Review of incentive schemes for networks

Discussion paper

December 2021

AUSTRALIAN ENERGY REGULATOR

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AER Reference: AER212808

Amendment Record

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Request for submissions

We, the Australian Energy Regulator (AER) invite interested parties to make written submissions on this discussion paper for our review of expenditure incentive schemes for network service providers. Please provide submissions by 5pm AEST **11 March 2022**.

Submissions should be emailed to incentivereview@aer.gov.au. Alternatively, you may mail submissions to:

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We prefer that all submissions be publicly available to facilitate an informed and transparent consultative process. We will treat submissions as public documents unless otherwise requested. All non-confidential submissions will be placed on the AER's website. For further information regarding the AER's use and disclosure of information provided to it, see the ACCC/AER Information Policy.

We request parties wishing to submit confidential information:

- clearly identify the information that is the subject of the confidentiality claim
- provide a non-confidential version of the submission in a form suitable for publication.

Questions for stakeholders

Key priorities

1. Have we captured the key stakeholder issues?
2. Do you agree with our intention to prioritise a review of the expenditure incentive schemes and customer outcomes?
3. What deliverables should we prioritise as part of this review?

Proposed focus areas

4. Do you agree with our key areas of focus? Our proposed key focus areas are:
    - Better information and monitoring of incentive schemes costs and outcomes over time.
    - The interaction between incentive schemes and forecasting.
    - The balance of incentive scheme rewards and penalties.
    - Linking incentive schemes to network service provider performance.
5. Are there other key issues we should consider as part of this review?

Overview of incentive regulation

6. Do stakeholders agree that the incentive framework is improving outcomes for customers of electricity services?
7. Is the size of incentive payments appropriate and commensurate with the outcomes being provided to customers?

Key components of incentive schemes

8. Does the current approach to financial incentives remain appropriate?
9. Are the current *levels* of financial rewards and penalties appropriate?
    - Should the rewards and penalty rates be lower or higher?
    - Should the relative rewards and penalties under the EBSS and CESS be fixed, or should it vary with the time value of money?
10. Is the balance of incentives between the schemes important?
    - Are there circumstances where different rewards and penalties between operating and capital expenditure appropriate?
    - How should financial incentives be considered taking into account potential non-financial incentives on network service providers?
11. To what extent is expenditure forecasting a concern for stakeholders?
12. To what extent would providing greater flexibility in the approach to applying incentive schemes address stakeholder concerns about the incentives on network service providers to over-forecast?

Operating expenditure outcomes and incentives

13. Has the EBSS provided the right incentives in terms of promoting continuous efficiency gains in operating expenditure?
14. Is the current level of rewards and penalties under the EBSS appropriate? What considerations should be given when determining the EBSS carryovers, including the length of carryover period?
15. The EBSS assumes that only base year operating expenditure is used to inform forecast operating expenditure. How does our use of economic benchmarking to assess the efficiency of base year operating expenditure affect the incentive to reduce operating expenditure? Should the EBSS be amended to reflect this?
16. Should there be any other adjustments to the EBSS?

Capital expenditure outcomes and incentives

17. Has the CESS provided the right balance of incentives in terms of promoting continuous efficiency gains, efficient timing of investments (including efficient deferrals) and good capital expenditure forecasts?
18. Is the current level of rewards and penalties under the CESS appropriate? Is a fixed level of 30 per cent still appropriate, or should be it changed? What considerations should be made to the appropriate level?
19. Should the application of the CESS, and its rewards and penalties, change for individual networks where there are concerns about expenditure over-forecasting?
20. Should there be any other adjustments to the CESS and capital expenditure incentive guideline?

Service performance outcomes and incentives

21. Do you agree with our proposal not to review the service performance component of the STPIS at this time?
22. Do you agree that there is appropriate flexibility across the STPIS and the customer service incentive scheme to ensure that customer preferences can be reflected in service performance incentives over time?
23. Do you agree with our proposal to address transmission network service provider concerns about the market impact component of the STPIS within revenue determinations?

1 Introduction to our review

This discussion paper sets out our approach to reviewing the incentive schemes established in the National Electricity Rules (NER), which is one of our strategic priorities.

Incentive schemes form an important part of our approach to regulating national monopoly electricity and gas networks in Australia. We seek to incentivise network service providers to run an efficient business so that customers pay no more than necessary for services that they value the most. The framework is designed to mimic the outcomes from effectively competitive markets.

We continue to incrementally improve our approach to regulation by being more efficient and focusing on outcomes that matter most to customers. This is reflected in our 'tilt' priorities outlined in our Strategic Plan for 2020–25. One of the priorities we identified is reviewing and refining our incentive schemes and guidelines to ensure they remain relevant and fit-for-purpose. This was prioritised in response to stakeholder feedback in recent regulatory processes about the costs and benefits from the incentive schemes.

We have also been reporting on incentive schemes in our recent electricity network performance reports. We monitor the rewards and penalties to customers from incentive schemes, and the price, expenditure, and service outcomes to customers over time. Our reports note that we are committed to monitoring outcomes achieved under the schemes and refining their design as necessary over time.

In this review, we will:

- review the objectives of the operating and capital expenditure incentive schemes and the service performance scheme
- consider the costs and benefits of the schemes in terms of promoting the long-term interests of consumers by examining network pricing, expenditure and performance data, and reviewing case studies
- consider whether the schemes are working as intended to incentivise networks to behave efficiently and deliver the right levels of service to customers
- consider whether incremental change to the existing design of the schemes will improve outcomes for consumers and better incentives on networks.

This discussion paper provides information to inform stakeholder consideration of these matters, including the objectives and performance of incentive schemes, outcomes being delivered to customers, and proposed key areas for further examination and review.

We will focus primarily on the schemes that apply to the electricity distribution and transmission network service providers. This is because we have more financial and operational information from the electricity networks that we have collected and reported in our network performance and

benchmarking reports.[1] This allows us to examine jurisdictional trends, in addition to individual business outcomes.

1.1 Why we are undertaking a review and our priorities

What we have heard from stakeholders

In recent regulatory determinations for the Victorian and South Australian electricity distributors, we received customer and community feedback on the incentive schemes. This feedback focused on the operating expenditure and capital expenditure incentive schemes – the efficiency benefit sharing scheme (EBSS) and the capital expenditure sharing scheme (CESS).

Emerging questions raised by customer and community groups included the size of the incentive rewards to networks and whether the incentive schemes are providing value for money.

In relation to capital expenditure, submissions noted that networks have been proposing significant capital expenditure efficiency rewards from the CESS. This resulted from networks under-spending capital expenditure compared with forecast. While this will result in less capital expenditure added to the regulatory asset base (RAB), several stakeholders expressed concerns regarding the scheme's transparency, and whether the scheme was rewarding genuine efficiency gains. Several stakeholders considered that there was a lack of transparency over whether under-expenditure was due to genuine efficiency gains, or due to a combination of happenstance, poor/over-forecasting or the inability to obtain project approvals.[2]

We note that, if a network can maintain its service standards without undertaking additional capital expenditure, customers will benefit from this through a lower RAB. However, as we discuss in section 5, where under-spending is due to deferring projects, it is important that these projects are not included again in future forecasts. Submissions raised concerns about the incentives on networks to over-estimate future expenditure forecasts and defer projects between periods.

In relation to operating expenditure, several stakeholders also observed large operating expenditure efficiency rewards from the EBSS. They questioned whether this was because of overly generous operating expenditure forecasts, or whether the results are reflective of businesses on the efficient frontier. One submission also stated it was not clear whether the large

[1] We are in the process of developing network performance reporting for gas networks and pipelines. This will provide us with better information to consider the revenues, expenditure and service performance of gas networks individually and collectively, and the contribution of incentive schemes. We will focus primarily on the information available from electricity networks in this review. However, we consider that any learnings from electricity networks will likely be relevant to gas networks in the near term.to consider the revenues, expenditure and service performance of gas networks individually and collectively, and the contribution of incentive schemes. We will focus primarily on the information available from electricity networks in this review. However, we consider that any learnings from electricity networks will likely be relevant to gas networks in the near term.

[2] CCP17, Advice to the AER on the Victorian Electricity Distributors' Regulatory Proposals for the Regulatory Determination 2021–26, June 2020, p. 65; ECA, Victorian Electricity Distributors Regulatory Proposals 2021–26, June 2020, Attachment 1, p. 32; EnergyAustralia, Victorian Electricity Distribution Determinations 2021–26 – regulatory proposals – 31 January 2020, June 2020, p. 8; Origin Energy, Submission to Victorian electricity distributors regulatory proposals, June 2020, p. 6.

efficiency rewards are a result of the EBSS not working or whether the AER is not using the results of its productivity analysis in forecasting operating expenditure.

Network service providers have been broadly supportive of the existing expenditure and reliability schemes. For example, in 2019, Energy Networks Australia published a report that examined the benefits of the EBSS and STPIS to customers.[3] It found that the incentive framework had delivered benefits to customers in the form of reductions in the average residential customer energy bill and improvements in reliability. These benefits reflected reductions in operating expenditure compared to regulated allowances, and how customers value improvements in service reliability. This report did not capture outcomes to consumers from the CESS as data was not yet available.

Our review provides us with an opportunity to consider in further detail the issues raised by stakeholders and reflect on the experience in applying the incentive schemes. This will include the outcomes for consumers from the date of our last review, and the potential effect of incentive schemes on network behaviour.

A focus on the expenditure incentives

We intend to focus on the incentives for prudent and efficient operating and capital expenditure, and the contribution of the EBSS and CESS. These 2 schemes have been an important source of revenues for network service providers and customers have asked how they are benefiting from efficiency gains driven by these schemes.

These 2 schemes were the focus of our 2013 Better Regulation reform program, which also included the development of our expenditure forecasting assessment guideline and economic benchmarking techniques. This review provides an opportunity to reflect on whether these reforms are delivering the intended outcomes to customers.

We consider a key focus will be the CESS. This scheme has not been reviewed since it was created in 2013. However, it has received significant stakeholder interest, especially from consumer groups. We now have information and regulatory experience from applying the CESS to all electricity distribution networks and most electricity transmission networks.

The EBSS has been in operation since 2008 and was previously reviewed in 2013, when the CESS was created. We consider that the EBSS is broadly fit-for-purpose and plays an important role in ensuring that actual operating expenditure can be used in setting forecasts in subsequent regulatory periods. Nevertheless, given that capital expenditure and operating expenditure are to some extent substitutable, it is appropriate to also review the incentives for efficient operating expenditure and the role of the EBSS.

We recognise that the expenditure incentive schemes form one component of the broader regulatory incentive framework (albeit an important one). There are other components of the incentive framework that contribute to promoting the long-term interests of consumers.

[3] Energy Networks Australia, *Rewarding Behaviour: How Customers Benefit from Incentive-Based Regulation*, 31 July 2019. Available at: https://www.energynetworks.com.au/news/media-releases/incentives-deliver-more-than-6-billion-in-benefits-to-customers/

An important component of this framework is the incentive to maintain or improve service quality. The service target performance incentive scheme (STPIS) ensures that a network provider is penalised for cutting service quality (and equally is rewarded for improving service quality where it is valued by customers). Without this incentive, a network provider may find that it is financially profitable to cut service quality and expenditure at the same time. This could lead to worse outcomes for customers.

We consider that service reliability component of the scheme is generally fit-for-purpose and is delivering positive outcomes for customers. We also recently reviewed the reliability incentive calculations that apply to electricity distribution networks in 2018, alongside updating the estimate of the value of customer reliability, which indicates co customers' willingness to pay for reliable levels of service. We consider that more time is required to consider the impact of these changes on reliability outcomes for customers and the design of the STPIS incentives.

As network service providers engage closely with their customers, we gain a better understanding of the types of performance measures that should be incentivised under the regulatory regime. For example, in recent Victorian electricity distribution revenue determinations, networks and customers agreed to replace the customer service performance measure in the STPIS with a number of alternative measures that reflected customer preferences about service performance. This was facilitated by our new customer service incentive scheme.

We consider that the STPIS and the customer service incentive scheme currently provide sufficient scope and flexibility for customer preferences to be reflected in service performance incentives over time.

We are not intending to review the unique components of the service performance scheme that apply to electricity transmission networks (namely the network capability component and market impact component). In the context a transforming energy system, with increased regionally dispersed renewable generation and changing network constraints, we are open to a future review of this incentive scheme. However, as the energy market transforms, we consider it more effective to respond to individual service provider concerns within each revenue determination.

The review also does not consider the demand management incentive scheme. This scheme has only been in place for 2 years. A review of the demand management incentive mechanism should ideally be undertaken once we have more information about how the scheme has worked, and the development of the market for demand management services. It would also consider how the underlying expenditure schemes have performed (through this review). This is consistent with the original explanatory statement for the demand management incentive scheme.

How this interacts with our broader program

Our review of incentive schemes is one part of our broader program to incrementally improve our approach to regulation by being more efficient and focusing on outcomes that matter most to customers. These are reflected in our 'tilt' priorities outlined in our Strategic Plan for 2020–25. This includes work that seeks to improve the incentives faced by service providers in delivering services to customers, such as:

- Our *Better Resets Handbook Toward Consumer Centric Network Proposals* (the Better Resets Handbook).[4] This is designed to strengthen the reputational and procedural incentives on electricity networks in preparing their regulatory proposals and engaging with customers.[5] In this incentive schemes review, we will reflect on role of the Better Resets Handbook in terms of the incentives on network service providers in preparing expenditure forecasts and how it complements the expenditure incentive schemes.
- Our review of incentive arrangements for export services. We are concurrently considering the appropriate incentive arrangements for electricity distribution networks to provide efficient levels of export services. This may include expanding the STPIS to include export services. While our incentive scheme review is not seeking stakeholder submissions on incentives for export services, as we engage with stakeholders across both reviews, we will consider the implications, if any, for the broader STPIS design and application.

In addition, we continue to report annually on electricity network performance outcomes that matter most to customers. The information in these reports help inform our assessment of the performance of incentive schemes. Our most recent electricity network performance report was published in September 2021, which includes information on the how much customers spend on incentive payments. We stated that we intended to work further over the coming years to improve reporting on the effect of incentive scheme outcomes for customers. This review of incentive schemes forms a key step in improving reporting on incentive schemes outcomes.

We also continue to publish electricity network benchmarking reports to provide stakeholders with information about the productivity growth and efficiency of distribution and transmission networks. The efficiency of electricity networks is one important measure of the outcomes from incentive regulation. Our most recent report was released in November 2021.

We continually review and refine elements of our benchmarking methodology and data to maintain the reliability and applicability of the benchmarking results. In November 2021, we also published a consultation paper about the impact of capitalisation and cost allocation differences on our electricity network benchmarking results. The issue of capitalisation and cost allocation relates to how network service providers decide whether to incur operating expenditure or capital expenditure. While this consultation paper is considering the impact of cost allocation decisions on benchmarking results, it is related to the consideration of the financial incentives on electricity networks to incur operating or capital expenditure (which is one of the key focuses of this review).

1.2 Our proposed focus areas for review

This section sets out our proposed key focus areas for review. This is based on our consideration of key issues stakeholders have raised, and information on the performance of network service providers over time and how they have been responding to incentives.

[4] We published a draft version of the Handbook in September 2021 and the final version will be published in December 2021.

[5] The first iteration of the Better Resets Handbook will apply only to electricity networks. In future iterations, will be consider applying it to gas networks.

Our proposed key focus areas are:

- Better information and monitoring of incentive schemes costs and outcomes over time.
- The interaction between incentive schemes and forecasting.
- The balance of incentive scheme rewards and penalties.
- Linking incentive schemes to network service provider performance.

Better information and monitoring of scheme costs and outcomes over time

We heard from stakeholders that there is a lack of transparency about how incentive scheme rewards and penalties are associated with advancing the interests of consumers. For example, where there are rewards from expenditure under-spending, it was unclear whether this reflected efficiency gains or expenditure over-forecasting or changes in project delivery assumptions.

We began reporting on incentive scheme outcomes in our 2020 and 2021 network performance reports. This includes information on the revenues charged to consumers from incentive schemes, and expenditure and service performance outcomes. This has helped provide more publicly available information in an accessible format. However, the information is necessarily high-level. Our 2020 report noted that we intend to work further in coming years to improve our reporting tools on incentive scheme outcomes, seeking to better understand the effect that those schemes are having on network service provider outcomes.

This review will consider in more detail how the expenditure incentive schemes have performed over the past 5 or more years, and whether the outcomes are consistent with stakeholder expectations. Sections 4, 5 and 6 of this discussion paper provides some initial information to inform stakeholder consideration of the incentive scheme performance.

We will also consider how best to monitor and report on incentive schemes outcomes into the future to provide transparent and usable metrics to all stakeholders. This may include additional information included in our network performance reports, information considered as part of our regulatory determinations and new information to collect from networks. This information is likely an important first step in providing an ongoing measure of the outcomes from incentive schemes and providing stakeholders with greater confidence in the performance of incentives.

The interaction between incentive schemes and forecasting

Our incentive schemes work by incentivising network service providers to make efficiency gains that are in the long-term interests of consumers. A key feature of incentive schemes is that efficiency gains (and losses) are measured against the forecasts set in regulatory determinations.

In addition to transparency, we heard from consumer stakeholders that expenditure over-forecasting is a concern. This was in the context of both capital expenditure and operating expenditure. In the context of capital expenditure, the ability for network service providers to defer projects between regulatory periods means that consumers may sometimes pay more than efficient costs.

Once we set a forecast, how a network service provider acts will depend on a range of factors. This includes the opportunity for financial rewards under the incentive schemes, the approach to

setting future forecasts and relying on outcomes delivered by the network, and other non-financial incentives. Circumstances can also change since the forecasts were set.

This discussion paper provides some information about how incentive schemes interact with our forecasting approaches to capital and operating expenditure.

Operating expenditure incentives

Our approach to setting operating expenditure forecasts is linked closely with the EBSS. We forecast operating expenditure based on a single year's actual operating expenditure. Where a network makes efficiency gains in operating expenditure, customers will benefit as the revealed efficient expenditure will be used to set revenues in the next regulatory period. This ensures that customers should only pay for the efficient costs of operating and maintaining electricity networks.

The EBSS provides a continuous, or constant, incentive to reduce operating expenditure, which gives us confidence that we can rely on any single year's actual expenditure for forecasting. Our analysis suggests that the EBSS, in conjunction with our operating expenditure forecasting approach, is working well to incentivise networks to improve operating expenditure efficiency.

One area for consideration is the extent to which a network's forecast operating expenditure is informed by factors other than actual operating expenditure in a single year. Notably, we use economic benchmarking to test the efficiency of actual operating expenditure and, in some circumstances, set the efficient level of operating expenditure. When our forecast for operating expenditure is informed by economic benchmarking, this may distort the strength of the incentives from the EBSS in encouraging efficient operating expenditure and the link with forecasting.

We are interested in stakeholders' views on whether we have the correct balance between the EBSS and our economic benchmarking. That is, does our application of both tools provide networks a constant incentive to reduce operating expenditure to the efficient level?

Capital expenditure incentives

In the context of forecasting capital expenditure, we do not rely on a single year of total capital expenditure to set forecasts. This is because capital expenditure is less recurrent in nature, at least when considered across a total program of works. The primary benefit of the CESS in this context is to ensure that efficient capital expenditure is added to the RAB.

While we use actual capital expenditure performance to inform components of future expenditure requirements, we have greater reliance on the quality of information provided in regulatory proposals and our assessment tools when determining forecasts for efficient capital expenditure.

It is also necessary to account for the deferral of capital expenditure projects in the calculation of CESS incentive payments where a network service provider defers capital projects between regulatory periods. Where a network can defer capital expenditure, this can benefit customers through a lower RAB. However, short-term deferrals will be detrimental to consumers where a network service provider is able to defer a material amount of expenditure, leading to higher capital expenditure forecasts in the following regulatory control period. This can lead to consumers paying higher than efficient costs.

We introduced a number of forecasting tools as part of our 2013 Better Regulation reforms, including statistical modelling (e.g. repex modelling) to identify the prudent amounts of

replacement expenditure. We have since made further improvements and released additional guidance to guide networks when preparing expenditure forecasting.

However, there remain concerns from stakeholders, such as from observed patterns of underspending and over-forecasting of capital expenditure. Stakeholders questioned whether CESS rewards are commensurate with efficiency gains in this context and whether we are identifying all capital expenditure deferrals, as well as other drivers of expenditure.

We consider greater transparency and reporting of the drivers of underspends will help to address these concerns and provide us and stakeholders with greater confidence in forecasts going forward. This should be balanced with an appropriate amount of regulatory burden and costs.

One of our recent reforms is the Better Reset Handbook.[6] This Handbook sets out our expectations for a greater customer-centric approach to regulatory proposals, including expenditure forecasts that deliver the outcomes valued by consumers. Our Handbook established a process by which we will consider well-justified proposals. This provides us with an avenue for a clearer and more transparent assessment of expenditure forecasts and whether there are concerns around over-forecasting and whether efficiency gains are likely to be genuine. This is likely to be particularly relevant to capital expenditure forecasting and efficiency benefits from the CESS.

In this review, we will consider how our approach to forecasting provides the appropriate conditions for generating expenditure forecasts that are reflective of efficient costs. Where they are, the incentive schemes are more likely to reward genuine efficiencies. However, where there are concerns about expenditure forecasting and material changes in circumstances within a regulatory period, it may be necessary to consider whether the design and application of incentives may need to change. This is related closely to the following key focus areas.

The balancing of incentive schemes

The expenditure incentive schemes were designed to provide network service providers with an incentive to make efficient decisions on when and what type of expenditure to incur, while maintaining service performance. Networks receive equal rewards and penalties for making efficiencies in either operating expenditure or capital expenditure and service performance. This intends to provide incentives on networks to achieve a balance between costs and service quality (a ‘price-quality trade-off’) that is valued by customers.

The current analysis suggests that the expenditure schemes do not currently provide equal rewards and penalties. This is due to differences in how the EBSS and CESS are designed, and changes in economic conditions over the past 5 years.

It is not yet clear whether imbalances in incentives is distorting decision making by network service providers such that they are not making efficient decisions on when and what type of expenditure to incur. In practice, it is likely difficult to disentangle the impact of financial and non-financial factors on networks' investment decisions. However, this is an area for further consideration as to whether the financial incentives are correctly balanced.

[6] We published a draft version of the Handbook in September 2021 and the final version will be published in December 2021.

Where there are concerns that an imbalance in the schemes may not encourage efficient behaviour, it would be necessary to make an amendment to the schemes. This could be to the design of the incentive rates, or how the scheme is applied in regulatory determinations.

Linking incentive schemes to service provider performance

The application of incentives schemes should be flexible in responsive to network service provider performance and whether they are appropriately responding to incentives or require incentivising.

Several consumer stakeholders have raised concerns about expenditure over-forecasting and whether network service providers are being rewarded for genuine efficiency gains. We have also heard that an incentive scheme should not apply unless we can confidently correct for expenditure over-forecasting (specifically for capital expenditure forecasting and the CESS).

We currently decide whether to apply an incentive scheme to a network service provider as part of their revenue determination. When we decided to apply an incentive scheme, our current approach is to apply the same version of an incentive scheme to each network service provider.

However, a more flexible approach can be applied. When the AEMC made the rule change that required the AER to establish the CESS, it contemplated that the AER could tailor incentive scheme rewards and penalties to service providers based on their historical spending behaviour and how they are responding to incentives. This is discussed in section 3.4.

It is important that incentive arrangements lead to outcomes that are consistent with consumer preferences and their long-term interests. We consider that it may be appropriate for incentive schemes to be flexible and responsive to network service provider performance and views on whether they are appropriately responding to incentives. This may include more active consideration on whether or not to be apply a particular scheme and/or the incentive arrangements (e.g. incentive reward or penalty rate and symmetry) that will apply to individual service providers in a particular regulatory determination, instead of applying a fixed approach to all service providers.

We are considering ways in which the design of our schemes, and how we apply them in practice, can be more flexible. We are also considering how we will test whether network service providers are responding to incentives, in particular for capital expenditure where there is less of a clear association between capital expenditure performance in one regulatory period and the setting of capital expenditure forecasts in the next regulatory period.

As we begin applying our Better Reset Handbook, we will examine and test service provider performance and proposals against the criteria we have established for considering expenditure proposals. Expenditure proposals that are aligned with the criteria set out in the Handbook will provide us greater confidence that networks are proposing efficient expenditure and have been seeking genuine efficiencies over time. This is one way in which we gain confidence in the ongoing application of incentives.

However, when expenditure proposals do not align with the criteria set out in the Handbook, this provides us with information that can inform the application of incentive schemes in the upcoming regulatory period. The application of schemes can also be considered by customers in their engagement with networks, and we can take these views into account.

1.3 Timeline and approach

In undertaking this review, we are mindful of providing sufficient transparency and regulatory certainty to upcoming regulatory determinations. We also want to provide a timely review that addresses those issues that matter most to customers, as well as network businesses.

When amending incentive schemes, we are required to consult with stakeholders in accordance with the consultation requirements set out in chapter 6 and 6A of the NER. These require us to:

- publish an explanatory statement on the reasons for amending a scheme or guideline
- invite written submissions for no less than 30 business days
- publish a final decision within 80 business days from publishing the proposed amendment.

These requirements do not apply to the review process undertaken prior to consultation on any proposed amendments to incentive schemes. However, we intend to consult widely with all stakeholders about the performance of the incentive schemes, key issues for review, and whether any changes should be made to the schemes themselves (or other areas for reform).

Network businesses consider the expected operation of incentive schemes when preparing their regulatory proposals. The NSW, ACT and Tasmanian electricity distribution networks are expected to submit their regulatory proposals for the next 5-year period in January 2023. Throughout 2022, these businesses will be preparing their proposals and engaging with consumers and regulators, including the AER.

Table 1 sets out our timeline and key milestones for our review of incentive schemes.

Table 1 Timeline for review of incentive schemes

Milestone	Date
AER discussion paper published	2 December 2021
Submissions on AER discussion paper due	11 March 2022
AER draft decision setting our key findings and proposed next steps *(Where we propose to amend an existing incentive scheme, we will consult with stakeholders for at least 6 weeks, as required under the NER.)*	June 2022
Submissions on AER draft decision due	July 2022
AER final decision setting our next steps and scheme amendments	September 2022

Questions

1. Have we captured the key stakeholder issues?
2. Do you agree with our intention to prioritise a review of the expenditure incentive schemes and customer outcomes?
3. What deliverables should we prioritise as part of this review?
4. Do you agree with our key areas of focus? Our proposed key focus areas are:
    - Better information and monitoring of incentive schemes costs and outcomes over time.
    - The interaction between incentive schemes and forecasting.
    - The balance of incentive scheme rewards and penalties.
    - Linking incentive schemes to network service provider performance.
5. Are there other key issues we should consider as part of this review?

2 Overview of incentive-based regulation

2.1 How incentive regulation aligns with customer outcomes

Electricity networks and some gas networks are 'natural monopolies' that do not face the typical commercial pressures experienced by businesses in competitive markets. They do not need to consider how and whether or not rivals will respond to their prices, and may face limited financial pressure to control their operating costs or invest efficiently.

We regulate the revenues and prices of these electricity and gas networks. The regulatory framework aims to encourage network service providers run an efficient business and ensure that consumers pay no more than necessary for a safe and reliable service. This framework is designed to mimic the outcomes from effectively competitive markets.

The framework is incentive-based. Incentive-based regulation provides network service providers with financial incentives to improve their efficiency and performance over time. This includes financial rewards where a service provider improves their efficiency and financial penalties where they become less efficient. This is aimed at incentivising a service provider to reveal the efficient cost of providing services and the level of services valued by consumers.

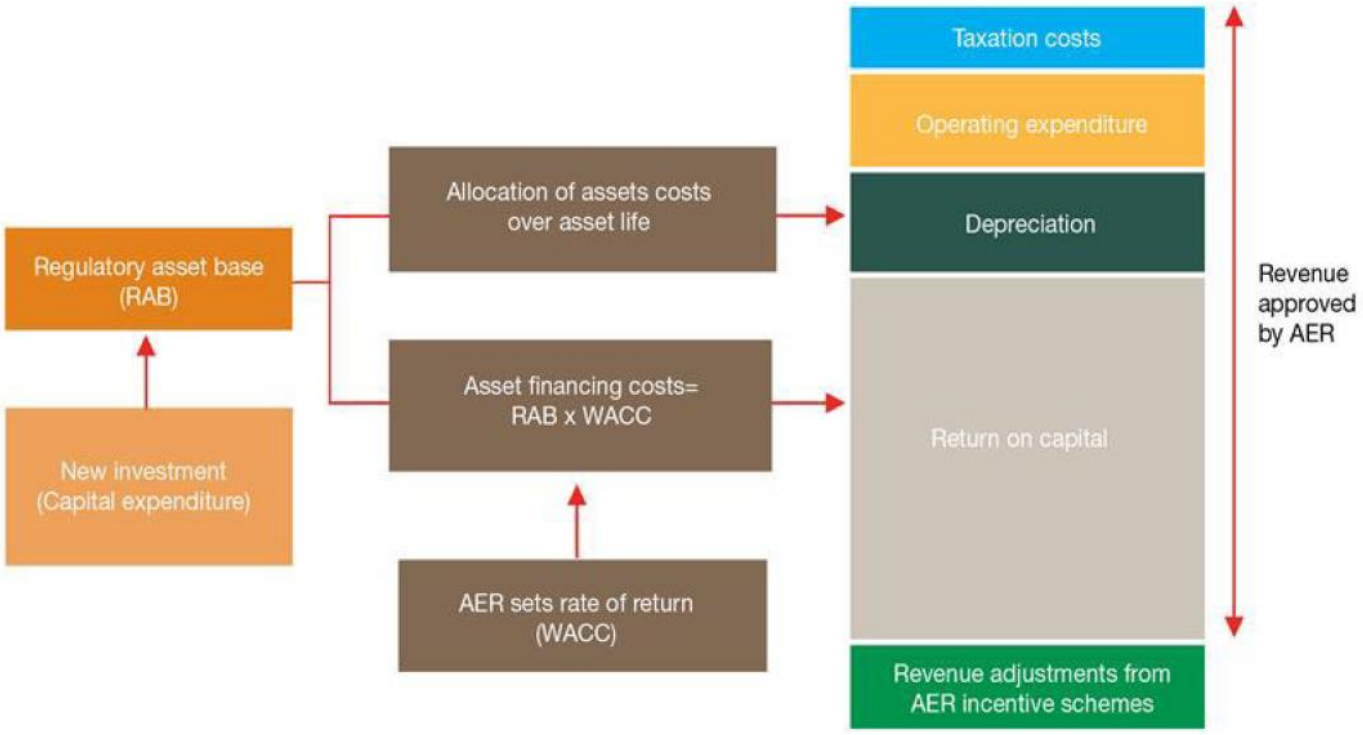
How the AER determines regulated network prices

Under the economic regulatory framework, network service providers are entitled to recover the efficient costs that a prudent operator would expect to incur in running its network. This includes:

- the capital costs of long-lived network assets (e.g. poles, wires and transformers), which are recovered over their useful working life
- annual operating, maintenance and other non-capital costs incurred to provide services.

We set regulated revenue based on an estimate of these efficient costs. The forecast revenue stream is based on the 'building blocks' of a service provider's efficient and prudent costs. This includes revenue to cover its efficient capital costs (in the form of a return on investment and the recovery of the initial outlay or depreciation), its efficient annual operating costs, its tax liabilities, and any payments from an incentive scheme. This building block approach is shown in Figure 1.

Figure 1 The building block model to forecast network revenues



Source: AER

We generally set revenue allowances every 5 years. Once regulated revenue is set for each 5-year period, the network service provider will then decide how best to run its network, provide services to customers and what assets to invest in.

As the revenue forecast is set at the start of the regulatory period, there is an incentive for network providers to reduce the costs it incurs. If the provider can reduce its expenditure below the level funded under our revenue allowance, it benefits by keeping the difference. It will continue to earn revenue equal to the allowance but, since its costs are lower, its profit will be greater.

At the end of a regulatory control period, the RAB is updated for actual capital expenditure and depreciation undertaken during the period, and actual operating expenditure and service performance is reported. At this stage, the revenue targets are reset for the next period, and any cost underspend or overspend is passed onto consumers.

Providing incentives for efficiency and good performance

Incentive regulation was introduced to encourage regulated monopolies to become more efficient and to innovate over time. Other forms of regulation in Australia and around the world have focused only on limiting monopoly pricing while allowing networks to recover their actual costs (generally referred to as “cost of service regulation” or sometimes “cost plus regulation”).[7]

[7] This form of “cost of service” regulation was present in the United Kingdom prior to the 1980s in electricity, water and telecommunications industry regulation. It has also been prevalent in the United States until recently.

However, focusing only on preventing monopoly pricing did not encourage businesses to invest and operate efficiently and provide good levels of service. This ultimately harmed consumers through higher than efficient prices and lower quality service.

Incentive-based regulation was introduced to improved outcomes for consumers by providing incentives on networks to become more efficient over time. This was first introduced in the United Kingdom in the 1980s across the water, energy and telecommunications industries. It has since been adopted by several Australian state-based regulators and is the foundation for the building block framework in the National Electricity Rules and National Gas Rules that we apply.

This form of incentive regulation attempts to mimic the outcomes to businesses and consumers from an effectively competitive market. In an effectively competitive market, there is an incentive for a business to ensure efficient levels of service. A business that reduces its prices and/or provides the desired level of service to consumers, may gain market share and increase in profits. Similarly, a reduction in the service to consumers without a corresponding reduction in price may lead to reduced market share and a subsequent reduction in profits. Over time, the competitive process should ensure that prices are reflective of efficient costs and service levels reflect the needs of customers.

In the national electricity framework in Australia, the building block incentive framework that we apply, a network service provider can earn higher returns in the short term by reducing its expenditure and/or improving service performance against regulated revenue targets. Then through our periodic regulatory determinations or 'resets', expenditure reductions and/or service performance improvements are passed through to customers in the form of lower revenue targets. The networks will then face an incentive to further improve their cost efficiency or service performance against the new targets.

In this arrangement, customers benefit over time where:

- services are provided at an efficient cost and this is reflected in the network component of customer electricity bills
- they receive the types and levels of service that is commensurate with what they value.

To ensure that customers get the most out of the regulatory framework, the NER also establishes several targeted incentive schemes to encourage specific behaviour and outcomes from network service providers. These schemes provide additional financial rewards or penalties that are added to the forecast revenue building blocks (as shown in the green revenue building block in Figure 1).

The 3 core incentive schemes are:[8]

- Efficiency benefit sharing scheme (or EBSS). This scheme provides networks with additional financial incentives to undertake efficient operating expenditure over time and plays an important part in how we forecast efficient operating expenditure.

[8] These are "ex ante" incentive measures that are applied from the start of a regulatory control period and provide efficiency and performance targets. There are also "ex post" measures that are applied at the end of the regulatory period, such as the review of actual capital expenditure incurred (when it is materially higher than forecast) and using forecast expenditure to depreciate the regulated asset base.

- Capital expenditure sharing scheme (or CESS). This scheme provides networks with additional financial incentives to undertake efficient capital expenditure over time, to ensure that only efficient capital expenditure is added to the RAB.
- Service target performance incentive scheme (or STPIS). This scheme provides electricity network service providers with additional financial incentives for maintaining and improving network performance, to the extent that consumers are willing to pay for such improvements

These schemes were developed over time to complement the underlying incentive framework to encourage specific behaviour from network service providers. A key objective of these schemes is to encourage network service providers to make choices about both the costs and quality of their services that are valued by customers. This is consistent with the behaviours of businesses in effectively competitive markets.

Without these incentives to consider both costs and service quality, the regulated network may find that it is financially profitable to cut service quality and expenditure at the same time. This could lead to worse outcomes for consumers. To avoid this outcome the framework ensures that the network is penalised for cutting service quality.

The NER also establishes schemes that are intended to incentivise electricity distribution networks to undertake efficient expenditure on relevant non-network options. These include:

- Demand management incentive scheme. This provides network service providers with financial incentives for undertaking efficient demand management activities instead of more expensive traditional network investments with long lives.
- Demand management innovation allowance mechanism. This provides networks with funding for research and development into innovative demand management solutions.

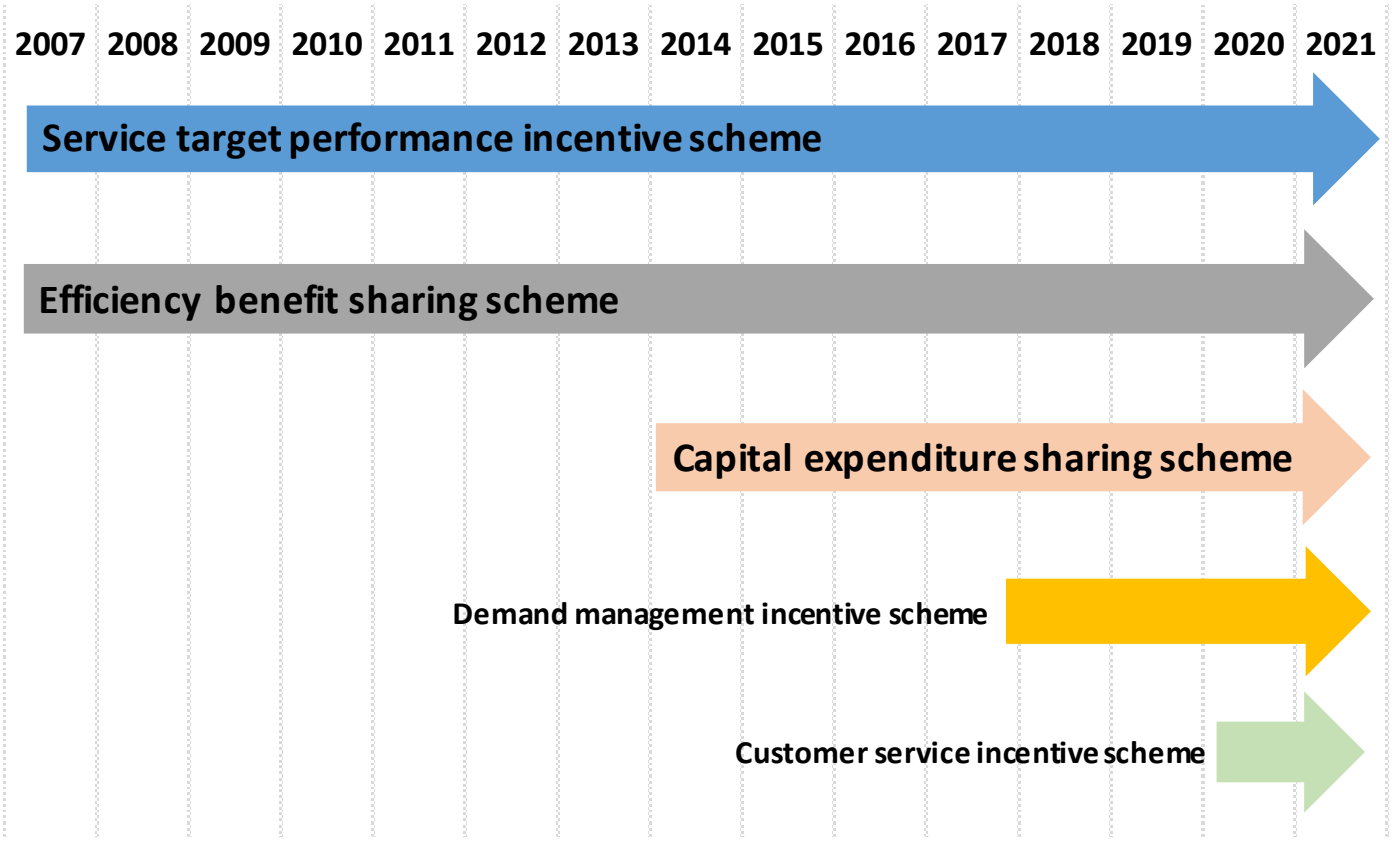
The NER also allows the AER to establish a small-scale incentive scheme that provides incentives for network providers to deliver network services in a manner that contributes to the achievement of the national electricity objective. The AER has currently developed one scheme – the customer service incentive scheme. This is designed to encourage electricity distributors to engage with their customers and provide customer service in accordance with their preferences.

Evolution of incentive arrangements and methodologies

The incentive framework has evolved incrementally over time to provide network service providers with the right incentives to become more efficient over time and provide good services to customers. The national incentive regulatory framework was first introduced in 2006 and applied to electricity transmission and some gas networks. It was then incrementally applied to electricity distribution networks from 2008 as the responsibility for the economic regulation of these networks were passed from state-based regulators to the national regulatory framework.

Figure 2 provides a high-level timeline for when we introduced the individual incentive schemes that we apply to electricity transmission and distribution networks.

Figure 2 History of incentive schemes in the national regulatory framework



Source: AER

The STPIS and EBSS were introduced in 2007. These schemes were first applied to transmission networks before being applied to electricity distribution and gas networks incrementally (except for the STPIS which only applied to electricity networks). We replaced the existing state-based incentive schemes with national consistently designed and applied schemes. However, in developing these schemes, we were informed by approaches adopted by the Victorian and South Australian state-based regulators prior to the transfer of economic regulation to the AER.[9]

In 2013, we undertook our Better Regulation reform program. This was in response to a 2012 AEMC rule change that sought to reform the national energy market and economic regulation of networks to be more consumer focused. As part of our program, we introduced a cohesive package of measures to support an improved regulatory framework for consumers through improvements to incentive schemes, the approach to forecasting and the regulatory process, and better customer engagement. This included establishing:

- an expenditure assessment guideline, which included new forecasting techniques and methodologies

[9] The Essential Services Commission of Victoria was responsible for the economic regulation of Victorian electricity distribution networks until 2009, when the AER assumed responsibility under the national framework. Similarly, the Essential Services Commission of South Australia was responsible for the economic regulation of South Australia Power Networks (then ETSA Utilities) until 2010.

- the CESS and an associated expenditure incentive guideline (as well as reviewing the design of the EBSS)
- economic benchmarking techniques and associated annual reporting
- a consumer challenge panel, and a consumer engagement guideline for network service providers.

Since our Better Regulation program, we began applying the CESS first to transmission networks and then to electricity distribution networks incrementally. We also began applying a modified version of the CESS to gas networks.

We have also been implementing a range of incremental reforms and improvements to our expenditure forecasting techniques, our economic benchmarking, and our guidance to networks. This is an ongoing process.

In 2017, we introduced the demand management scheme and demand management innovation allowance. These were introduced to complement other reforms targeting consumer choice and more efficient network pricing outcomes, including tariff reform, metering contestability, ring-fencing and strengthening the transparency and efficiency of replacement expenditure.

In 2018, we undertook a review of the STPIS for electricity distribution networks. We adjusted the scheme to achieve better reliability outcomes for customers. In 2019, we also published our review of the values different customers place on having a reliable electricity supply (also known as the 'value of customer reliability' or VCR). The VCR is a key input in determining the incentive payments for outperforming reliability targets and penalties for underperforming.

In 2019, we have also begun publishing annual electricity network performance reports to provide stakeholders with information about the outcomes to consumers (such as electricity network revenue, expenditure, and service performance).

In 2020, we published our customer service incentive scheme. This arose out of the 'New Reg' initiative that was undertaken between AusNet Services, Energy Networks Australia and Energy Consumers Australia to explore ways to improve sector engagement and identify opportunities for regulatory innovation.

2.2 Examining outcomes for customers from incentive regulation

This section provides an overview of the outcomes for customers produced from the implementation of incentive regulation. For this purpose, we will examine key measures from our network performance reporting. This provides a starting point in determining whether incentive schemes are delivering outcomes for consumers.

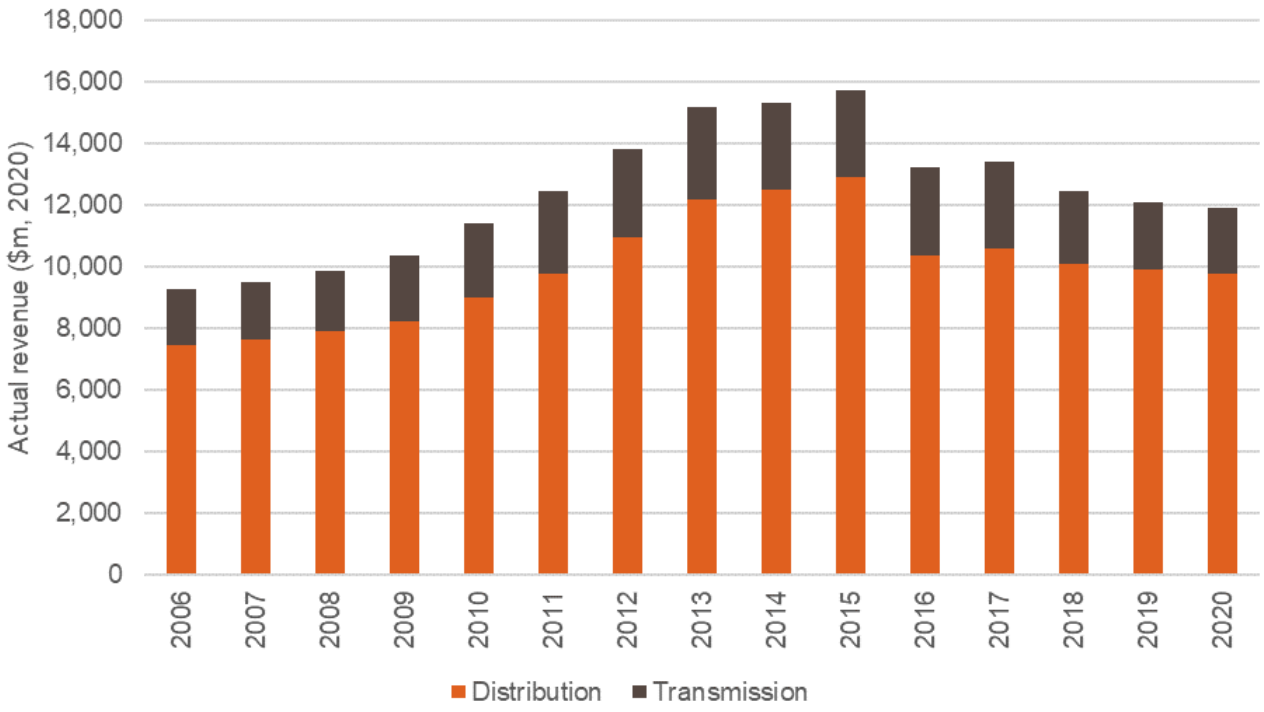
Our 2021 performance report notes that the current regulatory framework is improving outcomes for consumers of electricity services. In particular, since 2014, we have observed reductions in network revenues, reductions in network expenditure, improvements in service reliability, and overall improvements in the productivity of network service providers.

Electricity and gas customers pay for network revenues through their electricity and gas bills. For electricity, we know that the electricity network costs (distribution and transmission) account for between 40 and 50 per cent of what customers pay in their electricity bills. The remainder covers

the costs of generating and retailing electricity, and the costs of various regulatory programs. This means that reductions in network revenues will put downward pressure on consumer bills.

Figure 3 shows that the costs of running electricity networks, as represented by total regulated revenues, have been in decline since 2014. This decline in network revenue means that customers are paying less for the network component of their bills. This reversed the increase in revenues over 2007 to 2013, which led to the large increases in retail electricity prices.

Figure 3 Total electricity network revenues

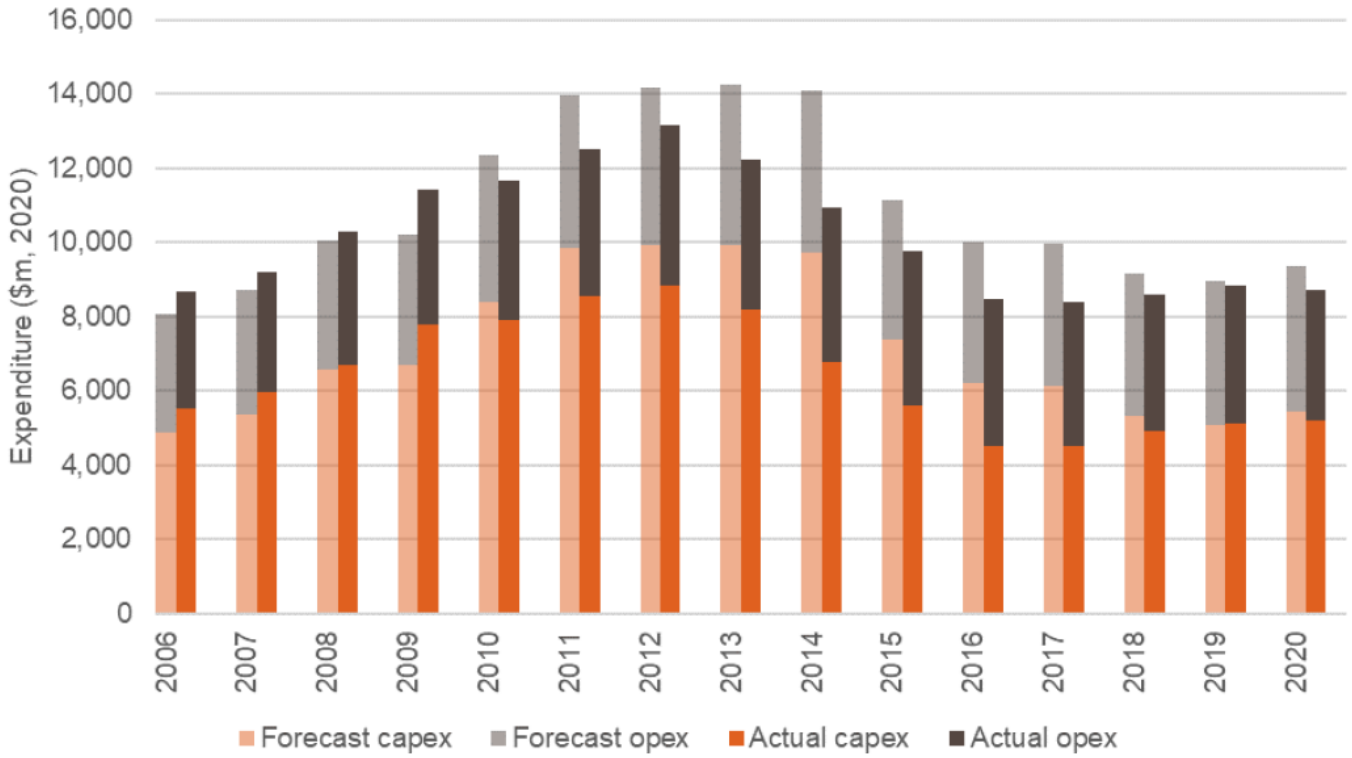


Source: AER electricity network performance report 2021

All electricity networks are now regulated under revenue caps. This means that AER determinations of maximum allowable revenues have a significant impact on the annual charges set by networks. This is informed by our assessment of forecast efficient expenditure, incentive schemes and the other building blocks.

A significant driver of falling revenues has been reductions in the regulated cost of capital. However, we have also observed reductions in operating expenditure and capital expenditure for new network assets. These cost reductions put downwards pressure on network revenues through a reduction in the operating expenditure building block and the costs of financing new capital expenditure. These reductions in expenditure are shown in Figure 4.

Figure 4 Total electricity network expenditure

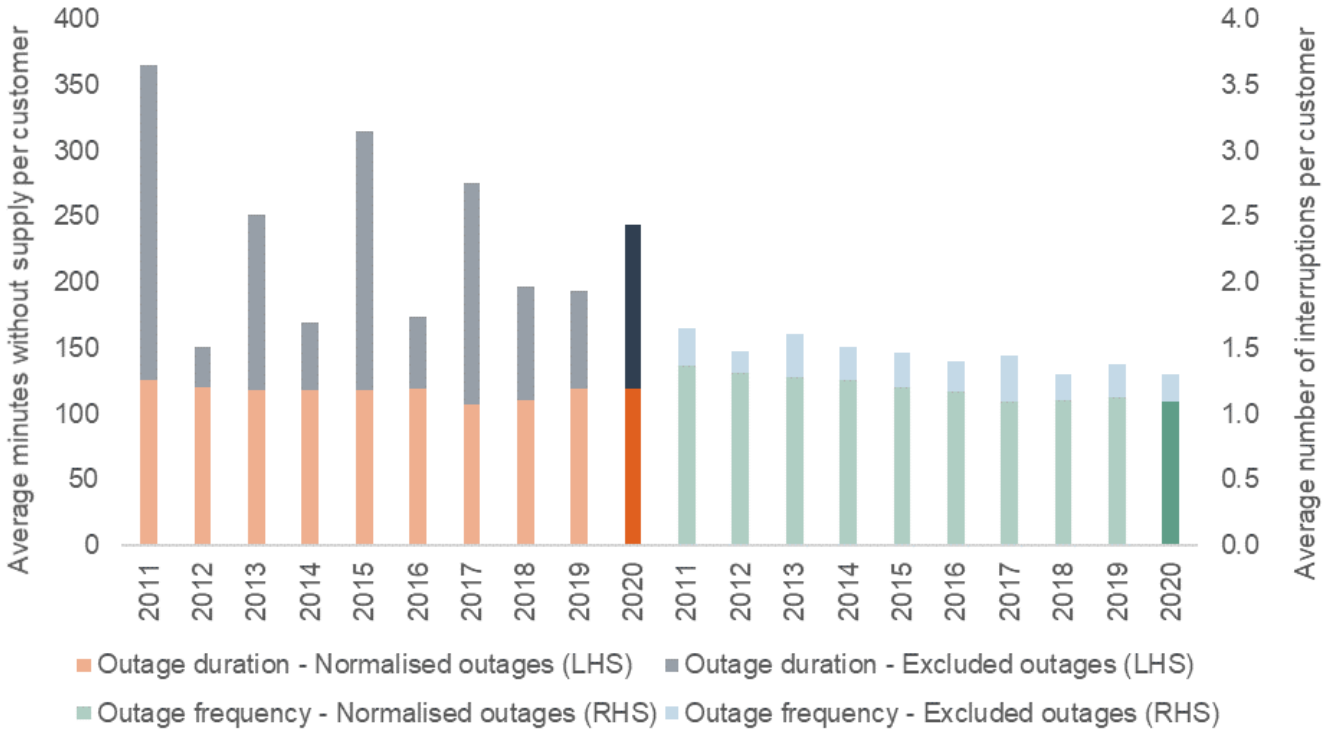


Source: AER electricity network performance report 2021

A key outcome that consumers should expect for the prices they pay for electricity is a reliable supply of electricity. Reliability refers to the continuity of electricity supply and is typically measured by the frequency and duration of interruptions to supply. There is typically a trade-off between electricity reliability and affordability because maintaining or improving reliability may require expensive investment in network assets. Reliability standards and the incentive schemes need to strike the right balance by targeting reliability levels that consumers are willing to pay for.

Figure 5 shows that consumers have experienced both fewer and shorter outages over time, despite reductions in network revenues and expenditure. This trend is evident even when including outages from major events such as storms (these events are typically excluded when measuring the underlying trends in reliability as they are outside the control of network providers). However, we do note that there has been a slight increase in outage duration since 2017.

Figure 5 Service reliability, frequency and duration of outages, electricity distribution

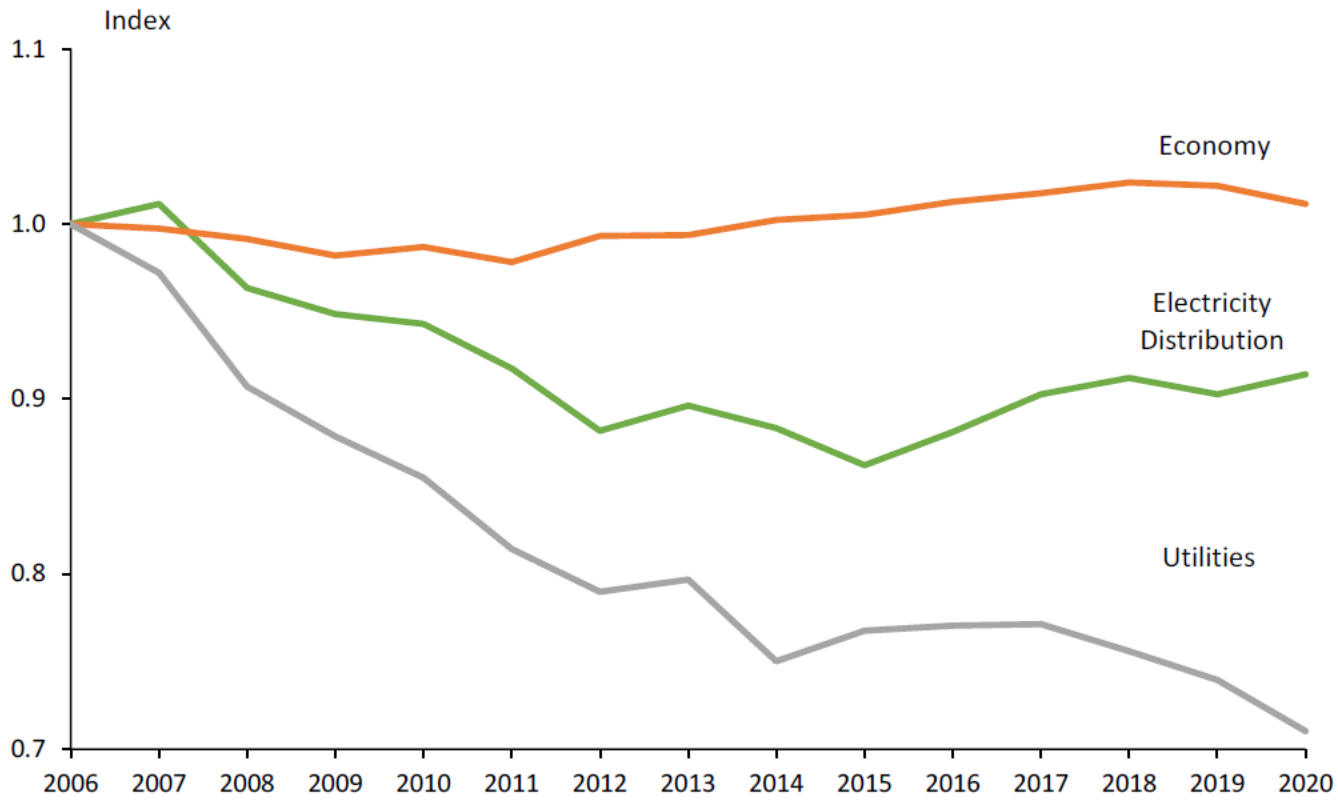


Source: AER electricity network performance report

These reliability trends broadly suggests that network providers have been able to pursue efficient expenditure while maintaining service reliability. This is an important outcome as it provides a high-level insight that the regulatory framework appears to balance incentives on network providers to seek efficiencies while providing good levels of service.

Finally, the AER annually reports on the productivity of electricity distribution and transmission networks. These productivity measures combine expenditure inputs and network outputs (including service reliability) to measure how efficiently these networks are in delivering reliable services to customers. Our most recent economic benchmarking reports show that the productivity of both electricity distribution and transmission networks have been increasing since 2015. This is consistent with the observed reductions in operating and capital expenditure, and reductions in network outages. Figure 6 shows that the growth in productivity since 2015 exceeded the overall economy and the utility sector (electricity, gas, water and waste services).

Figure 6 Electricity distribution, utility sector, and economy productivity, 2006 to 2020



Source: AER 2021 distribution network service provider benchmarking report

2.3 The contribution of incentive schemes

The incentive framework is designed to reward networks that provide good services to customers at an efficient cost. The addition of incentive schemes is to encourage prudent and efficient behaviour from network service providers and outcomes that are valued by customers. This is done by providing rewards and penalties in the form of adjustments to revenue determinations.

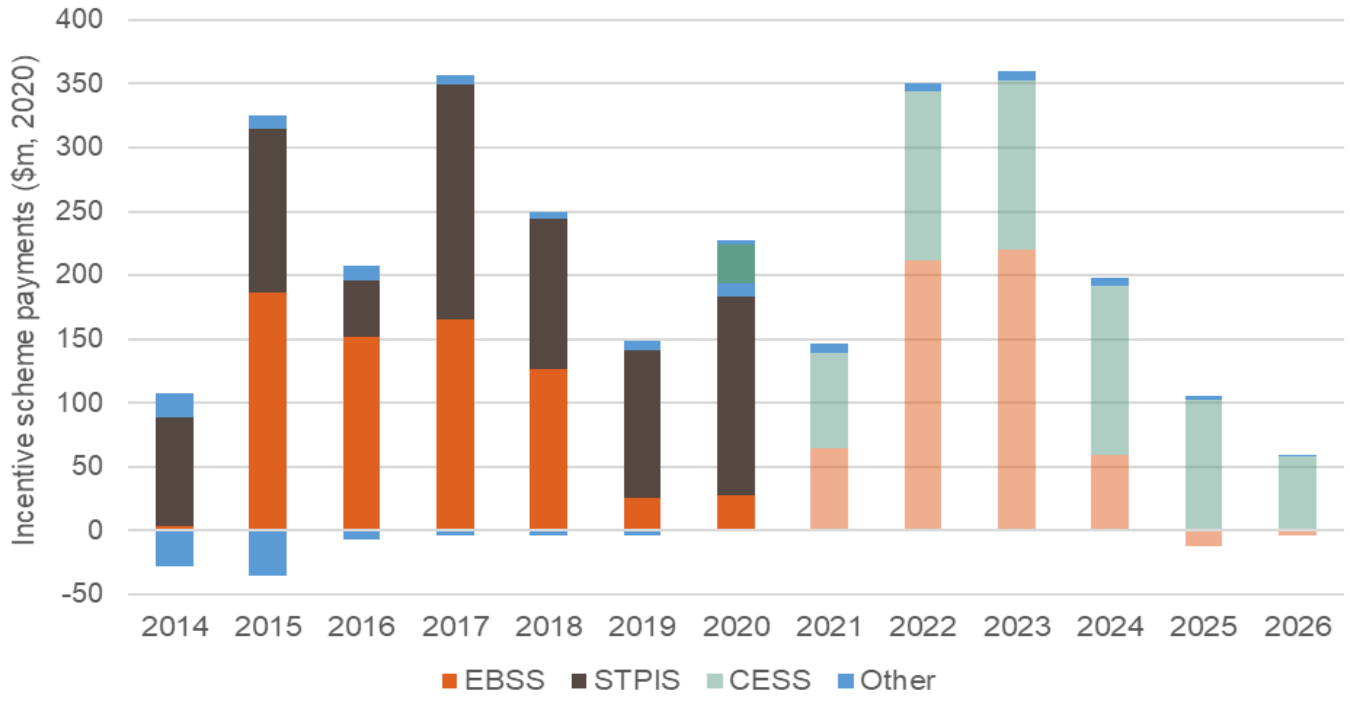
A guiding principle in establishing additional incentive schemes is that financial rewards and penalties available under the schemes should be commensurate with outcomes delivered. In the previous section, we examined high-level outcomes to customers from the incentive framework.

In this section, we examine the contribution of the incentive schemes in terms of the size of these incentive rewards and penalties and how much customers pay through their energy bills.

The payments from individual incentive schemes

Figure 7 provides a breakdown of the actual incentive scheme payments from electricity distribution networks from 2014 to 2020, and the forecast scheme payments from 2021 to 2026 (the latest available forecast of incentive rewards).

Figure 7 Incentive scheme revenues — electricity distribution



Note: 'Other' includes payments from the DMIS, the Victorian fire-start scheme, and other adjustments.

Source: AER analysis

Figure 7 shows that that electricity networks have historically received significant incentive rewards from the STPIS and EBSS. This is due to networks outperforming against operating expenditure forecasts and service reliability targets. Between 2014 and 2020, each of these two schemes contributed approximately half of total available incentive payments.

Between 2021 and 2026, electricity networks will also be entitled to receive incentive reward payments from the EBSS and CESS. This is the results of networks outperforming against operating expenditure and capital expenditure forecasts in the recent regulatory period. This is the first time that incentive payments from the CESS have been owed to network service providers.

We note that there are no STPIS incentive payments shown between 2021 and 2026. The incentive rewards or penalties from the STPIS will become known once actual reliability performance is observed and compared with reliability targets. The EBSS and CESS differ as they calculate rewards and penalties at the end of the regulatory period. If service providers can improve their reliability in upcoming years, this will lead to additional incentive revenues from 2021 onwards. This further increases the impact on total revenues and consumer bills.

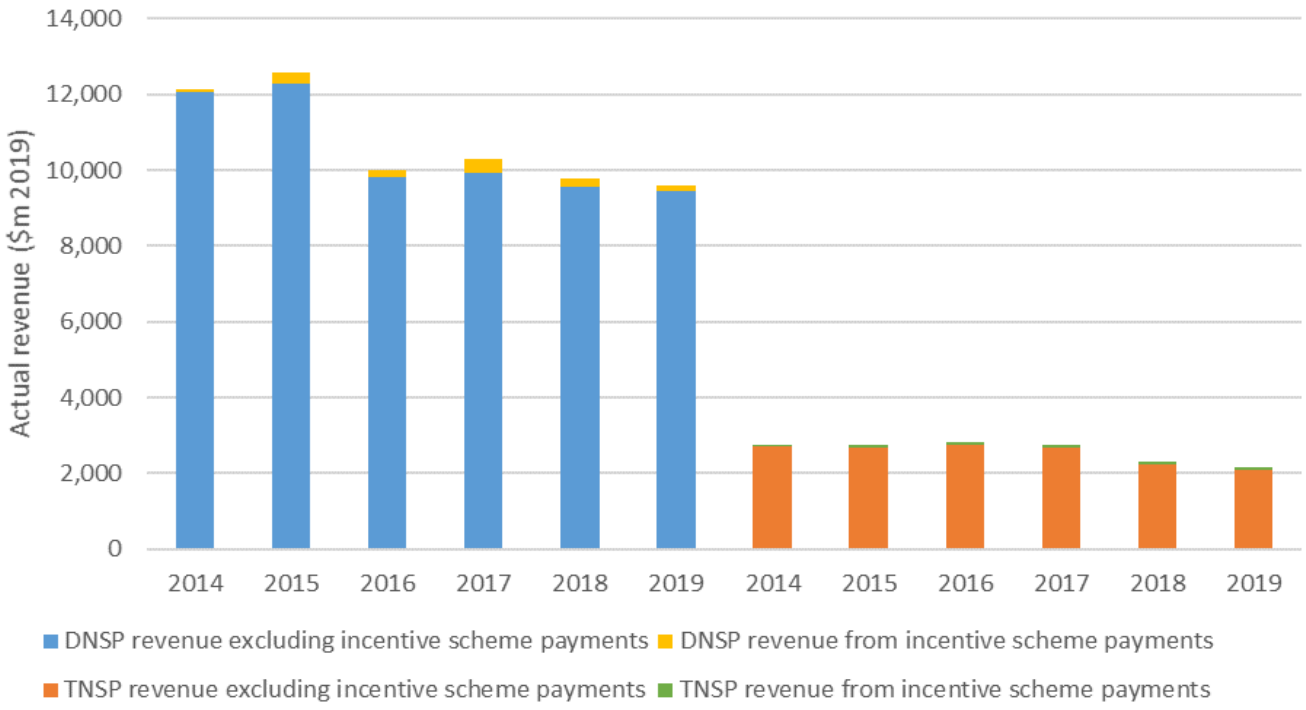
Network service providers can only receive incentive rewards where they are able to outperform against allowances and targets set in revenue determinations. This provides benefits to customers where network charges over time are reflective of efficient expenditure and the customer receives levels of service that they value.

In sections 3 to 6, we examine in greater detail the types of outcomes that the incentive schemes reward, how actual observed outcomes are used to set future revenues, and how customers can benefit. It also sets out key issues for further examination.

Contribution to customer prices and network returns

The payments to network service providers from incentive schemes increase the revenues they are entitled to earn from customers. Figure 8 shows that incentive payments have increased allowed revenues by up to 2 per cent between 2014 and 2019. Given that network revenues account for between 40 and 50 per cent of what customers pay in their electricity bills, revenues from incentive payments likely have a small, yet noticeable increase in customer bills.

Figure 8 Impact on incentive payments on revenue allowances — electricity

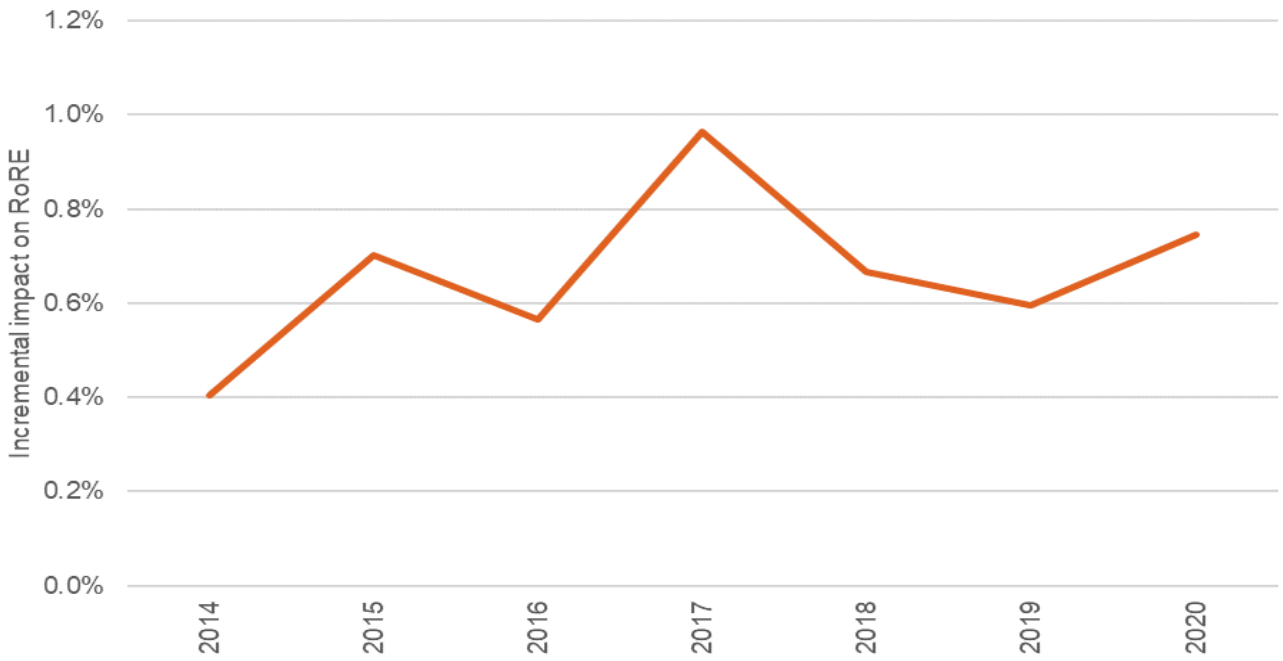


Source: AER 2020 electricity network performance report

Network service providers are compensated for their efficient financing costs, including a return on equity, as part of their building block revenue allowance. Where they are able to earn an incentive payment, these are additional revenues that are added on top of the network service provider's efficient costs. This adds to network profits.

Figure 9 shows the contribution of incentive payments to electricity network service providers' profits, as represented by its actual return on regulated equity. Incentive schemes have added 0.66 per cent to network returns on average from 2014 to 2020.

Figure 9 Impact of incentive schemes on profits – electricity



Source: AER 2021 electricity network performance report

We note that these revenue and profit outcomes reflects actual incentive payment rewards from the EBSS and STPIS to date. As shown in the section below, incentive payments from the CESS were first reflected in network revenues in 2020 and are now reflected in forecast revenue allowances for the next 5 years. The revenues generated by the CESS will increase allowed revenues and network profits.

Questions

6. Do stakeholders agree that the incentive framework is improving outcomes for customers of electricity services?
7. Is the size of incentive payments appropriate and commensurate with the outcomes being provided to customers?

3 The key principles of incentive schemes

This section provides some insights into the design of the incentive schemes and the key components that aim to incentivise the efficient provision of services from network service providers. This provides a starting point for considering whether the schemes, as currently designed and applied, remain fit-for-purpose into the future.

The incentive schemes are designed to provide networks with financial incentives to make efficient decisions on when and what type of expenditure to incur, while maintaining or improving service performance. This is achieved by providing:

- rewards (penalties) for making efficiency gains (losses) in either operating expenditure or capital expenditure, thereby providing symmetrical incentives
- rewards when networks outperform reliability targets, and this is valued by customers, and penalties where networks reduce reliability, possibly by reducing expenditure, and this is not valued by customers.

The rewards and penalties applied in the incentive schemes mean that efficiency gains and losses are shared between network service providers and consumers. At the same time, circumstances can reasonably change, and service providers may need to spend more or less than initially forecast to maintain the safety and reliability of the network. The incentive schemes share these changes between networks and consumers.

The nature of financial incentives may also encourage networks to propose more expenditure than they require, or lower performance targets, in order to maximise the rewards they can earn from outperforming (or minimise the penalties from underperforming). These rewards would not reflect genuine efficiency gains. In this context, the nature of a financial incentive and its effect on behaviours depends on 2 components:

1. How the financial reward varies with the observed actual performance of the network over a given time.
2. How the target performance level varies with the observed actual performance of the network in the past.

This section provides some insight into:

- the links between incentives, observed performance and setting performance targets
- the setting of financial rewards and penalties under the scheme
- how the schemes are applied to different service providers.

We examine in more detail the design and application of the EBSS, CESS and STPIS in the following sections.

3.1 The links between incentives and setting forecast targets

In the context of incentive schemes, efficiency gains and outperformance are defined by comparison to forecast allowances and performance targets. The effect of a financial incentive on network service provider behaviour can depend on how forecasts are set and how forecasts are determined using historical performance levels of the respective network

One of the benefits from incentive schemes is that they contribute to revealing information about the efficient costs of providing levels of services valued by customers. This revealed information is used in setting revenue allowances and performance targets in subsequent regulatory periods.

Each incentive scheme works differently in terms of how they use revealed information to set future revenue allowances and performance targets:

- We forecast operating expenditure based on a single year of a network service provider's actual operating expenditure. Where a network lowers its operating expenditure, this will lead to a lower starting base for the operating expenditure component of revenues in the next period. The EBSS, in combination with our forecasting approach, ensures that the service provider does not benefit from increasing operating expenditure in this single year. In this way the EBSS gives us greater confidence that the operating forecasts we determine are no more than the efficient amount required by a prudent network. We discuss this further in section 4.
- We forecast capital expenditure using a range of techniques, including expenditure modelling and project assessment. We do not rely on a single year of actual total capital expenditure (although actual expenditure for specific types of capital expenditure can inform our assessment of future requirements). In this context, the primary purpose of the CESS currently is to ensure that only efficient capital expenditure is incurred and rolled into the RAB. Where a network incurs lower capital expenditure than we forecast, a lower amount will be added to the regulated asset base. This will lower the maximum regulated prices a service provider can charge consumers for the remainder of the life of the asset (which can be up to 50 years). We discuss this further in section 5.
- We set reliability performance targets based on the average of the previous five years of outturn reliability performance. Under the STPIS, a network will only benefit from incentive payments where they make permanent improvements in reliability. Where they make improvements, these will then be used to set performance targets for the next 5 years. Therefore, there is a strong link between the STPIS incentives and the approach to setting performance targets. We discuss this further in section 6.

The issue of forecasting was a key concern raised by consumer stakeholders in recent revenue determinations. Several consumer stakeholders raised concerns that networks have an incentive to over-estimate future expenditure forecasts and defer capital expenditure projects between regulatory periods. Others also considered that there was a lack of transparency over whether observed under-expenditure was due to genuine efficiency gains, or poor/over-forecasting.

The opportunity for financial gains from the incentive schemes may encourage networks to propose more expenditure than they require, in order to maximise the rewards they can earn from spending less than forecast (or minimise the penalties from overspending). These rewards would

not reflect genuine efficiency gains. However, the opportunity to inflate forecasts above the efficient levels somewhat depends on how actual observed expenditure and performance determines future allowances and performance targets.

As explained above, there is a close link between actual observed operating expenditure and reliability performance and the setting of future revenue allowances and performance targets. The actual observed operating expenditure and service performance is used to set future allowances.

We do not systemically use actual observed total capital expenditure to forecast total capital expenditure. While we use actual capital expenditure performance to inform components of future expenditure requirements, capital expenditure is less recurrent in nature than operating expenditure. This means that we have greater reliance on the quality of information provided in regulatory proposals and our assessment tools when determining forecasts for efficient capital expenditure.

As outlined in section 5, improvements in our forecasting methodologies, such as part of our 2013 expenditure forecast assessment guideline, help to reduce the risk of over-forecasting expenditure. In September 2021, we also published a draft version of our Better Resets Handbook, which sets out our expectations for a greater customer-centric approach to regulatory proposals. As we note in draft version of our Handbook, by encouraging network businesses to improve their consumer engagement, the consumer will be put further into the centre of the regulatory determination process. This will allow consumers to have a greater influence over the development of regulatory proposals by the network businesses and, more importantly, ensure networks businesses deliver the outcomes valued by consumers.

The Handbook includes our expectations for how we will examine expenditure forecasts from electricity networks. Expenditure proposals that meet our expectations of a well-justified expenditure proposal, including reflecting consumer preferences, will qualify for a targeted and proportionate review. This will result in efficiencies in the regulatory process such as settling key issues at the draft decision stage or with network proposals even possibly being fully accepted. This provides procedural and reputational benefits to networks.

This approach provides us with an avenue for a clearer and more transparent assessment of expenditure forecasts and whether there are concerns around over-forecasting and whether efficiency gains are likely to be genuine. This is likely to be particularly relevant to capital expenditure forecasting and efficiency benefits from the CESS.

3.2 The setting of rewards and penalties

The calculation of rewards and penalties under the EBSS, CESS and STPIS is explained in this section, including how they contribute to incentivising efficient expenditure and service performance outcomes that customers value.

Financial rewards under incentive schemes encourage network service providers to seek efficiencies in their expenditure and improvements in their performance. This benefits customers where it leads to more efficient network costs that are then reflected in energy bills paid by customers, and levels of service that they value.

The level and approach to setting financial rewards and penalties is an important component of financial incentive schemes. Large financial rewards are generally associated with 'high powered'

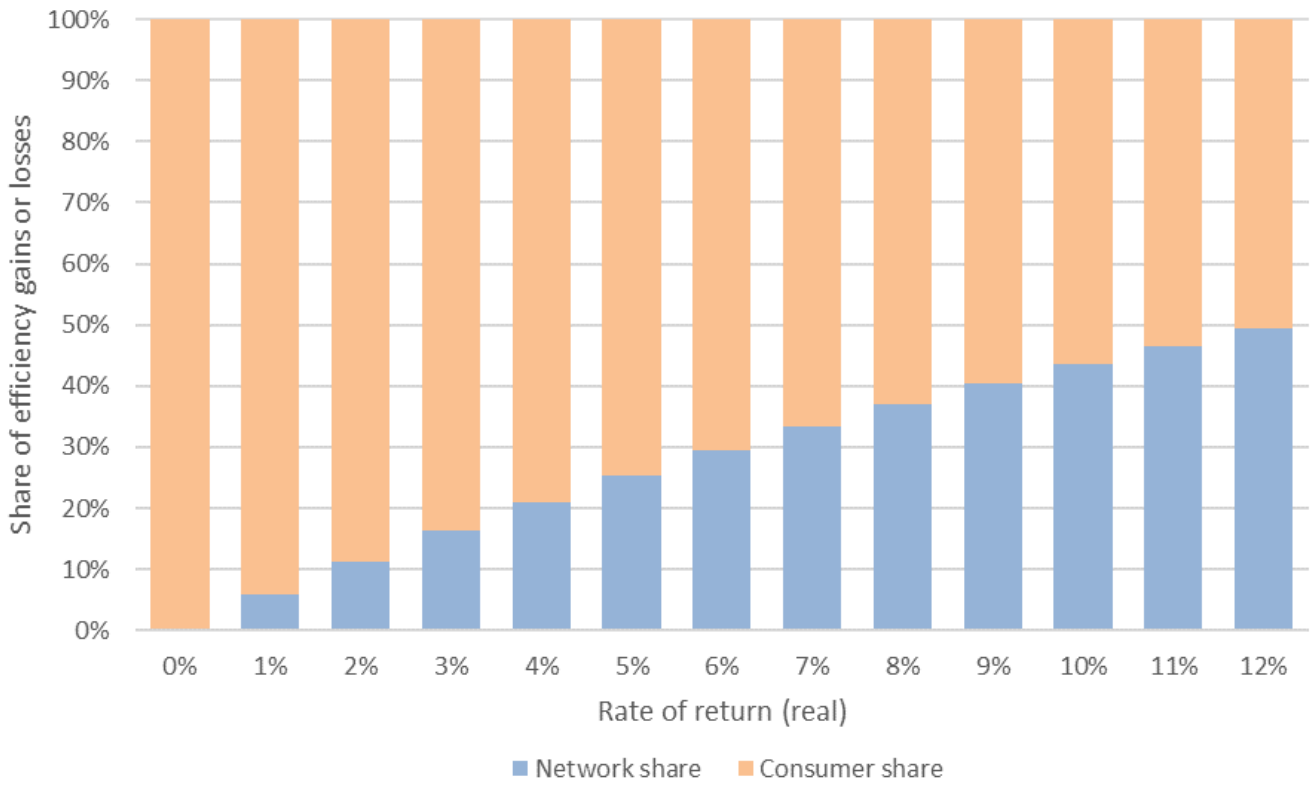
incentives that encourage networks to seek greater efficiencies and service levels. However, this potentially encourages networks to maximise their financial rewards by trying to increase expenditure targets above efficient levels or sacrificing service performance. Similarly, 'low powered' incentives with lower financial rewards provide less encouragement to seek efficiencies, and less of an incentive to increase targets above efficient levels.

How the schemes calculate rewards and penalties

The EBSS provides financial rewards by allowing network service providers to retain benefits of operating expenditure efficiencies for 6 years. This is done by providing additional revenues in subsequent regulatory periods as "carry over amounts". At the end of s6ix years, the benefits of the efficiency gains are passed to consumers when efficient actual operating expenditure is used to set revenue allowances.

The benefits to networks from retaining these efficiency gains under the EBSS will depend on the time value of money, which is typically represented by the cost of capital. Where interest rates are higher, the network will receive a greater financial benefit for retaining efficiency gains (e.g. it can invest the savings it made in operating expenditure and benefit from the return). Figure 10 shows the benefits to networks from making efficiency gains under various rates of return.

Figure 10 The sharing of efficiency gains



Source: AER analysis

When the EBSS was first developed, the regulated rate of return was approximately 6 per cent in real terms. We calculated that a network retaining the benefits of efficiency gains for 6 years

meant that they retained 30 per cent of any efficiency gain. Customers would retain the remaining 70 per cent.

The STPIS shares benefits of reliability similar to the EBSS. Reliability performance targets are typically based on a 5-year historic average (excluding certain events). Throughout a regulatory period, actual service reliability is compared against the historical target. Where the network improves reliability compared to targets, it receives a reward that is based on the value of customer reliability for each network component.

Where reliability improvement is sustained, the service provider will receive incentive rewards for a period of five years (until which time the target is reset). This approach closely aligns the scheme with incentives under the EBSS. The sharing of improvements changes in reliability will depend on the time value of money.

Under the CESS, a service provider receives a fixed reward equivalent to 30 per cent of capital expenditure efficiency gains made within a regulatory period (and equivalent penalty for efficiency losses). Where a network incurs lower capital expenditure than we forecast, we add a lower amount to the regulated asset base. The effect of this is that consumers will share in 70 per cent of the benefits.

The CESS was designed to be consistent with the sharing of operating expenditure efficiency gains under the EBSS. This was one element of the design of the schemes that encourage network service providers to make efficient choices in either operating or capital expenditure while maintaining service levels. However, it differs from the EBSS by setting a fixed incentive rate, as opposed to the rate being driven by the time value of money.

Economic conditions have altered the comparative benefits of the schemes

Since the introduction of the CESS, the economic conditions have changed. This has changed the relative benefits from making operating expenditure efficiencies and capital expenditure efficiencies, and maintaining service levels.

Between 2013 and 2020, the regulated rate of return declined from around 6 per cent to around 3 per cent (in real terms). The reduction in interest rates over the past 5 years has lowered the returns that shareholders can expect from investing in network assets. This may diminish any inherent biases towards capital expenditure (for example, where network investors have a preference towards a greater asset base). However, it also changes the relative strength of the rewards and penalties under the incentive schemes.

As shown in Figure 10 above, a decline in the rate of return from 6 per cent to 3 per cent means that the benefits to network service providers from making operating expenditure efficiency gains is now closer to 15 per cent (with consumers retaining up to 85 per cent of efficiency gains). This has reduced the power of the incentive for network providers to seek operating expenditure efficiencies.

In contrast, the CESS remains fixed and ensures that networks receive 30 per cent of any capital expenditure efficiency gains. This means that, for every dollar saved in capital expenditure, a network will save approximately twice as much as for a dollar saved in operating expenditure.

We consider the implications of these changes in economic conditions below.

3.3 Balancing incentives between the schemes

A guiding objective in developing and applying incentive schemes has been that network service providers should ideally be financially indifferent between investing in network assets or incurring operating expenditure to provider network services and meet reliability targets. Network service providers should make investment decisions over time that are aligned with efficient outcomes for consumers, including service performance.

This was encouraged by providing:

- rewards and penalties that are consistent between incentive schemes (for example, when the CESS was first developed, it was designed to match the rewards and penalties generated by the EBSS)
- symmetry in the application of rewards and penalties, such that the rewards for outperforming are the same as the penalty for underperforming.

Providing balance between the schemes was seen as particularly important where networks have options available to substitute between capital and operating expenditure to meet service levels, such as choosing to invest in a new asset or incur operating expenditure (e.g. maintain existing assets), or where there are abilities to capitalise or expense specific costs within a cost allocation framework (e.g. overheads, leases). While there are non-financial reasons that may influence investment decisions, the financial incentive schemes should ensure that decisions are appropriately aligned with customer values and are fit-for-purpose within the overall framework.

In 2013, when we developed the CESS, we initially considered an asymmetric scheme that imposed higher penalties for capital expenditure overspending than rewards for underspending. We considered it was important to protect consumers from capital expenditure overspending, and that high rewards for underspending may incentivise service providers to under-invest or defer investment at the expense of reliability. This received support from some consumers and industry groups that were concerned about the potential bias towards capital expenditure. However, other stakeholders noted that overspending may not necessarily be inefficient and it would be inappropriate to impose greater penalties rather than rewards for forecasting error.

We ultimately concluded that a symmetric scheme would better achieve efficient substitution between capital and operating expenditure. We considered it would be difficult to balance the incentives with an asymmetric CESS and a symmetric EBSS. We also considered that concerns about capital expenditure bias could be addressed through our improvements to forecasting techniques. However, we noted that:

> A symmetric scheme may also be more appropriate since this is the first time we have introduced a CESS. In particular, it is less likely to result in perverse outcomes than would an asymmetric CESS. It may be that a symmetric scheme coupled with the ex post review is sufficient to ensure that NSPs remain within their capex allowances. Introducing a symmetric CESS first allows us to review how NSPs have responded to the CESS with the option to change the CESS if it has not delivered the desired outcomes.

In 2018, the AEMC published its annual review of the economic regulatory framework for electricity networks. The AEMC reviewed the financial incentives for network service providers in providing economically regulated services and considered the question of whether they have an inherent bias towards capital expenditure over operating expenditure. This was in response to

stakeholder concerns, such as to the *Independent Review into the Future of the National Electricity Market: Blueprint for the Future* (the Finkel Review), that the current regulatory framework provides stronger incentives to undertake capital expenditure than the incentives to undertake operating expenditure.

The AEMC observed that the financial incentives under the current framework were sensitive to assumptions, but were broadly balanced. However, it noted that it may be difficult to disentangle the impact of financial and non-financial factors on networks' investment decisions when examining expenditure and performance outcomes. The AEMC concluded:

> In the current environment where interest rates and regulated cost of capital are low, and where the most viable solutions to many network problems may still require capital investment, the Commission's view is that the potential for bias is low and the current regulatory framework provides appropriate incentives for efficient investment decisions. However, the Australian electricity system is likely to be more decentralised in the future, and DER are likely to be able to provide plausible alternatives to traditional network solutions. The Commission is concerned that the potential for bias would be greater under such a scenario, especially when combined with a high interest rate environment.

We are undertaking this review within the context of the AEMC's findings. That is, the regulatory framework and incentive schemes remain broadly appropriate but are sensitive to various assumptions, and both the financial and non-financial incentives on network service providers.

As we observed above, changes in economic conditions have changed the relative benefits to network service providers from making operating expenditure efficiencies and capital expenditure efficiencies, while maintaining service levels. Where there are such differences in the incentive arrangements between operating and capital expenditure, this has the potential to change network behaviour. For example, network service providers may:

- decide to inefficiently shift expenditure from capital expenditure to operating expenditure, or
- seek to inflate forecasts of capital expenditure above efficient levels, as they will benefit more from making capital expenditure savings.

These decisions are ultimately influenced by the preferences of network providers and financial and non-financial biases, as the AEMC recognised. Where a network service provider is indifferent between operating or capital expenditure, a strong capital expenditure incentive may skew incentives. However, where a network has a default bias towards capital expenditure, a stronger capital expenditure incentive may encourage more efficient investment (where it can retain existing service levels). This can also affect decisions related to non-traditional network activities including demand management.

3.4 Number of schemes and differentiation between networks

We apply the same version of the EBSS, STPIS and the CESS to each network service provider. The application of the same incentive scheme to all service providers has benefits in terms of transparency and regulatory certainty, as well as consistency across providers and over time. However, it may not always achieve optimal outcomes where networks respond to incentives differently or face a unique change in circumstances.

In the AEMC's 2012 NER rule change, it acknowledged that the AER has flexibility in how it decides to apply the various incentive schemes. It noted:

> The AEMC proposed that the AER should be able to apply schemes in a different way to different NSPs or even to apply different schemes to different NSPs. This would enable the AER to tailor its approach to individual NSPs. So, for example, the AER could apply what were regarded as stronger incentives for NSPs that traditionally spend more than their allowance and weaker incentives where the AER is concerned about inefficient deferral into future regulatory control periods.[10]

When we developed the CESS, we considered that a 30 per cent reward and penalty, in combination with a limited ex post review, was sufficient to incentivise efficient capital expenditure, regardless of how different networks may respond to incentives. We now have experience in applying the CESS and can observe actual capital expenditure patterns and how networks are responding to incentives.

As we have previously noted, several consumer stakeholders have raised concerns about expenditure over-forecasting and whether network service providers are being rewarded for genuine efficiency gains. We have also heard that an incentive scheme should not apply unless we can confidently correct for expenditure over-forecasting (specifically for capital expenditure forecasting and the CESS).

We note that we have previously made decisions not to apply an incentive scheme where it was not needed. For example, in Ausgrid's revenue determination for the 2014–19 regulatory period, we decided not to apply the EBSS. This was because we used economic benchmarking to help set the forecast of efficient operating expenditure over the regulatory period, and at that time we were not confident that we would use Ausgrid's revealed expenditure to forecast operating expenditure in subsequent periods. We re-applied the EBSS in the next revenue determination.

In the context of concerns raised by stakeholders about capital expenditure forecasting, it may be appropriate to consider whether the application of incentive schemes should reflect network service provider performance and views on whether they are appropriately responding to incentives or require incentivising. This may include considering both whether or not to apply a particular scheme and/or the incentive arrangements (e.g. incentive reward or penalty rate and symmetry) that will apply to individual service providers in a particular regulatory determination.

There are several ways for us to test network service provider performance and how they are responding to incentives. This includes performance monitoring over time, and engagement between networks and customers in revenue determination processes and the information received as part of regulatory proposals.

As we previously noted, we published a draft version of our Better Resets Handbook in September 2021. In the context of individual revenue determinations, the Better Resets Handbook is also an avenue and process to examine and test service performance and whether they are responding to incentives. The Handbook includes our expectations for how we will examine expenditure forecasts from electricity networks. It also provides expectations about engagement between networks and customers.

The expenditure expectations set out in the Handbook are intended to provide transparency to both us and stakeholders about forecast expenditure and the reasons for historical spending, such as under- or over-spending against historical forecasts. This provides us with information to test

[10] AEMC, National Electricity Amendment (Economic Regulation of network Service Providers) Rule 2012, Final Rule Determination, 29 November 2012, p. 122.

whether networks are proposing efficient expenditure and have been seeking genuine efficiencies over time. Where we are confident that networks are seeking efficient expenditure only, this provides us with confidence in the ongoing application of incentives. However, when expenditure proposals do not align with the criteria set out in the Handbook, this provides us with information that can inform the application of incentive schemes in the upcoming regulatory period. The application of schemes can also be considered by customers in their engagement with networks, and we can take these views into account.

Questions

8. Does the current approach to financial incentives remain appropriate?
9. Are the current *levels* of financial rewards and penalties appropriate?
    - Should the rewards and penalty rates be lower or higher?
    - Should the relative rewards and penalties under the EBSS and CESS be fixed, or should it vary with the time value of money?
10. Is the balance of incentives between the schemes important?
    - Are there circumstances where different rewards and penalties between operating and capital expenditure appropriate?
    - How should financial incentives be considered taking into account potential non-financial incentives on network service providers?
11. To what extent is expenditure forecasting a concern for stakeholders?
12. To what extent would providing greater flexibility in the approach to applying incentive schemes address stakeholder concerns about the incentives on network service providers to over-forecast?

4 Operating expenditure outcomes and incentives

This section examines the effect of the EBSS on efficient and prudent operating expenditure.

The aim of the EBSS is to provide networks with an incentive to undertake efficient operating expenditure. This tool is also important in how we forecast efficient operating expenditure.

The incentive to incur efficient operating expenditure is impacted by 3 main factors:

1. The ex-ante operating expenditure forecast, which allows network service providers to keep any operating expenditure underspends as profit.

2. How actual operating expenditure amounts impact forecast operating expenditure in subsequent periods.

3. The rewards or penalties EBSS carryover amounts.

With this in mind, we maintain a consistent approach to forecasting operating expenditure so that network service providers know how their actual expenditure amounts will influence future forecasts. Furthermore, the operating expenditure forecasting approach we use is consistent with the one assumed in the design of the EBSS.

An objective of the EBSS is to provide a *continuous*, or constant, incentive to reduce operating expenditure.[11] This is important since we forecast operating expenditure using a single year's actual operating expenditure (the base year). Without an EBSS, and if a network was confident its revealed operating expenditure would be used to forecast future allowances, a network could increase its revenues in the following period by shifting operating expenditure into the base year, or indeed, by simply spending more in the base year. With the EBSS, networks do not benefit from doing this. Shifting operating expenditure into the base year, or spending more, would result in EBSS penalties such that the network would not benefit. In this way the EBSS gives us greater confidence that the forecasts we determine are no more than the efficient expenditure required by a prudent network.

The first transmission EBSS was introduced in 2007 and a distribution EBSS followed in 2008.[12] The EBSS was reviewed in 2013 as part of our Better Regulation reform program (in which we also introduced the CESS). This program also introduced the *Expenditure forecast assessment guideline* and the start of our annual benchmarking reports for electricity networks.

We now have several regulatory periods worth of data to observe operating expenditure trends since the introduction of the EBSS and the outcomes of our Better Regulation reforms. We examine whether these outcomes are consistent with the intentions of the incentive scheme.

[11] In developing and implementing an EBSS, we must have regard to the need to provide network service providers with a continuous incentive, so far as is consistent with economic efficiency, to reduce operating expenditure. NER cl 6.5.8(c)(2). We interpret the word continuous to mean constant. That is, network service providers should have the same incentive to reduce operating expenditure in every year.

[12] A similar scheme applied in Victoria prior to the AER taking over the responsibility of regulating the Victorian distributors.

4.1 How the EBSS benefits customers

The EBSS is designed to benefit customers by providing networks with an incentive to undertake efficient operating expenditure during a regulatory control period. Where the networks undertake efficient expenditure, we can use this to forecast efficient operating expenditure into the subsequent periods. These are reflected in the charges that customers pay in electricity bills.

When forecasting operating expenditure, we typically start with a single year of actual operating expenditure (the base year) to forecast future requirements. We test the efficiency of operating expenditure in this year, by using our benchmarking analysis. We use actual operating expenditure in the base year if we find it to be efficient, or we make an efficiency adjustment if we determine it to be inefficient. We then make changes for factors such as forecast regulatory changes, input price changes, output growth and productivity changes. This is the revealed cost base-step-trend forecasting approach, which we describe further in our *Expenditure forecast assessment guideline*.

However, the ex-ante incentive regime and our forecasting approach create 2 potential problems:

1. A network provider has an incentive to increase operating expenditure in the expected 'base year' to increase its forecast operating expenditure allowance for the following regulatory control period.

2. A network service provider's incentive to make sustainable change to its practices, and reduce its recurrent operating expenditure, declines as the regulatory control period progresses. It then increases again after the base year is used to forecast operating expenditure for the following regulatory control period. By deferring these ongoing efficiency gains until after the base year, the network would retain the benefits of doing so for longer because they won't be reflected in the operating expenditure forecasts for the following period.

We address these issues by applying an EBSS in combination with a revealed cost base-step-trend forecasting approach.

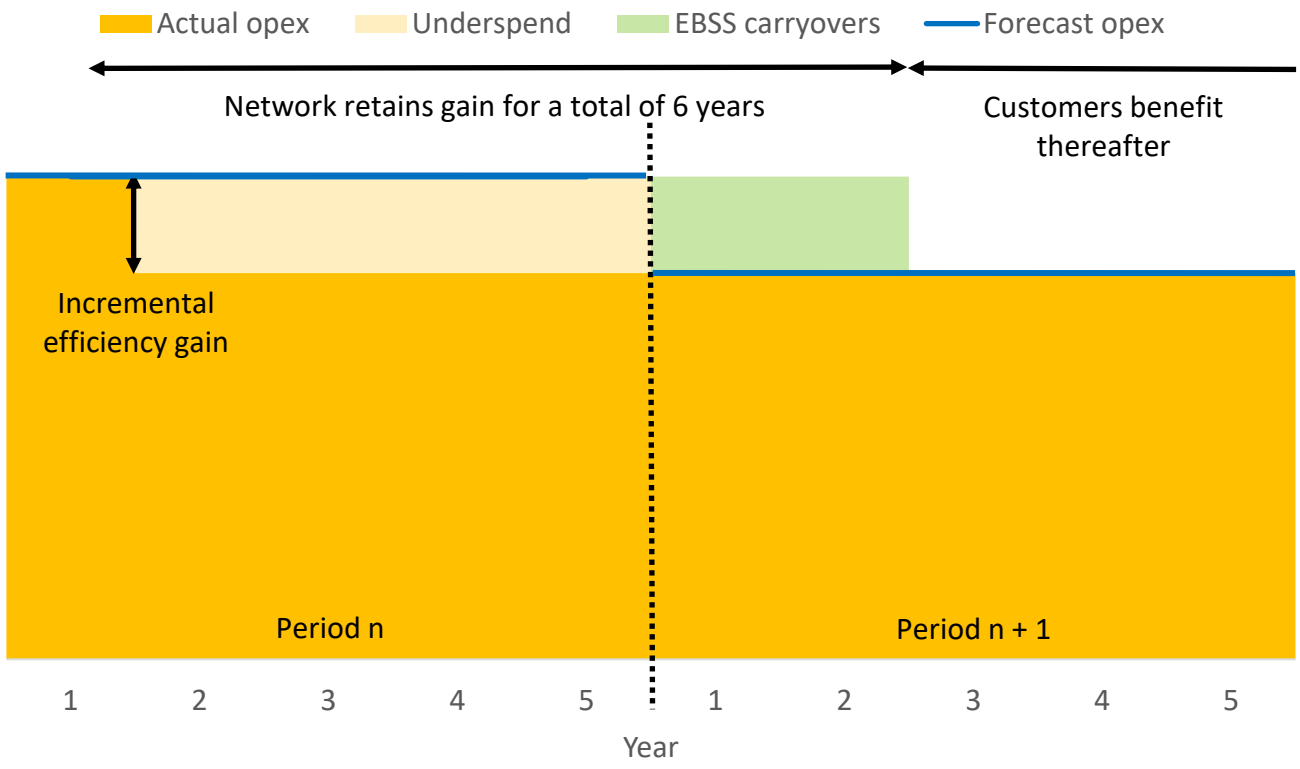
Providing a continuous incentive to seek efficiencies

The EBSS ensures that a network service provider retains efficiency gains or losses for 6 consecutive years, regardless of the *initial year* in the regulatory period that the gains or losses occurred. This is the basis for providing a constant financial incentive to reduce operating expenditure.

Figures 11 and 12 provide 2 examples of variation in *initial year* of reductions in operating expenditure and subsequent timing of associated incentive payments. It illustrates that the benefit to a network from making an efficiency gain is unaffected by when the initial efficiency gain occurs, and that rewards will continue into the next regulatory period. That is, the network gets the same reward for an efficiency gain of a given size (and the same penalty for an overspend of a given size) in each year of the regulatory control period. The figures also illustrate that the reductions in actual operating expenditure will lead to lower forecast operating expenditures that will benefit consumers post network reward period.

Figure 11 provides a stylised example of a network that reduces its recurrent level of operating expenditure in the second year of a regulatory period. It retains that incremental efficiency gain for 4 years in that control period because forecast operating expenditure is fixed for the period. The EBSS then carries that incremental gain forward for a further 2 years into the next regulatory period, allowing the network to retain the efficiency gain for a total of 6 years. Consumers benefit from forecast operating expenditure in the second period, which is adjusted down to reflect the lower revealed level of operating expenditure.

Figure 11 How the EBSS shares an efficiency gain made in year 2

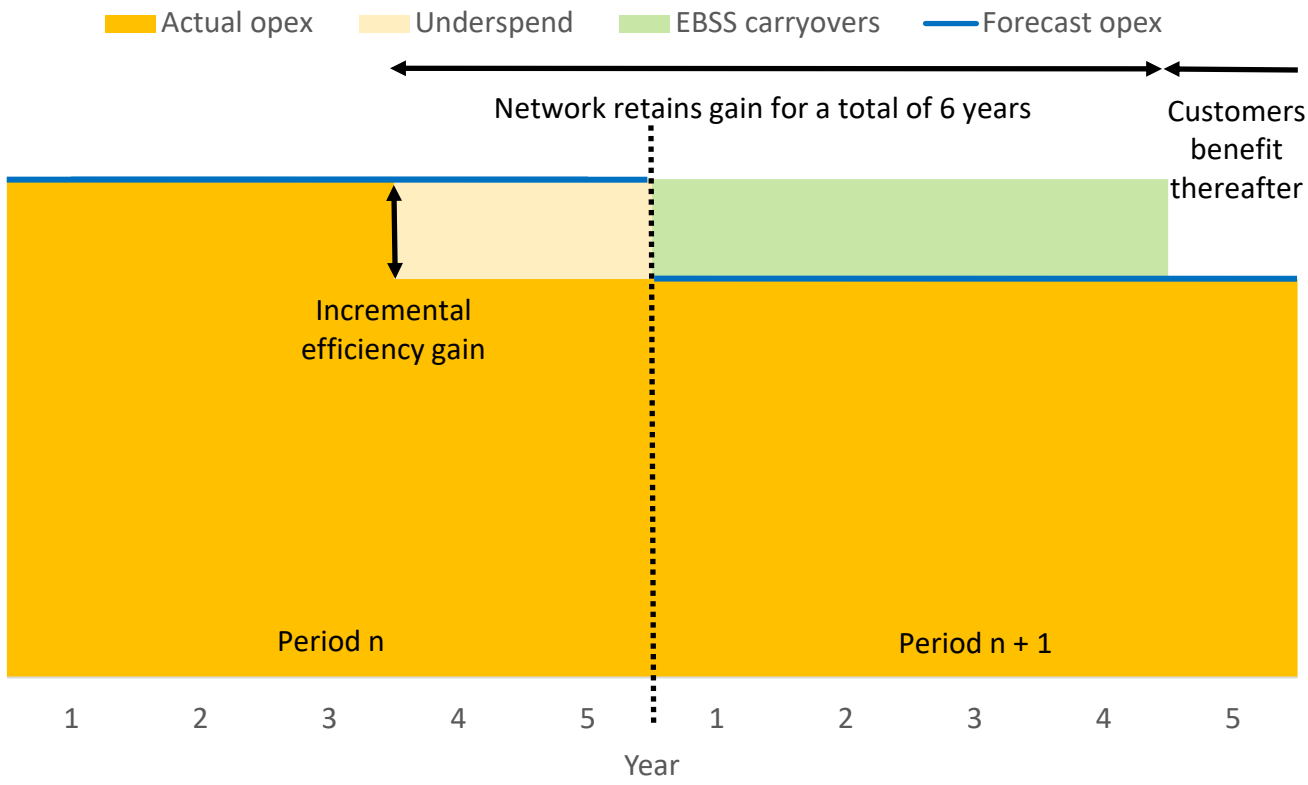


Source: AER

Figure 12 shows a similar example, except that the efficiency gain is made in the fourth year. Again, the EBSS allows the network to retain the benefit of the efficiency gain for a total of 6 years. Although in this case it retains that incremental efficiency gain for only 2 years in the first period. The EBSS then carries that incremental gain forward for a further 4 years into the next control period. Consumers then benefit from forecast operating expenditure in the second period being adjusted to reflect the lower revealed level of operating expenditure.[13]

[13] This assumes year 4 is used as the base year to forecast operating expenditure for the second period. If an earlier year was instead used the benefits to the network and consumers would be the same. However, forecast operating expenditure would remain at the higher level and the network would accrue an EBSS penalty in year 5 of the second period. This is because the EBSS would assume that the network's underspend in year 5 is the same as it is in the base year. Therefore the EBSS would assume an incremental efficiency loss in year 5.

Figure 12 How the EBSS shares an efficiency gain made in year 4



Source: AER

Other assumptions when forecasting operating expenditure

The design of the EBSS assumes that:

- a $1 increase (decrease) in actual operating expenditure in the base year increases (decreases) forecast operating expenditure in every year of the next control period by $1, and
- a change in actual operating expenditure in any other year has no impact on forecast operating expenditure in the next control period.

Where these conditions do not hold, or if we rely on other information in setting forecast operating expenditure, this may reduce the benefits to consumers from rewarding network service providers using the EBSS. This is because we rely on other information to set forecast operating expenditure and rely less on the revealed cost information that is incentivised by the EBSS.

To illustrate, where we rely on a network's actual operating expenditure in any other year than the base year, this may incentive this business to change their expenditure inefficiently. It is because of this assumption that we do not set the forecast rate of change based on a network service provider's past actual rate of change. For example, we do not use the wage price increases negotiated by a network service provider, or its actual input mix, to set forecast price growth. Similarly, we do not use the actual productivity growth achieved by a network service provider to forecast productivity growth. Doing so would reduce the incentive to negotiate efficient wage increases, adopt the most efficient input mix or achieve productivity gains.

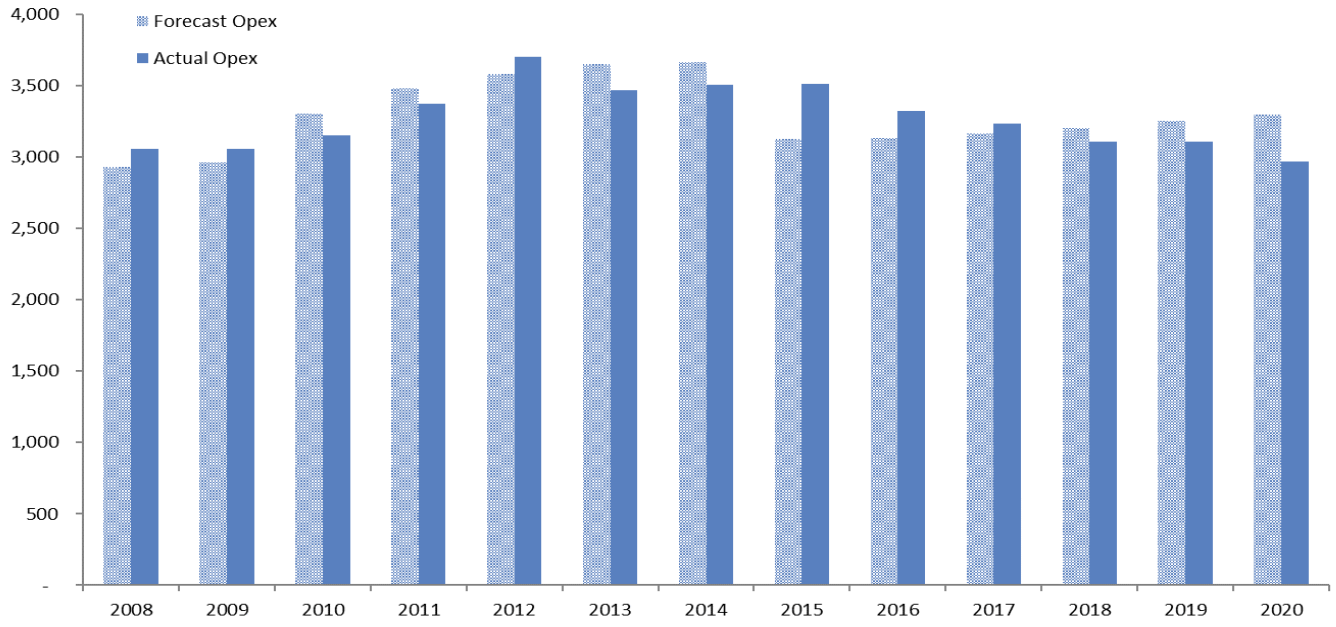
However, the NER requires that we must have regard to the most recent annual benchmarking report and the benchmark operating expenditure that would be incurred by an efficient network.[14] With this in mind, and to ensure forecast operating expenditure meets the NER criteria, we adjust base operating expenditure if we consider it to be materially inefficient, based on our benchmarking analysis. This may be inconsistent with the design of the EBSS, as forecast operating expenditure is not directly linked with actual operating expenditure in the base year.

4.2 Operating expenditure trends and patterns

This section provides insight into the operating expenditure trends and patterns we have observed since the introduction of the EBSS and the 2013 reforms. This section builds off information reported in our electricity network performance and annual benchmarking reports.

Figure 13 shows the total actual and forecast operating expenditure across the electricity distribution networks in the NEM. This shows that total operating expenditure peaked in 2012 and has since been declining, with a consistent downwards trend observed since 2014 and 2015.

Figure 13 Actual and forecast operating expenditure, electricity distributors, $m 2020



Source: AER network performance report

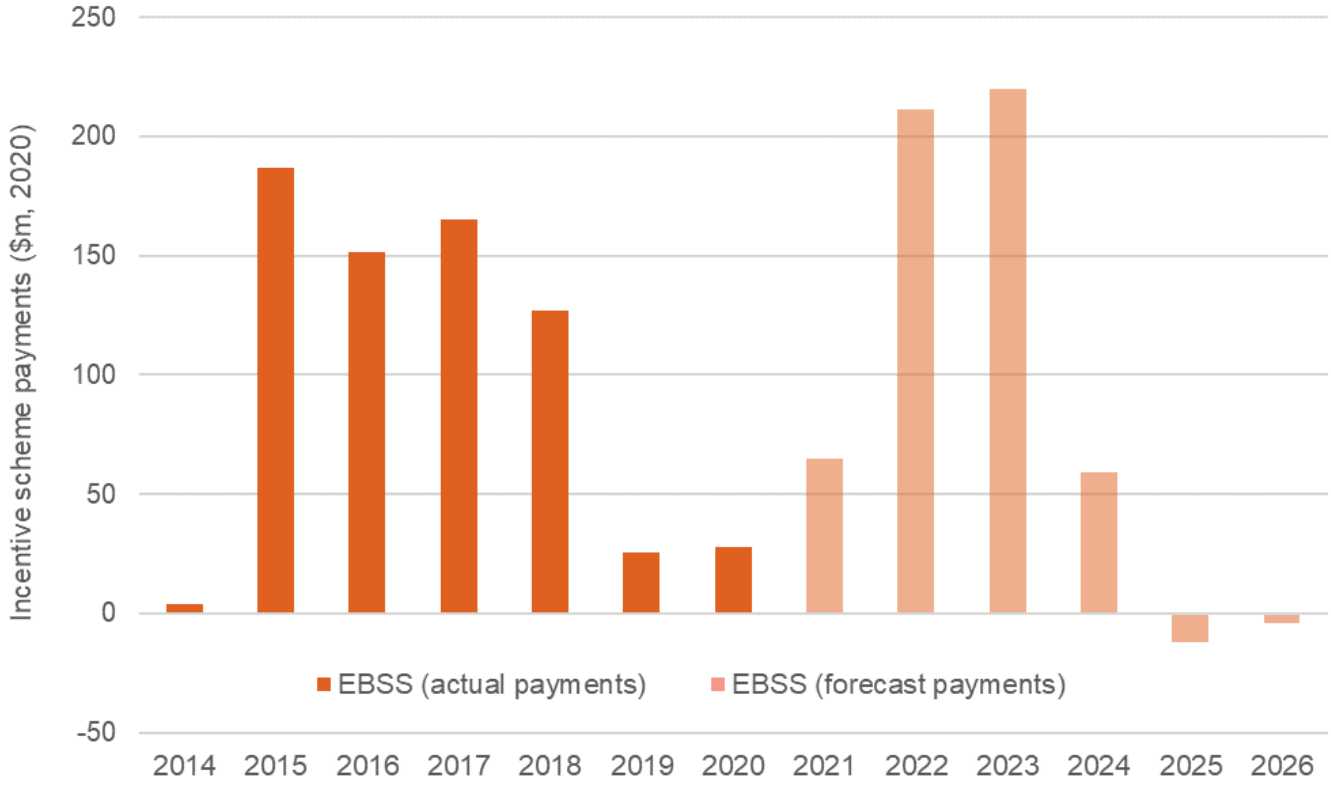
Our operating expenditure forecasts significantly reduced in 2015 and have since trended upwards. This initial reduction followed the conclusion of our Better Regulation reform program in which we started measuring and applying economic benchmarking of electricity networks.

While we observed some significant overspending in 2015 and 2016, the consistent decline in actual operating expenditure has led to underspending between 2018 and 2020. These declines in actual operating expenditure, and the consequent underspending against forecast allowances, has

[14] NER cl 6.5.6(e)(4)

contributed to the positive EBSS carryover rewards that networks will be entitled to in upcoming years, as shown in Figure 14.

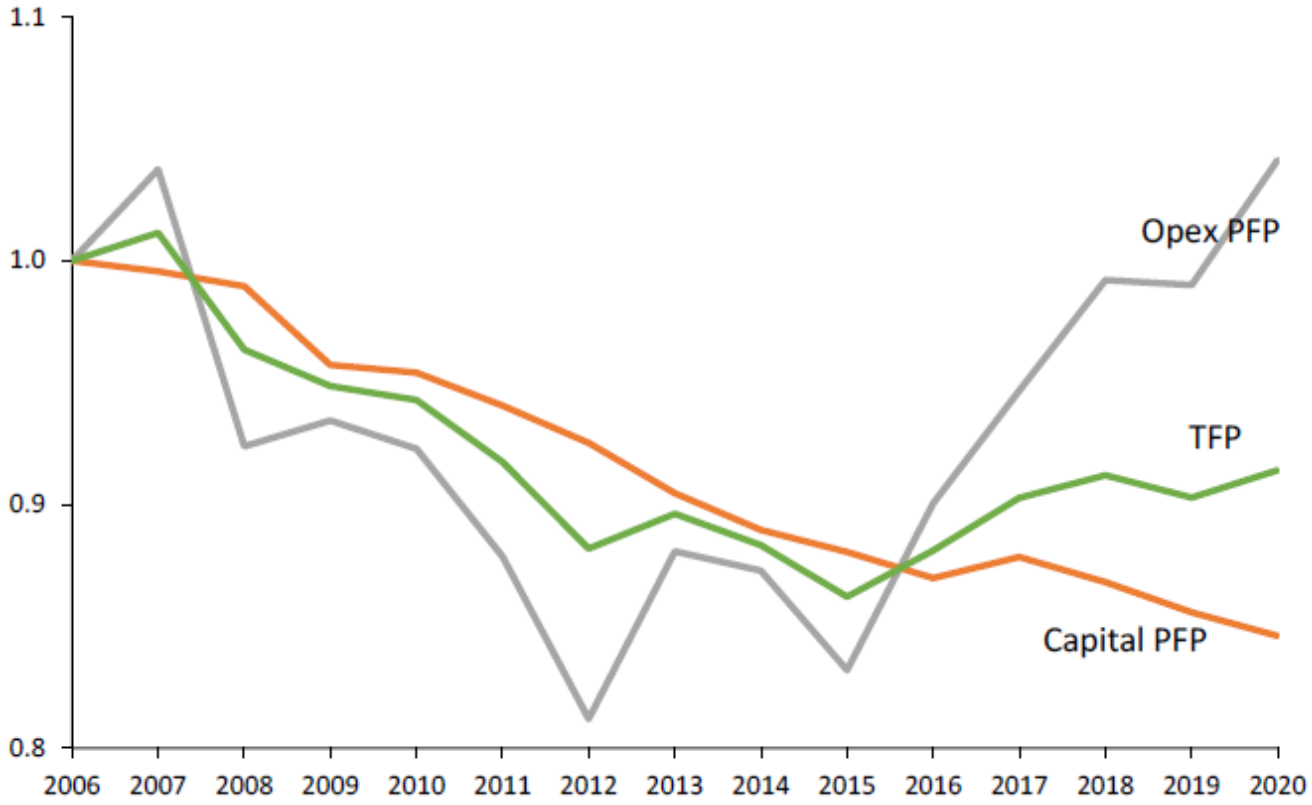
Figure 14 EBSS revenues – electricity distribution



Source: AER electricity network performance report

As shown in Figure 15, operating expenditure declines have contributed to significant growth in the measured productivity of electricity distribution businesses across the NEM since 2015 (as demonstrated by the increase in operating expenditure partial factor productivity, or 'opex PFP'). The productivity results are shown at the total industry level. There are different results between each electricity distribution business. However, as we discuss below, we have observed a correlation between improvements in productivity and significant EBSS rewards in the most recent regulatory control period.

Figure 15 Operating expenditure and capital multi-lateral partial factor productivity, and total factor productivity, electricity distribution, 2006 to 2020



Source: AER 2020 electricity distribution benchmarking report

There is no evidence of networks inflating base year operating expenditure

As previously explained, when forecasting operating expenditure, we typically start with a single year of actual operating expenditure (the base year). We then test the efficiency of operating expenditure in this year, by using our benchmarking analysis. We use actual expenditure in the proposed year or make an efficiency adjustment to it if we consider it is inefficient. This works in conjunction with the EBSS to provide network service providers with incentive to spend the efficient amount or less. With the EBSS a network may increase spending above the efficient amount if it determines that this could influence future operating expenditure allowances. The EBSS is designed to mitigate this incentive.

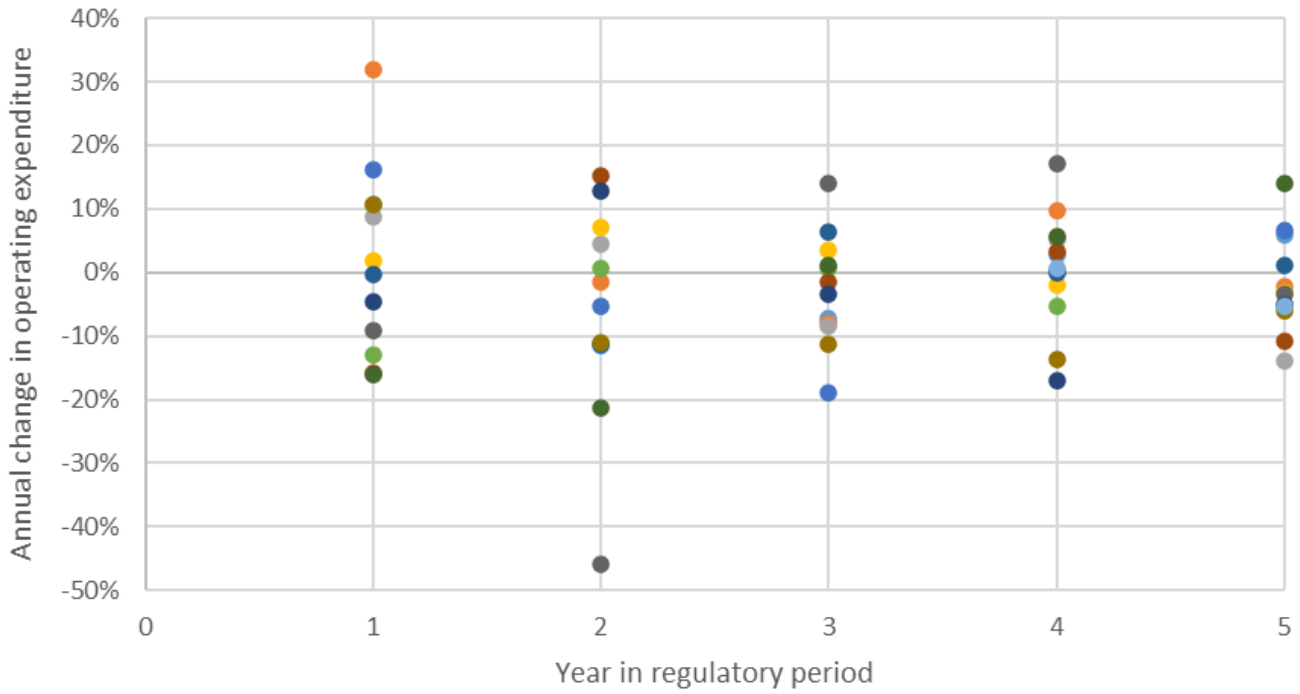
As part of our Better Regulation reforms, we found that there was no systematic evidence that networks were spending more operating expenditure in the expected base year than earlier years. While the EBSS had only been in place for one regulatory period for a handful of electricity distribution and transmission businesses, the EBSS appeared to be working as intended.

The EBSS has now applied for a least 2 regulatory periods for most electricity networks. We have looked for any evidence that networks are increasing their operating expenditure in the expected base year.

Figure 16 shows the change in actual operating expenditure each year compared with the previous year for each electricity distributor. The different colours represent different networks. If

networks were responding to an incentive to increase operating expenditure in the base year we would expect to see a greater increase in operating expenditure in years 3 and 4, which are the most commonly used base years. Further, if there was a greater incentive to make efficiency gains at the start of the period we would expect to see a lower annual change in operating expenditure at the start of the period, with the annual change increasing at the end of the period. But we do not see this. Instead, there is no clear pattern that the networks have increased, or decreased, their operating expenditure in any particular year, compared with the other years in the regulatory period. This gives us further confidence that the EBSS is working to provide a constant incentive to reduce operating expenditure as intended.

Figure 16 Annual change in operating expenditure (recent regulatory period)



Source: AER analysis

4.3 Key issues for considering operating expenditure incentives

The EBSS plays an important role in how we forecast efficient operating expenditure by providing a continuous incentive to pursue efficiency gains. In section 4.2, we observed that operating expenditure has been declining since 2012, which also coincided with improvements in the productivity of operating expenditure across all electricity distribution networks. This suggests that the EBSS, in conjunction with our forecasting approach and the underlying incentives in the regulatory regime, is providing benefits to consumers by ensuring that network charges reflect the efficient costs of operating and maintaining electricity networks.

However, we note that some stakeholders have recently observed significant EBSS carryover amounts and questioned whether this was due to overly generous operating expenditure forecasts, or whether it reflected networks making significant efficiency gains. In this section we examine the drivers of these significant EBSS carryovers and how these accord with our expectation of the application of the scheme.

Broadly speaking, we consider that electricity distribution networks can be split into 3 different groups based on their EBSS outcomes and benchmarking performance in recent years:

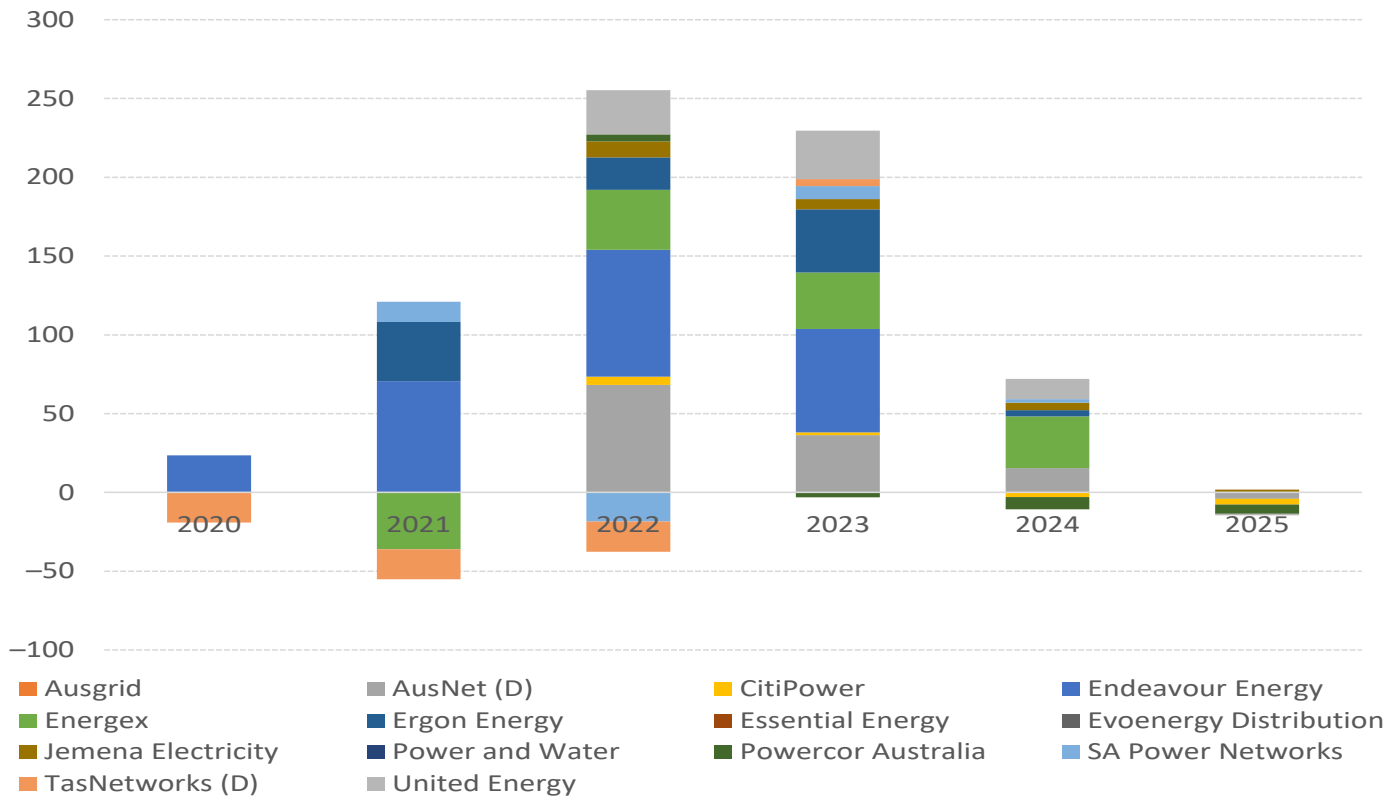
1. Networks that perform well in the operating expenditure benchmarking and which have accrued only modest EBSS carryover amounts.

2. Networks that perform less well in the operating expenditure benchmarking but which we have not found to be materially inefficient, and to which we have applied the EBSS. These tend to be the networks that accrue the largest EBSS carryover amounts.

3. Networks that perform poorest in our operating expenditure benchmarking and which we have found to be materially inefficient. In these cases, we have previously chosen not to apply the EBSS because we were not confident that we would use the networks' revealed expenditure to forecast operating expenditure in subsequent periods. Consequently, these networks have not accrued any carryovers.

Figure 17 shows the EBSS carryover rewards that will be added to forecast revenues in upcoming years. The carryovers reflect operating expenditure reductions made by networks in their most recent regulatory period and were included in their most recent revenue allowances.

Figure 17 EBSS rewards by electricity distribution network, $million



Source: AER analysis

The EBSS rewards between 2021 and 2025 have been primarily driven by large carryover amounts from 5 businesses. Table 2 show the 5 largest total EBSS carryovers over the period

2020 to 2025. The 5 electricity distribution networks have tended to be mid-tier performers in our annual benchmarking. These networks have sought efficiency gains in response to the incentives under the framework, which may include financial incentives from the EBSS and our use of economic benchmarking.

Table 2 Largest total EBSS carryovers over the period 2020 to 2025, $million

Network	EBSS rewards, 2020 to 2025
Endeavour Energy	$240.2
AusNet Services	$115.9
Ergon Energy	$102.2
United Energy	$70.8
Energex	$70.7

Source: AER analysis

We note that networks that have performed poorest in our operating expenditure benchmarking and which we have found to be materially inefficient have often made significant operating expenditure reductions in recent years, even though the EBSS did not apply to them. This shows that benchmarking also plays an important role in incentivising networks to reduce operating expenditure in the absence of other financial incentives.

However, the significant improvements in operating expenditure productivity from the networks that are not at the efficient frontier in our benchmarking, and any associated EBSS carryovers, may not persist over the longer term. As more networks improve their relative productivity and move closer to the efficient frontier, the opportunities for significant efficiency gains within one regulatory period may diminish. This is something we will need to monitor through our economic benchmarking reports.

This also reveals that our use of economic benchmarking has implications for how we use the EBSS. Using economic benchmarking to forecast operating expenditure (such as adjusting base operating expenditure) is not consistent with the assumptions within the EBSS. The EBSS assumes that we rely on actual operating expenditure in a single year to forecast operating expenditure. When base operating expenditure is informed by economic benchmarking, this may distort the linkages between the EBSS and our forecasting approach. This is the reason that we do not apply the EBSS to a network when we make efficiency adjustments for actual operating expenditures in determining the base year for the following regulatory period.

Nevertheless, the consideration of economic benchmarking is necessary to ensure forecast operating expenditure complies with the requirements of the NER. Specifically, our most recent annual benchmarking report is one of the operating expenditure factors we must have regard to. For those networks that perform well in our benchmarking analysis, benchmarking is unlikely to materially impact the incentive to reduce operating expenditure. However, for those distributors that do not perform as well on the economic benchmarking, any expectation that their forecast operating expenditure is likely to be impacted by their benchmarking performance, is likely to increase the incentive to reduce operating expenditure.

We are mindful that our use of economic benchmarking, as well as the EBSS, can in some instances create dual and potentially strong incentives on network service providers to seek efficiencies in operating expenditure. We are interested in stakeholders' views on whether we have the balance between the EBSS and our economic benchmarking correct. That is, does our application of both tools provide networks a constant incentive to reduce operating expenditure to the efficient level?

Questions

13. Has the EBSS provided the right incentives in terms of promoting continuous efficiency gains in operating expenditure?
14. Is the current level of rewards and penalties under the EBSS appropriate? What considerations should be given when determining the EBSS carryovers, including the length of carryover period?
15. The EBSS assumes that only base year operating expenditure is used to inform forecast operating expenditure. How does our use of economic benchmarking to assess the efficiency of base year operating expenditure affect the incentive to reduce operating expenditure? Should the EBSS be amended to reflect this?
16. Should there be any other adjustments to the EBSS?

5 Capital expenditure outcomes and incentives

This section examines the effect of the CESS and its associated capital incentives guideline on efficient and prudent capital expenditure.

The CESS is an ex-ante approach with a key objective to provide networks with an incentive to undertake efficient capital expenditure during a regulatory control period. It achieves this by rewarding (penalising) networks that under (over) spend their allowance. The CESS ensures that a network provider receives a reward equivalent to 30 per cent of capital expenditure efficiency gains made within a regulatory period (and equivalent penalty for efficiency losses).[15]

The CESS was created in 2013 and first applied in 2015. It is now applied to most electricity network service providers for one regulatory period. We now have the benefit of actual capital expenditure which allows us to evaluate capital expenditure patterns and outcomes. We can examine whether the outcomes are consistent with the objectives of the schemes and if the current design remains fit for purpose.

We have focussed this analysis primarily on electricity distribution network service providers, as there is a larger number of networks and more complete data sets.

5.1 How the CESS benefits customers

The CESS is intended to provide networks with financial incentives to pursue efficiency gains over time. This aimed to address concerns that the incentives to seek efficient costs declines over a regulatory period. The inclusion of an incentive scheme benefits customers where it leads to efficient capital expenditure being added to the RAB. This leads to more efficient investments being recovered over time from customers through network charges.

Efficiency gains are defined by reductions in capital expenditure compared with forecast expenditure allowances. This means the setting of reasonable expenditure forecasts is important in ensuring that network service providers are incentivised to seek genuine efficiency gains. Where capital expenditure forecasts are set above a level that provides safe and reliable services to consumers, then underspending against this forecast would not reflect genuine efficiencies.

We have a role in determining the capital expenditure allowances. However, unlike for operating expenditure, we do not use a revealed cost approach to forecasting total capital expenditure. One benefit of the interaction between the EBSS and operating expenditure forecasting is that networks do not benefit, via increased revenues, from shifting actual operating expenditure and spending more in specific years (such as the base year). This gives us confidence the forecasts we determine are no more than the efficient operating expenditure required by a prudent network.

While we use actual capital expenditure performance to inform components of future expenditure requirements, capital expenditure is less recurrent in nature than operating expenditure. This means that we have greater reliance on the quality of information provided in regulatory proposals

[15] The CESS in conjunction with the use of forecast depreciation to roll forward the RAB ensures that the network service provider receives the same incentive irrespective of asset lives.

and our assessment tools when determining forecasts for efficient capital expenditure. We discuss 2 important aspects of our approach to setting forecast capital expenditure allowances below.

Forecasting techniques

At the time of developing the CESS and our incentives guideline in 2013, we considered that improvements in our forecasting methodologies, as part of our expenditure forecast assessment guideline, would help to reduce the risk of over-forecasting. This included the development of statistical models and economic benchmarking and standardised forecasting approaches.

We have since continued to update and refine our forecasting assessment methodologies and provide additional guidance to electricity distribution and transmission network service providers in preparing their capital expenditure forecasts. These include:

- Asset Replacement Industry Note
- Information and Communication Technologies (ICT) Guidance Note
- Regulation of Actionable Integrated System Plan Projects Guidance Note
- AER outline of the repex model
- Guideline note (draft) on Distributed Energy Resources Integration Expenditure

Our repex model is an important tool that allows us to undertake a top-down assessment of recurrent expenditure on replacing assets by comparing the business' forecast modelled replacement expenditure against other businesses. The repex model sets a threshold against which we compare the electricity distribution business' forecast. We have recently reviewed the key assumptions underpinning our repex modelling approach and the repex model outcomes under different scenarios.[16]

For non-network ICT, we published a guidance note on how we would assess recurrent and non-recurrent ICT capital expenditure using a combination of top down and bottom-up assessment methodologies.[17]

The CESS has also benefited our capital expenditure forecasting assessment by allowing us to place greater weight on actual expenditure for those components of a network's capital program that are more recurrent in nature. Trends in actual capital expenditure and revealed cost inputs can be used in setting future capital expenditure allowances for these particular components.

Capital expenditure deferrals

Network service providers may defer capital expenditure between regulatory periods. This can may be efficient where it extends the life of existing assets and reduces the need for additional investment in the near term. This can benefit customers through relatively lower network charges and more productive use of networks.

16 AER, Explanatory note AER review of repex modelling assumptions, December 2019; AER repex model outline for electricity distribution determinations, February 2020.

17 AER, Guidance note - non-network ICT capex assessment approach, November 2019.

However, it is necessary to account for the deferral of capital expenditure projects in the calculation of CESS payments where a network service provider defers expenditure between periods. As we set out in our explanatory statement to our capital expenditure incentive guideline:

> Without any adjustment to the CESS payments, all capex underspends would be treated identically. A NSP [network service provider] would receive the same reward through the CESS for a permanent efficiency improvement as it would for a short-term deferral of capex. Where the deferred capex has no impact on a NSP's forecast of capex for the next regulatory control period, all else being equal, consumers will be better off from such deferral. However, if a NSP's capex forecast materially increases in the next regulatory control period because the capex was deferred, a NSP's reward from deferring capex is likely to exceed the benefit to consumers from the short-term deferral. If this is the case, consumers will, perversely, face higher prices after short-term deferral of capex.

In this context, short term deferrals will be detrimental to consumers where a network service provider is able to defer a material amount of expenditure, and this leads to higher capital expenditure forecasts in the next regulatory control period. This leads to consumers not sharing in the benefit of such a deferral and potentially paying for more than efficient costs.

Under the CESS, we have the flexibility to adjust the CESS payments where we identify a material amount of capital expenditure that is deferred between regulatory control periods. To help consumers share in the benefits of deferred capital expenditure, we can make an adjustment to the CESS payments where:

- the network service provider has materially underspent in the current regulatory period
- the amount of the deferred capital expenditure in the current regulatory period is material
- total approved forecast capital expenditure in the next regulatory period is materially higher than it is likely to have been if a material amount of capital expenditure was not deferred.

One alternative is to instead adjust the capital expenditure forecast in the next regulatory control period to remove the deferred projects. However, this may not necessarily be consistent with the requirements in the NER to forecast efficient expenditure that may be reasonably required. We and stakeholders considered it would be more transparent to address short-term deferrals through an adjustment to the CESS payments rather than through the capital expenditure forecast.

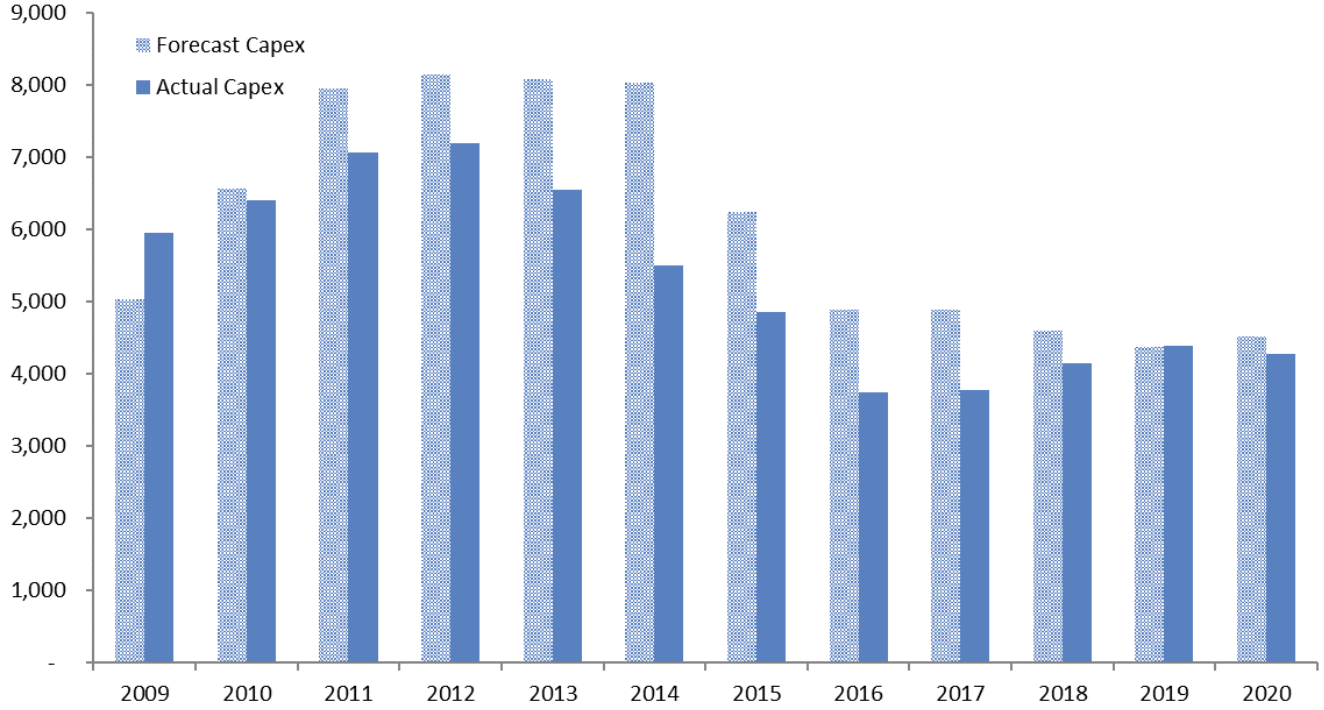
5.2 Capital expenditure trends and patterns

This section provides some insight into the capital expenditure trends and patterns we have observed since the application of the CESS. This includes overall trends in actual capital expenditure compared with forecasts and examines whether these outcomes are consistent with the intentions of the incentive mechanisms. This section builds off information reported in our electricity network performance reports.

Networks are spending less than their allowances

Figure 18 shows the total actual and forecast capital expenditure across the electricity distribution networks in the NEM. This shows that total capital expenditure has declined significantly between 2012 and 2016, and was materially below forecasts set in revenue determinations. Capital expenditure has trended upwards since 2016 but has still remained below forecasts overall.

Figure 18 Forecast and actual capital expenditure – all electricity distribution

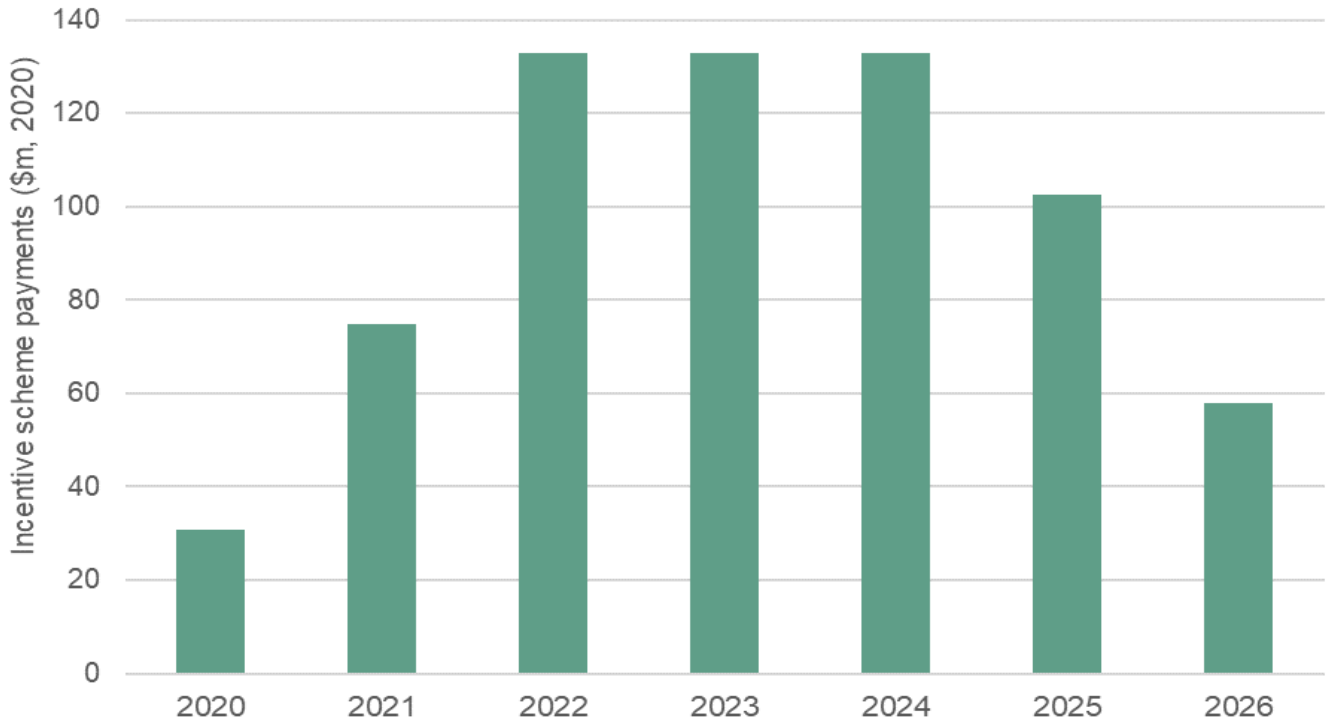


Source: AER network performance report

There are likely many reasons for the overall decline in capital expenditure, including changes in the external environment (e.g. reductions in demand, and changes in regulatory obligations), as well as networks making more efficient investments. However, since 2015, we also consider that a material factor has been improvements in our expenditure forecasting techniques. This has allowed us to assess forecast capital expenditure needs more accurately (as discussed above).

The pattern of underspending against allowances continued after the introduction of the CESS in 2015. This contributed to the positive CESS carryover rewards that networks will be entitled to in the upcoming regulatory period, as shown in Figure 19. However, we note that actual capital expenditure has trended upwards and electricity distribution networks have recently spent near their allowance.

Figure 19 CESS revenues – electricity distribution



Source: AER electricity network performance report

This may provide some evidence that electricity distribution networks are responding to incentives to incur efficient capital expenditure. Where network service providers have been able to spend less than forecast despite reductions in forecast capital expenditure over time, this will lead to a relatively lower RAB. Consumers will benefit through lower network charges over time.

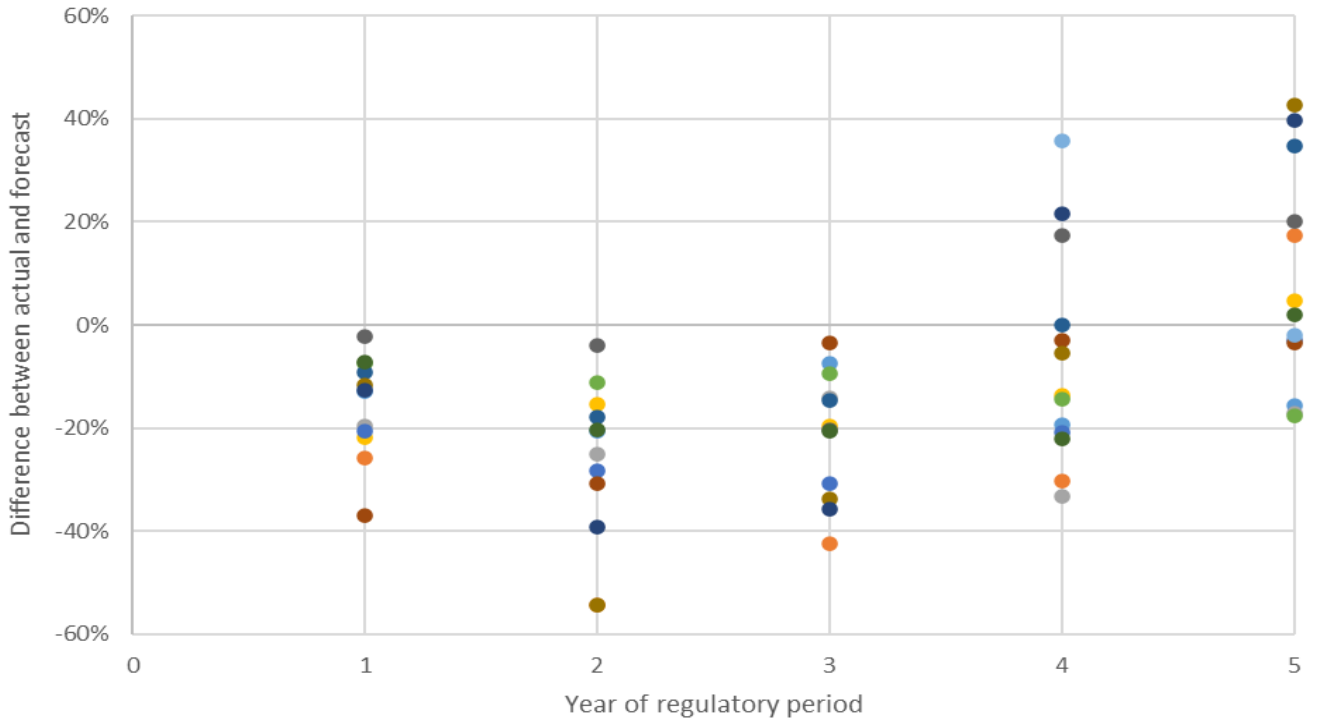
We recognise that it is not straightforward to identify whether expenditure underspending is due solely to efficiency gains, or changes in circumstances or happenstance. This is a key concern raised by consumer groups. Prior to the introduction of the CESS, networks were also able to spend less than forecast without the strength of the financial incentive created by the CESS.

This means that examining in detail the drivers of underspends may be necessary to identify whether underspending is due to efficiencies. We examine 2 notable trends in capital expenditure below that raises question as to whether the CESS is currently promoting outcomes that are commensurate with efficiency gains in capital expenditure.

Networks appear to be spending more later in regulatory periods

Figure 20 compares actual and forecast for each electricity distribution network in the first regulatory period in which the CESS has applied. This shows that all electricity distribution networks underspent their capital expenditure allowances in the first 3 to 4 years of their regulatory period, sometimes materially. However, a majority of electricity distribution networks spent closer to, or above, their allowances in the last year or 2 of their regulatory period. In some instances, networks have significantly overspent their allowance in last year of the regulatory period.

Figure 20 Difference between actual and forecast capital expenditure over the first CESS regulatory control period – electricity distribution



Source: AER analysis

These observed patterns of electricity distribution networks spending higher capital expenditure in the final year of the recent regulatory period is observed historically. However, it is not what we would expect with the financial incentives generated by the CESS. The CESS was expected to lead to smoother spending patterns. This has not yet occurred.

This pattern in and of itself does not indicate inefficient spending by networks in the later years of the recent regulatory period. There may be other reasons beyond the CESS, financial or otherwise, that continue to factor into investment decisions in any given year. This is also the first regulatory period in which the CESS has applied. It may be that we need to observe additional regulatory periods from each network to see if expenditure patterns become smoother over time.

We are also interested in exploring whether the current design of the CESS, and the calculation of rewards and penalties, has created unintended consequences in terms of encouraging networks to shift capital expenditure to later in their regulatory period.

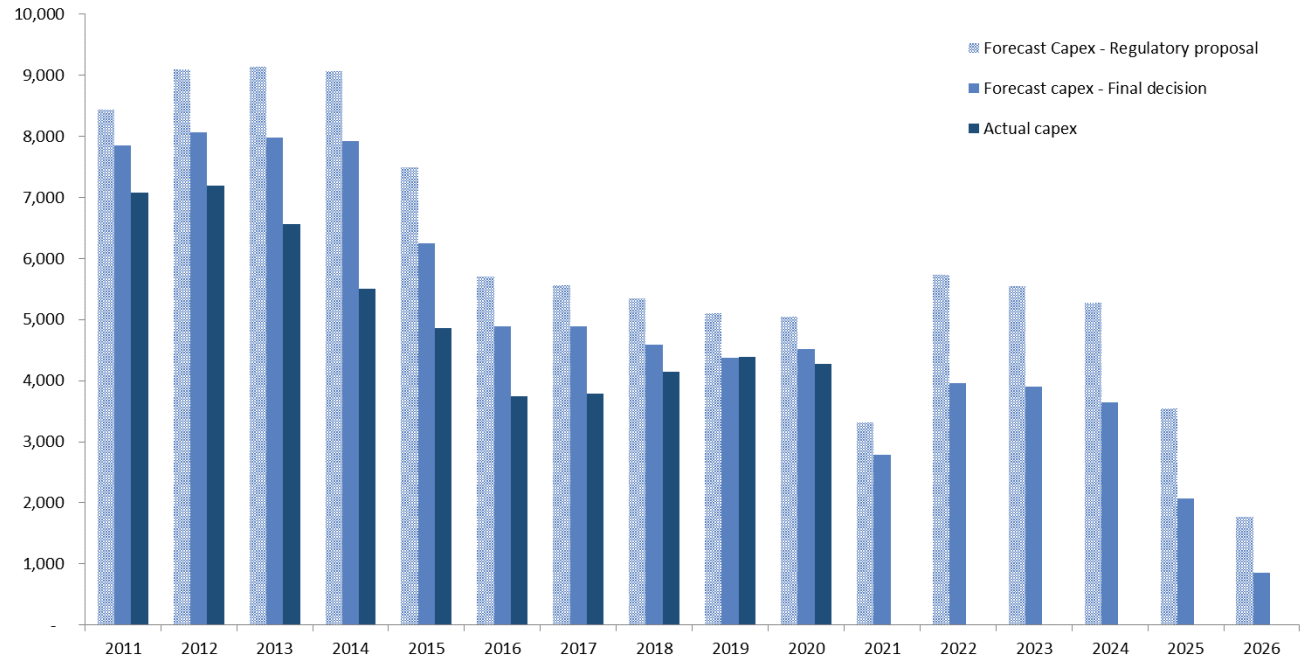
Patterns in underspending and high proposed expenditure

The improvements in forecasting techniques, and the benefit of using efficient actual capital expenditure to inform future forecasts, has allowed us to assess prudent and efficient capital expenditure forecasts more accurately across distribution networks. However, we have observed a growing disparity between initial proposals from networks and our final decisions recently.

As shown in Figure 21, initial proposals from electricity distribution networks are typically higher than our final decisions. This has been a consistent trend over several regulatory periods.

However, this difference has been more pronounced in recent capital expenditure allowances for the regulatory periods covering 2021 to 2026.

Figure 21 Difference between proposed capital expenditure and AER final decision



Note: 2021 does not include Victoria due to the 6-month transition from calendar year to financial year regulatory control periods.

Source: AER analysis

There is also an observed pattern of several electricity distribution networks underspending their capital expenditure allowance in their recent regulatory periods and then proposing a significant increase in forecast capital expenditure in the next period. For example, we observe that 9 of the 13 distribution networks underspent their capital expenditure allowances by more than 10 per cent in the recent regulatory period. Of these, 7 distribution networks proposed forecast capital expenditure was more than 10 per cent above its actual capital expenditure for the next regulatory period. This includes 2 distribution networks that had proposed forecast capital expenditure 40 per cent higher than actual capital expenditure.

As shown in Figure 19, electricity distribution networks have received significant CESS rewards for underspending their capital expenditure allowance. The observed pattern of underspending and over-forecasting is one example of a trend that raises a concern as to whether these CESS rewards were commensurate with efficiency gains. While lower capital expenditure will lead to less added to the RAB, these efficiencies are not necessarily being reflected in network proposals for future capital expenditure forecasts. This creates an increased regulatory cost of examining expenditure proposals and determining reasonable forecasts of efficient expenditure.

5.3 Key issues for capital expenditure incentives

The CESS plays an important role in incentivising network service providers to pursue efficiencies in capital expenditure. In the previous section, we have observed that since the introduction of the CESS networks have underspent their capital expenditure allowances. This has benefited customers through lower capital expenditure added to the RAB, which in turn will lead to relatively lower network charges over time.

As capital expenditure can be non-recurrent in nature, the reasons for underspending is not always clear and it can be due to genuine efficiencies as well as changes in circumstances or other reasons. We do not systemically rely on actual capital expenditure to set future allowances. Instead, we rely on the quality of information provided in regulatory proposals and our assessment tools when determining forecasts for efficient capital expenditure.

Forecasting was a key issue raised by customers in recent revenue determinations. Several submissions raised concerns about the incentives on networks to over-estimate future expenditure forecasts and defer projects between regulatory periods. Others also considered that there was a lack of transparency over whether observed under-expenditure was due to genuine efficiency gains, or due to happenstance, poor/over-forecasting or the inability to obtain project approvals.

Challenges in identifying drivers of capital expenditure underspending

A key issue from customers was whether capital expenditure underspending reflects genuine efficiency gains or other reasons. This is important because we do not systemically rely on actual capital expenditure to set future allowances. Where a network underspends against their allowance in one period, this does automatically flow through to lower allowance in the next regulatory control period.

One of the outcomes observed recently were patterns of underspending and over-forecasting future capital expenditure allowances. One driver of the observed pattern may be deferral in capital expenditure between regulatory periods. This can be efficient behaviour when it leads to a lower RAB while maintaining service performance levels. However, where similar projects are included in future capital expenditure forecasts, this can lead to consumers not sharing in the benefits of deferred expenditure. Networks should not be rewarded under the CESS for this type of outcome.

As discussed above, the current CESS allows us to adjust rewards and penalties to account for material amounts of capital expenditure deferrals between regulatory periods.

To date some network service providers have included adjustments to their CESS payments to reflect projects that have been deferred and included in their proposed capital expenditure. We consider this is good practice and ensures that consumers do not overpay for efficiency gains, and that the operation of this mechanism does not become a regulatory burden.

We have also made one adjustment to a CESS payment for deferrals that were not included in a regulatory proposal. However, this requires us to undertake an ex-post review of actual capital expenditure. This is not necessarily the intention of the incentive framework and information asymmetry remains a concern.

When we set capital expenditure forecasts, we analyse and assess expenditure drivers, programs and projects to inform our view on a total forecast. However, we do not determine forecasts for all

individual capital expenditure drivers or determine which programs or projects a network should or should not undertake. This is consistent with our ex-ante incentive-based regulatory framework and is often referred to as the ‘capital expenditure bucket’.

Networks may need to undertake programs or projects that they did not anticipate during the reset. Networks also may not need to complete some of the programs or projects proposed if circumstances change. We consider that a prudent and efficient network would consider the changing environment throughout the regulatory control period and make decisions accordingly.

This poses challenges in identifying projects that have efficiently deferred between regulatory periods and accordingly adjusting the CESS or future capital expenditure forecasts. We consider greater transparency of the drivers of underspends will help to address these concerns and provide us and stakeholders with greater confidence in forecasts going forward. However, this should be balanced with an appropriate amount of regulatory burden and costs.

We consider that this is a key focus area in ensuring that the CESS remains fit-for-purpose over time and that customers benefit from efficiency gains achieved by network service providers.

A greater customer-centric approach may improve forecasting and incentives

In September 2021, we published a draft version of our Better Resets Handbook, which sets out our expectations for a greater customer-centric approach to proposals. The Handbook includes our expectations for how we will examine capital expenditure forecasts. The final version of the Handbook will be published in December 2021.

A key capital expenditure expectation in the Handbook is information that should be included as part of top-down testing total capital expenditure. This includes greater transparency in circumstances where there was a material underspend and a material step up in proposed capital expenditure (including deferrals in projects or other reasons for material increases in requirements). We expect network service providers to provide well justified reasons for any material CESS benefit that have been explained to customer groups. Networks will benefit through increased efficiency in the regulatory process.

The Handbook is an avenue that provides a clearer and more transparent top-down consideration to allow us to better link capital expenditure forecasting with the CESS. Capital expenditure proposals that are aligned with expectations set out in the Handbook will provide us greater confidence that over forecasting and deferrals do not outweigh efficiency gains in capital expenditure. This is primarily related to providing better quality information to inform our understanding of network performance and future expenditure requirements.

A flexible approach to incentives

In addition to the potential for more consumer-centric forecasting, a more flexible approach to financial incentives may also contribute to reducing the regulatory costs and information asymmetry associated with over-forecasting and concerns about whether capital expenditure incentive outcomes are commensurate with genuine efficiency gains.

The current version of the CESS applies a fixed reward or penalty to each network service provider. This fixed approach is relatively straightforward and transparent. However, it does not provide flexibility to change the approach to incentives based on how networks behave and are responding to the regime, or concerns around the accuracy of capital expenditure forecasts.

As noted in section 3.4, the AEMC has noted that it is open for us to apply incentives schemes in a different way to different networks or even to apply different schemes to different networks. In the context of capital expenditure, patterns of underspending and over-forecasting may raise concerns as to whether networks are responding appropriately to incentives and passing efficient expenditure through to consumers.

Where there are concerns, it may be appropriate to adjust the strength of financial incentives, and/or change the balance of rewards and penalties, for each network. This may reduce the regulatory burden of identifying all asset deferrals if we can amend the incentives for future regulatory control periods where there are concerns with inter-period deferral or over forecasting. It may also allow us to amend the incentives where there are concerns about imbalances with the incentives for operating expenditure efficiencies.

Questions

17. Has the CESS provided the right balance of incentives in terms of promoting continuous efficiency gains, efficient timing of investments (including efficient deferrals) and good capital expenditure forecasts?
18. Is the current level of rewards and penalties under the CESS appropriate? Is a fixed level of 30 per cent still appropriate, or should be it changed? What considerations should be made to the appropriate level?
19. Should the application of the CESS, and its rewards and penalties, change for individual networks where there are concerns about expenditure over-forecasting?
20. Should there be any other adjustments to the CESS and capital expenditure incentive guideline?

6 Service performance incentives and outcomes

The STPIS provides electricity network service providers with incentives for maintaining and improving network performance, to the extent that consumers are willing to pay for such improvements. It does this by rewarding networks that outperform service performance targets and penalising networks that underperform service performance targets.

Importantly, a network service provider will only receive a financial reward after actual improvements are delivered to the customers. We believe that this scheme has over time delivered good outcomes for customers in terms of service reliability.

One of the objectives of the STPIS is to ensure that the incentives are sufficient to offset any financial incentives the network service provider may have to reduce costs at the expense of service levels for customers. In conjunction with CESS and EBSS, the STPIS will ensure that:

- investments to improve reliability are based on prudent economic decisions
- any reduction in expenditure is achieved efficiently, rather than at the expense of service levels to customers.

There are 2 arms of the STPIS schemes — one each for electricity distribution and electricity transmission. Each scheme focuses on different performance outcomes and incentives. We consider each scheme in turn and the key issues for consideration.

6.1 Service performance for electricity distribution

The key focus of the STPIS for electricity distribution is supply reliability and how soon a customer can contact a network contact centre to report and seek information on power outages.

Reliability refers to the continuity of electricity supply and is typically measured by the frequency and duration of interruptions to supply. Reliability is measured by a combination of System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI) and Momentary Average Interruption Frequency Index (MAIFI). This is measured for each segment of the network — CBD, urban and rural.

Under the STPIS, reliability targets are typically based on the level of reliability achieved by a network over a recent period. These targets are then updated every 5 years, as part of the regulatory determination process, to take account of the most recent reliability performance.

The reward and penalty mechanism under the STPIS determines how much performance above the reliability targets is rewarded, and how much performance below the target levels is penalised. This is done by taking account of the value that customers place on improved reliability for each component of service reliability (e.g. frequency and duration). The incentive rates are based on the value of the annual energy delivered, which is determined by placing a value that different customers place on having a reliable electricity supply (referred to as the ‘value of customer reliability’). This aims to ensure that the network service providers’ operational and investment strategies are consistent with customers’ value for the services that are offered to them.

The benefits to consumer from the STPIS are from sustained increases in service performance. Where a network only achieves temporary improvements in performance, such as service

reliability, it will not receive any substantial incentive payment. We can directly measure this benefit to consumers based on the measurement of the improvement in reliability and the value of improved reliability to customers using the VCR.

As an illustration, we modelled the benefit of this scheme by assuming AusNet Services' urban network reliability performance improved by 10 per cent on an ongoing basis. In this example, where AusNet Services improved its network reliability, it would receive incentive payments of $1.33 million per annum for 5 years under the existing STPIS. Then at its next regulatory control period, its service reliability targets would be reset to the improved actual reliability levels. Where it was able to maintain these improved reliability levels, AusNet Services' customers would benefit by $2.2 million per annum on an on-going basis, as measured by the improved levels of reliability and the value of customer reliability.

In addition, the customer service component measures the performance of networks' contact centres and the percentage of calls to the fault line answered in 30 seconds.[18]

We currently apply version 2.0 of the STPIS for electricity distribution networks. We reviewed the STPIS in 2018 and also reviewed the value of customer reliability in 2019, as discussed below.

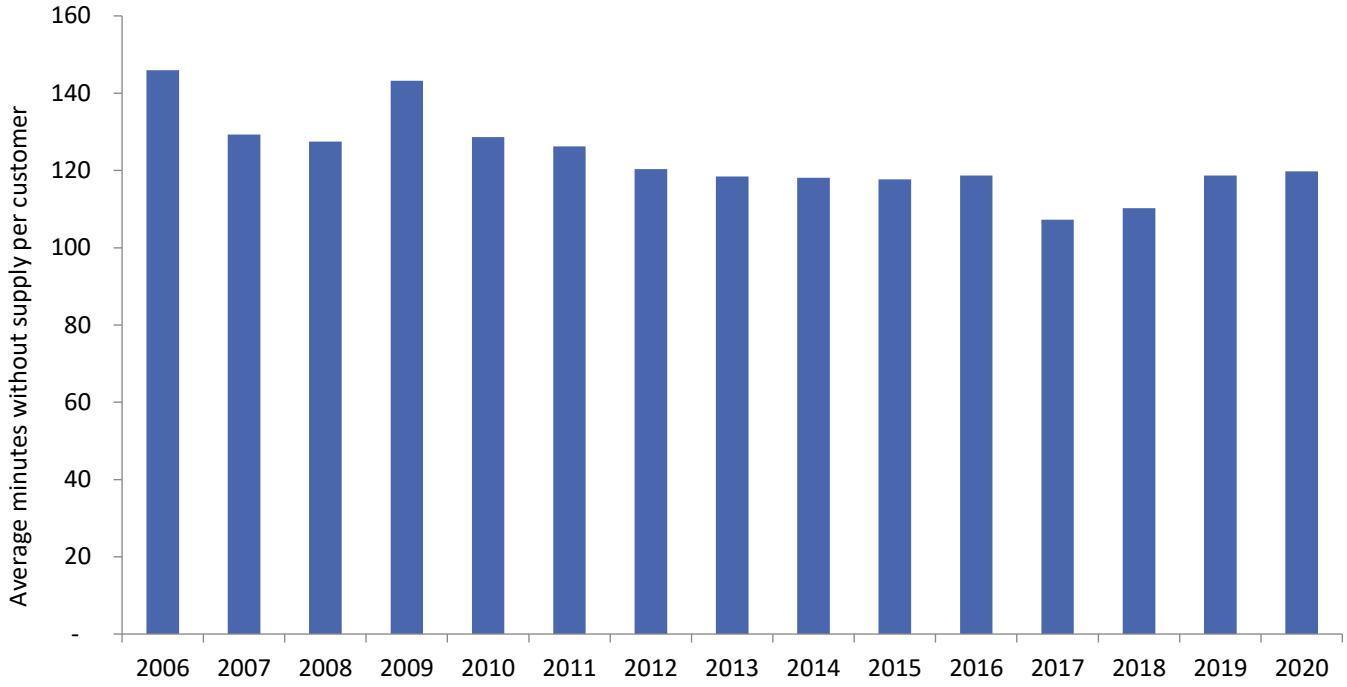
Service reliability trends

Figure 22 and Figure 23 shows service reliability performance between 2006 and 2020, using both key components of reliability — the duration of outages, and the frequency of outages. It shows the reliability outcomes observed by customers (including the impact of all major events such as storms) and normalised reliability outcomes (excluding the impact of major events).

Figure 22 shows that customers have experienced shorter duration of outages over time over electricity distribution networks. Between 2006 and 2020, the average duration of outages reduced by 26 minutes or 18 per cent. This declining trend has been broadly consistent over time. However, there has been a slight annual increase in outage duration since 2017.

[18] The time to answer a call is measured from when the call enters the telephone system of the call centre (including that time when it may be ringing unanswered by any response) and the caller speaks with a human operator, but excluding the time that the caller is connected to an automated interactive service that provides substantive information.

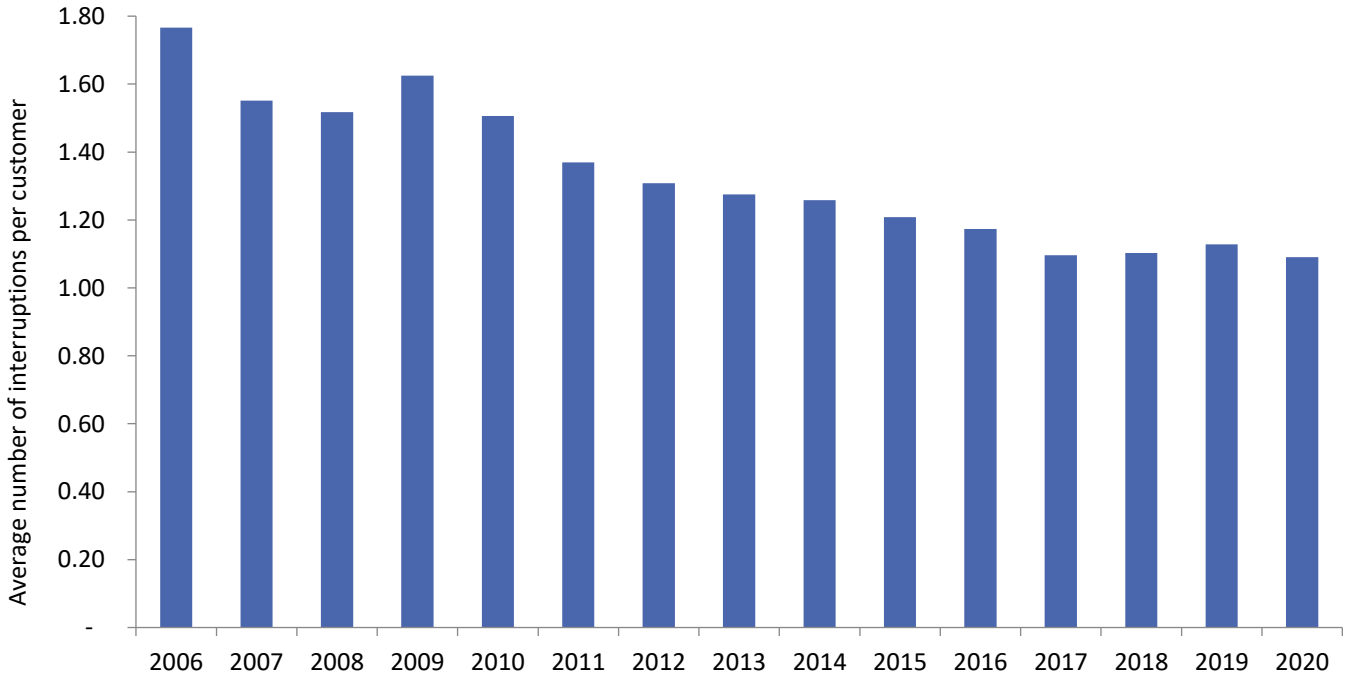
Figure 22 Average minutes without supply per customer – electricity distribution



Source: AER electricity network performance report

Figure 23 shows that customers have also experienced fewer outages over time over electricity distribution networks. Between 2006 and 2020, the average number of interruptions per customer per year declined by 0.68, or 38 per cent.

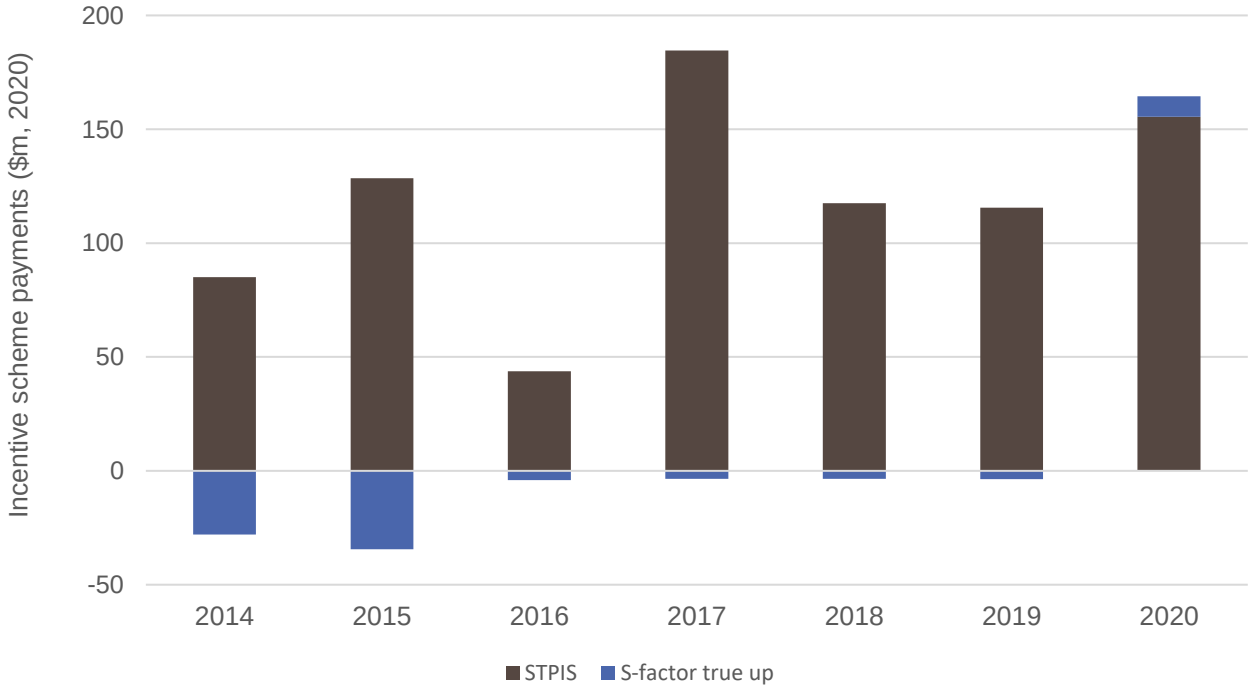
Figure 23 Average number of interruptions per customer – electricity distribution



Source: AER electricity network performance report

Figure 24 shows that incentive rewards from the STPIS have provided electricity distribution networks with $830 million in incentive revenues between 2014 and 2020. While significant, these incentive rewards are due to network service providers improving their service reliability and outperforming against targets set under the STPIS. They also provide evidence that the scheme is continuing to achieve its objective of delivering improved service reliability over time that is valued by customers.

Figure 24 Service performance incentive scheme revenues – electricity distribution



Note: The s-factor true-up scheme is the superseded service performance scheme previously applied to Victorian electricity distribution networks by Essential Services Commission Victoria.

Source: AER electricity network performance report

These observations are consistent with analysis undertaken by Energy Networks Australia in 2019, which examined the benefits of both the EBSS and STPIS to all customers across the NEM. In relation to reliability outcomes, it observed that customers had benefited from both reductions in the minutes without power and fewer outages. It estimated that the total benefits to customers from the improvements in reliability was between $3.2 billion to $6.6 billion in present value terms (depending on the assumed rate of return). As these are total benefits to customers, it did not account for the costs of the STPIS to customers in terms of incentive payments to networks.

Our recent reviews

In 2018, we undertook a review of the STPIS that applies to electricity distribution. We considered that the scheme was achieving its objective in delivering improved service reliability valued by customers. We observed that electricity distribution networks had, overall, outperformed against their reliability targets over the 2011 to 2015 period.

In administrating the STPIS, we found that while the STPIS has delivered improvements in the reliability of electricity supply, electricity distribution networks had focused on reducing the number of short interruptions to supply, rather than also reducing the number of longer interruptions. As a result, the average length of supply restoration time has increased, meaning that customers, particularly at the end of networks (often in rural or remote areas) may not receive the same supply improvements as customers in urban areas.

Consequently, we adjusted the formula that was calculating incentive rates to better balance the weight given to the frequency and duration of supply interruptions. The modified STPIS increases the incentive for electricity distribution networks to reduce the average duration of supply interruptions for all customers, while keeping the number of outages at low levels.

We now apply version 2.0 of the scheme to electricity distribution networks.

In 2019, we also published our review of the value of customer reliability. The last review was undertaken in 2014 by the Australian Energy Market Operator (AEMO). Our review updated the methodology AEMO employed to determine the value of customer reliability, to take account of changes in the National Electricity Market since 2014. This was the largest study of the value of customer reliability ever conducted in Australia with over 9,000 residential, small business and industrial energy customers completing the survey.

The value of customer reliability plays an important role in ensuring consumers pay no more than necessary for safe and reliable energy, helping energy businesses identify the right level of investment to deliver reliable energy services to customers. In the STPIS, it is a key input in determining the incentive payments for outperforming reliability targets and penalties for underperforming. Since 2020, we began applying the latest value of customer reliability through our distribution revenue determinations in calculating incentive rates.

Over the coming regulatory periods, we will monitor how distribution networks are responding to our updates to service reliability incentives and how it affects reliability outcomes for customers.

Ensuring that service performance reflect customer preferences

The current scheme measures performance primarily in terms of service reliability and this is the primary source of incentive rewards and penalties. We consider that the approach to incentivising the efficient levels of service reliability for electricity distribution networks is broadly fit-for-purpose. The trends in the frequency and duration of outages shows that customers are benefiting from reliability improvements. The positive incentive payments also suggested that customers value the improvements in service reliability when measured using the value of customer reliability.

The scheme also includes a customer service component that is specifically related to telephone answering. Networks are engaging with customers regularly to seek insights into their preferences in terms of service delivery and pricing. This is important in ensuring the incentives that apply to networks in terms of service delivery are consistent with the outcomes desired by customers, and whether these outcomes should be encouraged through financial incentives.

One way that evolving customer preferences are being reflected in incentives is through our new customer service incentive scheme. In recent regulatory determinations, network service providers and customers agreed to replace the existing telephone answering service with additional and alternative service measures that better aligned with customer preferences.

We are also currently undertaking a review of incentive arrangements for distribution businesses to deliver efficient levels of export service and performance. This may include expanding the STPIS to include export services to reflect the needs of consumers using distributed energy resources (and other similar technologies) and ensure that new technologies are integrated more efficiently into the grid. We must publish a report of our findings by 31 December 2022.

We consider that the current regulatory arrangements, in addition to our review into expert services incentives, provided sufficient scope and flexibility for customer preferences to be reflected in service performance incentives. This includes the existing service reliability measures and flexible customer service incentive scheme.

In the remainder of this section, we provide more information about our customer service incentive scheme (and its interaction with the STPIS) and our review into the appropriate incentives for export services performance.

Customer service incentive scheme

As network service providers continue to engage with their customers about the services that matter most to them, we will gain a better understanding of the types of service performance measures that should be incentivised under the regulatory regime. The types of services that matter most to customers may change over time or may differ between networks. This is important in ensuring that service performance measures are aligned with the expenditure outcomes we are incentivising under the EBSS and CESS.

In July 2020, we published a new customer service incentive scheme. This scheme is designed to encourage electricity distributors to engage with their customers and provide customer service in accordance with their preferences. The scheme allows us to set targets for distributor customer service performance and require networks to report on their performance against those targets.

The scheme arose out of the ‘New Reg’ trial.[19] New Reg was a joint initiative between the AER, Energy Networks Australia and Energy Consumers Australia to explore ways to improve sector engagement and identify opportunities for regulatory innovation. As part of this trial, electricity distribution network service provider AusNet Services negotiated a proposed customer service incentive scheme which it has put to the AER.

The customer service incentive scheme is a flexible 'principles based' scheme that can be tailored to the specific preferences and priorities of a network’s customers. This flexibility will allow for the evolution of customer engagement and adapt to the introduction of new technologies.

[19] See https://www.aer.gov.au/networks-pipelines/new-reg

Recently, CitiPower, Powercor and United Energy's proposed to replace the current STPIS telephone answering parameter with a more holistic incentive that addresses its customer's preferences. The scheme has been approved by CitiPower, Powercor and United Energy's Customer Advisory Panel, and external stakeholders have also expressed support for the scheme in submissions.

They proposed 3 'performance parameters' to be incentivised across the electricity distribution businesses:

1. SMS communication on unplanned outages
2. Frequency and duration of planned outages (excluding CitiPower)
3. Customer service in telephone answering.

The SMS communication on unplanned outages (1), and the frequency and duration of planned outages (2), are not currently performance measures under the STPIS. These replaced the STPIS telephone answering target and incentive rate that applied to these businesses.[20]

Service performance incentives for export services

In our 2018 review of the STPIS for electricity distribution, we noted that industry developments, including increasing photovoltaic installations, battery storage and increased use of distributed energy resources, pose challenges for the STPIS.[21] We considered whether the STPIS could be changed to reflect the needs of consumers using distributed energy resources and other similar technologies. Based on stakeholder feedback, we stated that we will consider these issues further when these trends and developments are clearer.

On 12 August 2021, the AEMC made a final determination on updates to the National Electricity Rules and National Energy Retail Rules to integrate distributed energy resources, such as small-scale solar and batteries, more efficiently into the grid.[22]

The AEMC's final determination provides us with new responsibilities, including undertaking a review to consider incentive arrangements for distribution businesses to deliver efficient levels of export service and performance. The AEMC noted that the review should consider the practical feasibility of extending the STPIS to exports and outline an approach to providing balanced incentives for export services. The final determination also provides us flexibility to apply other existing incentive schemes (such as the demand management incentive scheme and the small-scale incentive scheme) and interim arrangements (such as reputational incentives and

[20] However, as telephone answering remains an important service for many consumers, we consider that the businesses should continue to report on the telephone answering parameter in the next regulatory control period.

[21] AER, *Final decision – STPIS – Explanatory statement*, November 2018, p. 37.

[22] AEMC, *Final determination – Access, pricing and incentive arrangements for distributed energy resources*, August 2021.

benchmarking) to export services while we undertake the process to extend the STPIS to export services. To undertake this review, we may need to collect relevant information from networks and test the feasibility of certain metrics through paper trials. We must publish a report of the findings by 31 December 2022.

The AEMC noted that there is a need to carefully consider how to measure a network's performance in enabling exports before financial incentives are provided to electricity distribution networks to improve their performance against those metrics. We have begun discussions with networks about suitable data and metrics for measuring export service performance.

We will continue our review of potential incentive arrangements for export services in conjunction with this review of incentives schemes. We are not seeking stakeholder submissions on the review of export services as part of this review of incentive schemes. However, as we engage with stakeholders across both reviews, we will consider the implications, if any, for the broader STPIS design and application.

6.2 Service performance for electricity transmission

Electricity transmission networks typically have higher levels of redundancy and reliability compared with electricity distribution. This is because outages on transmission networks will likely affect greater numbers of customers. In this context, the focus of the STPIS for electricity transmission primarily relates to the impact of unplanned outages.

This scheme has 3 components — the service component, market impact component, and network capability component.[23]

We now apply version 5.0 of the STPIS for transmission networks. The scheme has gone through several reviews and iterations over time. Table 2 provides information about components of the scheme that were included and/or reviewed in each version of the STPIS.

[23] AER, *Final – Service Target Performance Incentive Scheme,* October 2015, cl. 2.2(a).

Table 2 Version history of STPIS for electricity transmission

Version	Date	Components of review
1	August 2007	Incorporated service measures that provide incentives to improve network availability and reliability. These include the parameters collectively referred to as the service component.
2	March 2008	Introduced the market impact component to improve the availability of the transmission system that are most important at determining market spot prices. The service component alone did not address the impact of network congestion of wholesale market prices.
3	March 2011	This incorporated minor amendments to parameters.
4	December 2012 September 2014 (version 4.1)	Comprehensive review that: • amended the service component to focus more on lead indicators of reliability • changed the way performance against the market impact component was measured • introduced the network capability component. Minor amendments in September 2014.
5	September 2015	Amendments to ensure the scheme continues to provide value for money. The key area was changes to the market impact component, including imposing penalties for not meeting targets (in addition to the existing rewards system) and reinstating some exclusions that the networks were passing through to customers. We also made further updates to the network capability component and service component. On 5 November 2021, we published an additional guidance note that clarifies the data period to be used in setting the market impact component under version 5 of the STPIS.

Source: AER

The remainder of this section provides more detail about each component of the STPIS for transmission, and any relevant key issues.

Service component

The service component provides a reward or penalty of plus or minus 1.25 per cent of the maximum allowed revenue to improve network reliability by focussing on unplanned outages. The service component is designed to encourage transmission network service providers to seek to

reduce the number of unplanned network outages and to promptly restore the network in the event of unplanned outages that result in supply interruptions. This component is also designed to indicate potential reliability issues.

We generally do not report on industry-wide trends in unplanned outages on transmission networks. However, we consider that outcomes in terms of the numbers of unplanned network outages across each transmission network is similar to electricity distribution in terms of reductions in the frequency of outages over time.

We are not currently proposing to review the service component of the STPIS.

Network capacity component

The network capability component is designed to encourage transmission network service providers to develop projects in return for an incentive payment. This component encourages transmission networks to examine their networks to identify suitable one-off operational and capital expenditure projects. These projects are expected to have a high net benefit and a short payback period and deliver improvements in the capability of the transmission network at times when it is most needed.

We consider that the network capability component provides value by incentivising 'low hanging fruit' projects that improve network capability and congestion, which may be at a lower cost than traditional network investment.

We are not currently proposing to review the design of this component of the STPIS. However, we note that this aspect of the scheme is administratively complex to apply. The scheme is based on business case analysis and outcomes are generally considered project by project. This relies heavily on information provided by network service providers in their regulatory determinations and market bodies such as AEMO, and this information must be transparent and reliable.

We will continue to monitor the applicability of the network capability component over time as the market and transmission system evolves, as well as the accuracy and reliability of the information included in administering the scheme.

Market impact component

The market impact component provides an incentive to transmission network service providers to minimise the impact of transmission outages that can affect wholesale market outcomes. The market impact component measures performance against the market impact parameter, which is the number of dispatch intervals where an outage on the transmission network results in a network outage constraint[24] with a marginal value greater than $10/MWh (known as the 'MIC count').[25]

[24] Network outage constraints are constraint sets that are applied in AEMO's market systems to manage power flows during outages so that the power system remains secure during an outage.

[25] AER, *Final – Service Target Performance Incentive Scheme,* October 2015, Appendix C.

Targets are set through the revenue determination process for each transmission network service provider. The AER's revenue determination specifies, for the regulatory control period, the values that are to be attributed to the market impact component. A transmission network service provider must submit 7 calendar years of annual performance measure data to calculate the target as noted above. On 5 November 2021, we published a guidance note that clarifies the data period to be used in setting the market impact component of the performance target under version 5 of the transmission STPIS.

Each transmission network's annual MIC count is measured against its target, where the target is calculated by averaging the median 5 of the last 7 years of annual performance measure data.[26] Service provider receive a reward or penalty of up to plus or minus 1 per cent of the maximum allowable revenue for the relevant calendar year. Further, the dollars per dispatch interval ($/DI) associated with the reward/penalty for each count can be directly calculated for the regulatory control period from the MIC target, and the MAR. Both the target and the $/DI are fixed for the regulatory control period.

A number of electricity transmission network service providers have sought a review of the 'market impact component'. In 2020, we heard from Energy Networks Australia, AusNet Services, Powerlink and TransGrid that the method for setting future performance targets for the market impact component is no longer fit purpose. The current method sets future targets based on historic data. The networks considered that dramatic changes in generation mix and location of new generators across the NEM is expected to significantly increase network constraints above historical averages.

We consider that the market impact component was working to incentivise transmission network management of network congestion as designed. While we observe increases in the number of constraints, the increased counts will signal to a transmission network to either change its network management or undertake capital works to address network congestion. The incentive arrangement is designed to be symmetric, creating financial rewards when the network is managing congestion well and creating penalties when it is not.

The issues raised by transmission networks also relate to the ongoing evolution of the transmission system and its impact on network and market constraints. There are currently several important reviews into market design reform and system constraints that will affect the regulation of transmission networks and the need and design of the market impact component. These include the Energy Security Board's post-2025 Market Design, AEMC's Investigation into system strength frameworks in the NEM, the outcomes of the Coordination of Generation and Transmission Investment review, and the general implementation of actionable projects under AEMO's integrated system plan.

[26] The target will be calculated from the average of the 5 values remaining from the last 7 years of annual performance measure data, excluding the largest and smallest annual values.

We consider it prudent to review the market impact component in the future after we have observed the impact of these reforms on market constraints and spot prices. We are not currently proposing to review the market impact component through this incentive review.

In the meantime, we will continue to work with transmission network providers on a case-by-case basis to determine appropriate performance targets within each revenue determination. This can effectively respond to concerns raised in each service providers' individual context.

For example, AusNet Services has recently proposed an approach to defining and applying events that are excluded when comparing actual performance against targets. AusNet Services stated that this is intended to "enable the scheme to remain functional and to continue to provide the intended incentives". We will consider AusNet Services proposal as part of its revenue determination.

Questions

21. Do you agree with our proposal not to review the service performance component of the STPIS at this time?
22. Do you agree that there is appropriate flexibility across the STPIS and the customer service incentive scheme to ensure that customer preferences can be reflected in service performance incentives over time?
23. Do you agree with our proposal to address transmission network service provider concerns about the market impact component of the STPIS within revenue determinations?