



Better Regulation

Expenditure incentives guidelines for electricity network service providers

Issues paper

March 2013

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Shortened forms

Shortened form	Full title
ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
CESS	Capital expenditure sharing scheme
capex	Capital expenditure
DNSP	Distribution network service provider
EBSS	Efficiency benefit sharing scheme (for operating expenditure)
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NGR	National Gas Rules
NSP	Network service provider
opex	Operating expenditure
RAB	Regulatory asset base
TNSP	Transmission network service provider
WACC	Weighted average cost of capital

Request for submissions

This issues paper is part of the Australian Energy Regulator's (AER) Better Regulation program of work, which follows on from changes to the National Electricity Rules announced in November 2012 by the Australian Energy Market Commission. The AER's approach to regulation under the new framework will be set out in a series of guidelines to be published by the end of November 2013.¹

Interested parties are invited to make written submissions to the AER regarding this issues paper by close of business, 2 May 2013.

Submissions should be sent electronically to: incentives@aer.gov.au. The AER prefers that all submissions sent in an electronic format are in Microsoft Word or other text readable document form.

Alternatively, submissions can be sent to:

Sebastian Roberts
General Manager
Australian Energy Regulator
GPO Box 520
Melbourne Vic 3001

The AER prefers that all submissions be publicly available to facilitate an informed and transparent consultative process. Submissions will be treated as public documents unless otherwise requested. Parties wishing to submit confidential information are requested to:

- 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.

All non-confidential submissions will be placed on the AER's website at www.aer.gov.au. For further information regarding the AER's use and disclosure of information provided to it, see the ACCC/AER Information Policy, October 2008 available on the AER website.

Enquires about this paper, or about lodging submissions, should be directed to the Network Operations and Development Branch of the AER on (03) 9290 1444.

¹ Further details on the consultation processes and other guidelines work streams are available at <http://www.aer.gov.au/node/18824>.

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Summary

The Australian Energy Regulator (AER) is responsible for the economic regulation of electricity transmission and distribution services in eastern and southern Australia under chapters 6 and 6A of the National Electricity Rules (NER). We also monitor the wholesale electricity market and are responsible for compliance with and enforcement of the NER. We have similar roles for gas distribution and transmission under the National Gas Rules (NGR).

This issues paper is the first consultation paper for the development of expenditure incentive guidelines for electricity network service providers (NSPs). It forms part of our Better Regulation program of work to implement a number of changes to the NER and NGR made on 29 November 2012. The aim of these reforms is to deliver an improved regulatory framework focused on the long-term interests of energy consumers.

This issues paper relates to changes to the NER. Under the revised NER, the AER is required to develop capital expenditure incentive guidelines by 29 November 2013. Given that capital expenditure (capex) and operating expenditure (opex) are to some extent substitutable, and we are currently revisiting our approach to forecasting opex, we consider it appropriate to revisit the incentives for opex at this time also. For this reason the expenditure incentive guidelines will cover both capex and opex incentives despite the rule changes only concerning capex.

In developing incentive mechanisms for capex and opex our overall objectives are to:

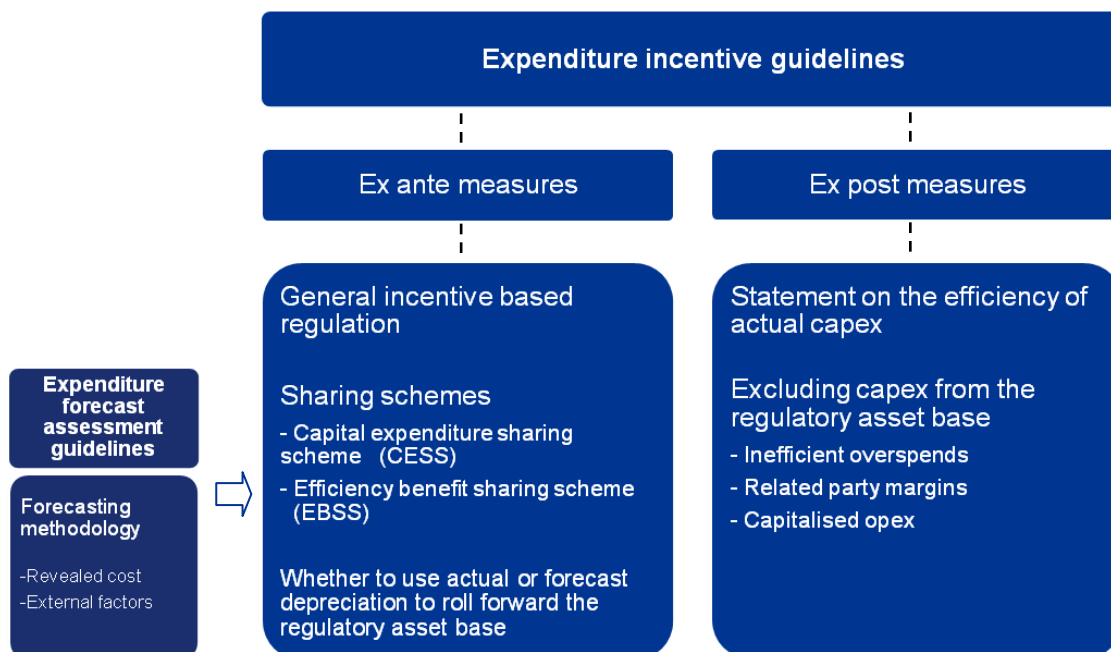
- incentivise NSPs to seek efficiency improvements in capex and opex
- share efficiency losses and gains between the NSP and its customers.

There are a number of mechanisms that incentivise NSPs to undertake efficient expenditure. Some of these are put in place at the start of a regulatory control period or earlier (ex ante measures) and others apply at the end of a regulatory control period (ex post measures). The guidelines will include ex ante measures for both capex and opex. The new ex post measures apply only to capex. Figure 1 (next page) shows how the various incentive measures fit together.

Ex ante measures

NSPs are currently encouraged to undertake efficient expenditure through the regulatory framework. The general incentive based regulatory framework provides NSPs with the incentive to spend less than their allowance. In particular, if a NSP underspends relative to its allowance, it can keep the difference until the end of the regulatory control period (or potentially longer for opex where a five year rolling efficiency benefit sharing scheme applies, see below). At the end of the period the subsequent benefits of an underspend (or costs of an overspend) are transferred to consumers. This is done differently for capex and opex. See chapter 2 for more on our approach to incentive regulation.

Figure 1 How the incentive mechanisms fit together



Capital expenditure

For capex, the sharing of underspends/overspends currently occurs by updating the regulatory asset base (RAB) for actual capex at the end of each regulatory control period. If a NSP has underspent, it will benefit during the regulatory control period. Consumers will benefit at the end of the period when the RAB is rolled forward at a lower level than if the full amount of the capex allowance had been spent. This leads to lower charges into the future.

In addition to this, the AER now has the discretion to develop a number of additional ex ante measures including:

- Capital expenditure sharing schemes (CESSs) to allow for the benefits/costs of underspends/overspends to be shared between NSPs and their customers (this only applied to distribution NSPs (DNSPs) previously).
- Discretion on whether to use forecast or actual depreciation to roll forward the RAB for both transmission NSPs (TNSPs) and DNSPs (this only applied to DNSPs previously).

Capital expenditure sharing schemes

In developing any CESS, the first stage is to consider the issues with the current incentives. One key issue is that the incentive to make savings declines over the regulatory control period. The second key issue is that the regulatory regime might not provide sufficient protection for customers from the costs of inefficient capex overspends.

A continuous CESS, with constant incentives in each year of the regulatory control period, would address the first issue. The second issue is to do with the power of the incentive.

The current regime provides average incentives of approximately 17 to 30 per cent, depending on the life of the asset. An incentive of 17 per cent means that for every \$1 that a NSP spends above its capex allowance, it will bear 17 cents of this (and consumers will bear 83 cents).

For underspending, we consider that the current incentives are broadly appropriate, though there are reasons to limit the reward. In particular, high rewards could result in NSPs putting off capex, which could have adverse cost or service outcomes for consumers. Hence, our initial preference is for a reward of between 20 and 30 per cent.

In the case of overspending, we consider there is a case for stronger incentives to apply. In most cases NSPs should be able to spend within their allowance, especially given the NER provides for reopeners, cost pass-throughs and contingent projects. In order to protect consumers from having to bear future price increases because of inefficient capex, we consider that the penalty for overspending should be greater than 30 per cent.

Our initial preference is for a continuous asymmetric CESS. The penalty would be greater than 30 per cent, the reward would be between 20 and 30 per cent. This would not only address concerns with the current regime, it would also better align incentives between capex, opex and service quality.

Chapter 3 discusses the factors that we will consider in developing any form of CESS.

Use of forecast or actual depreciation

The decision on whether to use forecast or actual depreciation to roll forward the RAB needs to be made alongside the incentives provided by any CESS. Using actual depreciation increases the power of the incentive. Where a CESS is in place, our initial view is that forecast depreciation should be default approach for rolling forward the RAB. However, in certain circumstances it might be appropriate to use actual depreciation to roll forward the RAB. See chapter 3 for more on the use of actual or forecast depreciation to roll forward the RAB.

Operating expenditure

For opex, our current forecasting approach and incentive scheme are interlinked. As opex is largely recurrent and predictable, opex in one period is a good indicator of opex in the next period. Our 'revealed cost' forecasting approach for opex makes use of this. We typically use a NSP's actual opex incurred in the penultimate year of the regulatory control period to forecast opex for the next regulatory control period. To reduce the incentive NSPs face to inflate opex in this year they are subject to a five year rolling efficiency benefit sharing schemes (EBSSs). This provides a continuous incentive for NSPs to achieve efficiency gains.

The EBSSs work by allowing NSPs to retain underspends/overspends for a five year period. In this way, under certain assumptions, a NSP will benefit from approximately 30 per cent of any underspend. Consumers will receive approximately 70 per cent of the underspend through lower prices in the next regulatory control period. This is because forecast opex in the next regulatory control period will reflect the lower level of opex the NSP delivered in the current regulatory control period.

Similarly, if there is an overspend, NSPs will bear approximately 30 per cent of the total cost of the overspend. Approximately 70 per cent of the cost of the overspend will be passed through to consumers in the form of higher prices in the next regulatory control period.

The EBSSs have only been in place for a limited time, although based on our observations they appear to have worked well to date. To the extent that we continue to forecast opex based on a single year of actual opex, we are considering only minor incremental changes to the EBSSs. In particular, we consider that EBSSs that give effect to approximate 30:70 sharing ratios remains appropriate.

More broadly, we might need to change the existing opex incentives to account for proposed changes to our forecasting methodology for opex. We are currently developing expenditure forecast assessment guidelines. The issues paper, released in December 2012, proposed an increased role for external factors such as industry benchmarks in forecasting opex. This would have some implications for the incentives for efficient opex and would require changes to the current EBSSs. In particular, the link between current and future opex would effectively be broken.

Our initial position is that modified EBSSs would apply if we use exogenous approaches to forecast opex. If using these approaches, we propose that a sharing ratio be fixed at 30:70 for all underspends and overspends. This would provide a similar outcome to our current approach.

We invite stakeholders' views on this proposal. Opex incentives are discussed in more detail in chapter 4.

New ex post measures for efficient capital expenditure

The NER changes provide for ex post measures to play a stronger role in incentivising efficient capex. These ex post measures include:

- A new requirement on the AER to undertake an ex post assessment of the efficiency of capex to be included in the RAB and to provide a statement on this.
- The ability to exclude capex from entering the RAB where a NSP has:
 - overspent against its capex allowance and in doing so incurred inefficient capex, in which case we can exclude the inefficient portion of the overspend from the RAB
 - incurred inflated related party margins, in which case we can exclude the inflated portion from the RAB
 - capitalised opex resulting from a changed capitalisation policy, in which case we can exclude the capitalised from the RAB.

Before the rule changes, we relied more on ex ante measures to encourage efficient capex. Despite these new ex post measures, we propose that ex ante measures should remain the primary means by which to incentivise efficient capex. In particular, we are only likely to exclude inefficient capex (above the allowance) from the RAB where there is a significant overspend and where the ex post assessment has uncovered clear cases of inefficiency or imprudent behaviour by the NSP.

We propose to undertake the ex post assessment in a staged manner. We would start with a high level assessment of the NSP's capex performance and would only progress onto further detailed assessments as certain thresholds were met. In later stages, we would consider the capex incentives faced by the NSP and the NSP's project management and planning processes before progressing to any sort of bottom up assessment of capex. The guidelines will provide details on each of these stages.

In terms of excluding capex from the RAB, the guidelines will describe the process we will follow and the factors we will consider before excluding any capex from the RAB. A key question is how any CESS would work alongside any ex post exclusion of capex from the RAB. Our proposal is that any ex post exclusion would be in addition to any penalty already provided through the CESS.

Chapter 5 discusses ex post measures for efficient capex.

Interactions between mechanisms

Another key question for the issues paper is how all the mechanisms fit together.

We invite stakeholders' views on the extent to which we should develop a one-size-fits-all approach or maintain flexibility to apply different schemes depending on the characteristics and circumstances of individual NSPs. In addition, we invite stakeholder views on whether these issues should be prescribed in the guidelines or left for the determination stage. Our initial position is that one CESS should apply to all NSPs and that, for opex, the forecasting methodology will determine how the EBSSs are to apply.

Another consideration is what factors we should consider in setting the incentive power of any scheme. In particular, we need to ensure that the incentives are relatively balanced between opex and capex to avoid distorting decisions on whether to undertake capex or opex. In addition, we need to balance the expenditure incentives against the requirements for maintaining service standards. Reduced levels of expenditure should not be at the expense of service standards. See chapters 3 and 4 for more on these issues.

Consultation strategy and timetable

We are seeking direct input from interested parties into the development of these guidelines over the next several months. Issues raised in this paper will form a basis for discussion between interested parties and us in the coming months.

Our approach to consultation is guided by the overarching approach that has been adopted for the Better Regulation work stream.² The process will include multiple consultation stages (after the issues paper and draft guidelines) with various methods of engagement (for example, workgroups, written submissions and bilateral meetings). A timeline is provided in table 1 below.

² AER, *Better regulation issues paper*, 10 December 2012.

Table 1 **Timeline for developing the expenditure incentive guidelines**

Date	Topic	Description
20 March	Issues paper released	Explains issues and preliminary thoughts on approach to the expenditure incentives guidelines. Invites written submissions.
April	First stakeholder roundtable	Meeting with registered stakeholders. Opportunity to discuss AER's general approach.
April to May	Stakeholder consultation	Timing and scope to be determined between stakeholders.
2 May	Submission on issues paper due	Formal response to issues paper.
9 August	Draft guidelines published	Set out AER's draft positions on incentives for efficient capital and operating expenditure.
August	Stakeholder consultation	Further discussions with stakeholders.
Mid September	Submissions on draft guidelines due	Formal response by stakeholders.
October	Stakeholder consultation	Clarify with stakeholders remaining substantive issues. Indication of likely AER final decision.
29 November	Publish final Guidelines	Publication of final expenditure incentives guidelines including any transitional arrangements, as required.

Structure of the issues paper

The issues paper is broadly divided into four parts.

- Background and scope are discussed in chapter 1.
- Our current approach to incentive based regulation is discussed for both capex and opex in chapter 2.
- Ex ante measures to incentivise efficient expenditure are discussed in chapters 3 and 4:
 - Chapter 3 discusses ex ante measures for capex including CESSs and whether to roll forward the RAB using actual or forecast depreciation.
 - Chapter 4 discusses ex ante measures for opex including the forecasting methodology and any EBSS in place.
- Ex post measures for efficient capex are discussed in chapter 5.

There are also three attachments. The first contains a list of relevant terms and definitions from the NER. Recent trends in capex are discussed in attachment 2. Attachment 3 describes how a CESS could work in practice.

Questions

Questions for stakeholder comment are posed throughout the issues paper. For reference, these are listed below under the chapters in which they appear in this issues paper.

Chapter 3 *Ex ante measures for capital expenditure*

Question 1

Do stakeholders agree with the issues that we have identified about declining incentives for efficient capex? Are there any other issues that could arise from declining incentives for efficient capex? If so, what are these?

Question 2

Do stakeholders support our initial view that any capex sharing scheme should provide continuous incentives in each year of a regulatory control period? Please give reasons to support your view.

Question 3

Do stakeholders support our initial view that any capex sharing scheme should provide a reward for underspending of between 20 and 30 per cent? Please give reasons to support your view.

Question 4

Do stakeholders agree with our initial position that the penalty for overspending should be greater than 30 per cent? Please give reasons to support your view.

Question 5

Do stakeholders agree with our initial position that one capital expenditure sharing scheme should apply to all NSPs? Please give reasons to support your view.

Question 6

If we were to tailor different schemes for individual NSPs, what criteria should we use to differentiate between NSPs?

Question 7

Are there any categories of capex that should not be covered by a capital expenditure sharing scheme? Why?

Question 8

When, if at all, might it be appropriate to make adjustments to a type of capex before applying a CESS? Why?

Question 9

Do stakeholders agree with our initial position to apply a continuous asymmetric capex scheme with higher penalties for overspending than rewards for underspending? Please provide reasons.

Question 10

Do stakeholders agree with our initial position that the penalties and rewards for a capex scheme should be included in the guidelines rather than determined as part of a determination? Please provide reasons.

Question 11

Do stakeholders agree that forecast depreciation should be the default form of depreciation used to roll forward the RAB except where there is no capex sharing scheme in place or where there is persistent overspending by a NSP?

Question 12

Do stakeholders agree with the factors that we have identified for consideration in determining whether to apply forecast or actual depreciation?

Chapter 4 *Ex ante measures for operating expenditure***Question 13**

If we continue to use a revealed cost approach to forecast opex, should the same EBSSs remain largely in place, or are more significant changes required?

Question 14

Does an incentive power of 30 per cent provide a sufficient incentive to achieve efficiency gains?

Question 15

Are there any circumstances where balancing the opex incentive with the capex and service level incentives may not encourage economic efficiency?

Question 16

Do stakeholders agree the EBSSs should provide a continuous incentive in each year of a regulatory control period? Are there any circumstances where a continuous incentive may not encourage economic efficiency?

Question 17

Do stakeholders agree the EBSS rewards and penalties should be symmetrical, regardless of the forecasting approach?

Question 18

Should uncontrollable costs be excluded from the operation of the EBSSs?

Question 19

Should the approach to addressing uncontrollable costs differ depending on the forecasting approach?

Question 20

Are there any other reasons to exclude costs from the operation of the EBSSs?

Question 21

Should the EBSSs define specific costs to be excluded from its operation? If yes, which costs should be excluded from the scheme? If no, should criteria be defined which would guide which costs would be nominated as excluded costs?

Question 22

Should all excluded cost categories be determined prior to the commencement of the regulatory control period in which the scheme applies?

Question 23

Should the EBSSs provide greater flexibility as to how opex forecasts are adjusted for the purposes of calculating rewards and penalties under the scheme?

Chapter 5 *Ex post measures for capital expenditure*

Question 24

Do stakeholders agree with having a staged approach to the ex post review?

Question 25

Are the issues that the AER proposes to consider as part of the ex post review appropriate?

Question 26

Are there any other factors that the AER should consider in conducting an ex post review?

Question 27

Are there any additional factors that we should consider before excluding an amount of an overspend from a NSP's RAB?

Question 28

Do you think our approach for the assessment of related party margins is reasonable? What other approaches may be appropriate?

Question 29

Do you think our approach for the assessment of capitalisation requirements is reasonable? What other approach may be appropriate?

1 Background and scope

This chapter provides some of the background to the NER changes that have initiated the development of expenditure incentive guidelines. It then defines the scope and role of the guidelines.

1.1 Amended rules for capital expenditure incentives

The changes to the NER were initiated by the AER in September 2011. In particular, we raised concerns that the (former) NER provided incentives for NSPs to overinvest in capex. To address these concerns we suggested changes to:

1. The incentives for efficient capex — to address concerns around overspending by NSPs we recommended that only 60 per cent of any capex overspend could be rolled into the RAB; the cost of the remaining 40 per cent would be borne by the NSP.
2. Allow discretion to use forecast depreciation — the rules only allowed for actual depreciation to be used to roll forward the RAB for transmission NSPs (this discretion was already provided for DNSPs). The AER requested the discretion to use either forecast or actual depreciation to roll forward the RAB for all NSPs.
3. Review related party margins — this was requested to ensure that only efficient related party margins are rolled into the RAB (previously all capex incurred was rolled into the RAB).
4. Review capitalisation policy changes — this was requested to ensure that expenditure is not funded twice, first as opex and then as capex through the RAB.

The AEMC's rule change gave effect to the last three of our proposals. In response to the first proposal, the AEMC gave us the ability to develop capital expenditure sharing schemes through guidelines. In addition, the AEMC's rule change included a requirement for us to undertake an ex post efficiency review of capex and gave us the ability to disallow from the RAB any capex (above the allowance) that is not efficient.

1.1.1 Capital expenditure incentive guidelines

To give effect to the new rules on capex incentives, the AER is required to develop and publish capex incentive guidelines.³ The AER is required to include in these guidelines:

- the details of any capital expenditure sharing schemes developed by the AER
- how the AER will assess whether to disallow capex from entering the RAB if a NSP's actual capex exceeds its capex allowance
- how the AER proposes to determine whether to use actual or forecast depreciation to roll forward the RAB at the commencement of a regulatory control period
- how the AER will assess whether third party margins are efficient and whether these should be included in the RAB
- how the AER will assess whether a NSP's capex includes expenditure that was treated as opex at the time of the AER's determination

³ NER, clauses 6.2.8(a)(1) and 6A.2.3(a)(1).

- how the above schemes and proposals, both individually and taken together, are consistent with the capital expenditure incentive objective.⁴

Capital expenditure incentive objective

In designing or applying capex incentives schemes, the AER is required to consider a new capital expenditure incentive objective:

The *capital expenditure incentive objective* is to ensure that, where the value of a regulatory asset base is subject to adjustment in accordance with the *Rules*, then the only capital expenditure that is included in an adjustment that increases the value of that regulatory asset base is capital expenditure that reasonably reflects the *capital expenditure criteria*.⁵

The capital expenditure criteria are essentially that capex should be prudent and efficient and based on realistic demand forecasts.⁶ In deciding if the AER is satisfied of the capital expenditure criteria, the AER must consider the capital expenditure factors (see attachment 1).

1.2 Revisiting the incentives for operating expenditure

While the changes to the NER relate to capex incentives rather than opex incentives, we consider that it is timely and appropriate to revisit the incentives for opex.

In particular, changes to the incentives for capex could influence treatment of opex. NSPs have some ability to substitute between opex and capex. While this can be efficient in certain circumstances, a NSP's decision may be distorted by differences in the incentive schemes for capex and opex. This could encourage perverse outcomes. In particular, if the incentives for capex are lower, a NSP might choose to undertake capex rather than opex. In addition, NSPs might reclassify expenditure (usually from opex to capex) during a regulatory control period in order to earn higher returns.⁷ Ideally, the power of the incentives for capex and opex would be similar so as not to distort business decisions about whether to undertake capex or opex.

Further, we are currently considering current changes to the forecasting approach for capex and opex (see section directly below). This could also have implications for the incentives for opex.

1.3 Interaction with the expenditure forecast assessment guidelines

There are some interrelationships between these guidelines and the expenditure forecast assessment guidelines.⁸ In the case of opex in particular, the current EBSSs are closely linked with the current methodology for forecasting opex. That is, a NSP's actual opex in one regulatory control period will largely determine its opex allowance in the next regulatory control period (this is discussed in more detail in chapter 2). To the extent that the methodology for forecasting opex changes, the EBSSs may also need to be amended so that it still provides a continuous sharing of efficiency gains (or losses) and an appropriate power of incentive, irrespective of the forecasting methodology.

With capex, a NSP's actual capex in one regulatory control period is not necessarily a significant determining factor of its capex forecast in the next regulatory control period. This is partly because past capex is not always the best basis for forecasting future capex requirements since capex is often

⁴ NER, clauses 6.4A(a) and 6A.5A(a).

⁵ NER, clauses 6.4A and 6A.5A.

⁶ The capital expenditure criteria are contained in clause 6A.6.7(c) for TNSPs and clause 6.5.7(c) for DNSPs.

⁷ The capitalisation rule change has been made to deal with this second issue (see chapter 5).

⁸ AER, *Expenditure forecast assessment guidelines for electricity distribution and transmission: Issues paper*, 2012.

lumpy and non-recurrent. To this end, the link between the expenditure forecasting methodology and the incentive framework is less pronounced for capex compared to opex. That said, we will monitor progress on the expenditure forecast assessment guidelines and we encourage stakeholders to make submissions on these interrelationships.

1.4 Scope of the guidelines

While we have a role in regulating both gas and electricity NSPs, the expenditure incentive guidelines will only apply to electricity NSPs.

The guidelines will specify our proposed approach to expenditure incentives and related issues. Specifically, the guidelines will include:

- the types of incentive schemes that could apply to NSPs and the factors that we will consider in deciding which type of scheme to apply; both for capex and opex
- our process for the ex post review of capex and the types of circumstances in which we will exclude an amount of capex from a NSP's RAB
- our criteria for deciding whether to apply actual or forecast depreciation to a NSP's RAB
- our method for reviewing related party margins and the types of circumstances in which we will not include the full margin in a NSP's RAB
- our method for reviewing changes to a NSP's capitalisation policy and the circumstances in which we will exclude capitalised opex from a NSP's RAB.

While we are required to publish expenditure incentive guidelines covering all of these issues, most of these issues are discretionary rather than mandatory for the AER. The only new requirement on the AER is to undertake an ex post review of capex that enters the RAB.

Guidelines can be useful in providing NSPs with a degree of certainty and predictability about the AER's approach to regulation. That said the expenditure incentive guidelines are not binding on us or NSPs. If we choose to depart from the guidelines in making determinations, we will aim to signal this in the framework and approach stage of a determination. Further, if we ultimately decide to adopt an approach that is not consistent with the guidelines we are required to support this decision with reasons and substantiating information.

2 Incentive based regulation

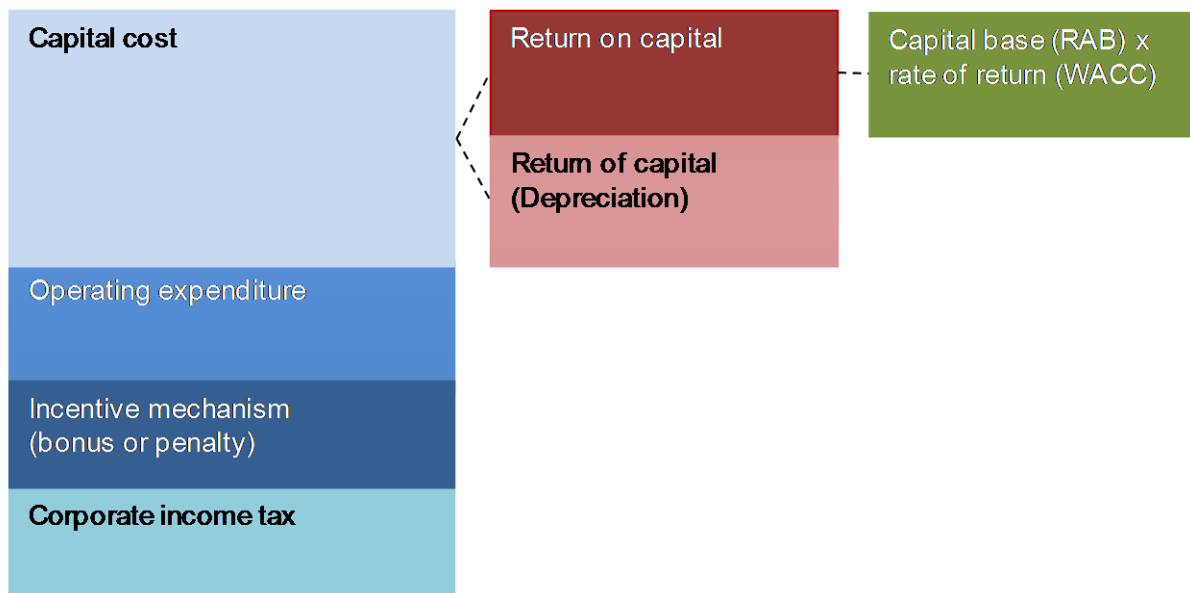
This section provides context to the expenditure incentive guidelines. It outlines the AER's approach to incentive regulation and the power of the incentives under the current incentive based regulatory regime.

2.1 How does the AER determine electricity network charges?

The AER is responsible for determining charges for electricity TNSPs and DNSPs in the National Electricity Market (NEM).

In determining a NSP's charges, the AER first determines what revenue a NSP requires to cover its efficient costs. That is, what revenue a NSP requires to cover its efficient capital costs (in the form of depreciation and a return on investment), its efficient operating costs, its tax liabilities and any payments to/from an incentive mechanism. The AER uses the building block approach for this purpose (see figure 2.1).

Figure 2.1 The AER's building block approach



In order to understand the current incentives for efficient capex and opex it is necessary to understand how these are forecast and funded under the building block approach.

2.2 Capital expenditure

Since capital assets are generally expensive and long lived, it makes sense to recover capital assets over their useful working life rather than in the year that the asset is commissioned. To achieve this capex is funded through a return on and of capital.

- The return on capital is provided as a return on the NSP's asset base (given by the weighted average cost of capital (WACC) multiplied by the Regulatory Asset Base (RAB)). The RAB reflects all of the assets owned by the NSP that are being used to provide the regulated service. The return on capital provides the NSP with a return on its investment.

- The return of capital is given by depreciation. This essentially provides for the initial capital outlay to be recovered over the life of the asset.

To determine a NSP's capex allowance for a regulatory control period the AER will consider a NSP's capex proposal and either accept this or determine an alternative capex allowance.

Forecasting capital expenditure

We currently assess capex proposals by:

- Reviewing the NSPs proposals against past performance. For example, we can assess the unit cost of pole replacement by using past costs appropriately indexed for changes in labour and materials costs.
- Reviewing the age profile of assets to better understand asset replacement requirements.
- Assessing augmentation requirements against demand projections.
- Assessing non-recurrent projects against distribution and transmission regulatory tests.
- Undertaking other assessments as required.

Some categories of capex are relatively certain and recurrent. Assessing a NSP's past performance is a useful way of reviewing capex proposals for these categories of capex.

However, more often capex is non-recurrent and lumpy making it difficult to accurately determine a NSP's capex requirements. In particular, since capex changes from year to year and over time, we cannot always rely on historic capex to determine the efficiency of capex forecasts. We are more reliant on the capex proposals provided by NSPs. Given NSPs' incentives to inflate forecasts, asymmetric information can be a problem for the AER in determining capex allowances. Given this, we typically assess non-recurrent capex on a case-by-case basis, including by reviewing regulatory test assessments where these have been carried out.

How are network service providers incentivised to deliver efficient capital expenditure?

Once a NSP's capex allowance is determined, the NSP is provided with a return on and of capital to fund that capex. For each year of the upcoming regulatory control period, a NSP's capex allowance will be the sum of:

- the forecast RAB multiplied by the WACC⁹; and
- depreciation.¹⁰

As the capex allowance is set before the regulatory control period commences, a NSP has an incentive to spend less than the allowance so as to earn higher profits. If a NSP spends less than its

⁹ The forecast RAB is the actual RAB at the end of the previous regulatory control period, plus any forecast capex undertaken in the current regulatory control period, minus any actual depreciation (from assets in place prior to the start of the regulatory control period), minus any forecast depreciation (from capex undertaken during the regulatory control period).

¹⁰ This is the sum of actual depreciation for assets in place prior to the start of the regulatory control period and forecast depreciation for capex to be undertaken during the regulatory control period.

allowance it will still earn revenue to cover the whole allowance. Hence it can 'keep the difference' between the allowance and its actual expenditure until the end of the regulatory control period. Conversely, if a NSP spends more than its allowance, its revenue will not cover the overspend meaning that the NSP has to bear the cost of this overspend within the regulatory control period.¹¹

At the end of a regulatory control period, the RAB is updated for actual capex and depreciation¹² undertaken during the period. At this stage, the NSP no longer earns a benefit (or loss) on its capex underspend (or overspend). Instead, any underspend or overspend is passed onto consumers through the RAB which ultimately leads to lower (or higher) future charges.

In this way, incentive based regulation provides incentives for NSPs to 'beat' the allowance. This should encourage NSPs to pursue capex efficiency improvements that will ultimately benefit both the NSP and electricity consumers. The relative sharing ratio between the NSP and consumers will be determined by the year in which the overspend or underspend occurs, whether actual or forecast depreciation is used to roll forward the RAB, and the life of the asset.

For a WACC of 8 per cent, using forecast depreciation and for an asset life of 10 years, for example, the incentive power can vary from above 60 per cent in year one to about zero per cent in year five. This means that if a NSP can save \$10 in year one it will retain \$6 (and \$4 will go to consumers). Under these assumptions, the average power of the incentive under the current regulatory regime ranges from approximately 30 per cent for an asset with a life of 10 years to 17 per cent for an asset with a life of 50 years (see table 2.1).

Table 2.1 Average power of the incentive under the current regulatory regime

Asset life	10 years	20 years	30 years	40 years	50 years
Average power	29.68%	21.72%	19.07%	17.74%	16.94%

Source: AER analysis

The incentives for efficient capex are discussed in more detail in chapters 3 and 5.

Use of actual or forecast depreciation to roll forward the regulatory asset base

Whether actual or forecast depreciation is used to roll forward the RAB affects the power of the incentive for efficient capex. Actual depreciation is the depreciation associated with actual capex undertaken during the regulatory control period. Forecast depreciation is the depreciation associated with the capex allowance for the regulatory control period.

Actual depreciation affects the incentives for efficient capex in the following ways:

- If there is a capex overspend, actual depreciation will be higher than forecast depreciation. This means that the RAB will increase less at the next regulatory control period than if forecast depreciation were used. Hence, the NSP will earn less into the future (i.e. it will bear more of the cost of the overspend into the future).

¹¹ It is these incentives to reduce expenditure that make historic costs a good indicator of future costs where capex is recurrent and predictable. That is, a NSP's efficient costs are 'revealed' over time.

¹² That is, actual or forecast depreciation.

- If there is a capex underspend, actual depreciation will be lower than forecast depreciation. This means that the RAB will increase more at the next regulatory control period than if forecast depreciation were used. Hence, the NSP will earn more into the future (i.e. it will retain more of the benefit of an underspend into the future).

The use of forecast or actual depreciation is discussed in chapter 3 (section 3.3).

2.3 Operating expenditure

Operating expenditure is the operating, maintenance and other non-capital costs needed to deliver network services. It includes labour costs and other non-capital costs associated with providing network services.

Opex is generally recurrent and predictable. This has implications for how we forecast opex and the incentives for efficient opex.

Forecasting operating expenditure

At present the AER generally uses a 'base, step, trend' approach to forecasting opex. This generally involves using the most recent year for which there is data available on actual opex (this is usually the penultimate year of a regulatory control period) to set the base year. This base year estimate is then adjusted to account for:

- trends: any changes in costs that result from:
 - real cost escalation—that is, an estimate of the expected cost change of key factor inputs such as labour and materials costs¹³
 - output growth—that is, any expected change in the demand for network services (for example, a change in customer numbers).
- step changes: any other circumstance, requirement or project that will require the business to undertake more or less opex than is incorporated in the base year.

The base year is taken to be an efficient starting point for forecasting future opex requirements on the basis that the NSP is subject to incentives to reveal their efficient costs (discussed below). For this reason the base, step, trend approach is called the 'revealed cost approach'.

Into the future, benchmarking will have a more significant role in the way we determine opex allowances.¹⁴ This is likely to influence the way we provide incentives to NSPs to pursue continual efficiency improvements in opex. This is discussed further below.

How are network service providers incentivised to deliver efficient operating expenditure?

As with capex, NSPs have an incentive to 'beat' their allowance during a regulatory control period. Allowances are set prior to a regulatory control period commencing and are not revisited until the next

¹³ Due to market forces, these costs may not increase at the same rate as inflation.

¹⁴ The expenditure forecasting methodology is being developed through a separate guidelines development process. See the website for the latest developments: <http://www.aer.gov.au/node/18864>

determination. For this reason, if a NSP underspends on opex it can keep the difference during the regulatory control period. If it overspends, it bears the cost of this during the regulatory control period.

Since allowances are typically based on actual opex from the penultimate year of a regulatory control period, there is a link between actual performance and future allowances. Hence, there is an incentive for NSPs to inflate their opex in the base year to earn higher allowances into the future. The EBSS mitigates this by providing a continuous incentive for opex in each year. The current EBSSs are five year rolling schemes that work on an incremental basis.¹⁵

Under this approach the benefit of an underspend (or cost of an overspend) is passed onto consumers in the next period through lower opex (or higher opex if there is an overspend). This, together with the EBSS provide for benefits or costs to be shared between NSPs and their customers with approximately 30 per cent of any benefit/penalty going to a NSP and approximately 70 per cent going to customers.¹⁶

The incentives for efficient opex change once benchmarking is used to determine opex allowances. Benchmarking breaks the link between a NSP's performance in one regulatory control period and its opex allowance in the next regulatory control period. If a NSP's opex allowance was based solely on external benchmarks, the NSP would have a very strong incentive to beat the allowance. In particular, it would retain 100 per cent of the benefit of any underspend (or bear 100 per cent of the cost of any overspend), subject to any changes in the benchmark level of opex.

Opex incentives are discussed in more detail in chapter 4.

¹⁵ That is, to retain the benefit of a \$5 saving in year one, a NSP will have to make the same \$5 saving in all following years of a regulatory period. Since opex is recurrent, once a saving has been made in one year, a NSP should be able to make the same saving in every following year. This is different to capex which is often non-recurrent and where savings are often made from deferring capex rather than avoiding it altogether.

¹⁶ Based on a real discount rate of 6 per cent.

3 Ex ante measures for capital expenditure

The amended rules provide for two key ex ante mechanisms to incentivise efficient capex. The first is the ability to develop CESSs. The second is the ability to use either forecast or actual depreciation to roll forward the RAB.

At present, none of the electricity NSPs that the AER regulates are subject to a CESS.¹⁷ Instead, NSPs are incentivised to reduce expenditure through the incentive based regulatory regime (discussed in chapter 2). For depreciation, in the absence of any CESS we have usually used actual depreciation to roll forward the RAB.

Before discussing the specifics of these two mechanisms, the issues we are trying to address through these mechanisms are discussed. Next CESSs are discussed followed by a discussion on the approach to depreciation.

3.1 What issues are we trying to address?

The AER and other interested parties have raised a number of concerns with the current ex ante incentives for efficient capex. These include:

- declining incentives for efficient capex over the regulatory control period
- inadequate protection for consumers from inefficient capex.

In addition, the AER requested the discretion to determine whether to roll forward the RAB using actual or forecast depreciation. Given the changes to other parts of the incentive framework, this will allow the AER to consider the incentives for efficient capex in total and will allow for consistency between TNSPs and DNSPs.

The issue of declining incentives and concerns about consumers not being adequately protected under the current regime are discussed below.

3.1.1 Declining incentives

One of the AEMC's key concerns with the current capex incentives is that the incentives for efficient capex decline over the period.¹⁸ This concern was also raised by the Productivity Commission¹⁹ and NERA and PwC.²⁰

NSPs only retain the benefits (or bear the costs) of any underspend (overspend) until the end of the regulatory control period. In year one, any benefit/penalty from an underspend/overspend will last for four years before the RAB is updated for actual capex. In year five, however, the benefit/penalty will be approximately zero. Hence, the power of the incentive declines over the regulatory control period.

Figure 3.1 shows how the incentives decline over the regulatory control period for assets with different asset lives.²¹

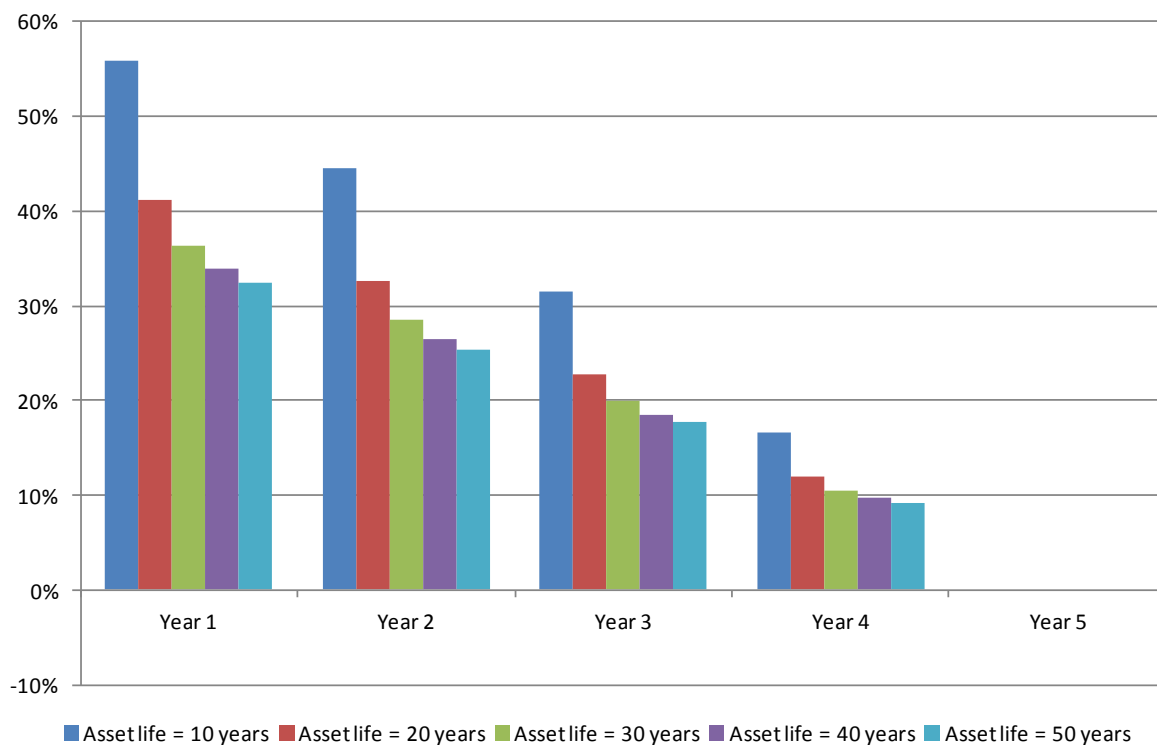
¹⁷ Though in the past CESSs have applied to Victorian DNSPs, for example.

¹⁸ The other concern was that capex overspends are rolled into the RAB without any ex post assessment of their efficiency.

¹⁹ Productivity Commission, *Electricity Network Regulatory Frameworks, Draft Report*, Canberra, 2012, p. 195.

²⁰ NERA Economic Consulting and PwC Joint Report, *Capital and Operating Expenditure – Response to the AEMC Directions Paper*, Attachment C to ENA, *Response to AEMC Directions Paper – Economic Regulation of Network Service Providers*, 20 April 2012.

Figure 3.1 Declining incentives over the regulatory control period



Source: AER analysis

There are three main reasons why declining incentives for efficient capex can be a problem:

1. There is a lack of discipline on capex in year five:
 - If a NSP's WACC is equal to the regulated WACC, there is no penalty/reward on overspends/underspends in year five. This could lead NSPs to be less disciplined in regards to their capex in year five. Further, if a NSP's WACC is consistently lower than the regulated WACC, the NSP could benefit from overinvesting in the latter years of a regulatory control period.
2. It could distort decisions about whether to undertake capex or opex:
 - If the incentives for efficient capex differ significantly from the incentives for efficient opex, this could distort decisions on whether to undertake opex or capex. It could also lead a NSP to change its capitalisation policy to reclassify costs between capex and opex. For example, in year five the incentives for efficient opex are currently higher than the incentives for efficient capex. Hence, a NSP could benefit from spending on capex instead of opex even if it leads to overspending on capex. It could also incentivise a NSP to change its capitalisation policy to reclassify opex as capex. The rules have been amended to address changes to capitalisation policies (see chapter 5). However, we believe that the incentives of efficient capex and opex should be similar to incentivise appropriate behaviour by NSPs.
3. Capex might be less efficient if NSPs skew their capex towards the end of the regulatory control period:

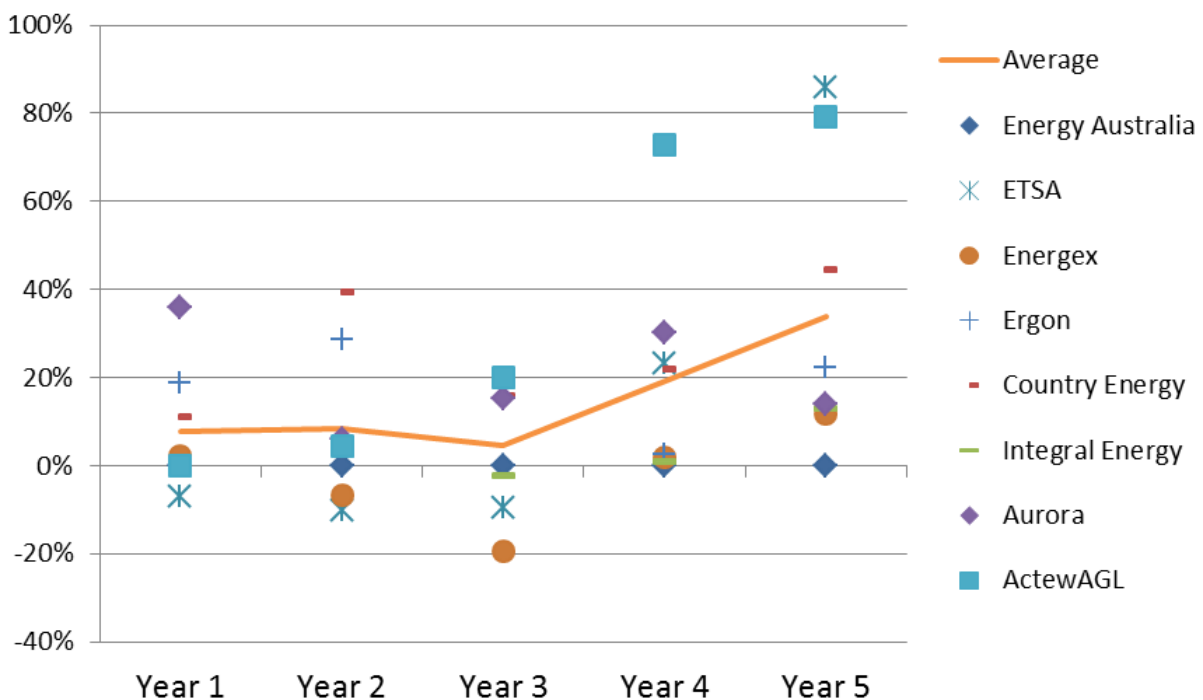
²¹ This assumes that the regulatory weighted average cost of capital (WACC) and the NSP's true WACC are both 8 per cent and that actual depreciation is used.

- Unnecessary peaks and troughs in a NSP’s investment programs can result in higher costs than a more stable work program. For example, if a large number of projects are undertaken during the final years of the regulatory control period, NSPs may rely more on external contractors for projects that could have been undertaken more efficiently by in house staff. NSPs may also enter into less cost-effective contracts with external contractors if they are contracting at shorter notice and for a smaller scope of work rather than if they were offering a steady stream of work.

In practice, there is some evidence that the capex profile of NSPs has been skewed towards more capex in the later years of a regulatory control period. Figure 3.2 shows the capex profile of a number of DNSPs over the last completed regulatory control period.

While there could be other reasons why NSPs tend to spend more in the later years of a regulatory control period, providing for constant incentives in each year of the regulatory control period would mean that the design of the regulatory regime is not exacerbating or unduly influencing these trends.

Figure 3.2 Capital expenditure over the regulatory control period



Source: Productivity Commission, 2012, Electricity Network Regulatory Frameworks, Draft Report, Canberra, p. 194.²²
 Notes: The vertical axis shows overspending as a proportion of the capex allowance (that is, (actual capex – forecast capex) / forecast capex). Cost pass throughs have been considered as part of forecast capex. Victorian networks have been excluded since a capex efficiency carryover mechanism applied at the time.

²² Data: Parsons Brinckerhoff Associates, *Review of Energex Regulatory Proposal for the Period July 2010 to June 2015*, 2009; Parsons Brinckerhoff Associates, *Review of Ergon Regulatory Proposal for the Period July 2010 to June 2015*, 2009; Parsons Brinckerhoff Associates, *Review of ETSA Utilities Regulatory Proposal for the Period July 2010 to June 2015*, 2010; Parsons Brinckerhoff Associates, *Report on capital expenditure overspends by electricity network service providers*, 2012; and, Wilson Cook and Co., *Review of Proposed Expenditure of ACT and NSW Electricity DNSPs: Volume 4 — Country Energy*, 2008.

Question 1

Do stakeholders agree with the issues that we have identified about declining incentives for efficient capex? Are there any other issues that could arise from declining incentives for efficient capex? If so, what are these?

Concerns about whether the current regime is protecting consumers

There are concerns that the current regulatory regime does not provide sufficient protection for consumers against electricity price rises that are caused by inefficient overspending on capex. These concerns arise in the context of rising electricity prices, increasing capex and overspending in some jurisdictions. There are also concerns about whether all NSPs respond to financial incentives.

Recent trends in capital expenditure

The levels of both allowed and actual capex have increased significantly in recent years.²³ This is consistent with the broad rise in allowed revenues for NSPs in the NEM between the current and previous regulatory periods.²⁴ This in part has contributed to the significant rise in retail electricity prices over the last five years.²⁵

In the past, there have been concerns about overspending by DNSPs in New South Wales and Queensland. This is supported by the data (see attachment 2). However, this trend does not appear to have persisted in the current regulatory control period. Indeed, there has been more overspending in Victoria rather than New South Wales or Queensland in the most recent regulatory control period.

There are a number of factors that have driven the recent capex increases. Among other things, these include increasing peak demand for electricity and increasing service standards. Further, there are a number of reasons why actual capex could differ from capex allowances. Without undertaking further analysis on the underlying capex drivers for each NSP, it is difficult to draw any strong conclusions from the data. To the extent that capex drivers have been analysed, the conclusions have been varied and tend to point to NSP specific circumstances or characteristics.²⁶

Do all network service providers respond to financial incentives?

In the past there appeared to be a trend of overspending by government owned DNSPs. Numerous experts have studied this and concluded that government owned NSPs tend to be less responsive to financial incentives than privately owned NSPs.²⁷ A number of theoretical reasons for this have been put forward, including:

²³ AER, *Rule change proposal: Economic regulation of transmission and distribution network service providers: AER's proposed changes to the National Electricity Rules*, 2011.

²⁴ AER, *State of the Energy Market*, 2012, p. 68.

²⁵ ABS, *Consumer Price Index*, cat. no. 6401.0.

²⁶ See: Mountain, B.R, *Australia's Rising Electricity Prices and Declining Productivity: the Contribution of its Electricity Distributors*, Report for the Energy Users Association of Australia, Melbourne, 2011; NERA Economic Consulting, *Analysis of Key Drivers of Network Price Changes – A report prepared for the ENA; Attachment A to ENA, Response to AEMC Directions Paper – Economic Regulation of Network Service Providers*, 2012; Parsons Brinckerhoff Australia Pty Ltd, *Report on capital expenditure overspends by electricity network service providers*, Report for AEMC, 2012; and Productivity Commission, *Draft report: Electricity network regulatory frameworks*, 2012.

²⁷ See: Garnaut, R, *Transforming the Energy Sector*, Garnaut Climate Change Review Update 2011, Update Paper 11; Littlechild, S, *Advice to the AEMC on Rule Changes*, 2012; Mountain, B.R, *Australia's Rising Electricity Prices and Declining Productivity: the Contribution of its Electricity Distributors*, Report for the Energy Users Association of Australia,

- Government owned NSPs often face a number of competing objectives (including social and environmental objectives, for example) meaning that they may not only be seeking to maximise profits.²⁸
- Government owned NSPs might face a lower cost of capital (than the regulated WACC) meaning they have an incentive to overinvest.²⁹
- Government owned NSPs tend to be more risk averse about potential power failures (given the political impact of this) and hence, may overinvest in the security of the network.³⁰

To the extent that any category of NSP fails to respond to the incentives of the regulatory regime, this could lead to poorer outcomes for consumers, especially in terms of price.

3.2 How can capital expenditure sharing schemes address these issues?

The broad aim of a CESS is to incentivise NSPs to pursue capex efficiency improvements. This could be achieved by rewarding NSPs for underspending on capex and/or penalising NSPs for overspending on capex.

A CESS provides for the cost of overspends and the benefits of underspends to be shared between a NSP and its customers. The relative sharing of benefits or costs between a NSP and its customers can be given by a sharing ratio.³¹ This is also called the power of the incentive. Generally, the more powerful the incentives are, the greater the reward or penalty for the NSP.

3.2.1 What do the rules say?

Requirements for the CESS are contained in 6A.6.5A (transmission) and 6.5.8A (distribution). These provide that in developing any CESS, the AER must take into account:

- the following CESS principles:
 - NSPs should be rewarded or penalised for improvements or declines in the efficiency of capex
 - rewards and penalties should be commensurate with efficiencies or inefficiencies, but rewards and penalties do not have to be symmetric
- any interaction of the CESS with any other scheme the NSP is subject to in relation to efficient opex or capex
- the capital expenditure objectives, and, if relevant, the operating expenditure objectives.

2011; Productivity Commission, *Draft report: Electricity network regulatory frameworks*, 2012; and Yarrow, G, *Preliminary views for the AEMC*, 2012.

²⁸ Productivity Commission, *Draft report: Electricity network regulatory frameworks*, 2012, p. 251.

²⁹ Garnaut, R, *Transforming the Energy Sector*, Garnaut Climate Change Review Update 2011, Update Paper 11, and Mountain, B.R, *Australia's Rising Electricity Prices and Declining Productivity: the Contribution of its Electricity Distributors*, Report for the Energy Users Association of Australia, Melbourne, 2011.

³⁰ Garnaut, R, *Transforming the Energy Sector*, Garnaut Climate Change Review Update 2011, Update Paper 11.

³¹ For example, a sharing ratio of 30:70 would provide 30 per cent of any over or underspend to go to the NSP and 70 per cent to go to the NSP's customers. That is, if there was a saving that had a present value of \$100, \$30 (present value) would go to the NSP and \$70 (present value) would go to the NSP's customers.

They also provide that, in deciding whether to apply a CESS to a NSP, and the nature and details of any CESS that is to apply to a NSP, the AER must:

- make that decision in a manner that contributes to the achievement of the capital expenditure incentive objective (see attachment 1)
- take into account the CESS principles (above) and the circumstances of the NSP.

3.2.2 Options

Any CESS should attempt to address the issues that have been identified with the current regime. These include:

- declining capex incentives over the regulatory control period (which causes a number of issues).
- inadequate protection for consumers against higher than necessary electricity prices.

This section discusses how to address these issues through a CESS in terms of:

- whether a CESS should provide continuous incentives
- what the rewards for underspending should be
- what the penalties for overspending should be.

We also consider whether there is a case for applying different schemes to different NSPs and whether any types of capex should be excluded from the operation of a CESS.

Continuity

A CESS could be designed to provide NSPs with continuous incentives³² during the regulatory control period. This would mean that the benefit (or penalty) for underspending (or overspending) would be the same whether the underspend (or overspend) occurred in year one or year five (or any other year) of a regulatory control period. This could be achieved, for example, by allowing for the benefits or costs to be retained for a defined period irrespective of when an underspend or overspend occurs.

Continuous incentives would have the benefit of:

- limiting overspending in the later years of the regulatory control period, especially where a NSP's true WACC is lower than the regulated WACC
- better aligning the incentives for efficient capex and opex to remove any bias in whether to undertake capex or opex and to remove incentives for NSPs to change their capitalisation policies. This is especially relevant in the later years of a regulatory control period.

³² While incentives might be continuous in that they are constant in all years, this does not mean that the incentive to spend each additional dollar will be the same. This will depend on whether there is a threshold at which the incentives change. For example, if the penalties for overspending are different to the rewards for underspending, then the incentive to spend a dollar that is still under the allowance will be different to the incentive to spend a dollar once the NSP has spent more than its allowance. This issue is discussed further below in the options section. For clarity, the term continuous should be read to mean that the incentives are the same in each year of a regulatory control period.

- providing NSPs with greater incentives to manage their capex programs on a continuous basis rather than deferring capex to, or increasing capex in, the later years of a regulatory control period, which could result in less efficient capex.

Given these benefits, our initial view is that any CESS should be continuous, where possible. Submissions to the AEMC process also tended to support any CESS being continuous.³³

Question 2

Do stakeholders support our initial view that any capex sharing scheme should provide continuous incentives in each year of a regulatory control period? Please give reasons to support your view.

What should the reward for underspending be?

We believe that any CESS should provide some incentive for NSPs to pursue capex efficiency improvements to beat their capex allowances. This not only benefits NSPs but also benefits consumers through lower prices in the future.

For the purpose of calculating any reward (or penalty) the NSP's capex allowance (adjusted for any pass-throughs, reopening of capex or contingent projects) would form a proxy for the NSP's efficient capex. The reward would then apply to the difference between the NSP's actual (adjusted) capex and its allowed capex. This is consistent with the AEMC's view that 'the ex ante allowance, as a total, represents a forecast of an efficient level of expenditure for the NSP.'³⁴

The starting point for considering the power of any reward is to consider what reward the current regulatory regime provides. As discussed previously this is not constant over the regulatory control period and depends on the life of the asset. Given this, a range of between 20 and 35 per cent would appear to be a good starting point. However, there are some reasons why we might want to limit the reward for underspending.

Reasons to limit the reward for underspending

We consider that the reward for underspending should be limited for the following reasons:

- to minimise the scope for NSPs to under invest to the detriment of service levels. While there is a separate incentive scheme for service, there is always a lag between capex and service levels.³⁵ This could mean that NSPs choose to sacrifice service levels into the future to earn higher rewards from the CESS in the present. Even if NSPs do not discount future penalties for current rewards, the power of the reward for underspending should be no higher than the (discounted) rewards for service improvements.

³³ For example, Grid Australia, Jemena and NERA Economic Consulting and PwC (on behalf of the ENA) supported any CESS being continuous. The Productivity Commission also supported continuous incentives in its 2012 draft report on Electricity Network Regulatory Frameworks.

³⁴ AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p. 123.

³⁵ The service target performance incentive scheme (STPIS) provides incentives to NSPs to improve or maintain a high level of service for the benefit of participants in the NEM and end users of electricity. There is one STPIS for TNSPs and one STPIS for DNSPs.

- to limit the scope for NSPs to capitalise opex or substitute from opex to capex due to differing incentives for these categories of expenditure. Since the power of the EBSS is 30 per cent, a reward of 30 per cent or lower would achieve this.

Given this, we believe that the reward for underspending should be between 20 and 30 per cent. This is broadly in line with the average incentive provided under the current regulatory regime.

Question 3

Do stakeholders support our initial view that any capex sharing scheme should provide a reward for underspending of between 20 and 30 per cent? Please give reasons to support your view.

What should the penalty for overspending be?

Our initial view is that in order to adequately protect consumers from paying too much, the penalty for overspenders should be higher than the reward for underspenders. The reasons for this are discussed below. This is followed by a discussion of factors that will minimise the risks to NSPs from an asymmetric CESS. Finally, we discuss what the power of the penalty should be.

NSPs should usually be able to spend within their capital allowance

In setting a NSP's allowance, the AER is required to provide NSPs with 'a reasonable opportunity to recover at least the efficient costs the operator incurs'.³⁶ This suggests that in most circumstances a NSP should be able to spend within its allowance. The AEMC noted:

... given that the ex ante allowance, as a total, represents a forecast of an efficient level of expenditure for the NSP there should be little need for the NSP to spend above this amount in normal circumstances. As the Parsons Brinckerhoff report indicated, while there are often unexpected additional costs for a NSP during a regulatory control period, there will also be unexpected reductions in costs. In addition, the NSP should be able to take mitigating actions, such as re-prioritising capex, to avoid spending over its allowance, or seek a cost pass through if the relevant test is met. Indeed, on this basis, the Commission suggested there was an argument that no capex above the level of the ex ante allowance should be rolled into the RAB.³⁷

This suggests that the expectation is for NSPs to be able to spend within their capex allowance in most circumstances. For this reason it is appropriate that an overspend should be penalised more than an underspend should be rewarded.

We face asymmetries in setting capital expenditure allowances

As discussed in chapter 2, capex is often non-recurrent and uncertain. For this reason, we cannot always rely on historical data or recent capex of similar NSPs to inform our estimates. Instead, we are more reliant on the data and information provided by the NSP. This means we face the issue of asymmetric information. This could lead to more generous capex allowances compared to other building block components (such as opex, which is recurrent and predictable). For this reason, underspending might represent a NSP's success in getting a higher allowance rather than any capex efficiency improvement. In contrast, any instance of overspending is more likely to reflect reduced

³⁶ Under the revenue and pricing principles (s. 7A).

³⁷ AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p. 123.

capex efficiency. Given this, it might be appropriate to have a higher penalty for overspending than reward for underspending.

NSPs respond differently to financial incentives

To the extent that any NSPs do not fully respond to the financial incentives provided by the regulatory regime, this could also lead to increasing prices to the detriment of consumers. If NSPs do not respond to financial incentives then the ex ante allowance will provide limited protection to consumers. NSPs could undertake any capex with the comfort that it will ultimately be included in the RAB, with the majority of costs being passed on to consumers. While we could rely on ex post measures to limit the amount of any inefficient overspend to be included in the RAB, our preference is to get the ex ante measure right in the first place.

Targeted use of ex post provisions to address concerns about overspending

As discussed in chapter 5, we consider that that ex ante mechanisms should remain the primary means of ensuring capex efficiency improvements. Detailed ex post reviews would be used to address overspending in a targeted and focussed manner as outlined in section 5.5. Hence, as much as possible the regulatory regime should provide incentives for efficient capex through ex ante measures.

Factors to limit NSPs' risks from a higher penalty than reward

There are a number of mechanisms in the NER that can protect NSPs from unforeseen and uncontrollable events that require a NSP to undertake additional capex. These include cost pass throughs and reopening provisions. In addition, contingent projects allow NSPs to come back to the AER for approval of projects that have a high degree of uncertainty surrounding them at the determination phase. As discussed above, our proposal is that a CESS would only apply after any cost pass throughs, reopeners and contingent projects were already taken into account. That is, NSPs will not be penalised where unforeseen and uncontrollable events require additional capex above the allowance or for undertaking contingent projects. For this reason, we believe that NSPs are already offered some degree of protection through the regulatory regime.

What should the penalty be?

For the reasons above, we believe that the penalty for overspending should be higher than the reward for underspending. In addition, in setting the penalty we need to consider the potential impact on opex/capex substitution and on service standards.

We consider that a penalty of more than 30 per cent would provide for consistency across the treatment of capex and opex. In particular, since the penalty for capex would be equal to or higher than the incentives applying to opex, NSPs should not be incentivised to change their capitalisation policies or undertake capex instead of opex. There is also an in-built disincentive to swap capex for opex since there would be no way for the NSP to recover the opex after it was undertaken (except to the extent that they might get a higher opex allowance into the future). For this reason, we believe that a penalty of above 30 per cent for capex overspends would not distort decisions on whether to undertake capex or opex (or provide incentives to change capitalisation policies).

One potential concern with a higher penalty for overspending is that it could lead NSPs to undertake less capex, which could potentially lead to service decline. However, this would only be the case if the

NSP had not managed to meet its service standards within its capex allowance. To limit the potential for service standard decline, the penalty could apply on an aggregate basis rather than an annual basis. This would mean that NSPs would only be penalised if they overspent in total over a five year period.

In summary, our initial view is that the CESS penalty for overspending should be greater than 30 per cent. This is broadly in line with incentives for opex and service standards and does not represent a significant departure from the incentives provided under the current regulatory regime.

Question 4

Do stakeholders agree with our initial position that the penalty for overspending should be greater than 30 per cent? Please give reasons to support your view.

Should we have different schemes for different NSPs?

We understand that different schemes could apply to different NSPs based on the ownership (government owned or privately owned) or type (DNSP or TNSP) of the NSP.

How ownership affects a NSP's responsiveness to financial incentives was discussed above. In summary, government-owned NSPs might respond differently to financial incentives than do privately owned NSPs.

Similarly, there are differences in capex for TNSPs and DNSPs.³⁸ Capex for TNSPs tends to be associated with larger projects that are of higher value and have longer planning and construction lead times. This type of capex is more 'lumpy' and the costs (savings) of bringing forward (deferring) such projects can be substantial. In comparison, capex for DNSPs is generally composed of smaller projects or programs of work. The timeframes for these projects are generally shorter, leaving less flexibility for deferral. Given these differences, there could be a case for applying one type of scheme to TNSPs and a different type of scheme to DNSPs.

While there are differences in NSPs depending on their ownership and type, we consider that these differences do not justify different schemes. This has been the approach adopted for opex and we consider it appropriate for any CESS.

Question 5

Do stakeholders agree with our initial position that one capital expenditure sharing scheme should apply to all NSPs? Please give reasons to support your view.

Question 6

If we were to tailor different schemes for individual NSPs, what criteria should we use to differentiate between NSPs?

³⁸ Parsons Brinckerhoff Australia Pty Ltd, *Report on capital expenditure overspends by electricity network service providers, Report for AEMC*, 2012.

Should any categories of capital expenditure be excluded from a capital expenditure sharing scheme?

One further question on the design of any CESS is whether there are any types of capex that should not be subject to a CESS. This could be because these categories of capex are uncertain and are hence, difficult to forecast with any degree of precision. On the other hand, the regulatory regime already provides mechanisms to protect NSPs from bearing significant unexpected costs (through re-opening and pass-through provisions). For this reason, perhaps there are already sufficient provisions that deal with uncertainty in the regime. Further, applying adjustments to some types of capex and not others could potentially distort decisions on what types of capex to undertake.

Another adjustment that could be made would be to volume adjust for capex that had actually occurred. For example, if there were fewer new customer connections required than forecast, the CESS would only apply once this had been accounted for. However, one could take the opinion that these things work out over the long term and hence, there is benefit in simplicity.

Our initial view is that once pass-throughs, reopeners and any contingent projects are added to the allowance, all other categories should be included in the CESS. We are interested in stakeholders' views on whether any types of capex should be excluded from a CESS.

Question 7

Are there any categories of capex that should not be covered by a capital expenditure sharing scheme? Why?

Question 8

When, if at all, might it be appropriate to make adjustments to a type of capex before applying a CESS? Why?

3.2.3 Preferred approach

Our initial preference is for a continuous asymmetric CESS to apply to all NSPs. The penalty for overspending would be greater than 30 per cent while the reward for underspending would be between 20 and 30 per cent. We consider that these sharing ratios should be included in the guidelines rather than being determined as part of a determination as this would provide greater certainty to NSPs.

We propose that this CESS would apply on a cumulative basis to avoid penalising NSPs for changing the timing of their capex during a regulatory control period.³⁹

A continuous asymmetric CESS would have the benefit of providing continuous incentives while also providing additional protection for consumers against overspending. It would also limit the potential for adverse outcomes that could occur with higher rewards for underspending. See attachment 3 for an example of how a CESS could work.

³⁹ We note that an asymmetric rolling CESS or an asymmetric CESS that applied on an annual basis would penalise NSPs for changing the timing of capex.

We note that our proposed approach for a CESS differs from our proposed approach for opex. However, we consider that there are valid reasons for this as discussed in this chapter. In particular, given that capex is often non-recurrent and lumpy in nature it is more difficult to forecast and we believe there is greater scope for capex allowances to be biased upwards. Even though we are proposing different approaches for capex and opex, we believe that the incentives across the two categories of expenditure are relatively balanced based on the range of potential penalties and rewards discussed above. This means that the incentives for NSPs to capitalise opex would be limited and decisions on whether to undertake opex or capex would not be distorted. We are interested in stakeholder views on this issue.

Question 9

Do stakeholders agree with our initial position to apply a continuous asymmetric capex scheme with higher penalties for overspending than rewards for underspending? Please provide reasons.

Question 10

Do stakeholders agree with our initial position that the penalties and rewards for a capex scheme should be included in the guidelines rather than determined as part of a determination? Please provide reasons.

3.3 Actual or forecast depreciation

When the RAB is updated for actual capex, it is also depreciated. The type of depreciation used to roll forward the RAB can affect the incentives for efficient capex.

Actual depreciation is based on the actual capex undertaken. Forecast depreciation is based on the capex allowance.

As discussed in chapter 2, using actual depreciation to roll forward the RAB provides stronger incentives for efficient capex compared to using forecast depreciation.

3.3.1 What do the rules say?

The amended NER provide the AER with flexibility to roll forward the RAB of TNSPs on the basis of either actual or forecast depreciation, as was already the case for DNSPs.⁴⁰ The NER requires that the capital expenditure incentive guidelines set out the manner in which we propose to determine which approach to apply to the use of depreciation in the RAB roll-forward process.⁴¹ The NER highlights the need to consider, in addition to the capex incentive objective:

- other incentives the NSP has to undertake efficient capex
- substitution possibilities between assets with different lives

⁴⁰ NER, clauses S6A.2.2B(a) and S6.2.2B(a).

⁴¹ NER, clauses 6A.5A(b)(3) and 6.4A(b)(3).

- the extent of overspending and inefficient overspending relative to the allowed forecast.⁴²

3.3.2 Issues to consider

The choice of depreciation approach is one part of the overall capex incentive framework and needs to be considered in that context. In this sense, the issues surrounding the use of alternative depreciation approaches mirror the issues arising in the development of a CESS. These issues need to be considered and resolved holistically to achieve a balanced capex incentive framework, taking into account the overall incentives a NSP has to incur efficient capex.

Actual depreciation provides stronger incentives for efficient capex than does forecast depreciation. Under the current regulatory regime, for a WACC of 8 percent, the average power of the incentive under actual depreciation ranges from approximately 30 per cent for an asset with a life of 10 years to 17 per cent for an asset with a life of 50 years. By contrast, the average power of the incentive under forecast depreciation is around 14 per cent, for all assets (Table 3.1).

Table 3.1 Average power of the incentive under actual or forecast depreciation

Asset life	10 years	20 years	30 years	40 years	50 years
Actual depreciation	29.68%	21.72%	19.07%	17.74%	16.94%
Forecast depreciation	13.76%	13.76%	13.76%	13.76%	13.76%

Source: AER analysis.

Reasons to provide stronger incentives by using actual depreciation include:

- to make up for the absence of other incentives such as a CESS
- to strengthen incentives provided by a CESS, for example, in the case of persistent overspending
- to better align incentives between capex and opex, as appropriate
- to better align incentives between capex and service standards, as appropriate.

Economic Insights showed that the incentive from using actual depreciation to roll forward the RAB varies with the life of the asset.⁴³ Using actual depreciation will provide a stronger incentive for shorter lived assets compared to longer lived assets. For this reason, a number of NSPs commented that actual depreciation was a second best solution to an effective CESS.⁴⁴

Given this, the degree of substitutability between assets of different asset lives could be an important consideration in choosing between actual and forecast depreciation. However, we do not consider that actual depreciation should be excluded from the capex incentive framework solely on this basis, given that:

- short lived assets are a very small proportion of the overall asset base, and
- there is limited scope to substitute away from the core long life poles and wires assets.

⁴² NER, clauses S6A.2.2B(b)(c) and S6.2.2B(b)(c).

⁴³ Economic Insights, *The use of actual or forecast depreciation in energy network regulation, Report prepared for the AEMC, 2012*

⁴⁴ ENA, *Response to the AEMC Directions Paper, 2012*, p. 34; Grid Australia, *Response to the AEMC Directions Paper 2012*, p. 8; Jemena, *Response to the AEMC Directions Paper, 2012*, p. 24.

Nonetheless, we are required by the NER to consider the substitution possibilities between assets with different lives in deciding whether to apply actual or forecast depreciation.

NERA and PwC⁴⁵ and Economic Insights⁴⁶ further recommended that actual depreciation should only be applied where there is no CESS in place. The following considerations were also recommended:

- the substitutability between opex and capex and the balance of incentives between opex and capex
- the balance of incentives with service performance schemes
- the relative incentive for expenditure on assets with differing economic lives.

3.3.3 Preferred approach

Our initial position is that we would only use actual depreciation where:

- there is no CESS in place and therefore the power of capex incentive may need to be strengthened; or
- a NSP's past capex performance demonstrates evidence of persistent overspending.

We believe that if there is a CESS in place the power of this should already have been determined with respect to opex and service standard incentives. Hence, there might be less of a need to increase the power of the capex incentive by using actual depreciation.

In considering whether to apply actual depreciation in either of the above circumstances we would consider the impact on:

- the substitutability between opex and capex and the balance of incentives between opex and capex
- the balance of incentives with service performance schemes
- the relative incentive for expenditure on assets with differing economic lives.

In practice, we consider that in most cases forecast rather than actual depreciation will be the default.

Question 11

Do stakeholders agree that forecast depreciation should be the default form of depreciation used to roll forward the RAB except where there is no capex sharing scheme in place or where there is persistent overspending by a NSP?

⁴⁵ NERA Economic Consulting and PwC Joint Report, *Capital and Operating Expenditure – Response to the AEMC Directions Paper*, Attachment C to ENA, *Response to AEMC Directions Paper – Economic Regulation of Network Service Providers*, 2012.

⁴⁶ Economic Insights, *The use of actual or forecast depreciation in energy network regulation*, Report prepared for the AEMC, May 2012, p. v.

Question 12

Do stakeholders agree with the factors that we have identified for consideration in determining whether to apply forecast or actual depreciation?

4 Ex ante measures for operating expenditure

The current EBSSs for TNSPs and DNSPs have been in place since September 2007 and June 2008 respectively. They are intrinsically linked to our opex forecasting approach ('the revealed cost approach'). Given we are reviewing our approach to a whole range of different aspects of how we regulate, it is timely to also review the operation of the EBSSs.

For instance, we are currently reviewing our approach to forecasting opex. If we use a different approach to forecast opex in the future, there will need to be some modifications to the EBSSs.

We also note that our approach to determining capex incentives may affect our approach to opex. We will consider any implications as we continue to develop our approach to capex.

4.1 What is the current approach?

As discussed in chapter 2, we generally use recent actual opex from a single year to forecast an opex allowance. This is on the basis that opex is, in general, relatively stable and recurrent. We usually base our forecast on actual opex in the penultimate year of the preceding regulatory control period as, at the time of the determination, this is the most recent year where we have audited opex data. Therefore, we consider it to be the best indicator for a NSP's opex in the future.

Under this forecasting approach, charges in the current regulatory control period reflect forecast opex. Without an EBSS, the NSP will 'keep the difference' between forecast opex and actual opex during the regulatory control period. There are two potential incentive problems under this approach:

1. A NSP has an incentive to increase expenditure in the 'base year' to increase its opex allowance for the following regulatory control period.
2. The incentive to reduce opex declines as the regulatory control period progresses because incremental efficiency gains are retained for a shorter period.

We address these issues by applying an EBSS to complement our opex forecasting approach.

We address the first issue by ensuring NSPs face an adequate penalty for efficiency losses. The current EBSSs are symmetrical schemes so the penalty for an overspend is the same as an equivalent underspend.

We address the second issue by ensuring the incentives are continuous. That is, by applying the EBSS, a NSP will retain an incremental efficiency gain or loss for five years regardless of the year in which the gain or loss is made.

The current EBSSs work as follows:

1. The NSP keeps the benefit (or wears the cost) of delivering actual opex lower (higher) than forecast opex during a regulatory control period.
2. Prior to the start of the next regulatory control period we calculate a reward or penalty to ensure incremental efficiency gains or losses are retained by the NSP for five years. If a NSP achieves an incremental reduction in actual opex relative to forecast opex, it receives a reward. If there is not, it receives a penalty.

3. The reward or penalty is added to or subtracted from total revenue in the next regulatory control period.

The effect of the current schemes is that the sum of a NSP's opex allowance and opex carryover amounts reflects its actual opex from six years prior (before considering network scale effects, real price effects and cost step changes). Assuming a real discount rate of six per cent, this approach allows the NSP to retain approximately 30 per cent of the net present value of any efficiency gain. Thus, the power of the incentive is approximately 30 per cent. The remaining 70 per cent of the benefits flow through to lower charges for consumers. The benefits to consumers arise because forecast opex in the next regulatory control period will be reflective of the lower level of opex the NSP delivered in the base year.

As the scheme is symmetrical, the same ratios apply if there is an increase in opex during the period relative to forecast opex. That is, NSPs will bear approximately 30 per cent of the net present value of the increase in cost, while approximately 70 per cent of the increased cost will flow through to higher charges for consumers. This is because forecast opex in the next regulatory control period will be reflective of the higher level of opex the NSP delivered in the base year.

If a NSP increases its opex in the base year it will face a negative carryover amount equal to the increase in each of the first four years of the next regulatory control period. Thus, its revenues only increase in the fifth year of the next regulatory control period. Due to the time value of money, the net present value of the benefits to the NSP of the increase in opex in the fifth year of the next regulatory control period will be less than the cost to the NSP of the increase in opex in the base year. This approach reduces the incentives a NSP faces to increase its opex in the base year.

A number of examples of how the current EBSS for DNSPs works in practice are provided in Appendix B of *Electricity Distribution Network Service Providers – Efficiency Benefit Sharing Scheme, Final Decision*. This includes examples that illustrate the effective penalty that would apply if a NSP increases its opex in the base year.⁴⁷

4.2 What issues are we trying to address?

As stakeholders would be aware, we are currently developing expenditure forecast assessment guidelines as now required by the NER.⁴⁸ Under this approach, we are considering a range of different techniques for forecasting opex. A different approach to forecast opex will affect the design of the EBSS.

Opex forecasting approaches generally fall into two broad categories:

1. Revealed cost approaches

Under revealed cost approaches, we rely on the revealed actual costs of the individual NSP to set future opex allowances. This is based on the assumption opex is largely recurrent and past expenditure is a good indicator of future expenditure. This is a reasonable assumption given NSPs undertake activities on a regular cycle, such as asset inspections and vegetation clearance. We typically use one year of opex data to set the future opex allowance. However, a revealed cost

⁴⁷ Australian Energy Regulator, *Electricity distribution network service providers – Efficiency Benefit Sharing Scheme, Final Decision, Appendix B*, June 2008, pp. 23-35.

⁴⁸ NER, clauses 6.4.5 and 6A.5.6.

approach need not use a single year of actual expenditure. Alternatively, an average of multiple years could be used instead.

2. Exogenous forecasting approaches

Exogenous forecasting approaches are not influenced by the individual NSP's actual opex performance. These include approaches that forecast opex based on industry benchmarks. It may be appropriate to rely on other data to set forecast opex where we do not consider actual opex incurred by the NSP to be the best indicator of what an efficient level of opex should be.

The incentives facing a NSP will differ under either approach. Therefore, we need to consider whether different EBSSs need to be in place depending on whether we use a revealed cost or exogenous approaches to forecast opex.

4.2.1 EBSSs under revealed cost approaches

Under a revealed cost approach that relies on a single year of actual opex, without an EBSS, a NSP will have an incentive to spend more than the efficient amount as it knows it can influence future opex allowances. As we discussed above, the current EBSS is designed to mitigate this incentive.

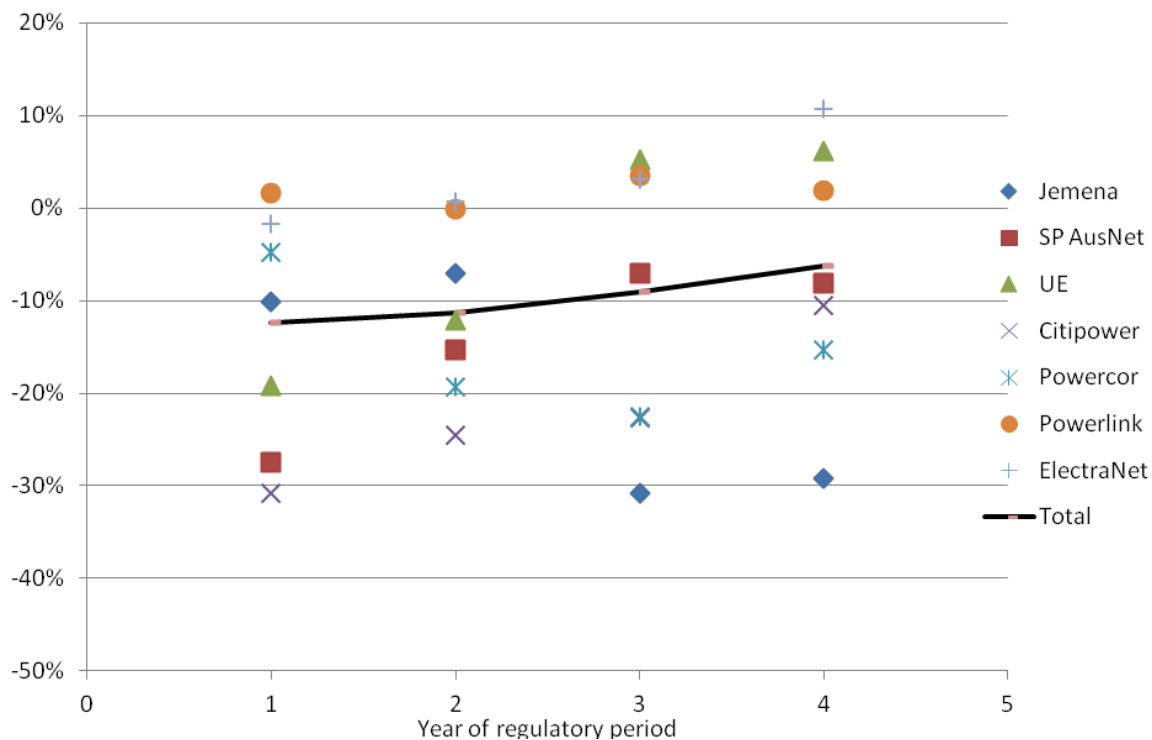
Given the short time the EBSSs have been in place, there is relatively limited available data to measure how effective the current EBSSs have been.

However, where opex incentive schemes have been in place for a whole regulatory control period there is no systematic empirical evidence that illustrates opex of NSPs is excessively high in year 4 compared to earlier years in the regulatory control period. Therefore, the preliminary empirical evidence suggests that opex incentive schemes have been effective in constraining any incentive to increase year 4 opex.

Figure 4.1 illustrates the actual expenditure of NSPs that have completed a regulatory control period with an opex incentive scheme in place.⁴⁹ If there were evidence of NSPs spending more than the efficient amount in the base year, we would expect to see a disproportionate rise in year 4 opex compared to earlier years in the regulatory control period.

⁴⁹ Note most of the data in Figure 5.1 relates to the difference between forecast opex and actual opex from the 2006-10 regulatory control period for Victorian DNSPs. In this period, Victorian DNSPs were regulated by the Essential Services Commission of Victoria and were subject to a different opex incentive scheme to the current EBSS for DNSPs. The scheme was very similar to the current EBSSs.

Figure 4.1 Difference between forecast opex and actual opex, with opex incentive scheme in place



Source: AER analysis

As there is limited empirical evidence to suggest year 4 opex is disproportionately high, at this stage we consider there is not a compelling reason why we should significantly change the current EBSSs where we continue to use the current approach for forecasting opex. However, we think some minor changes should be considered. We would like to seek feedback on how we address excluded costs, and ex post adjustments, as discussed in section 4.5.

Question 13

If we continue to use a revealed cost approach to forecast opex, should the same EBSSs remain largely in place, or are more significant changes required?

4.2.2 EBSS under exogenous forecasting approaches

As discussed in our *Expenditure forecast assessment guidelines for electricity distribution and transmission* we are investigating a range of different techniques we may use in the future to forecast opex.⁵⁰ Where we utilise these techniques in the future to forecast most of a NSP's opex allowance, rather rely on the actual opex incurred by the NSP, the NSP will have limited ability to influence its future opex allowance.

Under exogenous forecasting approaches, without an EBSS, a NSP will have a very strong incentive to reduce its opex. Without an EBSS, a NSP will retain the difference between actual opex and

⁵⁰ These techniques include category based assessment, total factor productivity, econometric modelling, data envelopment analysis and stochastic frontier analysis. For further information see Australian Energy Regulator, *Expenditure forecast assessment guidelines for electricity distribution and transmission Issues Paper*, December 2012.

forecast opex during the regulatory control period. As its actual opex has no influence on its future opex, there is not the same incentive to increase actual opex in the penultimate year of the current regulatory control period as would be if we used our current opex forecasting approach without an EBSS.

We consider there are number of reasons why we should dilute this incentive. This includes:

1. to share efficiency gains between NSPs and customers
2. to balance the power of the incentive to achieve capex efficiencies and the incentive to improve service standards
3. to share the impact of any forecasting error between NSPs and customers.

For these reasons, we think an EBSS is still required where we use exogenous forecasting approaches to forecast opex.

Our preliminary position is that the EBSSs that apply under exogenous forecasting approaches will be designed to achieve similar outcomes as the current EBSS, in that:

- where actual opex is lower than forecast opex, a NSP will receive 30 per cent of the net present value of the difference. Customers will receive the remaining share of the benefits.
- where actual opex is higher than forecast opex, a NSP will bear 30 per cent of the net present value of the difference. Customers will bear the remaining share of the costs.⁵¹

Under this approach if the NSP delivers opex that is \$100,000 lower than benchmark opex, \$70,000 will be passed through to customers through a negative adjustment to the NSP's regulated revenue in the next regulatory control period.⁵² The NSP will retain \$30,000 as a reward for delivering opex lower than the benchmark.

Similarly, if the NSP delivers opex that is \$100,000 higher than benchmark opex, \$70,000 will be passed through to customers through a positive adjustment to the NSP's regulated revenue in the next regulatory control period. The NSP will, in effect, be penalised \$30,000 for failing to achieve the benchmark.

We outline the reasons for this position below, and other principles we will take into account when considering changes to the current EBSSs.

4.3 What do the rules say?

Clause 6.5.8 of the NER sets out the rules governing the development of an EBSS for DNSPs. It requires that the AER develop and publish a scheme or schemes that provide for a fair sharing between DNSPs and distribution network users of efficiency gains and losses. In developing and implementing an EBSS, the AER must have regard to:

⁵¹ While our current position is that the objectives of an EBSS that applies under exogenous forecasting approaches will be similar to the current EBSSs, how the mechanisms work will be different. Unlike our current approach where the approximate 30:70 sharing ratio is the outcome given how the EBSS operates, we intend that the EBSSs under exogenous forecasting approaches will be designed to give effect to a fixed 30:70 sharing ratio.

⁵² This could be calculated in each regulatory year or over a whole regulatory control period.

- (1) the need to ensure that benefits to electricity consumers likely to result from the scheme are sufficient to warrant any reward or penalty under the scheme for DNSPs
- (2) the need to provide DNSPs with a continuous incentive, so far as is consistent with economic efficiency, to reduce opex
- (3) the desirability of both rewarding DNSPs for efficiency gains and penalising them for efficiency losses
- (4) any incentives that DNSPs may have to capitalise expenditure
- (5) the possible effects of the scheme on incentives to implement non-network alternatives.

Similar requirements are set for TNSP by clause 6A.6.5.

4.4 Design principles under any EBSS

Incentive to achieve operating efficiency improvements

In determining the power of the incentive, we are essentially determining the reward for efficiency improvements. That is, for every additional dollar saved by a NSP, how much should it retain?

Determining the power of the incentive is a balancing act. If the incentive is too high powered, it will encourage efficiency gains but customers may not receive a fair share of these gains. A high powered incentive will also mean that all forecasting error is borne by NSPs, which is unlikely to be desirable.

Under the current EBSSs, the implicit power of the incentive is approximately 30 per cent. That is, for any \$1 reduction in opex relative to forecast opex, a NSP will retain approximately 30 cents.

We consider a power of 30 per cent provides a sufficient incentive for a NSP to make efficiency improvements. It also ensures that customers ultimately receive most of the benefits of lower opex. We consider there is no compelling reason why the power of the incentive should differ between different service providers.

Therefore, our preference is that all NSPs will face the same incentive power regardless of whether the opex forecasting approach relies on revealed costs, exogenous data or a combination of both. Our preliminary view is that for all decreases in opex relative to forecast opex, a NSP will receive 30 per cent of the benefits. We intend to modify the EBSSs to give effect to this objective, regardless of what opex forecasting approach we use.

While we expect how we reward NSPs for reductions in opex will not change depending on the forecasting approach, how the total benefits of reductions in opex relative to historical levels are shared between NSPs and customers may change compared to our current forecasting approach.

For instance, under the current approach, if the opex forecast includes no forecast efficiency improvements, a NSP will retain approximately 30 per cent of all reductions in opex in the regulatory control period. The total gains received by the NSP depend mainly on how it performs relative to its historical opex. In general, the NSP will receive a net benefit from all improvements in opex relative to its historical opex.

However, if we adopt exogenous forecasting approaches, then the total benefits that a NSP receives will depend on how its opex compares to the new benchmark. Even if a NSP makes an efficiency improvement relative to its historical performance, if its actual opex remains higher than the new benchmark, then it will not benefit in net terms. While the NSP will always achieve a marginal benefit from achieving incremental reductions in opex, in total, a NSP will only receive a net benefit if it is able to deliver opex lower than the benchmark.

Balance between opex and capex incentives

As discussed in section 3.2.2 in designing the EBSSs we also need to consider the relative incentives between opex and capex. If the power of the incentive differs between opex and capex, a NSP will have clear preferences to capitalise or expense expenditure without any benefit to the customer.

For example, if the reward for reducing opex is greater than the penalty for increasing capex, a NSP could receive a reward for simply capitalising expenditure rather than expensing it without any efficiency improvement. This would be contrary to the requirement that we ensure benefits to electricity consumers likely to result from the EBSS are sufficient to warrant any reward or penalty under the scheme for NSPs.⁵³

It is for this reason the current EBSSs require opex forecasts be adjusted for any capitalisation policy changes when rewards and penalties under the scheme are calculated. If the capex and opex incentives were matched this would not be required.

Similarly, if the capex and opex incentives are not balanced then NSPs may have an incentive to install new assets rather than maintain existing assets or vice versa. For example, if the opex incentive were greater than the capex incentive a NSP would have an incentive to replace an existing asset rather than maintain it since the reward from reducing its maintenance expenditure could be greater than the penalty from the additional capex. This could lead to inefficient investment decisions. Similarly, imbalanced incentives could distort the use of non-network alternatives since these are typically operating expenses.

Balance between opex incentives and incentives to improve service levels

The balance between opex incentives and the incentive to improve service levels provided by the service target performance incentive scheme (STPIS) should also be considered. If the incentive to reduce opex is greater than the incentive to improve service levels then NSPs have an incentive to reduce opex at the expense of service levels even if the value to customers of that service level reduction is greater than the opex reduction. This would be inefficient.

The current STPIS sets benchmark service standard levels based on a five year average of actual service levels delivered. Similar to the existing EBSSs, this provides a sharing ratio of approximately 30:70.

Continuity

The NER requires us to have regard to the need to provide NSPs a continuous incentive, so far as is consistent with economic efficiency, to reduce opex.⁵⁴ A continuous incentive means the benefit (or

⁵³ NER, clause 6.5.8(c)(1)

⁵⁴ NER, clauses 6.5.8(c)(2) and 6A.6.5(b)(1).

penalty) in net present value terms for efficiency gains (losses) would be the same regardless of the year in which the efficiency gain (loss) is achieved. The key benefit of continuous incentives is that they do not distort timing decisions. If incentives are not continuous, NSPs have an incentive to shift opex from years with a high incentive rate to years with a low incentive rate. For example, if incentives decline as the regulatory control period progresses, a NSP may have an incentive to defer efficiency gains from the end of one regulatory control period to the start of the next. This would be inefficient if the gains could be achieved earlier. In this way, continuous incentives generally encourage more efficient outcomes.

Continuous incentives are also important for assessing expenditure. If incentives were not continuous, this would need to be taken into account when assessing any trends in a NSPs historic opex. Similarly, it would need to be taken into account when undertaking benchmarking and comparing the opex of different NSPs.

Appropriate penalty for overspending

The NER requires us to have regard to the desirability of both rewarding NSPs for efficiency gains and penalising NSPs for efficiency losses.⁵⁵

Under the current EBSSs, the penalty for spending more than forecast opex is approximately 30 per cent of the overspend. A strong penalty for overspending is a fundamental feature of the current EBSS. Without an appropriate penalty for overspending, NSPs have an incentive to shift expenditure into the base year.

However, as a NSP has no influence over its future forecast opex under exogenous forecasting approaches, then a NSP will not face a strong incentive to shift expenditure into the base year. An EBSS is not required to address this issue.

Further, without an EBSS in place, if a NSP's actual opex is higher than its forecast opex, it will bear all the costs for overspending. Under these circumstances, a NSP will face strong incentives to lower its opex. Given the strong incentives to reduce opex under these circumstances, some consumers may consider that NSPs should bear most of the costs of an overspend if using exogenous forecasting approaches.

However, while we note there are different incentive properties under different forecasting approaches, our preliminary view is for the overspends to be shared with consumers in the same way regardless of the forecasting approach. We consider a penalty of 30 per cent of the total cost of the overspend is appropriate if a NSP is unable to deliver actual opex lower than forecast opex for the following reasons:

- it ensures the risk of forecasting opex that is unsustainably low is shared between consumers and NSPs.
- it balances the other incentives facing a NSP. For instance, if the effective penalty for overspending is too punitive then it may provide an incentive for NSPs not to maintain or improve its service standards.

⁵⁵ NER, clauses 6.5.8(c)(3) and 6A.6.5(b)(2).

We also note that under this approach the penalty for overspends will be the same as the reward for underspends. A benefit of symmetric rewards and penalties is that if expenditure is brought forward or deferred, the value of the reward from reducing expenditure in one year will match the penalty for increasing it in another year. This encourages NSPs to delay expenditure until it is required.

We note that this is a different approach to what we are proposing for the CESS. In section 3.3.3, we consider there are a number of reasons why we might prefer higher penalties for capex overspends relative to the reward for capex underspends. However, as previously discussed opex is, in general, recurrent and more predictable than capex. Therefore, we are typically subject to less information asymmetry when forecasting efficient opex than for forecasting efficient capex. We consider this is a reason for having smaller rewards for underspending on capex relative to the penalty for overspending on capex. However, as these reasons are not as relevant for forecasting opex, we think the case for equal rewards and penalties for opex is, in general, stronger.

Question 14

Does an incentive power of 30 per cent provide a sufficient incentive to achieve efficiency gains?

Question 15

Are there any circumstances where balancing the opex incentive with the capex and service level incentives may not encourage economic efficiency?

Question 16

Do stakeholders agree the EBSSs should provide a continuous incentive in each year of a regulatory control period? Are there any circumstances where a continuous incentive may not encourage economic efficiency?

Question 17

Do stakeholders agree the EBSS rewards and penalties should be symmetrical, regardless of the forecasting approach?

4.5 Excluded costs and ex post adjustments

Under any future EBSS, regardless of what forecasting approach we use, we also need to consider how excluded costs are considered in the operation of the scheme, and what adjustments we make to the benchmarks after they have been set.

The existing EBSSs allow certain costs to be excluded from the operation of the scheme. In this way, increases (decreases) in those costs do not result in penalties (rewards) for the NSP. These costs include costs from pass through events and other uncontrollable costs predefined in the regulatory determination. The purpose of these exclusions is to ensure NSPs are not rewarded or penalised for costs they have no control over.

By excluding certain costs from the operation of the current EBSSs, the share of incremental underspends retained by the NSP declines as the regulatory control period progresses. However, if

an exogenous forecasting approach were adopted, then the NSP would retain all underspends (overspends).

Question 18

Should uncontrollable costs be excluded from the operation of the EBSSs?

Question 19

Should the approach to addressing uncontrollable costs differ depending on the forecasting approach?

Another reason we have excluded costs from the operation of a revealed cost incentive scheme is if revealed costs are not used to forecast those specific costs.

For example, debt raising costs have been forecast based on the costs of a benchmark firm. If a NSP had lower actual debt raising costs it is able to retain the difference within the regulatory control period. However, as forecast debt raising costs were set exogenously in the next regulatory control period, if these costs were included in the EBSSs, then the NSP would also receive a positive efficiency carryover. It would be rewarded twice for the efficiency gain. Consequently, such costs were excluded from the current EBSSs.

However, if we are to use exogenous forecasting approaches to forecast a greater proportion of opex, there may be a stronger reason not to exclude debt raising costs from the EBSSs.

Question 20

Are there any other reasons to exclude costs from the operation of the EBSSs?

The EBSSs could potentially prevent the exclusion of particular costs that should reasonably be excluded from the scheme. The scheme could be both simplified and provided greater flexibility by not specifying or limiting excluded cost categories. That is, the scheme could allow any cost categories defined in the regulatory determination prior to the commencement of the regulatory control period. Alternatively, the scheme could define criteria by which excluded costs are determined prior to the commencement of the regulatory control period. If criteria were not defined, the excluded costs would need to comply with the requirements of the NER.⁵⁶

Question 21

Should the EBSSs define specific costs to be excluded from its operation? If yes, which costs should be excluded from the scheme? If no, should criteria be defined which would guide which costs would be nominated as excluded costs?

⁵⁶ Particularly NER clauses 6.5.8(c) and 6A.6.5(b).

Question 22

Should all excluded cost categories be determined prior to the commencement of the regulatory control period in which the scheme applies?

The current EBSSs also allow the opex forecasts used to calculate carryover amounts to be adjusted to reflect any difference between forecast demand growth and actual demand growth. In this way, NSPs are not penalised (rewarded) for costs increases (decreases) due to greater (less) network growth than forecast, over which they have limited control.

There may be other reasons to adjust forecasts for the purpose of calculating rewards and penalties. We would like to hear from stakeholders if they think there are other reasons to make ex post adjustments to opex forecasts.

Question 23

Should the EBSSs provide greater flexibility as to how opex forecasts are adjusted for the purposes of calculating rewards and penalties under the scheme?

5 Ex post measures for capital expenditure

This section considers the new ex post measures for efficient capex. These include:

- a new requirement for the AER to undertake an ex post review of capex entering the RAB
- the ability to exclude from the RAB:
 - inefficient capex above the allowance
 - inefficient related party margins
 - opex that has been capitalised due to a change in capitalisation approach.

5.1 What is the current approach?

Prior to the AEMC's rule change, the regulatory regime attempted to create incentives for efficient capex through ex ante measures rather than ex post measures. These ex ante measures are discussed in chapter 2.

In summary, through the use of ex ante forecasts, NSPs were incentivised to pursue capex efficiency improvements to retain the benefits from this during a regulatory control period. At the end of a regulatory control period, the RAB was updated for all actual capex incurred. NSPs were not required to remain within their capex allowance and there was no ex post review of capex.

5.2 What issues are we trying to address?

One of the two issues that the AEMC identified with the capex incentives provided by the (previous) NER was that actual capex above the capex allowance was not subject to regulatory scrutiny before being included in the RAB.⁵⁷

While a CESS might increase the penalties for overspending, it will not, of itself, stop inefficient overspenders from eventually being included in the RAB. To the extent that the RAB reflects inefficient capex, this will result in consumers paying more than is necessary.

Three types of expenditure were specifically identified as being potentially problematic if they were to be included in the RAB:

1. inefficient capex above the capex allowance
2. inflated related party margins
3. capitalised opex resulting from a change to a NSP's capitalisation policy.

5.2.1 Inefficient capital expenditure above the allowance

Ex ante allowances represent the AER's estimate of the efficient costs of providing the required service. These costs ultimately determine the charges to be paid by customers that use the service.

⁵⁷ The other was that the incentives for efficient capex declined over the regulatory control period.

There are incentives on NSPs to spend within their allowances as discussed in chapter 3. However, these incentives decline and in some circumstances, NSPs might not respond to these incentives (see chapter 3). In these cases, NSPs might spend above their allowances. While NSPs will bear some of the costs of this, it is usually consumers that bear the greater share of these costs.

Without the ability to review a NSP's actual capex, and exclude any inefficient capex from entering the RAB, consumers will ultimately bear a share of the costs of these inefficiencies.

5.2.2 Related party margins

NSPs sometimes outsource certain activities or services through contracts. To the extent that the costs of this are efficient, they are allowed to be recovered through charges. Contract charges sometimes include a margin. This margin reflects any difference between a contract charge and a contractor's actual costs.

Where the contract charges reflect those obtainable in a competitive market, this is likely to be a reasonable forecast of future efficient costs. Where the contractor is related to the NSP through common ownership, however, there can be an incentive to inflate this margin. This is because any margins will be passed through to customers in regulated charges and retained by shareholders of the parent company.

When setting ex ante forecasts we have an established method for assessing related party margins. However, to the extent that margins may be considered to be capital in nature, we had no ability to exclude these from the RAB roll forward. Where actual contract charges were rolled into the RAB, any inflated margins were also included in the RAB irrespective of our ex ante decision. This could lead to consumers paying more than is necessary.

5.2.3 Capitalised operating expenditure

Under the previous NER, a NSP could benefit from changing its capitalisation policy during a regulatory control period. If a NSP reclassifies its opex as capex it would be compensated:

- once, in its opex allowance as determined at the determination; and
- again, by earning a return on and of capital once the amount is included in the RAB as capex.

We requested a rule change to remove any incentives for NSPs to change their approaches to capitalising overheads during a regulatory control period. We recommended a rule change to provide that capitalised overheads should only be included in the RAB where they are consistent with that provided for in the forecast capex that was approved as part of the previous determination.

5.3 What do the rules say?

There are two elements to the ex post incentives for capex:

- an assessment of the efficiency and prudence of all capex being rolled into the RAB
- the possible exclusion of inefficient capex from the roll forward of the RAB.

5.3.1 Ex post assessment of prudence and efficiency

Clause 6A.14.2(b) (transmission) and clause 6.12.2(b) (distribution) require the AER to make a decision on whether the roll forward of the RAB meets the capital expenditure incentive objective (see attachment 1).

Clause 6A.14.2(b) (transmission) requires:

The AER must include in its reasons for a draft decision under rule 6A.12 or a final decision under rule 6A.13 a statement, with supporting reasons, as to the extent to which the roll forward of the regulatory asset base from the previous regulatory control period to the commencement of the regulatory control period contributes to the achievement of the capital expenditure incentive objective.

Clause 6.12.2(b) (distribution) requires:

The AER must include in its reasons for a draft distribution determination under rule 6.10 or a final distribution determination under rule 6.11 a statement, with supporting reasons, as to the extent to which the roll forward of the regulatory asset base as determined under clause 6.12.1(6) contributes to the achievement of the capital expenditure incentive objective.

5.3.2 Excluding capital expenditure from the Regulatory Asset Base

S6A.2.2A (transmission) and S6.2.2A (distribution) provide that in certain circumstances the AER may reduce the amount by which a NSP's RAB is to be increased as part of the RAB roll forward:

- where a NSP has spent more than its capex allowance⁵⁸, the AER may exclude inefficient capex above the allowance from being included in the RAB
- where a NSP incurred a margin in relation to arrangements that did not reflect arm's length terms, the AER may exclude the inefficient portion of the margin from entering the RAB
- where a NSP's capex includes expenditure that was classified as opex at the time of the determination, the AER may exclude this from the RAB.

The relevant period over which this assessment is to occur is the first three years of the regulatory control period just ending and the last two years of the preceding regulatory control period.

5.4 Role of ex post mechanisms and interaction with ex ante mechanisms

The AEMC provided some guidance on the role of the ex post provisions compared to the other mechanisms for efficient capex. In particular, the AEMC noted that ex ante mechanisms remain the main means of pursuing capex efficiency improvements:

... setting the best possible ex ante allowance for capex is important ... the use of ex ante incentive mechanisms for capex has the potential to provide important incentives for efficiency and innovation in capex that may not occur if reliance was placed on reviews of the efficiency of expenditure after it has occurred ...⁵⁹

... Ex ante incentives are the primary means to reveal the efficient level of capital expenditure. Such incentives are an important part of the overall approach to the treatment of capital expenditure. The introduction of reviews of the efficiency of past capital expenditure should not be seen as diminishing the

⁵⁸ Plus (or minus) any adjustments provided under the reopening provisions, as a pass through or as a contingent project.

⁵⁹ AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services*, Final Position Paper, November 2012, p. 123.

role of ex ante incentives. Rather, such reviews are to address a gap in the lack of supervision of capital expenditure that *has* occurred. The ability to reduce the capital expenditure rolled into the RAB is intended for obvious cases of inefficiency, and not as the main means of achieving efficient levels of capital expenditure.⁶⁰

That said, the AEMC noted that ex post reviews still have a role to play:

Ex ante incentives may not always provide adequate assurance that capex is efficient. A further check that what is rolled into the RAB is efficient would therefore be in the long term interests of consumers. The review of efficiency of past capex should also assist the AER in determining an appropriate ex ante allowance by permitting it to better understand how efficient a NSP has been in the previous period and what projects it has undertaken. It should also improve understanding of the reasons for any overspends.⁶¹

The AEMC listed the benefits of the ex post statement as being:

- providing information to other stakeholders regarding the efficiency of the NSP;
- contributing to the AER's analysis in setting capital expenditure allowances for the NSP's next regulatory period; and
- providing a necessary companion to any capital expenditure sharing schemes in place. While effective, capital expenditure sharing schemes may not always provide adequate assurance that capital expenditure is efficient. The review provides a further and final check on the efficiency of capital expenditure forming part of the RAB.⁶²

The use of ex post provisions to exclude inefficient capex from entering the RAB was supported by the Productivity Commission⁶³, the Major Energy Users group, the NSW Independent Pricing and Regulatory Tribunal (IPART) and the SA Minister for Mineral Resources and Energy.

Almost all of the NSPs that submitted to the AEMC on the ex post provisions to exclude inefficient capex from entering the RAB did not support its introduction.⁶⁴ They argued this would create regulatory risk and distort ex ante incentives for efficient investment.⁶⁵ A number of consumer groups were also dubious of the benefits of an ex post review mechanism.⁶⁶

We consider that ex ante measures should provide the main impetus for NSPs to deliver efficient capex programs. Ex post provisions would work on top of the ex ante provisions already in place. In particular, where a NSP is subject to a CESS we propose that this would continue to operate whether or not the AER finds that an amount of capex is efficient or inefficient through the ex post review. In this way, any penalty provided through the CESS will be a minimum penalty to apply to the NSP. This penalty would only be increased where the AER found instances of inefficient capex leading to an overspend and decided to exclude this from the RAB. Applying the CESS in all circumstances is also appropriate since the ex post exclusion of inefficient capex from the RAB can only apply where a NSP has overspent.

⁶⁰ AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services*, Final Position Paper, November 2012, p. iv.

⁶¹ AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services*, Final Position Paper, November 2012, p. 122.

⁶² AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services*, Final Position Paper, November 2012, p. v.

⁶³ Productivity Commission, *Draft report: Electricity network regulatory frameworks*, 2012.

⁶⁴ Including the ENA, United Energy/Multinet, SP AusNet, CKI and Jemena.

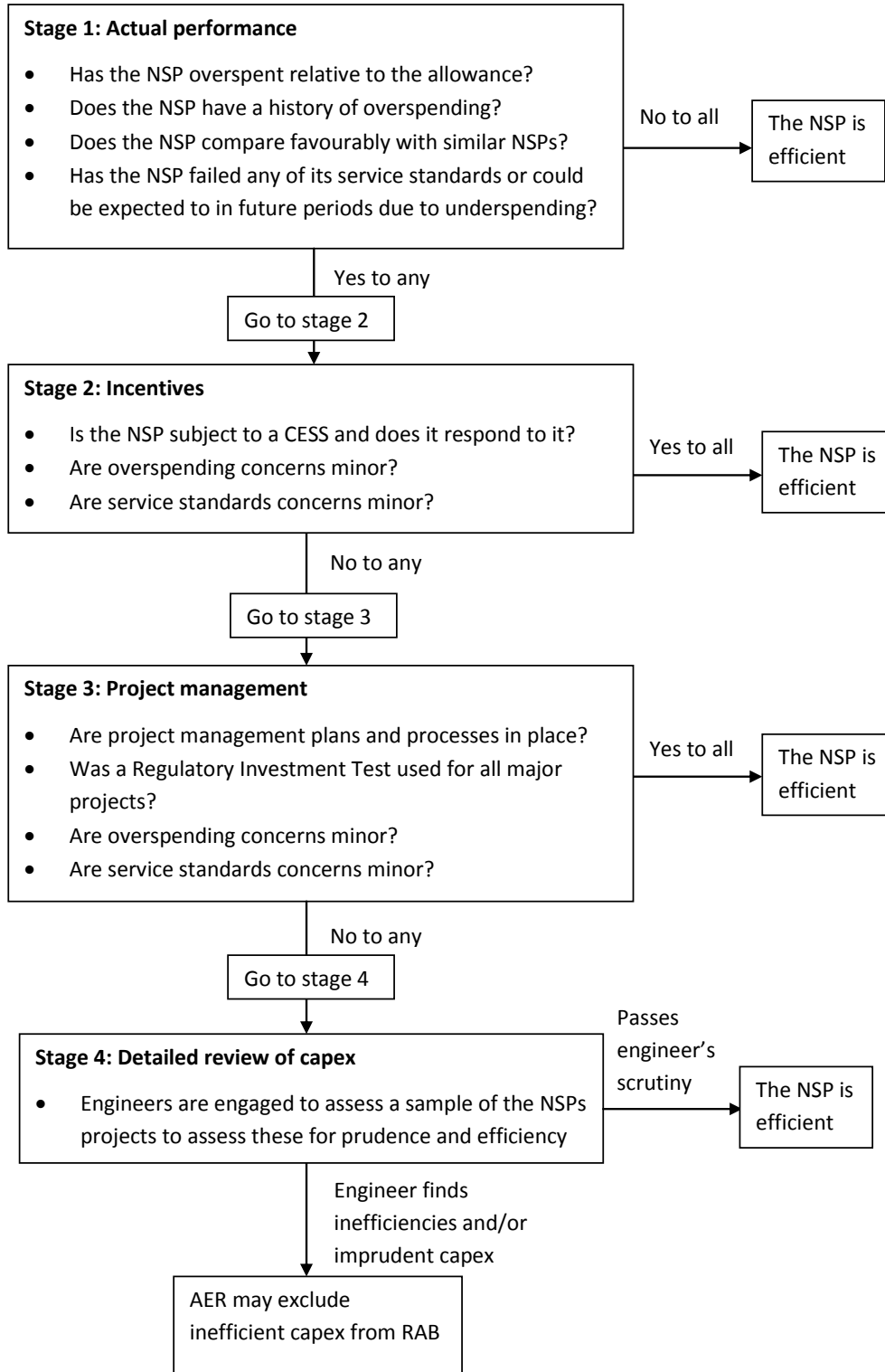
⁶⁵ AEMC 2012, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Draft Rule Determinations*, August 2012, p. 119.

⁶⁶ Including Energy Users, Consumer Action Legal Centre (it was concerned that it could result in a higher WACC), Energy Users Association and Ethnic Communities.

5.5 Ex post assessment of prudence and efficiency: A staged approach

In the AEMC's final position paper, it suggested that the AER could take a tiered approach to its ex post assessment of capex. The following section looks at the possible steps that could make up such an assessment. Figure 5.1 provides a summary.

Figure 5.1 Proposed ex post assessment approach



5.5.1 Step 1: How does the NSP's actual capex compare to its ex ante capex allowance?

The first step could involve considering how a NSP's actual capex compares to its forecast allowance across the review period. In doing this, we could consider annual levels of capex as well as capex over the review period, and any changes to the key determinants of capex such as unit costs or demand.

To test this further, we could undertake a high level comparison of a NSP's capex performance and the capex performance of similar NSPs, to the extent possible with the data available. This could make use of benchmarking data as appropriate. For example, if similar NSPs had faced the same exogenous factors then a comparison between the NSPs could indicate how well each NSP had responded to these factors. These comparisons would most likely be undertaken at a high level and would not replace more detailed NSP-specific analysis that would follow in the later stages of the assessment process, as required.

To the extent possible, we could also consider whether there is any evidence of substantial capex deferral. While deferral could be efficient and benefit both the NSP and consumers, significant and persistent capex deferral might lead to service decline. To assess deferrals we could consider the level (or trend) of capex backlog as well as the overall level of deferrals. We could also consider whether there has been any impact on service levels. While there are service incentive schemes in place, such as the service target performance incentive scheme (STPIS)⁶⁷, these are lagging indicators.⁶⁸ To gain a better understanding of the impact of recent capex on service performance we could consider other indicators such as feeder performance, guaranteed service levels, customer average interruption duration index performance and worst served customer performance.

If the AER is reasonably satisfied that the NSP has not overspent, or that any underspending has not caused service standards to decline (including expected future service standards) the ex post assessment would not have to progress past this stage.

5.5.2 Step 2: Does the NSP have incentives to undertake only efficient capex?

If the NSP has overspent its capex allowance, or there is evidence of potential service decline, we could then look at what incentives the NSP has to ensure its capex is efficient.

The AEMC noted that the presence of a CESS could be used as evidence of efficiency:

The presence of strong ex ante incentives for efficient capex could also provide the AER and customers with a relatively high level of assurance that any capex was likely to be efficiently incurred. The final rule allows the AER to develop ex ante incentives in part because the Commission expects that the use of such incentives could significantly reduce the likelihood of concerns that capex was inefficiently incurred. In this

⁶⁷ The purpose of the STPIS is to provide incentives to NSPs to improve or maintain a high level of service for the benefit of participants in the National Electricity Market NEM and end users of electricity. There is one STPIS for TNSPs and one STPIS for DNSPs.

⁶⁸ Given the long life of electricity network assets, a NSP's investment program for a given regulatory control period will only affect a small proportion of all its assets. Consequently, a decision to increase or decrease investment levels may have a negligible impact on service standards in the short run, even though the impact on their capex is significant. It is important that the regulatory regime does not create incentives for NSPs to pursue short term profit at the expense of long term performance. A network might experience years of under-investment before its ability to meet service standards is compromised.

way, any reduction of capex to go into the RAB following a review of efficiency would be a relatively rare occurrence.⁶⁹

Further:

The Commission [AEMC] agrees with NSPs that the AER should have regard to the other capex incentives and measures that exist when considering the nature and extent of a review of efficiency.⁷⁰

We could consider what types of incentives apply to the NSP and whether the NSP has demonstrated that it is responsive to these incentives. We could consider this for both the current review period and in previous regulatory control periods, where relevant.

If we are satisfied that the NSP is subject to capex incentives, that the NSP is responsive to these incentives and that the overspend is not significant, we could conclude our ex post assessment at this point. If we are not satisfied of these matters, we could progress our assessment to step 3. In particular, if we have strong concerns about significant overspends or service decline, particularly where there is a history of such behaviour, we might want to progress our assessment to step 3.

5.5.3 Step 3: Does the NSP use appropriate asset management and planning tools?

If the NSP has appropriate management and planning tools and practices in place, there is less scope for inefficient or imprudent capex.

As noted by the AEMC:

... if a NSP is well run and its management has in place robust processes for deciding which capex projects to undertake and regularly reviews and reassesses its capex program it should have nothing to fear from a review of its efficiency. Indeed, such a review should act to give the regulator greater confidence about the efficiency of the NSP's future capex projections.⁷¹

In assessing the NSP's tools and processes, we might want to consider whether the NSP has applied:

- for major projects, a Regulatory Investment Test (RIT-D or RIT-T) which complies with the relevant guidelines
- appropriate project management plans and processes including:
 - asset management, project delivery controls, procurement strategies, asset lifecycle management, resourcing strategies, program management and risk management
- appropriate project governance and capital governance.

It will also be important to assess whether these plans, processes and governance arrangements have actually been applied by the NSP. One way in which NSPs could potentially demonstrate this would be to attain national or international accreditation in asset management.⁷²

⁶⁹ AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services*, Final Position Paper, November 2012, p. 135.

⁷⁰ AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services*, Final Position Paper, November 2012, p. 136.

⁷¹ AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services*, Final Position Paper, November 2012, p. 122.

⁷² The United Kingdom standard for asset management (PAS 55) is soon to become an international standard (ISO 55000). We note that Ofgem requires PAS 55 accreditation for all DNSPs.

To the extent that the NSP has sound governance frameworks, good asset management and planning processes in place, and uses these, the AER may choose to conclude its ex post assessment at this stage. If, however, concerns remain, either over the quantum of the overspend or the service levels delivered, the AER could progress to step 4.

5.5.4 Step 4: Detailed review of capex

If the ex post capex review proceeds to step 4, it is because we have concerns about at least one of the following:

- the NSP's level of capex: it substantially exceeded the allowance, there is evidence of declining service levels, or there evidence that there are likely to be declining service levels in the future.
- the NSP is not subject to sufficient incentives for efficient capex, or there is evidence that the NSP does not respond to incentives for efficient capex.
- the NSP does not have adequate asset and project management and planning processes and tools in place, or the NSP has not followed these in undertaking its capex.

At this stage, the AER will undertake a more detailed assessment of the drivers of the NSP's capex overspends. This could include consideration of:

- Repex and Augex models for DNSPs to assess DNSPs' replacement and augmentation capex
- a sample of customer connections, or a benchmark of customer connections for multiple small connections
- any changes to demand which could have influenced capex outcomes
- IT capex
- case-by-case or project-by-project assessments of other projects.

Once these drivers are identified the AER will consider:

- whether the NSP's reasons for capex overspends/service decline are warranted
- whether there are other reasons that mitigate the NSP's overspends or service decline
- whether an engineering consultancy is required to further test the efficiency or prudence of a sample of the NSP's projects.

Once the AER has undertaken this analysis (using a similar methodology to how it undertakes this analysis ex ante) it will form an opinion on what aspects of the NSP's capex are efficient and prudent and what aspects of the NSP's capex are not efficient and prudent.

Question 24

Do stakeholders agree with having a staged approach to the ex post review?

Question 25

Are the issues that the AER proposes to consider as part of the ex post review appropriate?

Question 26

Are there any other factors that the AER should consider in conducting an ex post review?

5.6 Exclusion of capex from the RAB roll forward

This section considers the three cases in which we have the ability to exclude capex from the RAB:

1. when a NSP has overspent and incurred inefficient capex
2. where there is an inflated related party margin, regardless of whether the NSP spent more than its overall allowance.
3. where a change to a NSP's capitalisation policy had lead opex to be capitalised, regardless of whether the NSP spent more than its overall allowance.

5.6.1 Inefficient capital expenditure above the allowance

Inefficient capex can only be excluded from the RAB if both:

- it does not meet the capital expenditure criteria (that is, capex must be prudent, efficient, and based on a reasonable forecast of demand)
- the NSP's total capex exceeds its capex allowance (that is, there is a capex overspend).

In this way, this provision is automatically restricted to NSPs that have spent more than their capex allowance. This will be the AER's first step in identifying whether any capex can be excluded from the RAB roll forward.

In determining whether to exclude capex from the RAB, we must:

- have regard to the capital expenditure factors
- only take into account information and analysis that the NSP could reasonably be expected to have considered or undertaken at the time that it undertook the relevant capital expenditure.⁷³

Our decision on whether a NSP has incurred inefficient capex will be informed by our ex post review of capex. In particular, we will only consider excluding capex from the RAB if it has been identified as inefficient in stage 4 of the ex post review.

When calculating the amount to be excluded, we would also have regard to any penalties that had already been incurred under any CESS.

⁷³ NER, clauses S6.2.2A(h) and S6A.2.2.A.

Question 27

Are there any additional factors that we should consider before excluding an amount of an overspend from a NSP's RAB?

5.6.2 Related party margins

The AER has a fairly established method for determining whether to allow related party margins in its ex ante determination of contract prices. This involves a two stage process.⁷⁴ The first stage is a 'presumption threshold' test in which the AER considers the following:

- Did the NSP have an incentive to agree to non-arm's length terms at the time the contract was negotiated (or at its most recent re-negotiation)?
- If yes, was a competitive open tender process conducted in a competitive market?

If the answer to the first is no or the answer to the second question is yes, the NSP passes the presumption threshold. In these circumstances, we considered it was reasonable to presume the contract charge (including any associated margin above direct costs) reflects efficient costs and we accept the NSP's expenditure forecast.

Where a contract arrangement fails the presumption threshold, the AER sets the allowance with respect to the contractor's actual costs, with a 'margin' permitted only where the service provider is able to establish the efficiency and prudence of such a margin against legitimate economic reasons for the inclusion of the margin (and its quantum).⁷⁵ The methodology for assessing related party margins ex ante has been raised in the expenditure forecast assessment guidelines issues paper.⁷⁶

Ex post assessment

When rolling forward the RAB, our decision on whether to accept a related party margin will depend on whether the contractual arrangements have changed during the regulatory control period.

If the contract arrangement with the related party has not changed during the regulatory control period, then the AER's decision on whether to allow the margin to be included in the RAB would depend on how the related party margin was treated at the time of the determination:

- If the NSP's contract arrangement passed the 'presumption threshold' test and the contract charge was accepted in the determination, then the actual contract charge (including any margins) will be accepted and allowed to be included in the RAB.
- If the NSP's contract arrangement did not pass the 'presumption threshold' test and the contractor's actual costs (rather the contract charge) was accepted in the determination then the contractor's actual costs will be accepted and allowed to be included in the RAB.

⁷⁴ AER, *Final decision: Victorian electricity distribution network service providers: Distribution determination 2011–2015*, October 2010, pp. 163–205.

⁷⁵ This could be to compensate for common costs, provide a return on, and of, physical and intangible assets by the contractor in the provision of the service, or to compensate for asymmetric risks.

⁷⁶ AER, *Issues paper: Expenditure forecast assessment guidelines for electricity distribution and transmission*, 2012.

If the contractual arrangements have changed during the regulatory control period, this would require the AER to undertake another assessment of the related party margin. We anticipate that this would follow the same methodology as was applied ex ante.

Question 28

Do you think our approach for the assessment of related party margins is reasonable? What other approaches may be appropriate?

5.6.3 Capitalised operating expenditure

To determine whether the capitalisation requirement is satisfied the AER must know:

- when a NSP changes its capitalisation policy during a regulatory period
- whether any opex has been reclassified as capex because of those changes.

To this end, the guidelines could include a requirement on NSPs to notify the AER of any changes to capitalisation policies during the relevant period. The AER could use this information to assess whether any capex had previously been classified as opex. If the AER found instances of this (i.e. if an expenditure item was funded through an opex allowance but was subsequently classified as capex) the expenditure would not enter the RAB.

The impact of the CESS on incentives to undertake efficient opex versus efficient capex interacts with a NSP's incentive to change its capitalisation policy within a regulatory period. That is, a CESS that provides capex incentives that are more closely aligned with opex incentives would reduce the incentive for a NSP to change its capitalisation policy to reclassify opex as capex.

There are also interactions between this new capitalisation policy provision and the expenditure forecast assessment guidelines. In particular, the issues paper for the expenditure forecast assessment guidelines suggests that all NSPs adopt a standard capitalisation policy.⁷⁷ If a standard approach is adopted, this may have implications for the expenditure incentive guidelines.

To determine if the capitalisation requirement is satisfied the AER will require a NSP to specify its proposed capitalisation policy during a regulatory determination, which includes:

- the types of expenditure categories that will be capitalised
- the definition of such expenditure categories
- the detailed method used to calculate its proposed capitalisation of expenditure.

The AER may also require the NSP to provide its capitalisation of expenditure as part of the annual Regulatory Information Notice/ Regulatory Information Order process, including a statement of capitalisation policy with auditor's sign-off.

⁷⁷ AER, *Issues paper: Expenditure forecast assessment guidelines for electricity distribution and transmission*, 2012.

Question 29

Do you think our approach for the assessment of capitalisation requirements is reasonable? What other approach may be appropriate?

Attachment 1 Defined terms

This attachment provides a summary of relevant terms and definitions. These are provided for distribution NSPs (DNSPs) and transmission NSPs (TNSPs).

Capital expenditure incentive objective

The capital expenditure incentive objective is given by clause 6.4A(a) (distribution) and clause 6A.5A(a) (transmission) of the NER. For reference:

The *capital expenditure incentive objective* is to ensure that, where the value of a regulatory asset base is subject to adjustment in accordance with the *Rules*, then the only capital expenditure that is included in an adjustment that increases the value of that regulatory asset base is capital expenditure that reasonably reflects the *capital expenditure criteria*.

Capital expenditure incentive guidelines

The capital expenditure incentive guidelines is given by clause 6.4A(b)(c) for DNSPs and clause 6A.5A(b)(c) for TNSPs:

(b) The AER must, in accordance with the distribution consultation procedures, make and publish guidelines (*capital expenditure incentive guidelines*) that set out:

- (1) any capital expenditure sharing schemes developed by the AER in accordance with clause 6.5.8A, and how the AER has taken into account the capital expenditure sharing scheme principles in developing those schemes;
- (2) the manner in which it proposes to make determinations under clause S6.2.2A(a) if the overspending requirement is satisfied;
- (3) the manner in which it proposes to determine whether depreciation for establishing a regulatory asset base as at the commencement of a regulatory control period is to be based on actual or forecast capital expenditure;
- (4) the manner in which it proposes to make determinations under clause S6.2.2A(i) if the margin requirement is satisfied; and
- (5) the manner in which it proposes to make determinations under clause S6.2.2A(j) if the capitalisation requirement is satisfied; and
- (6) how each scheme and proposal referred to in subparagraphs (1) to (5), and all of them taken together, are consistent with the capital expenditure incentive objective. (c) If the AER is not satisfied as referred to in paragraph (c), it must not accept the forecast of required capital expenditure of a *Transmission Network Service Provider [DNSP]*.

(c) There must be Capital Expenditure Incentive Guidelines in force at all times after the date on which the AER first publishes the Capital Expenditure Incentive Guidelines under these Rules.

Capital expenditure criteria

The capital expenditure criteria are contained in clause 6A.6.7(c) for TNSPs and clause 6.5.7(c) for DNSPs:

(c) The AER must accept the forecast of required capital expenditure of a *Transmission Network Service Provider [DNSP]* that is included in a *Revenue Proposal [building block proposal]* if the AER is satisfied that the total of the forecast capital expenditure for the *regulatory control period* reasonably reflects each of the following (the *capital expenditure criteria*):

- (1) the efficient costs of achieving the capital expenditure objectives;

(2) the costs that a prudent operator would require to achieve the *capital expenditure objectives*; and

(3) a realistic expectation of the demand forecast and cost inputs required to achieve the *capital expenditure objectives*.

(d) If the *AER* is not satisfied as referred to in paragraph (c), it must not accept the forecast of required capital expenditure of a *Transmission Network Service Provider [DNSP]*.

Capital expenditure factors

The capital expenditure factors are contained in clause 6A.6.7(e) for TNSPs and clause 6.5.7(e) for DNSPs and include:

(4) the most recent annual benchmarking report that has been published under clause 6A.31 and benchmark capital expenditure that would be incurred by an efficient *Transmission Network Service Provider [DNSP]* over the relevant *regulatory control period*;

(5) the actual and expected capital expenditure of the *Transmission Network Service Provider [DNSP]* during any preceding *regulatory control periods*;

(5A) the extent to which the capital expenditure forecast includes expenditure to address the concerns of electricity consumers as identified by the *Transmission Network Service Provider [DNSP]* in the course of its engagement with electricity consumers;

(6) the relative prices of operating and capital inputs;

(7) the substitution possibilities between operating and capital expenditure;

(8) whether the capital expenditure forecast is consistent with any incentive scheme or schemes that apply to the *Transmission Network Service Provider [DNSP]* under clauses 6A.6.5A, 6A.7.4 or 6A.7.5 [6.5.8A or 6.6.2 to 6.6.4];

(9) the extent to which the capital expenditure forecast is referable to arrangements with a person other than the *Transmission Network Service Provider [DNSP]* that, in the opinion of the *AER*, do not reflect arm's length terms;

(10) [9A] whether the capital expenditure forecast includes an amount relating to a project that should more appropriately be included as a *contingent project* under clause 6A.8.1(b) [6.6A.1(b)];

(11) the most recent NTNDP⁷⁸, and any submissions made by *AEMO*, in accordance with the *Rules*, on the forecast of the *Transmission Network Service Provider's* required capital expenditure; [does not apply for DNSPs]

(12) [10] the extent to which the *Transmission Network Service Provider [DNSP]* has considered and made provision for efficient and prudent non-*network* alternatives;

(13) any relevant *project assessment conclusions report* required under clause 5.6.6; and [does not apply for DNSPs]

(14) [12] any other factor the *AER* considers relevant and which the *AER* has notified the *Transmission Network Service Provider [DNSP]* in writing, prior to the submission of its revised *Revenue Proposal [regulatory proposal]* under clause 6A.12.3 [6.10.3], is a *capital expenditure factor*.

Capital expenditure sharing scheme principles

The capital expenditure sharing scheme principles are contained in 6A.6.5A (transmission) and 6.5.8A (distribution):

⁷⁸ National Transmission Network Development Plan.

(c) In developing a *capital expenditure sharing scheme*, the AER must take into account the following principles (the *capital expenditure sharing scheme principles*):

(1) *Transmission Network Service Providers [DNSPs]* should be rewarded or penalised for improvements or declines in efficiency of capital expenditure; and

(2) the rewards and penalties should be commensurate with the efficiencies or inefficiencies in capital expenditure, but a reward for efficient capital expenditure need not correspond in amount to a penalty for the same amount of inefficient capital expenditure.

Depreciation

The depreciation principles are contained in S6A.2.2B (transmission) and S6.2.2B (distribution):

(b) The decision referred to in paragraph (a) must be consistent with the capital expenditure incentive objective.

(c) In making the decision referred to in paragraph (a), the AER must have regard to:

(1) the incentives that the Distribution Network Service Provider has in relation to undertaking efficient capital expenditure, including as a result of the application of any incentive scheme or any other incentives under the Rules;

(2) the substitution possibilities between assets with relatively short economic lives and assets with relatively long economic lives and the relative benefits of such asset types;

(3) the extent to which any capital expenditure incurred by the Distribution Network Service Provider has exceeded the corresponding amount of forecast capital expenditure accepted or substituted by the AER and the amount of that excess expenditure which is not efficient;

(4) the Capital Expenditure Incentive Guidelines; and

(5) the capital expenditure factors.

Margin requirement

The margin requirement is set out in S6A.2.2A(d) (transmission) and S6.2.2A (d) (distribution):

(d) The margin requirement is satisfied where the amount of the capital expenditure as a result of which the previous value of the regulatory asset base would otherwise be increased in accordance with clause S6.2.1(e) includes capital expenditure that represents a margin paid by the Distribution Network Service Provider in circumstances where the margin is referable to arrangements that, in the opinion of the AER, do not reflect arm's length terms.

Capitalisation requirement

The capitalisation requirement is set out in S6A.2.2A(e) (transmission) and S6.2.2A (e) (distribution):

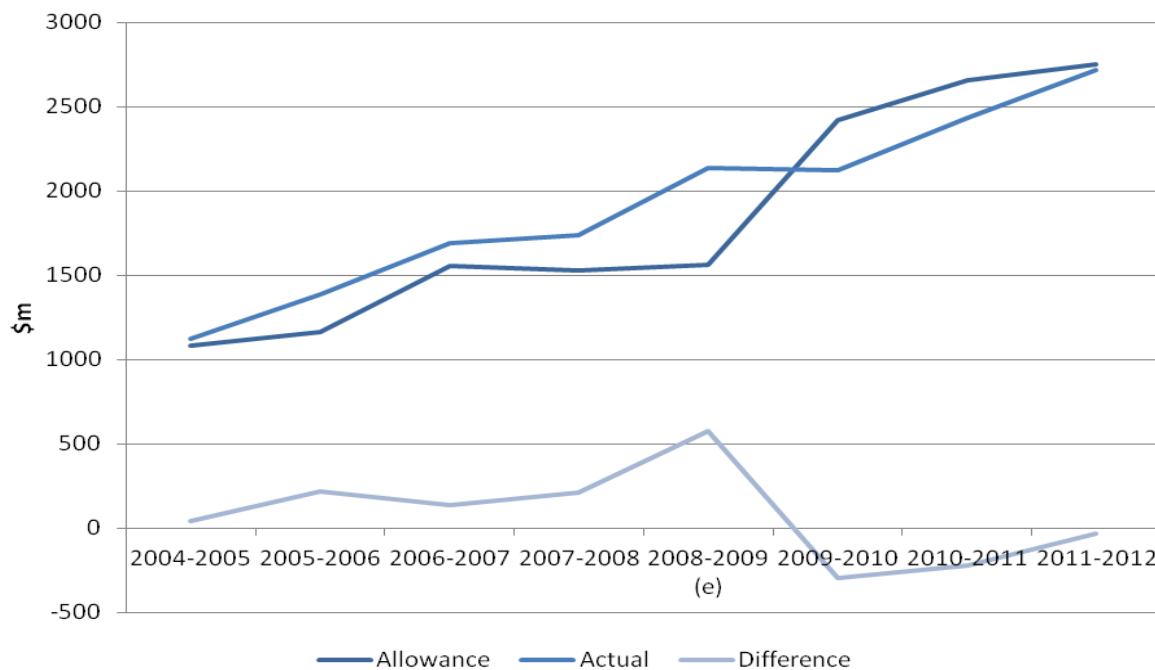
(e) The capitalisation requirement is satisfied where the amount of the capital expenditure as a result of which the previous value of the regulatory asset base would otherwise be increased in accordance with clause S6.2.1(e) includes expenditure that, under the Distribution Network Service Provider's applicable capitalisation policy submitted to the AER as part of a regulatory proposal, should have been treated as operating expenditure.

Attachment 2 Trends in capital expenditure

Figures A, B and C show trends in recent capex for DNSPs in New South Wales, Queensland, and Victoria.

In New South Wales (figure A), the current regulatory period spans from 1 July 2009 to 30 June 2014. Previously, the New South Wales Independent Pricing and Regulatory Tribunal was responsible for determining network charges in New South Wales. While there is some evidence of overspending in earlier years, this has not continued into the current regulatory control period.

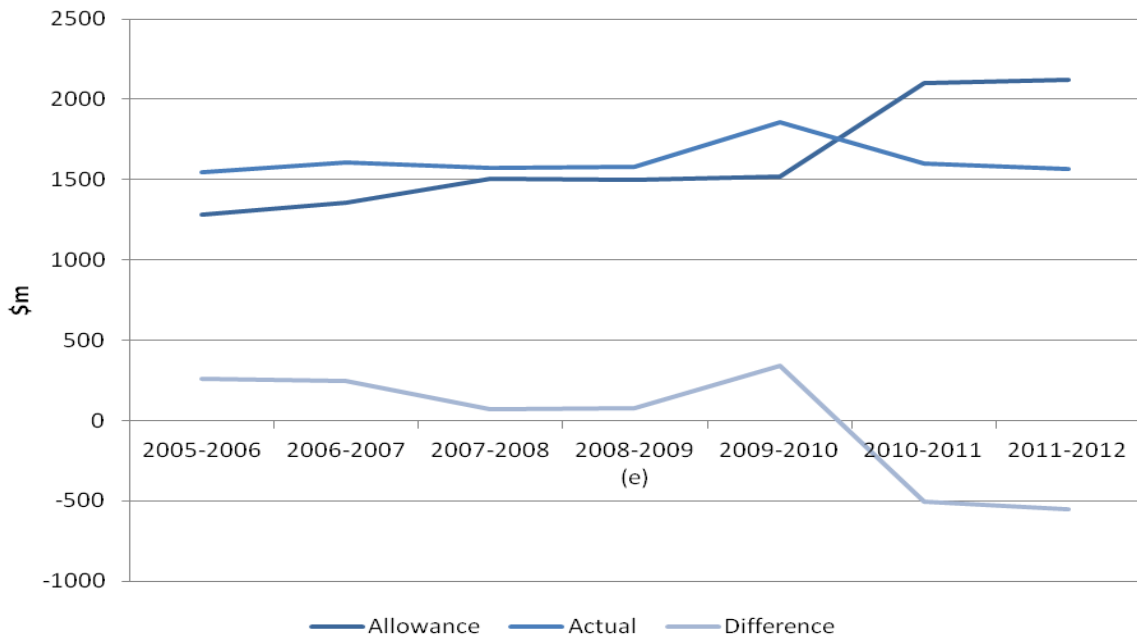
Figure A Net capital expenditure for distribution NSPs in NSW (2004–2012)



Source: AER analysis

The current regulatory period for Queensland is from 1 July 2010 to 30 June 2015 (figure B). The previous determination from 2005 to 2010 was made by the Queensland Competition Authority. Similar to the NSW experience, while there is some evidence of overspending in previous years, there is more of a trend of underspending in recent years.

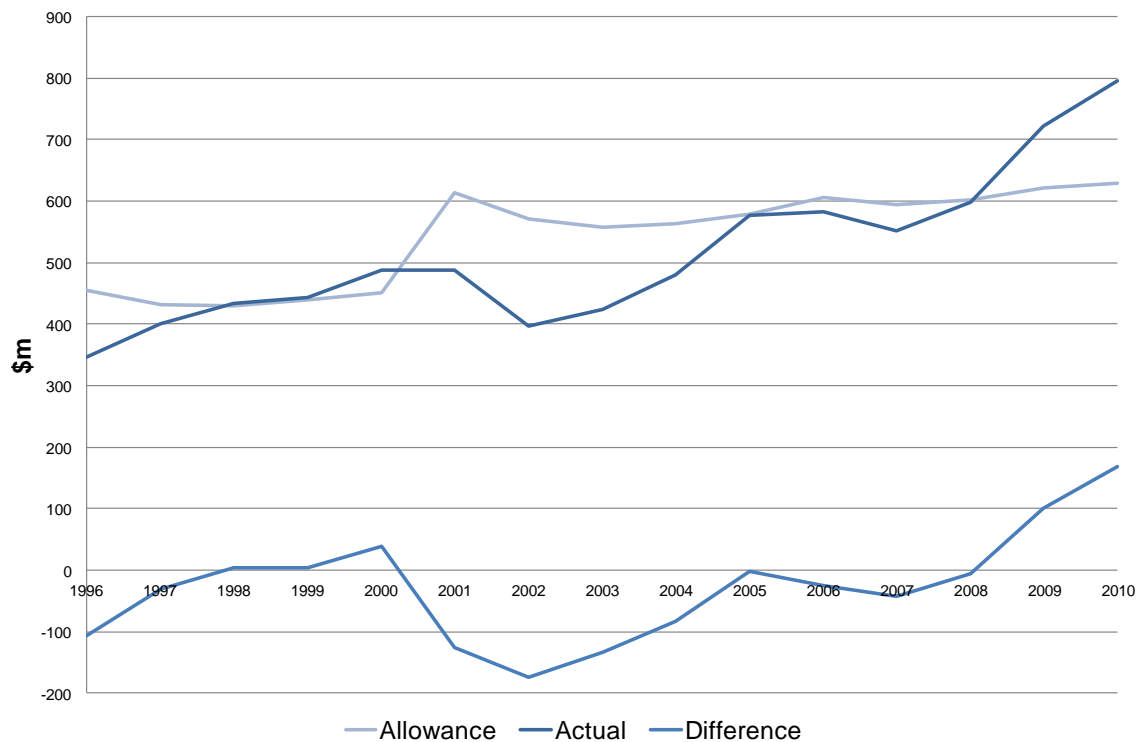
Figure B Net capital expenditure for distribution NSPs in Queensland (2005–2012)



Source: AER analysis

The current regulatory period for DNSPs in Victoria is January 2011 to December 2015 (figure C). Prior to this, the Essential Services Commission of Victoria was responsible for the price regulation of DNSPs in Victoria. The graph shows that there is no clear pattern of overspending or underspending, though overspending appears to be more prevalent in recent years. A capital expenditure sharing scheme applied from 1996 to 2005.

Figure C Net capital expenditure for distribution NSPs in Victoria (1996–2010)



Source: AER analysis

Attachment 3 How a capital expenditure sharing scheme could work

Whether or not any CESS is symmetric or asymmetric, the following model could be used. While other alternative models are available—for example, a rolling scheme such as the current EBSS—we believe that the model outlined below could meet the objective of continuity with relative simplicity. It also has the flexibility to be able to be used with different incentive powers.

Under this model the AER would:

- calculate whether the NSP had overspent or underspent (cumulatively) over the five year period
- determine the brought forward value of the overspend/underspend
- apply a sharing ratio to the brought forward value of the overspend/underspend, with the sharing ratio depending on whether the NSP had overspent or underspent
- adjust for the brought forward value of any benefits/costs already received by the NSP during the regulatory control period
- from the above calculations, provide a net present value neutral amount to the NSP in the next regulatory period.

This approach can be illustrated with a simple example. Assume that a NSP's capex allowance is \$100 in year 1, \$50 in year 2, \$350 in year 3, \$200 in year 4 and \$100 in year 5. Assume the NSP spends \$10 extra in year 1 but meets its allowance in all other years. Also assume:

- the regulatory WACC (which is equal to the firm's true WACC) is ten per cent
- a penalty of 70 per cent applies to overspends
- a reward of 30 per cent applies to underspends.

This example is illustrated in tables A and B. The approach to depreciation is not included in this example for simplicity.

Table A Example of a NSP's capex allowance and actual capex

	Year 1	Year 2	Year 3	Year 4	Year 5
(1) Capex allowance	\$100.00	\$50.00	\$350.00	\$200.00	\$100.00
(2) Actual capex	\$110.00	\$50.00	\$350.00	\$200.00	\$100.00
(3) Overspend	\$10.00	-	-	-	-
(4) Cost incurred by NSP		\$1.00	\$1.00	\$1.00	\$1.00
(5) Discount factor	1.46	1.33	1.21	1.10	1.00

Table B How an asymmetric capex sharing scheme would apply to an overspend

	Calculation	Amount
(A) Brought forward cost of overspend	(3) x (5)	\$14.60
(B) Share of brought forward overspend to be borne by NSP	(A) x Sharing factor	\$10.23
(C) Amount already recovered by the NSP	Sum of (4) x (5) for each year	\$4.64
Penalty	(B) — (C)	\$5.61

This same outcome can also be achieved by undertaking the following calculations.

Capital Expenditure Bonus or Penalty (CEBP) = Brought Forward value of change in capex over the period multiplied by (one minus the desired incentive power) less the sum of the change in capex over the period plus the sum of the change in depreciation over the period.

$$CEBP_{t+5} = (1 - \alpha)BFC_{t+5} - \sum_i \Delta Capex_{t+i}$$

Where:

$$BFC_{t+5} = \sum_{i=1}^5 \Delta Capex_{t+i}(1 + WACC)^{5-i}$$

α Is the desired power of the incentive which will vary depending on whether the NSP has overspent or underspent in total

$WACC$ Is the cost of capital

For the above example, the brought forward change in capex (BFC) would be \$14.64. The Capital Expenditure Bonus or Penalty (CEBP) would be -\$5.61, or a penalty of \$5.61.

Since this scheme works on a cumulative basis it avoids the problem that could occur if an asymmetric scheme were applied on an annual basis. In particular, with higher penalties than rewards, a NSP would be penalised under an annual scheme if it changed the timing of a capex project. It would be rewarded in the year that the capex was scheduled to occur but this would be outweighed by the penalty it would incur when the capex is undertaken. This could potentially lead to perverse outcomes. This problem is also avoided with any form of symmetric scheme.