review being initiated, this should be contingent on there being sufficient data available to usefully inform that review.</p>	We consider that these concerns are valid. Although some information may still be lacking in 2027 (such as information on export tariffs and flexible export limits), it is still very likely that data quality will improve and even proposals for bespoke incentives (rather than performance against bespoke incentives) may be useful in developing potential export service metrics for use in a standardised incentive scheme. We and have provided further detail in section 3.3.5 on the commentary to be provided in the annual export performance reports.
4.4	AusNet Services	Rather than determining the date of the future review through this consultation, proposed the AER monitor the quality of the export services	We agree with this suggestion.

ID	Stakeholder	Comment	Response
		performance data to determine if sufficient data quality improvements have occurred to warrant a holistic review. This should include monitoring of the performance of distributors' bespoke schemes and if further changes to the incentive framework are necessary.	We have noted that we will consider and comment on improvements in data quality in our annual performance reports.
4.5	Endeavour Energy	<p>Ideally the review would occur prior to the preparation and commencement of the next reset process for the NSW/ACT/TAS/NT DNSPs. Although, 2027 may not provide sufficient time to observe export service tariffs and SSISs in operation. As such, we support a late 2027 review which could be delayed to 2028 at the discretion of the AER if insufficient data is available.</p> <p>Alternatively, the review may be triggered by an operational metric such as the percentage of exporting customers or percentage of customers with smart meters supported by a 'no later than' backstop timeframe.</p>	<p>We recognise the concern about timing ahead of the future reset process.</p> <p>We have noted that we will consider and comment on improvements in data quality in our annual performance reports.</p>
4.6	Red Energy	Did not support a future review of the incentive arrangements for export services. CPI-X incentive regulation provides sufficient incentives for DNSPs to operate their network efficiently and reduce their expenditure relative to their forecast allowances sharing any outperformance with consumers. The AEMC's view that there is a risk that a DNSP would reduce their expenditure on the network at the expense of network reliability is not credible. It implies DNSPs operate their network for expedient short-term profits rather than genuinely attempting to become more efficient over the long term. Red Energy did not consider this observation credible.	We do not agree with Red Energy's position on this issue. The existing incentive arrangements do not incentivise improvements in the delivery of export services. Instead, they incentivise capex and opex efficiencies, while maintain and improving reliability (reducing network outages). Although it is currently difficult to introduce a financial incentive scheme to incentivise improvements in the delivery of export services, we should not discount that it may be possible to do so in the future when data availability improves.
4.7	Consumer Challenge Panel	Considered the timeline is vague and 4 years seems a long time. The AER will need to be vigilant that DNSPs do not take the opportunity to overcapitalise in the meantime.	We recognise this concern and have provided further detail in section 3.3.5 on the commentary to be provided in the annual export performance reports.

## Submissions on export service performance reporting

ID	Stakeholder	Comment	Response
<b>5. Performance reporting – additional data to include</b>			
5.1	Department of Energy, Environment and Climate Action (DEECA)	<p>Include additional voltage metrics to complement the currently proposed metrics of customers receiving overvoltage and customer complaints relating to export services and/or overvoltage. The former metric goes some way but is simplified and will not indicate the actual voltage levels being experienced by customers, or how these are changing over time. Additional voltage metrics are important to ensure customers and local networks are not adversely impacted.</p> <p>Rather than designing metrics that all DNSPs can meet, the AER should consider metrics that leverage of the smart meter coverage in Victoria, with other jurisdictions working to gradually meet that standard.</p>	<p>We will collect the simplified voltage measures included in the strawman request, which we agree go some way to reporting on voltage performance. We will need to further explore whether collecting and reporting on more detailed voltage data would be beneficial. Any future reporting should complement rather than duplicate work being undertaken by jurisdictional governments and through the ESB's data strategy. Future reporting will also need to consider how to present this large and complex dataset in a clear and accessible manner.</p> <p>We agree there are benefits of reporting on data that is only available in some jurisdictions. This benefits jurisdictions where data is available and provides a test case for what measures other jurisdictions should track in the future. We intend to collect data for some measures that are not widely available, such as measures relating to flexible exports.</p>
5.2	DEECA	Specify a pathway for collecting data on battery exports, including metrics related to household and neighbourhood-scale battery exports. The importance of optimising the use of battery assets is rapidly increasing, and large amount of new energy storage is imminent with new Victorian and Commonwealth battery programs.	Battery capacity information should address this need to some extent. On export data, it will often be difficult for DNSPs to differentiate between exports from batteries and solar PV as most residential batteries are combined with solar PV. While this is less of an issue for neighbourhood-scale batteries, these are currently uncommon. Moreover, battery exports do not clearly fall within the scope of export performance reports, which aim to report on exports from embedded generating units (NER 6.27A(a)).
5.3	AGL Energy	Involuntary export curtailment is a worthwhile measure to pursue. There are challenges to overcome, however the AER should be able to develop common modelling assumptions.	While we do not intend to report on this measure in the inaugural report, it is worthwhile to be open to exploring this measure in the future. We are proposing to report on the duration of full export access, which

ID	Stakeholder	Comment	Response
		<p>AGL suggest using 2020-21 as a base year and measure the voltage performance year to year and from there be able to infer export curtailment performance. There is already a satisfactory level of smart meter penetration to conduct appropriate data analysis, or to at least, provide a target as to when the analysis could be initiated.</p>	<p>faces similar (although less complex) modelling challenges. We expect that through reporting less complex (but nevertheless, highly modelled measures), we will develop a more informed view around the reasonableness of modelling assumptions. Our view is that voltage data is insufficient for measuring export curtailment. While inverters shut down at a particular voltage level, we would still need estimate what would have been exported in absence of the inverter shutting down. However, it is worth noting that we are planning to report on customers receiving overvoltage.</p>
5.4	Endeavour Energy	<p>The proposed metrics do not include visibility of the sample size available. Net export volumes can only be obtained from the smart meter CER customers and Endeavour still has approximately 60,000 basic meter CER customers. For consistency across networks these basic metered customers should either be reported separately in export customer numbers or potentially subtracted from the CER customer counts.</p> <p>Similarly, metrics such as “customers receiving over voltage” is only possible to obtain using smart meter power quality off market data. Endeavour only currently has 50,000 meters providing this data. Without visibility of this, the year or year metrics will inflate purely from the addition of more data.</p>	<p>We agree with the benefits of capturing sample size. We have now proposed to do this by requesting that export customer numbers also be disaggregated by whether or not customers have a smart meter. Our expectation is that this will give us a sample size for net metered exports.</p> <p>We understand that since many DNSPs procure power quality data, voltage data may often be modelled from a sample of customers with smart meters. To differentiate between observed and modelled data, we now intend to differentiate between ‘customers with measured voltage data’, ‘customers measured as receiving overvoltage’ and ‘customers estimated as receiving overvoltage’.</p>
5.5	Consumer Challenge Panel	<p>To properly measure the allocative efficiency of DNSP investment in network hosting capacity, the AER should obtain data on consumers’ ‘Willingness to Pay’ for additional increase in network hosting capacity and measure the deadweight loss associated with DNSP underinvestment in these resources. When recording customers’ ‘preferred export capacity’, it would be useful to also record the customer’s willingness to pay for that capacity.</p>	<p>We understand that customer export curtailment values are a more suitable input for calculating the prudence of investments in export hosting capacity as this aims to capture the detriment to customers and the market when consumer energy resource exports are curtailed.<sup>53</sup> If there was a clearer use case for</p>

<sup>53</sup> See AER, [Customer export curtailment value methodology: Final decision](#), 30 June 2022, Accessed 15 February 2023.

ID	Stakeholder	Comment	Response
			willingness to pay data, DNSPs could start recording customer preferences at the connection request stage. However, it may be challenging to interpret such data reliably as this would likely be a simple survey question rather than bid associated with a transaction.
5.6	Consumer Challenge Panel	Measure the number of customers going off-grid (e.g., permanent disconnections), i.e., becoming self-sufficient in a region where grid supply is readily available.	This measure could be useful for understanding network risks, particularly those related to network utilisation. However, it is not clear that this measure would be directly relevant for export service performance. We also understand it would likely be challenging to identify these customers unless the DNSP had surveyed customers when they requested supply abolishment.
<b>6. Performance reporting – challenges and costs of collecting proposed data</b>			
6.1	AGL Energy	Providing DNSPs with specific funding to procure or gather data is not supported as this can be funded from existing capex budgets and revenue from export tariffs should fund visibility.	We are not proposing to allow specific funding at this stage. We assess changes to expenditure allowances on a case-by-case basis as part of our revenue determinations and will have regard to the sufficiency of existing budgets and the revenue-raising potential of export tariffs at that time.
6.2	Evoenergy	Some metrics need data procured from third parties and may impose additional costs on DNSPs that will need to be recovered through regulated revenue. There is limited access to smart meter data due to the low penetration of smart meters, but also the high costs associated with procuring data from metering coordinators, and with storing and managing data. Additional costs are also incurred analysing meter data to realise and maximise its benefits, particularly where metrics are derived or estimated.	We will continue considering how best to balance the need to collect data against data availability and reporting costs (including where data requires procurement from third parties). The information request published alongside this report endeavours to accommodate data collection issues by allowing null responses and estimated data where appropriate. Moreover, a DNSP may choose to propose relevant costs in its revenue proposal for us to consider in the context of its broader revenue requirements.
6.3	TasNetworks, SA Power Networks	The number of AS4777.2 compliant inverters is not known with certainty due to potential non-compliance in installation practices.	We have added notes to the information request to acknowledge how data may be estimated, but the estimation approach must be provided in the basis of preparation. We will endeavour to provide appropriate



ID	Stakeholder	Comment	Response
			qualifications around assumptions and estimation approaches in the inaugural report.
6.4	Ergon Energy, Energex, Essential Energy	<p>Ergon and Energex do not have access to the level of measurement required to measure duration of full export access. Similarly, Essential Energy note that substantial costs would be associated with collecting this data as this would require voltage monitoring at each customer premise to determine whether any restrictions were caused by voltages within bounds by enacting AS4777.2</p> <p>Ergon and Energex suggest an approach to modelling/estimating could be pursued provided an agreement on appropriate assumptions could be reached. The AER should therefore clarify what key assumptions can be made and what would be an acceptable level of error.</p>	We are not collecting data relating to the duration of export access in our 2020-21 to 2021-22 information request and intend to consult further with DNSPs before issuing a 2022-23 information request. This additional consultation will be important for ensuring we provide appropriate guidance, including around acceptable error levels and scope to minimise disaggregation and allow null responses.
6.5	Ergon Energy, Energex, SA Power Networks	Additional guidance is needed around normalising metrics related to duration of export access. System security events and planned network outages should be excluded.	Our initial view would be to capture customer experience by not excluding defined events given the measures are not attached to a financial incentive scheme. If we move towards allowing DNSPs to exclude defined events, customer experience would still also valuable to report separately. Reporting both would be equivalent to the outage data we collect, which covers total outages as well as normalised outages.
6.6	Ergon Energy, Energex, Endeavour Energy, Essential Energy	<p>Ergon, Energex and Endeavour suggest providing clarity on calculating total CER generated, which is required to calculate total utilised CER generated.</p> <p>Energex and Ergon submit that this data is not available to DNSPs and may not be metered by any party and requires estimating several factors that may not be possible to verify at present – potentially resulting in DNSPs producing inconsistent estimates.</p> <p>Essential Energy can provide this data. However, due to high variability in customer use, solar installation angles, availability of sunlight, shade, weather, season etc, this information should not be used in benchmarking or performance reporting. Endeavour also note that estimation is possible. Endeavour Energy intends on using Solcast irradiance data to estimate self-consumption.</p>	<p>We agree that total CER generated must be modelled and data may not be comparable if DNSPs use different estimation methods.</p> <p>Similar to measures relating to the duration of export access, we are not collecting data on total utilised CER generated for 2020-21 to 2021-22. We intend to consult further with DNSPs before issuing a 2022-23 information request. This additional consultation will be important for ensuring we provide some guidance, including around acceptable error levels and scope to minimise disaggregation and allow null responses.</p>

ID	Stakeholder	Comment	Response
			We expect that the quality of our guidance may need to evolve and intend to use the initial years of this data cautiously. We understand that some DNSPs (e.g., SAPN) are more advanced in undertaking this modelling and there will be an element of cross-industry sharing and learning by doing that will evolve with time.
6.7	Ergon Energy, Energex	The AER should allow DNSPs to report fields relating to flexible export limits as N/A or null until such time as these connections become operational.	This suggestion reflects our original intention, which we will incorporate more explicitly into the information request for 2022-23 data.
6.8	AusNet Services, Evoenergy	The DER register (a key data source for export services) is filled out by installers as part the connection application process. DNSPs have limited capability to guarantee the accuracy of the data reported by DER installers. AusNet are working with AEMO and the industry to improve the data quality of the DER register, but data linked to the DER register should be used with caution in the meantime.	We understand there are ongoing efforts to improve data quality within the DER register, and data quality issues have been discussed by the ESB. <sup>54</sup> In the short term, we intend to complement our analysis with appropriate qualifications. However, we also intend to continue working on improving data quality over time, including through our work with the ESB on its data strategy
6.9	SA Power Networks	The following metrics will require estimation for customers that do not have inverters capable of dynamic operating envelopes: duration of full export access, duration of no export access, total utilised CER generation and customers receiving over-voltage.	Some measures will require estimation based on a sample of observed customers. Data on customers receiving over-voltage is requested in a way to provide sufficient nuance around observed data and number of observations versus modelled data and estimation methods. We will consult with DNSPs on the extent of this issue for other measures and potentially workarounds when we finalise the 2022-23 information request.
6.10	Consumer Challenge Panel	The outcome of the current review to the market metering framework will impact the ability for DNSPs to collect appropriate data.	We understand the current review will likely have a positive impact as the AEMC intends to increase access to power quality data, including by requiring metering coordinators to provide a new basic data

<sup>54</sup> ESB, [Electric vehicle supply equipment standing data: Consultation paper](#), December 2022, p. 54-55.

ID	Stakeholder	Comment	Response
			service to DNSPs and by putting clearer access rights around advanced data services <sup>55</sup>
6.11	Essential Energy	Essential Energy measures connections based on kW rather than KVA	We will continue to request connections data based on kVA as comparisons require consistent units of measurement. While there are technical nuances in converting kVA to kW, we are satisfied that a 1:1 conversion will provide a sufficiently reasonable estimate in absence of better information at this stage. Essential Energy may choose to do this if identified in its basis of preparation.
6.12	Essential Energy	Customers allocated to the classifications of “Urban”, “Short rural” and “Long rural” change every year due to changes in population density. Accordingly, a customer may be short rural in one period then urban in the next period without having moved premises.	We do not foresee this factor as materially affecting our analysis and note that such classifications would already affect a range of information collected by the AER. For clarity, the information request now specifies, ‘the DNSP is to include in its basis of preparation commentary on any customer reclassifications that are expected to be material information for reporting export service performance measures.
6.13	Essential Energy	Connection requests and connections data are not held in the same system and may not correspond.	It is not clear how broad this practice is among other DNSPs, but this is problematic insofar as our intent was to have this data linked – that is, to work out to what extent requested connection capacity converts to approved capacity. In clarifying this intention, we now specify that this data captures requests that resulted in approved negotiated connection agreements. Given this submission, the information request now includes the following note: ‘To the extent this is not feasible (e.g., if connections and applications are recorded in separate databases and the data is not linked), the DNSP should identify this in the basis of preparation, along with its estimation approach’.

<sup>55</sup> AEMC, [Draft report: Review of the regulatory framework for metering services](#), 3 November 2022, p. 101.

ID	Stakeholder	Comment	Response
6.14	Essential Energy	Essential Energy's complaints handling system does not have the capacity to collect complaints data without significant human interpretation and applied judgement. As a result, it is likely to be highly variable, and not comparable between DNSPs or across periods. This requires significant investment in processes and data gathering capability. The data gathered would be performed on a best endeavours basis and unlikely to pass an audit or assurance process.	Some DNSPs have more confidence in the quality of their complaints data due to them already having complaints handling systems that were fit for this purpose. For others, it may be infeasible to obtain this data retrospectively. Our information request (which will inform the future RIO) permits DNSPs to include estimated data – and for this measure, we permit null responses.
6.15	Ergon Energy, Energex	Ergon & Energex can provide the AER with the average non-zero static export limits but do not see the value this information may provide. Given the potential for outliers to impact reported averages, this metric may not support the AER's proposed purpose which is to use this data to provide information on the magnitude of export limits and identify if there is a practice of applying high static export limits that do not have a binding effect.	We will collect this data disaggregated by customer type and expect any particularly high non-zero static exports limits to apply to 'non-residential HV' customers. Given this, we do not expect data reported at the 'residential' level would be material skewed. If Ergon and Energex have particular data points of concern in mind, they can highlight this information in their basis of preparation.
6.16	AGL Energy	Note that data captured within connection agreements were initially meant to be included in the DER register. Given the limitations the AER identified on connection agreement data and being able to measure customer requested versus approved export capacity, this gives cause to uplift this information into the DER register to ensure customer expectations are accurately recorded	We understand there are ongoing efforts to improve data quality within the DER register, and data quality issues have been discussed by the ESB. <sup>56</sup> However, it is unclear if all of the challenges with interpreting connection agreement data would be addressed at the DER register level. For instance, estimates of planned curtailment will be understated to the extent customers' preferred export capacity levels are not recorded (which would occur if customers typically accepted static limits that are presented as a default). In the short term, we intend to complement our analysis with appropriate qualifications. However, we also intend to continue working on improving data quality over time, including through our work with the ESB on its data strategy.

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<sup>56</sup> ESB, [Electric vehicle supply equipment standing data: Consultation paper](#), December 2022, p. 54-55.

ID	Stakeholder	Comment	Response
6.17	Consumer Challenge Panel	The level of customer requested export capacity is influenced by network hosting capacity as customers are less likely to enter the market if network capacity is insufficient for them to export.	We agree that this endogenous relationship could exist, but do not have data to comment on its materiality. This could potentially be measured if DNSPs collected data on the percentage of connection offers rejected and surveyed inquiring customers on the reason for non-acceptance. It is not clear whether this data is currently collected, but if stakeholders considered the benefits of collecting it would outweigh the costs, we could explore whether to collect this from DNSPs in the future.
6.18	CitiPower, Powercor & United Energy	To give DNSPs sufficient time to populate and submit the DER information request by September 2023, it would be beneficial to extend the deadline for regulatory information notices to 31 <sup>st</sup> of November.	Addressing this matter somewhat depends on the complexity of information requested for 2022/23, as well as the flexibility available to other AER workstreams. We will endeavour to minimise the complexity of the data we request, which is subject to further consultation with DNSPs.
6.19	Essential Energy	Urges the AER to engage with DNSPs to co-design export data that is subject to the RIO process to allow DNSPs to assist the AER in achieving its data objectives.	We are working closely with the Networks Information Requirements Review to allow export data to be collected through the RIO process. Please note that while we prefer to collect export services data through the RIO, we will likely also supplement this with information requests to collect measures that we are less certain about so we can have more flexibility to amend definitions and change scope as needed.
<b>7. Performance reporting – base year</b>			
7.1	Endeavour Energy	Data on inverter compliance and overvoltage complaints will not be available for 2020-21 and 2021-22, and 2022-23 is proposed as the starting year.	We accept that data may not be available for all years requested. We have updated the information to be explicit about where null responses or estimated data will be accepted in relation to these measures.
7.2	CitiPower, Powercor & United Energy, SA Power Networks	The AER should consider a base year of 2021-22 as this is when most metrics are available with a higher degree of certainty. CitiPower, Powercor and United Energy note that the base year for different metrics and across different DNSPs may vary from 2020-21, but given these	Data provided to AEMO's DER register and the 2020-21 data we identified through previous information requests provides us with sufficient confidence to collect data from 2020-21. We acknowledge that some DNSPs may face challenges in providing certain

ID	Stakeholder	Comment	Response
		metrics are not intended to be used for benchmarking purposes where a 'full' dataset would be required, varying base years should not be an issue.	measures for 2020-21, but our information request now provides greater clarity around where estimated data (or null responses) may be provided. DNSPs will be required to explicitly state where data has been estimated and we will acknowledge the use of estimated data used in our performance reports.
7.3	SA Power Networks	<p>Most data in the strawman information requests will be available from 2021-22, except for data available from:</p> <ul style="list-style-type: none"> <li>• 2020-21: opex, capex, complaints, export capacity requested versus approved</li> <li>• 2022-23: Duration of full and no export access, average time the upper limit was unavailable for customers with flexible export types (disaggregated by feeder type)</li> </ul>	We request some data for 2020-21 which SAPN has noted is unavailable. However, DNSPs can provide estimated data where required (and for some measures, null responses) if identified and explained in the basis on preparation.
<b>8. Performance reporting – level of disaggregation</b>			
8.1	Endeavour Energy, Ergon Energy, Energex	<p>Customer type is a useful disaggregation method. However, disaggregating by feeder classification may not provide meaningful context or insights with respect to a DNSPs export service performance.</p> <p>Endeavour does not refer to HV feeder classifications internally in this context so this reporting would not align to BAU practices, and this would be the only instance it is reported in this manner. A more useful alternative would be to disaggregate the distribution transformer ratings in KVA. This could be bucketed into bands such as less than 50KVA, 50-315kVA, 315-500KVA, 500-1000KVA, above 1000KVA or the like. Ratings have correlation with rural and urban contexts with small sizes being used in rural networks and often also map to overhead and underground networks with 315KVA and below being overhead.</p> <p>Ergon &amp; Energex noted that data disaggregated by feeder classification would not provide a clear view of locational impacts and causes of overvoltage.</p>	<p>We intend to collect data disaggregated by feeder classification, which aligns with how we collect reliability data under the service target performance incentive scheme. While feeder classification-level data does not allow for locational analysis, it does provide visibility over any systematic differences between rural, urban and CBD networks, which could help us understand potential equity issues. Our analysis of current data does show systematic differences in measures at different feeder classification levels.</p> <p>Moreover, we are likely to collect feeder-level data (or the HV feeder-level data if that lowers costs for similar benefits) in the future, which will require DNSPs to drill down to the level required to report feeder classification in any case. Feeder-level (or some form of locational) data will be important for understanding export service performance to the extent that hosting capacity constraints are geographically contained.</p>

ID	Stakeholder	Comment	Response
8.2	Ergon Energy, Energex	There are difficulties with capturing information on customers receiving overvoltage, which required Ergon and Energex to previously apply assumptions to estimate the number of customers receiving overvoltage. These results were reported at the feeder classification level only. Currently, Ergon and Energex do not have visibility of this information at the 'Customer Type' level as presented in the AER's strawman information request.	<p>We have re-framed the information request to ask DNSPs to separately report customers with measured voltage data, customers measured as receiving overvoltage and customers estimated to have received overvoltage. This allows DNSPs to differentiate between what they were able to observe and what they had to model.</p> <p>We also specify that data requested under these fields 'may not be available by customer type for the DNSP; in which case, a NULL response may be given and the reasoning provided in the basis of preparation'.</p>
8.3	CitiPower, Powercor & United Energy	While potentially valuable, there are time and administrative costs associated with populating different disaggregations. If certain metrics are underutilised in the future, it could be more costly to produce than the benefits ultimately derived from reporting. Once the AER has a clearer understanding of what data is most valuable, we support excluding disaggregations for metrics that are less valuable to balance administrative data reporting costs with the benefits of data reporting itself.	We are open to reconsidering disaggregation requirements in the future if metrics are found to be of low value. If specific metrics are suspected to be less valuable in disaggregated form, we encourage stakeholders to raise this as part of the AER's network information requirements review <sup>57</sup> , under which the AER is developing a Regulatory Information Notice (RIO). While we prefer to collect export services data through the RIO, we will likely also supplement this with information requests to collect measures that we are less certain about so we can have more flexibility to amend definitions and change scope as needed.
8.4	Consumer Challenge Panel	It could be more useful to organise performance reports along levels of CER penetration observed across different subregions, rather than measuring performance against a base year. The AER could then compare DNSP export improvements over time in subregions where CER penetration is high. This would help ensure that DNSPs are investing in network improvement efficiently (that is, in subregions where CER penetration is high).	<p>For avoidance of doubt, we have used the term 'base year' to refer to the first year in a series of data rather than as a benchmark for measuring future performance.</p> <p>The data we are currently proposing to collect would not allow us to compare performance between regions. To do this, we would need to collect data disaggregated at a geographical level – potentially at the feeder level or the high-voltage feeder level.</p>

<sup>57</sup> AER, [Networks information requirements review](#), accessed 16 February 2023.

ID	Stakeholder	Comment	Response
			Another option may be to collect data on feeders that DNSPs identify as having the top 10 hosting capacity constraints. It would be beneficial to consider the costs and benefits of collecting more disaggregated data when developing information requests in future years.
8.5	Essential Energy	Connection requests and connections data are not held in the same system so may not correspond, and connection requests are not disaggregated by feeder (this only happens at the time of connection).	If customer request data is not disaggregated by feeder classification, the information request invites DNSPs to include a null response and explanation in the basis of preparation.
<b>9. Performance reporting – Clarification around definitions and scope of the information request</b>			
9.1	Endeavour Energy	Note that duration of full export access is measured as a % of time and then grouped by customer type classes. Suggest clarifying that this is then an average duration of full export access as the metric provided will be the average of all individual customers grouped in that category.	We agree with this interpretation and will clarify that this is a measure of ‘average duration’ when we collect this data in the 2022-23 information request.
9.2	Ergon Energy, Energex	<p>The current definitions of “customer” and “export services” are not appropriate. Support the previous definition, “DER generation customers”, as it provides:</p> <p>Number of customers with different DER generation types, defined as a small generating unit as per the DER Register. This focuses on the subset of DER with generation capability as relevant for export services. DER generation customers excludes customers connected to the isolated networks that are not connected to national grid. It also excludes customers with unmetered connection points without national metering identifier.</p> <p>The strawman information request should be adjusted to include this definition. To omit this would materially change the way in which export service metrics have been reported to date. This issue has also been raised with respect to the Networks Information Requirements Review and we understand that our preferred definition will be incorporated in those future requirements.</p>	<p>Since the export services we are intending to measure are distribution services (as defined in the NER), we are not intending to capture isolated networks that are not regulated. Following from this, we are no longer proposing to collect data by the ‘isolated network’ feeder classification. Moreover, given previous consultation indicated we should draw on data already available through the DER register wherever possible, it is also sensible to draw on the definition used in the DER register. Given this, we are proposing to define:</p> <ul style="list-style-type: none"> <li>• Customer as ‘Metered customers with a NMI’</li> <li>• Export services: Distribution services for supply from small generating units into the distribution network. This is where ‘distribution services’ is</li> </ul>



ID	Stakeholder	Comment	Response
			<p>defined in the NER and 'small generating unit' is defined in the DER Register.<sup>58</sup></p> <ul style="list-style-type: none"> <li>Export services customer: Customers to whom the DNSP is providing export services.</li> </ul> <p>We will also feed this proposal into the Networks Information Requirements Review to ensure consistency.</p>
9.3	Ergon Energy, Energex	Clarify whether metrics in the strawman information request are to be reported as at 30 June (rather than as the average of start and end of period).	We have clarified that all data reported at a point in time will be reported at the financial year-end. Some data is also measured over the year (e.g. customer complaints over the year).
9.4	Ergon Energy, Energex	The strawman information request should be limited in scope to export capacity for an accepted connection offer. That is, connection applications and enquiries should be out-of-scope.	Our intention for collecting export capacity requests was to measure 'to what extent did customers receive the capacity they requested'? As such, we do not want DNSPs to capture enquiries from potential customers in this request as that would prevent us from calculating that measure. We propose to provide clarification by noting that these measures, 'should not include connection agreements that accepted a default limit nor should they include enquiries that did not result in a connection'.
9.5	Ergon Energy, Energex	The strawman information request states that measures relating to export capacity requests 'should capture requests for a specific level of export capacity. They should not include connection agreements that accepted a default limit, nor apply to dynamic export limits'. This statement implies this information should be limited to negotiated connection agreements. If required, processes could be put in place to report this information from the 2023-24 regulatory year onwards.	We agree with this interpretation and note that customers requesting and receiving export capacity in general would largely be captured by changes in 'total export customer capacity' and 'export services customers' (with some difference to the extent export customers disconnect). This metric intends to measure the extent that customer preferences are not met at the connection process (which are likely due to hosting

<sup>58</sup> That is, a generating unit: (a) with a nameplate rating that is less than 30 MW; and (b) which is owned, controlled or operated by a person that AEMO has exempted from the requirement to register as a Generator in respect of that generating unit in accordance with NER clause 2.2.1(c).

ID	Stakeholder	Comment	Response
			capacity constraints). We propose to collect this data from 2020-21 but allow null responses until 2023-24 on this basis that it could impose a material burden to collate data that has not actively been stored as requested. "To the extent this data was unable to be provided or required estimation, the reason and/or estimation approach must be provided in the basis of preparation
9.6	Ergon Energy, Energex, SA Power Networks	<p>Additional clarification and consideration is needed for measurements of compliance with standard AS 4777.2.</p> <p>Ergon and Energex note that the standard version that would imply network readiness for flexible export limits is AS4777.2 (2020). In addition, AS4777.2 (2020) compliant inverters can accommodate flexible export arrangements but there is a requirement for inverter manufacturers to upgrade the systems to enable this</p> <p>SAPN note that compliance to AS4777.2 has a bearing on the overall hosting capacity of the network, but it is not an indicator of readiness for dynamic operating envelopes (DOEs). To be DOE ready, an inverter must meet CSIP-AUS standards.</p>	We are collecting data on inverter compliance with standard AS4777.2 as non-compliant inverters present risks for voltage management and limit the hosting capacity DNSPs can allocate. As such, this measure reflects a factor that is not necessarily within DNSPs' control that affects hosting capacity. We previously implied that we were interested in this data to understand flexible export limit-readiness, which was not correct. Nevertheless, the version of the standard of interest to us is AS 4777.2 (2020), which differs from the 2015 version of the standard, so we have added the date to the information request for clarity.
9.7	Ergon Energy, Energex, SA Power Networks, Endeavour Energy	<p>Several DNSPs seek guidance on the definition of the average time to connect consumer energy resources to the distribution network.</p> <p>Ergon and Energex note that this measure could be interpreted as the period from application to time of (a) connection offer, (b) connection offer acceptance, or (c) electrical work request. Some periods will be influenced by customer responsiveness and may not be within a DNSPs control. Additional factors such as metering change requirements may impact the timeframe.</p> <p>SAPN note they are not involved in the connection process for solar systems with a capacity less than 30kW. For larger systems, they are involved in the commissioning process and therefore suggest adding a definition which clarifies the measure should take place from the time a customer requests commissioning and we then subsequently arrive on site, noting this measure may also be impacted by customer availability to schedule commissioning times. They do not consider it appropriate to measure the days from when a</p>	These submissions raised valid nuances around the nature of DNSP involvement in the connection process. To appropriately account for these nuances, we are proposing to request the average time between receipt of the connection application and provision of the connection offer for accepted connection offers (days). Disaggregated by 'covered by model standing offer or equivalent', 'other low voltage connections', 'other high voltage connections'.

ID	Stakeholder	Comment	Response
		<p>connection application is received, as commissioning may be impacted by the time taken for the customer to undertake the solar installation.</p> <p>Endeavour note they are not involved in the connection of CER beyond the permission to connect (PTC) request and it's not possible for them to report on this metric as it is proposed. Suggest for NSW it is clarified that this applies to the average time from request being submitted to PTC being issued.</p>	
9.8	CitiPower, Powercor & United Energy	<p>Clarification is required for duration of full export access and duration of no export access. Suggest these measures refer only to customers who are on static limits, and it would be beneficial to clarify if this is the case or if this measure also applies to customers on flexible limits.</p>	<p>We will consult further on this measure before collecting it in the 2022-23 information request. However, our initial view is that both these measures would also capture customers on flexible export limits. We would therefore intend to clarify that 'duration of full export access' should capture performance against the service levels that customers nominally agreed to receive and would define this as: 'The percentage of time customers with export services experience unconstrained access up to the export limit set in their connection agreement. For customers on flexible export limits, this should be measured against the limit agreed to at the time. For example, if the flexible export limits at 10 kW or 3 kW during constraint period, unconstrained access should be measured against 3 kW during constraints and 10 kW otherwise.'</p>
9.9	Essential Energy	<p>"Non-DER customers" is not a defined term and it is unclear how number of non-DER customers should be counted.</p>	<p>Agree, the information request now phrases this as 'customers without solar PV or batteries'</p>

## Submissions on benchmarking reports

ID	Stakeholder	Comment	Response
<b>10. Export services operating environment factor (OEF)</b>			
10.1	Evoenergy	Evoenergy agrees with the draft report position to not proceed with developing an export services OEF.	<p>Our final position is to not proceed with the development of an export services OEF at this time as there a lack of reliable data and stakeholder support.</p> <p>As the time series of export services expenditure data matures, we leave open the option of developing an export services OEF, particularly if the future review of the PIN models concludes that updates to the model specifications to incorporate export services are not feasible. Any future consideration of an OEF would be done in consultation with stakeholders and consider issue raised by as part of this process.</p>
10.2	CitiPower, Powercor & United Energy	<p>CitiPower, Powercor &amp; United Energy support the AER's draft decision to not proceed with developing an export services OEF. In addition to the likely shortfall of data required to effectively support an OEF, and the expected low materiality of an OEF:</p> <ul style="list-style-type: none"> <li>• OEF adjustments result in benchmarking that is less accurate in comparison to directly factoring export service performance into the benchmarking analysis.</li> <li>• Not all networks may be able to report historical export service expenditure and historical data reported by networks may not be high quality.</li> <li>• Applying a standalone OEF adjustment for export services would not account for the role of export services within the AER's assessment of network allowances and would only impact comparative benchmarking analysis.</li> </ul>	See response to 10.1.

ID	Stakeholder	Comment	Response
10.3	SA Power Networks	SA Power Networks supports the AER's draft decision to not develop an export services OEF as an interim measure as: <ul style="list-style-type: none"> <li>it will not address the problem;</li> <li>OEFs are only relevant to comparative benchmarking analysis, leaving other applications of benchmarking models unadjusted.</li> </ul>	See response to 10.1.
10.4	AusNet Services	An interim export service OEF should not be developed.	See response to 10.1.
10.5	TasNetworks	There is currently insufficient data to develop an OEF for export services. Consistent with this is the difficulty in undertaking any comparison of export services between DNSPs.	See response to 10.1.
10.6	Endeavour Energy	Endeavour Energy supports the AER's draft decision not to develop an interim export services OEF and agrees that insufficient data is available to reliably estimate the impact export services have on the AER's benchmarking models.	See response to 10.1.
10.7	Consumer Challenge Panel	The CCP agrees with the AER positions in the draft report.	See response to 10.1.
<b>11. Future review of benchmarking models</b>			
11.1	CitiPower, Powercor & United Energy	CitiPower, Powercor & United Energy support a holistic review of benchmarking by 2027, in particular, when better export information is available and the impact of export services on benchmarking has become clearer. If sufficient data is available sooner, CitiPower, Powercor & United Energy also support an earlier review.	<p>We will initiate a full review of how the economic benchmarking should take into account export services by 2027, or earlier if sufficient reliable data becomes available.</p> <p>In the interim, we will monitor data and where feasible and cost effective to do so, we will, in consultation with stakeholders, begin to collect additional data we think will be most useful in informing the future review.</p> <p>We will also update the annual benchmarking report for distribution businesses to note that we are working toward a full review of if / how the benchmarking models can be updated for export</p>

ID	Stakeholder	Comment	Response
			<p>services and acknowledge that, in the interim, the benchmarking results do not fully account for export services and cross reference relevant data from the annual performance reports that is indicative of DNSPs' likely relative export services burden.</p> <p>We see the above approach as the best, practical way forward that appropriately balances various factors including current data availability, the cost to businesses of collecting, estimating and reporting new data, the likelihood that we will need specific data, the level of materiality of the impact of export services on the benchmarking results at present, the practical implications of these impacts for use of the benchmarking results by the AER in the near term, and the likelihood that export services will have a material enough impact on the benchmarking results in the near future to warrant updating the benchmarking model specifications.</p>
11.2	Energy Networks Australia	A holistic review of benchmarking models is needed to accurately capture the valued services delivered by networks across and increasingly two-way grid. ENA supports the AER undertaking this review as soon as sufficiently robust data is available.	See response to 11.1.
11.3	Evoenergy	Evoenergy supports a comprehensive review of benchmarking models while noting the complexities in defining model outputs while accounting for unique network design characteristics.	See response to 11.1.
11.4	TasNetworks	<p>The AER should continue to monitor developments and assess international data. Given the expected changes in the use of export services and the gradual introduction of export tariffs, there is unlikely to be sufficient time to observe the impacts of these changes by 2027.</p> <p>TasNetworks supports a review being initiated, this should only occur once sufficient data has been collected on which to base the review. Then, and only then, should the AER consider benchmarking export services.</p>	See response to 11.1.

ID	Stakeholder	Comment	Response
11.5	Consumer Challenge Panel	<p>Agrees with the broad approach taken by the AER in initiating a full review of the benchmarking models by 2027.</p> <p>The AER should consider how changing export service performance impacts consumer behaviour and self-consumption. It may be the case that low export limits could encourage consumers to engage in self-consumption. Export limits effectively increase the incentive for consumers with solar PV to invest in batteries in order to maximise self-consumption. If self-consumption is an important policy objective, it should be considered whether curtailment is really a problem.</p>	<p>See response to 11.1.</p> <p>The scope of the future review will be determined in consultation with stakeholders and will consider issues raised by stakeholders as part of this process.</p>
11.6	Essential Energy	<p>Essential Energy supports the recommended review of benchmarking, to account for an increasingly two-way grid.</p>	<p>See response to 11.1.</p>
11.7	SA Power Networks	<p>A fulsome review of benchmarking metrics and approaches should urgently commence with a view to completion in time for the 2024 benchmarking reports to ensure that distributors with high export services penetration do not continue to be disadvantaged.</p> <p>This review should consider what inputs and outputs best represent the efficient operation of the distribution network for consumption and export services including:</p> <ul style="list-style-type: none"> <li>• the relevance of existing energy throughput and maximum demand metrics;</li> <li>• potential new export service output metrics;</li> <li>• interrelationships between export services and other benchmarking variables; and</li> <li>• the suitability of existing benchmarking models to accommodate CER.</li> </ul>	<p>See response to 11.1</p> <p>We do not consider it is feasible to initiate a full review of the impact of export services at present due to limited availability of data. We also do not have sufficient evidence that the current level of impact of export services on the benchmarking results is materially disadvantaging DNSPs in practice.</p> <p>The scope of the future review will be determined in consultation with stakeholders and will consider issues raised by stakeholders as part of this process.</p>
11.8	Endeavour Energy	<p>This issue warrants more detailed consideration once additional data is available and as part of a more holistic review of the AER's benchmarking approach more generally than just in relation to export services. This review should consider whether benchmarking has promoted efficiency and</p>	<p>See response to 11.1.</p> <p>The scope of the future review will be determined in consultation with stakeholders and will consider</p>

ID	Stakeholder	Comment	Response
		<p>whether amendments for export services and other new or existing OEFs would collectively improve the AER's approach.</p>	<p>issues raised by stakeholders as part of this process. We note that the future review is limited in scope to consider if / how the benchmarking models can be updated to better account for export services. A wider review of the AER's benchmarking framework is out of scope of this review. The broader comments around wider review issues will be considered as part of the Annual Benchmarking Report's annual preparation and prioritisation of benchmarking development work.</p>
11.9	AusNet Services	<p>AusNet Services agrees a full review of the benchmarking models with respect to export services is required.</p> <p>However, a wider, more holistic review of all aspects of the AER's economic benchmarking needs to be undertaken urgently and cannot wait until 2027. The impact of export services is potentially minor compared to other factors and so it should not be the reason to delay a complete and fulsome review.</p> <p>AusNet noted substantiative concerns it and other networks have raised repeatedly in recent years in relation to a wider, more holistic review beyond export services, have not been adequately addressed. In particular, it is concerned that:</p> <ul style="list-style-type: none"> <li>• the inclusion of Guaranteed Service Level payments in the benchmarking models distorts the outcomes;</li> <li>• Sapere Merz' recommendation of prioritising a vegetation management OEF has not been addressed; and</li> <li>• the current bushfire OEF is out of date as it only accounts for bushfire-related regulatory obligations arising from the Bushfire Royal Commission, and not new bushfire-related costs that have since arisen.</li> </ul>	<p>See response to 11.1.</p> <p>We note that the future review is limited in scope to consider if / how the benchmarking models can be updated to better account for export services. A wider review of the AER's benchmarking framework is out of scope of this review. The broader comments around wider review issues will be considered as part of the Annual Benchmarking Report's annual preparation and prioritisation of benchmarking development work.</p>
<p><b>12. Materiality of the impact of export services on benchmarking models</b></p>			



ID	Stakeholder	Comment	Response
12.1	CitiPower, Powercor & United Energy	<p>If benchmarking models appropriately account for export service inputs but not outputs, DNSPs with materially higher levels of export service inputs may be disadvantaged.</p> <p>The impact of export services on the productivity scores of DNSPs is likely to be small at present but may increase with time.</p>	AER analysis for the final report, based on the available data and technical engineering views indicates that the impact of export services on the PIN model benchmarking results is unlikely to be material at present. We recognise that the impact may become more material in the future, and we will re-examine materiality as part of the 2027 review of benchmarking, or sooner if data become available.
12.2	SA Power Networks	Current approaches to benchmarking are already negatively impacting on some networks, even at relatively modest levels of network hosting capacity investment. These impacts will increase with higher renewables penetration and increased network investment; and networks such as ours are increasingly having our comparative benchmarking performance understated given that existing metrics do not adequately recognise the outputs being produced in enabling export service provision.	See response to 12.1.
12.3	Endeavour Energy	As export service hosting levels continue to increase, there is an increasing likelihood that the AER's benchmarking results are distorted by export hosting and diminish in accuracy and comparability.	See response to 12.1.
12.4	AGL Energy	The materiality of any current impacts on the productivity results has not been well established and the focus should be on informing these considerations via data collection.	See response to 12.1.
<b>13. Exclusion of export service inputs from benchmarking models</b>			
13.1	CitiPower, Powercor & United Energy	CitiPower, Powercor & United Energy support the AER's view to not further consider the option of excluding export service inputs from the benchmarking models. Doing so would step away from the holistic nature of benchmarking and reduce the AER's ability to efficiently assess expenditure.	Our preferred approach in the future review of benchmarking is to assess if / how the PIN models can be updated to better account for export services rather than to remove export services from the model specifications. As a result, we propose to give this issue a lower priority when considering it in the future review.
13.2	AusNet Services	There should be no further consideration of excluding export service inputs from the benchmarking inputs.	See response to 13.1.

ID	Stakeholder	Comment	Response
13.3	Endeavour Energy	<p>It is not immediately clear how removing export service import costs is practical because the interrelated impacts on the outputs would remain in the models.</p> <p>This may be an impractical and difficult task as the impact of export services on inputs may be inextricably linked to inputs for consumption services in addition to the output interrelationship problem noted by the AER.</p>	See response to 13.1.
<b>14. Impacts/options to adjust existing outputs – self consumption and ETP and RMD</b>			
14.1	SA Power Networks	SA Power Networks supports the view that ETP is impacted by self-consumption. The reduced energy throughput is representative of the value delivered to customers through the enablement of self-consumption which could not occur without a network in place to provide energy in excess of that able to be provided by customers' own solar systems.	<p>We do not currently see merit in accounting for self-consumed energy in the benchmarking model outputs. The criteria historically used to guide the specification of outputs in the benchmarking framework include that the output:</p> <ul style="list-style-type: none"> <li>• aligns with the NEL and NER objectives;</li> <li>• reflects services provided to customers;</li> <li>• is significant in its impact on customers or DNSP costs.</li> </ul> <p>Under this framework, we do not consider that self-consumption represents a service provided by the DNSP to the customer since this electricity is not transported over the distribution network and the customer pays for installation and maintenance of the CER generation. In addition, our current view, based on available evidence and our own technical assessment, also indicates that there are likely no material incremental export service-related costs incurred by networks in facilitating self-consumption.</p> <p>This issue will be examined further and consulted on as part of the future review.</p>

ID	Stakeholder	Comment	Response
14.2	AusNet Services	The definitions of ETP and RMD could potentially be changed to account for self-consumption / underlying demand. To the best of AusNet Services' knowledge, there is no requirement for benchmarking outputs to be aligned with how the National Electricity Rules define services.	See response to 14.1.
14.3	Endeavour Energy	With respect to the commentary on ETP and RMD, Endeavour Energy does not consider there is a conceptual issue with adjusting ETP and / or RMD for self-consumed energy. It is the relationship between the distribution network and the customer connection point that, inter alia, determines whether a customer can self-consume at a given point in time. Self-consumption is therefore a service enabled by means of, or in connection with, the distribution network. This may require further review from a legal perspective.	See response to 14.1.
14.4	CitiPower, Powercor & United Energy	On balance CitiPower, Powercor & United Energy believe that benchmarking models should not be adjusted based on customer self-consumption due to challenges in identifying self-consumption and likely low materiality on ETP and RMD.	See response to 14.1.
14.5	Consumer Challenge Panel	<p>Concerning the ETP variable, the CCP is concerned to what extent adding the amount of energy self-consumed to existing ETP reflects services provided to customers. DNSPs could effectively be rewarded for their customer investment decisions in export services that may be completely unrelated to how efficiently the DNSP performs. Such an amendment to the ETP could act as a perverse incentive for DNSPs to reduce export services as lower static export limits could increase self-consumption.</p> <p>There are similar concerns about how amendments to RMD reflect service provided to customers by DNSPs.</p>	See response to 14.1.

**15. Impacts/options to adjust existing outputs – reliability (CMOS)**

ID	Stakeholder	Comment	Response
15.1	CitiPower, Powercor & United Energy	CitiPower, Powercor & United Energy agree with the AER's assessment that the customer minutes off supply reliability output is unlikely to be improved materially with expenditure to enable exports services as this expenditure typically targets improving power quality and voltage compliance.	<p>Our view in this final report is that the existing reliability output (CMOS) is unlikely to be materially impacted by export service-related expenditure as this expenditure typically relates to voltage management actions.</p> <p>As a result, we propose to give this issue a lower priority when considering it in the future review.</p>
15.2	SA Power Networks	SA Power Networks agrees with the AER's preliminary view that export service expenditures will likely have no material impact on the existing reliability output.	See response to 15.1.
15.3	AusNet Services	Expenditures on export services are unlikely to have an observable reduction in reliability (CMOS), if at all. The primary cause of maximum demand outages can be effectively mitigated by targeted augmentation with meter data and network analytics.	See response to 15.1.
<b>16. New export services output</b>			
16.1	AusNet Services	<p>The size of export hosting services can be proxied by either Option 1 (export services customers as a proportion of total customers) or Option 2 (curtailment measure weighted by Customer Export Curtailment Value), and that this could be introduced as a new output on top of a change in the ETP and RMD definitions, provided there is no double counting.</p> <p>Intuitive sense should be added to the final assessment criteria as a check on the conceptual merit.</p>	<p>Our view in this final report is that there may be merit in adding a new output to the PIN models to measure the level of export services provided by DNSPs, as this could represents a service provided by DNSPs to their customer under the benchmarking framework.</p> <p>The merits, materiality and feasibility of developing a new export services output metric will be examined further and consulted on as part of the future review.</p> <p>The views provided in this process on options for developing a new output will be considered further as part of the future review.</p>

ID	Stakeholder	Comment	Response
16.2	CitiPower, Powercor & United Energy	A new export services output is likely to have a small impact on the productivity results currently. However, the impact is likely to increase in the future as more solar exports are enabled.	See response to 16.1.
16.3	Consumer Challenge Panel	The CCP supports the inclusion of an export service output variable in benchmarking models, provided it is based on negative output and CECV weighted (option 2). It did not support option 1 where export service customer numbers are used as this approach ignores the possibility that many CER customers could be experiencing curtailment.	See response to 16.1.
16.4	SA Power Networks	<p>SA Power Networks does not support the AER’s proposed approach of using the proportion of export service customer numbers (of total customers) to develop a new export services output, as the cost to serve export customers can vary greatly depending on the capacity to export and location within the network.</p> <p>SA Power Networks also opposes adopting a curtailment measure as a negative as a proxy of the level of export hosting services provided by the network, and using CECV to weight this output on the basis that:</p> <ul style="list-style-type: none"> <li>• this metric may penalise a network which is curtailing customers, even when it may be economic to do so;</li> <li>• the CECV varies state to state which may dis-advantage some networks dependent upon the CECV to which they are exposed;</li> <li>• a perverse incentive to under-invest may be introduced as networks which only allow customers to install smaller systems will be seen to outperform networks which allow customers to install larger systems;</li> <li>• a network which permits customers to install larger systems to take full advantage of dynamic exports may be significantly disadvantaged due to increased amounts of curtailment; and</li> </ul>	See response to 16.1.

ID	Stakeholder	Comment	Response
		<ul style="list-style-type: none"> <li>fundamentally, we consider we should measure the value delivered to customers as an output (including self-consumption as well as export energy).</li> </ul> <p>SA Power Networks instead recommends the application of metrics which reflect the delivery of value to customers through the efficient connection of export services including through the metrics below:</p> <ul style="list-style-type: none"> <li>Total Utilised Generation which could serve as a measure of the export services capacity which the network has enabled customers to utilise.</li> <li>RMD which would reference the networks' ability to integrate increasing levels of solar export.</li> <li>Quantity of Energy Exported which would measure the amount of energy the network has enabled customers to export.</li> </ul>	
<b>17. Materiality checks</b>			
17.1	CitiPower, Powercor & United Energy	CitiPower, Powercor & United Energy somewhat support the AER's materiality checks but note that with the AER revisiting benchmarking adjustments in, or prior to, 2027, that these materiality checks should be revisited at a later date when better information on exports is available.	<p>We will test the materiality on the impacts of export services on the PIN models as part of the 2027 review of benchmarking, or sooner if data becomes available.</p> <p>The final report provides our thinking to date on how materiality could be tested in the future review. We will consider stakeholder views provided during this process and consult further with stakeholders when deciding how we will test materiality as part of the future review.</p>
17.2	AGL Energy	AGL supports the AER conducting materiality checks on benchmarking models. We agree that the materiality of any current impacts on the productivity results has not been well established and the AER should focus on informing these considerations via data collection.	See response to 17.1.

ID	Stakeholder	Comment	Response
17.3	SA Power Networks	The need for a review of approaches to benchmarking should not wait until export services impacts materially on all networks. Given that benchmarking aims to assess relative performance of distributors, it is precisely now when distributors are at differing stages of the distributed energy transition that we need to consider how benchmarking accounts for provision of export services.	See response to 17.1.
17.4	AusNet Services	<p>AusNet Services welcomes the AER's draft decision and supports the AER's proposed approach of collecting data to understand the materiality of the impact of export services on benchmarking, before taking concrete steps to modify the benchmarking models.</p> <p>AusNet Services agrees that a materiality check is necessary to ensure that resources and effort are focussed on areas that have the greatest ability to impact benchmarking outputs.</p>	See response to 17.1.
17.5	Endeavour Energy	Endeavour Energy agrees with the AER's revised approach to the materiality checks included in Table 2 (column 2) of the draft report.	See response to 17.1.
<b>18. Data availability</b>			
18.1	CitiPower, Powercor & United Energy	<p>CitiPower, Powercor &amp; United Energy do not have data on quantity of energy self-consumed for any year because this is not measured by our smart meters. We recommend against estimating this data as it is likely to reduce the accuracy of benchmarking and reduce stakeholder confidence in the effectiveness of benchmarking.</p> <p>CitiPower, Powercor &amp; United Energy are able to provide the average quantity of energy exported and export customer numbers back to Quarter 2 2014, which is the start of our smart meter data set. Estimating numbers prior to these dates would be unreliable and is not required due to the low uptake of solar PV. We would be comfortable with assuming zero solar exports and customers for all DNSPs prior to Quarter 2 2014.</p> <p>CitiPower, Powercor &amp; United Energy have estimated export services costs back to 2014-15 to populate previous AER data requests seeking this</p>	<p>As outlined in section 5.3.3 of the final report, we will begin to collect, through the annual performance reporting process, data that is feasible, cost effective to report, and likely needed for the future review of the benchmarking (and for performance reporting).</p> <p>We will also monitor through the annual performance reporting process and consult with DNSPs on what additional data may become feasible and cost effective to begin to collect ahead of the future review.</p> <p>We will consider stakeholder views provided during this process as part of the future review, including in regard to use of actual data versus estimates where</p>

ID	Stakeholder	Comment	Response
		information. Estimating export services costs prior to 2014-15 would be unreliable due to our lack of smart meter data for prior years.	actuals are not available, and the extent to which back casting is required.
18.2	SA Power Networks	<p>Acknowledges additional data will be required to further understand the impacts of export services on benchmarking and is happy to work with the AER to consider data requirements to support the AER's benchmarking review.</p> <p>Some data will need to be estimated as actual data is not available at this stage, including self-consumption.</p>	See response to 18.1.
18.3	AusNet Services	<p>The AER should reconsider the need for collecting historical data as historical data dating back to 2006 or 2012 cannot be provided or estimated with sufficient reliability to enable it to be used for benchmarking and the assessment of base year efficiency.</p> <p>A more robust and accurate approach to data collection would be to select a realistic commencement date, where this becomes the base or benchmark on which future export services data is compared against. We propose a commencement date of 1 July 2024, which allows consultation on the form and granularity of the data, and systems and processes to be updated over a 6–12-month period.</p> <p>AusNet preliminary views on the AER's proposed data collection for benchmarking are below:</p> <ul style="list-style-type: none"> <li>• Annual quantity of energy self-consumed and the average quantity of energy self-consumed during the same peak hours over which maximum demands at transmission connection points are calculated would require an estimation approach and an ability to verify assumptions.</li> <li>• Average quantity of energy exported during the same peak hours over which maximum demands at transmission connection points are</li> </ul>	See response to 18.1.



ID	Stakeholder	Comment	Response
		<p>calculated can be provided as AusNet has access to net consumption from smart meters.</p> <ul style="list-style-type: none"> <li>• Export customer numbers as a proportion of total customer numbers can be provided as AusNet systems and processes capture this information.</li> <li>• Exported electricity as a proportion of energy throughput can be provided as AusNet has access to net consumption from smart meters.</li> <li>• Export services cost (opex and capex) can be provided once guidance is provided on what costs are included/excluded, and sufficient time is provided for systems/process upgrades.</li> <li>• Data on export limits can be provided, but it is unclear how a curtailment will be measured for customers with static limits, or how to account for the differences between exports being curtailed by networks and exports being curtailed by other factors. Data would be captured from the DER register.</li> </ul>	
18.4	Endeavour Energy	Endeavour Energy would be interested in understanding whether obtaining data back until 2006 will be required or whether the benchmarking review will also re-visit the period over which the models are run.	See response to 18.1.
<b>19. Issues related to the use of Canadian and New Zealand DNSPs in econometric benchmarking models</b>			
19.1	CitiPower, Powercor & United Energy	<p>CitiPower, Powercor &amp; United Energy's view is that the econometric models have significant value over the MTFP models because they apply statistical robustness and account for interdependencies between variables, producing generally more reliable results. The requirement to reconsider the use of Canadian and New Zealand DNSP data is dependent on the finding that export services are materially impacting the benchmarking models.</p> <p>Even if the impact of export services is found to be material, the econometric models are still likely to be more statistically accurate than the PIN models because of their superior statistical properties. CitiPower, Powercor &amp; United Energy therefore recommends that regardless of the</p>	<p>In the future review of benchmarking in addition to our focus on the PIN models, we will consult on and consider if / how the econometric benchmarking models could be adjusted to better account for export services, including issues related to the use of data from Canadian and New Zealand DNSPs.</p> <p>We will consider stakeholder views provided during this process as part of the future review.</p>

ID	Stakeholder	Comment	Response
		impact of export services on benchmarking, that the AER continue to use the econometric models as the primary measures of efficiency.	
19.2	SA Power Networks	SA Power Networks considers it important to assess jurisdictions from the perspective of their export service penetration and climate as well as the similarity of their regulatory regimes. In this context another jurisdiction that could be considered is California, for reasons of its household solar penetration and similar issues of excess daytime solar production.	See response to 19.1.
19.3	Endeavour Energy	While Endeavour Energy accepts the AER's benchmarking approach of Australian DNSPs we remain of the view the international data used in the economic models is not comparable. The addition of export services further exacerbates this issue with current and potential export services use and ownership levels in Australia varying markedly from Canada and New Zealand. The alternate involves reviewing available data from other countries, like the United States, or not relying on international data.	See response to 19.1.

# Glossary

Term	Definition
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ARENA	Australian Renewable Energy Agency
ARR	Annual revenue requirement
CECV	Customer export curtailment value
CER	Consumer Energy Resources
CESS	Capital expenditure sharing scheme
CMOS	Customer minutes off-supply
DER	Distributed Energy Resources
DMIAM	Demand management innovation allowance mechanism
DMIS	Demand management incentive scheme
DNSP	Distribution Network Service Provider
DRMG	Distribution Reliability Measures Guidelines
DVMS	Dynamic voltage management system
EBSS	Efficiency benefit sharing scheme
ESIS	Export service incentive scheme
ETP	Energy throughput
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
OEF	Operating environment factor
PIN	Productivity Index Number
PV	Photovoltaic
RMD	Ratcheted maximum demand
SSIS	Small-scale incentive scheme
STPIS	Service target performance incentive scheme

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