Submission on the AER Expenditure forecast assessment guidelines for electricity distribution and transmission

Report to Victorian DNSPs

March 2013

Acronyms and Abbreviations

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
AMP	NSP's asset management plans
Capex	Capital expenditure
CBA	Cost benefit analysis
CBA Guidelines	CollectivelyDepartment of Finance and Administration's *Introduction to Cost- Benefit Analysis* and *Handbook of Cost-Benefit Analysis*
CPI	Consumer price index
CPP	Customised price path
DEA	Data envelope analysis
DNSP	Distribution network service provider
DPP	Default price path
DSP	Distribution service provider
DNSP	Distribution Network Service provider
EM	Econometric modelling
ESC	Essential Services Commission (Victoria)
GDP	Gross domestic product
Guidelines	The intended guidelines which set out the approach the Australian Electricity Regulator is to take in assessing expenditure
IM	Information memorandum
IPART	Independent Pricing and Regulatory Tribunal
IQI	Information quality incentive
IRR	Internal rate of return
Merger Guidelines	ACCC's *Merger Guidelines*
MFP	Multi Factor Productivity
NEL	National Electricity Law

NEM	National Electricity Market
NER	National Electricity Rules
NSP_	Network service provider
NPV	Net present value
Opex	Operating expenditure
PTRM	Post tax revenue model
RIT-T	Regulatory investment test for transmission
SFA	Stochastic frontier analysis
TFP	Total factor production
TNSP	Transmission network service provider
WACC	Weighted average cost

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Executive Summary

The recent rule change for the economic regulation of network service providers clarified the discretion available to the Australian Energy Regulator to accept expenditure proposals from NSPs or to substitute its own levels. A key component of the new rules is the new requirement for the AER (AER) to develop guidelines (Guidelines) that set out the approach it intends to take in assessing expenditures—that is how it will exercise its discretion.

The Guidelines will promote confidence that the AER is transparent and predicable about its approach. It is inevitable that regulators must make decisions where there is imperfect information and multiple interpretations of the available data. Regulatory risk for all parties is reduced if regulators follow the "generally agreed approach" and guidelines codify and clarify that approach without limiting the evolution of regulatory thinking. Guidelines represent the balance between overly prescriptive detailed rules and the unfettered exercise of discretion.

The AER Issues Paper is the first step in the process of developing the expenditure assessment Guidelines. Our evaluation of the Issues Paper shows that while it is rich in detail, it does not set out a clear pathway that would likely lead to the development of high quality guidelines. For the eventual Guidelines to meet the standards expected of high quality regulatory guidelines, a number of fundamental questions need to be resolved along this pathway. If the gaps in the Issues Paper are not addressed, it will make the challenging task of producing high quality Guidelines in a tight timescale even more difficult.

The characteristics of high quality guidelines

The best way to identify the characteristics that the eventual Guidelines must possess is to look closely at other guidelines which deal with similarly complex issues in situations of information asymmetry, and are generally considered to be of high quality. We focus on the Australian Competition and Consumer Commission's (ACCC's) *Merger Guidelines* (Merger Guidelines) and the Department of Finance and Administration's *Handbook of Cost-Benefit Analysis*. From these case studies, it is possible to draw out a number of conclusions on how high quality guidelines can provide greater transparency, certainty and predictability in regulatory decisions. High quality guidelines:

- Codify the existing analytical approach
- Describe best practice and latest thinking in sufficient detail for all stakeholders to be able to implement
- Achieve a balance between principles and prescriptive rules
- Explain how discretion will be exercised and provide clear interpretations of the key concepts and criteria that will be applied
- Provide clarity on information requirements and advice on overcoming data limitations
- Offer practical advice on the analytical approach and techniques through case studies and worked examples.

In order to move the preparation of the Guidelines towards a standard to which the AER rightly aspires, the Issues Paper needs to set out the characteristics that the Guidelines should meet and how these characteristics will be reflected in the Guidelines.

The role of guidelines in the expenditure assessment task

The National Electricity Rules (NER) set out the objectives and requirements for expenditure assessment by the AER. Broadly, the AER must accept forecast expenditure if it "reasonably reflects" the "efficient costs" of a "prudent operator" of meeting a "realistic expectation" of forecast demand. The AER must also have regard to a large number of matters in deciding whether to accept a forecast.

The role of the Guidelines in the expenditure assessment process is to make the AER's decisions under these requirements of the regulatory framework clear and—at least within a reasonable range—predicable. In other words, stakeholders should be able to understand:

- In what circumstances will the discretion be exercised? (Transparency)
- How will the discretion be exercised? (Certainty)
- What will influence the way in which the discretion is exercised? (Predictability)

Thus, the Guidelines for each of the various expenditure tools and techniques should answer these questions and relate the use of the tools and techniques back to the expenditure assessment requirements of the NER. For example, how will the AER decide that costs are "efficient" and what information is necessary for a network service provider (NSP) to demonstrate that they are a prudent operator"?

How are new tools and techniques introduced?

The Issues Paper contains an extensive overview of a large number of economic benchmarking tools and techniques that the AER sees as candidates for use in expenditure assessment and inclusion in the Guidelines. However, it offers no insight into how the hard choices required for the Guidelines to serve their purpose will be made:

- Which techniques will be included in the tool box, and which will continue to be under development for years to come?
- How will the AER use various techniques given their varied margins of error and data needs?
- How will the AER reconcile conflicting conclusions that may emerge from the application of various techniques?

To provide insight into the practical issues that might arise in the introduction of these types of techniques we looked at four case studies and their use by other regulators.

The case studies highlight the difficulties in introducing economic benchmarking and econometric techniques into regulatory processes. At best, such techniques have worked for relatively low cost "first pass" analysis, in situations where alternative processes were in place to correct any resulting errors.

Overall, no regulator relied heavily on such non-traditional techniques, and the case studies showed that all economic benchmarking techniques operated in conjunction with other aspects of the regulatory framework—particularly incentive mechanisms to reveal efficient costs and accurate information.

Since the Guidelines must provide practical information to stakeholders on how regulatory decisions will actually be made, the experience of other regulators highlights the crucial need for the AER to set out a pathway to articulating how it will resolve the practical concerns around various techniques.

In the Issues Paper the AER has flagged the use of economic benchmarking tools in a "first pass" assessment of expenditure in the 40 day period after an NSP has lodged the initial Regulatory Proposal. While international experience suggests that this is a more appropriate use of these techniques than for final determinations, there are risks that need to be addressed in the preparation of the Guidelines. If the techniques are still not refined, and the data used is limited, the first pass analysis could, through inaccurate or misleading information, incorrectly identify concerns that will require considerable effort to resolve.

The introduction of any new tools must be carefully assessed against well-articulated evaluation criteria. There is a clear gap in the Issues Paper regarding setting out how the AER will decide whether the introduction of any technique will result in an overall improvement in the efficiency and cost of regulation, and produce better regulatory outcomes. Introducing new tools—as shown by our case studies—is difficult. The AER should maximise the experiences of other regulators. The study undertaken for Ofgem, for example, arrives at the following criteria for the implementation of any new analytical techniques:

- **Robustness:** the analytical process and the resulting assessment must be regarded as robust by the submitters and peer reviewers
- **Transparency:** in essence, a methodology cannot be a "black box"
- **Promotion of efficiency:** the technique should strike an appropriate balance between costs and desired outputs
- **Consistency with the wider regulatory framework**, particularly the incentive mechanisms
- **Reasonableness of data requirements and costs** involved
- **Adaptability to changes in network output requirements** (for example, associated with distributed generation).

Conclusion

Our study of best practice guidelines and the case studies of the use of benchmarking techniques by other regulators have highlighted a number of gaps in the Issues Paper that will make the development of good quality guidelines more difficult.

The key gap in the Issues Paper is the absence of a pragmatic focus on how the Guidelines will articulate the AER's decision-making, and a lack of prioritisation. The paper provides details and debate about a large number of techniques, including existing techniques, but gives no indication on any framework to resolve all of the issues raised.

We suggest that to move the preparation of the Guidelines towards meeting the high standards set by the best practice examples, the AER should prioritise:

- A focus on codifying existing techniques. The existing techniques are well known to the AER and stakeholders and have important precedent value. It is likely that these may be the only techniques that can be used for decision making purposes in the initial set of Guidelines
- A careful articulation of the criteria for bringing new techniques into the toolbox, and of how those techniques will in practice be used alongside the established approach
- In the context of the existing and new techniques, provision of guidance on how the results from the application of those techniques will be used to

interpret the key terms in the National Electricity Law (NEL) and the National Electricity Rules (NER); and

- Provision of worked examples.

We also propose an approach where the Guidelines set out the process and the requirements for a new technique to be introduced, and provide a "traffic light" indicator for each technique: red (in research), yellow (under development), green (ready for introduction). As the Guidelines evolve, various techniques will move along this pathway. A key component of this approach will be to specify at all stages of development the proposed role of the technique, and how its use will sit alongside other available and accepted techniques.

1 Introduction

In the recent rule change process for the economic regulation of network service providers, the Australian Energy Market Commission's (AEMC) overall approach was to give more discretion to the AER to make decisions.[1] The Commission considers that the rules give the AER sufficient freedom to set capital expenditure (capex) and operating expenditure (opex) allowances that are efficient, assuming it applies appropriate analytical techniques and has access to an appropriate level of information. The new rules clarify the degree of discretion for AER to accept expenditure proposals or to substitute its own levels.

While the rule changes provide more flexibility, the AEMC recognises that it is important for investor, service provider and consumer confidence in the framework and that the regulator is transparent and predictable about its approach. To supplement regulatory decisions, the rule changes require the regulator to develop guidelines that set out the approach it intends to take in assessing expenditures.

The guidelines to be developed by the AER must set out the **types of assessments** the AER will undertake in approving expenditure allowances that form part of the *Distribution Network Service Providers* (DNSP's) regulatory proposals and the **information required** to facilitate those assessments.

The AER's Issues Paper provides a number of objectives for developing these guidelines:

- Formalise and standardise various techniques in expenditure assessment
- Provide certainty and continuity by developing a generally agreed approach in assessment techniques
- Develop benchmarking techniques that will be used in annual benchmarking reports and in regulatory determinations, and
- Manage the collection of consistent data for conducting benchmarking assessments and reducing the compliance burden for NSPs.

We have been asked by Victorian DNSPs to review the AER's Issues Paper and to consider what else may be required to provide the necessary basis for developing the required guidelines.

The Issues Paper is a key first step in the pathway to having the guidelines in place by the end of this year. To move along this pathway, the Issues Paper needs to provide a clear insight into the likely future content of the Guidelines and to identify the issues that need to be resolved before the Guidelines can be drafted. In other words, while the Issues Paper does not need to describe exactly how the AER will exercise its discretion with respect to assessing expenditure forecasts, it needs to explain how the rules for the exercise of description will be developed, what choices will need to be made and how the AER plans to make those choices.

We approach our task in five steps:

- First, we analyse a number of acknowledged high quality regulatory guidelines to identify what makes them "best practice". From this review, we draw lessons about the characteristics of high quality regulatory guidelines—the characteristics that the expenditure assessment guidelines will need to exhibit

[1] National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012, 29 November 2012.

if the AER is to meet the high standards it aspires to. In particular, we examine how such guidelines describe the way that regulatory discretion will be exercised

- We then focus specifically on the expenditure assessment task that the AER will undertake, and the role of guidelines in that task. By drawing on the lessons of other high quality guidelines, we undertake a gap analysis of the Issues Paper: given the end objective of attaining the characteristics of high quality guidelines and the specifics of the AER's task, we ask to what extent the Issues Paper assists in preparing best practice guidelines; and
- Drawing on the gap analysis, we offer suggestions on how the development of the Guidelines can be framed to achieve the AER's objectives and best practice standards. We examine how the Guidelines should deal with the tools and techniques available to the AER. In this context, we separately consider how the Guidelines should address the current techniques already used by the AER in its previous assessment role, and future techniques that could be used in its expanded role. In regard to future tools, we also look at case studies where other regulators have used techniques such as Total Factor Production (TFP) and econometric models.

Finally, we look at the inter-relationship of the expenditure assessment tools and techniques with other regulatory mechanisms, particularly the use of incentives for regulated businesses to reveal information and costs.

Structure of this submission

In Section 2 we look at what good guidelines look like, drawing on the examples of the Merger Guidelines, the Department of Finance Guidelines for Cost Benefit Analysis, and the AER's own previous guidelines.

In Section 3 we examine the role of the guidelines in the AER expenditure assessment process and ask how the best practice characteristics should be translated into the context of this process.

In Section 4 we review the current approach to expenditure assessment and the tools that the AER has used, and examine how these precedents should be incorporated into the Guidelines to ensure regulatory stability.

In Section 5 we review future tools that might be used in expenditure assessment and the way in which they should be incorporated into the Guidelines.

In Section 6 we examine how expenditure assessment relates to other regulatory tools such as incentive mechanisms.

2 What do good guidelines look like?

In many instances, regulators and policy makers have to make difficult assessments despite having limited information and facing the possibility of multiple interpretations of the available data. In such circumstances, the application of discretionary judgement is inevitable. However, policy makers also recognise that unguided and unexplained discretion—with the best possible intentions—is likely to lead to suboptimal outcomes. If the subjects of discretionary judgements cannot predict how a decision will be made, or how data is likely to be interpreted, they are likely to lose trust in the legitimacy of the decision-making process. This will have consequences for the incentive to invest, and will impose real costs on society.

In such contexts, the role of guidelines is to limit uncertainty by setting out a common understanding of the "generally agreed approach." Regulatory guidelines are typically developed by the regulators themselves: they represent a self-imposed constraint on the exercise of discretion.

The regulator would be expected to follow the "generally agreed approach" set out in the guidelines. Each decision made by the regulator would add to the body of precedents which refine and clarify the "generally agreed approach". Such adherence to the approach articulated in the guidelines is designed to increase certainty, consistency and comparability of regulatory decisions, without removing the regulator's ability to develop and improve its assessment techniques. In fact, the on-going task of reviewing and updating the guidelines is the key mechanism for improving the decision-making framework.

The AER has already published various guidelines for networks and pipelines businesses, such as pricing methodology guidelines for Transmission Network Service Providers (TNSP), cost allocation guidelines and guidelines for the regulatory investment test for transmission. The AER is currently consulting on a number of guidelines such as regulatory investment tests for distribution businesses, and guidelines for shared assets. As we discuss later in the submission, the AER's existing guidelines generally have the characteristics of high quality guidelines.

However, none of the existing guidelines cover an issue as wide in scope and as open to different interpretations as the articulation of the expenditure assessment process. Designing high quality guidelines for issues of such breadth and complexity is not easy, because the guidelines must achieve a balance between discretion and being over-prescriptive. Before we review examples of high quality guidelines, in Section 2.1 we set the scene by exploring the role of guidelines in more detail.

The core of this part of our submission is the review in Section 2.2 of two examples of guidelines that are generally considered as best practice, and which deal with analytical and information complexities that are similar to those faced by the AER. These are the *Merger Guidelines* and the Department of Finance and Administration's *Introduction to Cost-Benefit Analysis* and *Handbook of Cost-Benefit Analysis (collectively, the* CBA Guidelines). We also briefly review the AER's *Regulatory investment test for transmission application guidelines*.

In Section 2.3 we draw on the case studies to distil the lessons on what makes good guidelines.

2.1 What is the role of guidelines?

Guidelines do not exist in isolation. They are part of a broader regulatory framework that includes legislation, regulations, rules, and licences.

Legislation governing utility regulation and price setting, such as the National Electricity Law, is often characterised by broad principles, such as the common prescription to "balance" various interests. Secondary legislation, such as the NER, is more specific, but not to the degree required to ensure predictability and consistency of decisions. The principles require interpretation by regulators or courts.

The more complex the issue faced by the regulator and the more limited the information, the greater the reliance on the regulator's experience, skills, analysis and judgment. This reliance means that regulators will and must have considerable discretion in decision-making.

Over time, sound decisions by regulators create trust and legitimacy. But there is also substantial risk that a high degree of discretion will lead to unacceptable uncertainty, which distorts the decision making of regulated companies by giving them a short-term perspective. Uncertainty faced by operators and investors about future regulatory treatment can give rise to a reluctance to accept long term contracts, execute long-term investment programs, and lead to lower than optimal investment if the additional risk is not properly rewarded or higher prices if the effect of uncertainty is recognised in the allowed return.

Regulatory guidelines represent an important tool for resolving the tension between regulatory discretion and the need for certainty. The wider the potential exercise of discretion, the greater the need for more precision in regulatory frameworks to channel the information gathering and the analytical process and to signal commitment to a given methodology. The guidelines fulfil this need for precision by allowing the regulator to articulate its approach in as much detail as necessary.

Given this context, we examine the characteristics of the recognised high quality guidelines by looking at how they balance the trade-offs in using, on the one hand, precise rules with high predictability, and, on the other, broader principles with necessary flexibility.

On the one hand, we ask how such guidelines secure the main advantages of precise rules, such as:

- providing certainty and predictability, and aiding in creating credible commitment
- giving consistent treatment and ensuring fairness
- facilitating appeals, and
- enabling orderly implementation of a new framework.

On the other hand, we also need to understand how high quality guidelines retain the advantages of broad principles:

- How they deal with the possibility that precise rules may lead to wrong decisions in cases where the circumstances diverge greatly from what was contemplated when the guidelines were formulated
- How they balance the high initial set-up cost of a system of precise rules. The rules have to be carefully thought through and developed in detail
- Enabling the regulator to use principles and discretion to offset information asymmetry, and
- Avoiding ambiguity that would result if the set of precise rules becomes too complex in an attempt to cover every contingency, no matter how minor. In

other words, increasing the complexity of rules can actually increase the possibilities for discretionary decision making.

2.2 What do high quality guidelines look like?

We have chosen the Merger Guidelines and the CBA Guidelines as examples of guidelines universally admired by the profession, and generally accepted as useful by all stakeholders. In addition, we have also reviewed the AER's *Regulatory Investment Test for Transmission Application Guidelines* which we consider a good example of a high quality set of guidelines produced by the AER itself.

2.2.1 Case study: Merger Guidelines

The purpose of the Merger Guidelines is to provide the business community with an indication as to the broad analytical framework applied by the ACCC when assessing whether a merger is likely to substantially lessen competition. The guidelines are designed to provide **reliable**, **comprehensive**, and **detailed** information that merger parties, their advisers, the business community and the public can utilize to:

- assess the likely level of scrutiny a merger will receive from the ACCC—in particular, guidance is provided on when merger parties should notify the ACCC of a merger
- increase understanding of the application of the legislation
- assist in structuring (or restructuring) mergers to avoid raising competition concerns
- identify the types of information that will assist the ACCC to reach a view on how a merger is likely to affect competition, and
- identify the ACCC's broad approach to remedying possible anti-competitive mergers through undertakings.

The ACCC makes it clear that it has **considered international best practice** guidelines issued by overseas competition authorities and the work done by the International Competition Network.

The guidelines also set out the **limitations** at the start: the ACCC is clear in highlighting that the guidelines do not cover every issue or circumstance that may arise in a merger review. The analysis of issues related to an individual merger may be tailored to the specific circumstances. Therefore, the ACCC proposes to apply the guidelines flexibly.

The guidelines provide a detailed overview of the **analytical approach and the key steps** in assessing a merger: by setting out the objective of determining whether the merger substantially lessens competition, how to define the market, what are the effects of mergers (unilateral and coordinated effects), and the strength of competitive constraints.

The guidelines **differentiate between requirements and recommendations**. For example, while pre-merger notification is not required, the ACCC recommends notification. It does so by providing guidance on the notification threshold when both of the following apply:

- the products of the merger parties are either substitutes or complements; and
- the merged firm will have a post-merger market share of greater than 20 per cent in the relevant market(s).

The guidelines explain key terms and concepts, and **variations on interpretations**. This is critical to understanding how guidelines might be applied as the decisions can hinge on interpretation of key terms. For example, what is considered "*substantial"* in assessing "substantial lessening of competition"; what is considered "*likely"* in a merger that would have the "effect or likely to have the effect of substantially lessening competition"; what is required to show that a firm might be *"failing"* without the merger?

As we will explain later in the submission, this has direct parallels with the AER's expenditure assessment task. Under the NER, the AER must accept an NSP's forecast of operating expenditure if it *"reasonably reflects"* the *"efficient costs"* of a *"prudent operator"* and a *"reasonable expectation of the demand forecast"*.[2] In a similar way to the merger guidelines, all of these key terms need interpretation. For example, how can a NSP show that they are a *"prudent operator"*, or what is a *"reasonable expectation of a demand forecast"*?

There is **clarity on the process** to be followed at various stages. For example, the guidelines explain in detail the steps in applying the hypothetical monopolist test to defining a market. Another example is the ACCC's explanation of the order in which it carries out the analysis of various competitive constraints, and how it intends to use an integrated approach.

Wherever possible, the approach adopted provides practical guidance on **how to carry out self-assessment** of the analytical approach. For example, the notification threshold is based on the calculation of market shares which, in turn, depends on market definition. The guidelines recommend that a conservative (narrow) market definition be used.

The guidelines provide insights on analysis that may lead to **conflicting conclusions** and **what evidence is relevant to reach a decision**, as is the case when assessing whether a merger gives rise to coordinated effects. A merger may decrease the number of firms in a market while increasing the level of asymmetry in the market. As a result, the guidelines explain that evidence of prior coordinated conduct is highly relevant.

The guidelines also provide helpful examples of the **types of information required** to carry out various analysis, such as that required for analysing the expected state of competition, identifying products in geographic regions that may be close substitutes, and for calculating concentration and market shares.

2.2.2 Case Study: CBA Guidelines

The CBA Guidelines are **targeted at both non-technical policy makers and technical practitioners**. The purpose of the *Introduction to Cost-Benefit Analysis* is to provide managers in Australian Government agencies with the **basic steps** on the use of cost benefit analysis (CBA). The audience is often required to evaluate programmes to ensure that they represent an efficient and effective use of public money. The *Introduction to Cost-Benefit Analysis* provides a non-technical description of CBA. Further detailed technical guidelines are provided in the *Handbook of Cost-Benefit Analysis* which is intended to be **technical resource guide** for undertaking a cost-benefit analysis of a project or programme.

The Guidelines are **clear on the scope.** The guidelines include three types of evaluation techniques (CBA, financial evaluation, and cost effectiveness analysis). For each of the tools, the Guidelines clearly explain the purpose of the tool, what types of decisions require a particular tool and **when and how to use alternative techniques**.

[2] Extracted from National Electricity Rules, V55, Clause 5.5.6(c)

The Guidelines helpfully **set out the limits of the tools.** Since the use of CBA may not always be appropriate, the guidelines set out alternative methodologies for evaluation, and explain that CBA should not be the only relevant factor to take into account in decision-making.

The Guidelines provide the **steps to be followed** in carrying out the CBA, and explain the key concepts, economic and financial terms, and provide worked examples.

The reader gets helpful advice on **how to exercise judgement**. Since costs and benefits are subject to uncertainty and risks, the Guidelines recommend use of techniques, such as sensitivity analysis and attaching probability to a range of outcomes, to estimate averages. Similarly, the Guidelines illustrate when to compare the net present value (NPV) with other decision rules such as the internal rate of return (IRR) or benefit-cost ratio of a project.

Since CBA requires valuation of project or programme costs and benefits, the Guidelines are helpful in walking the reader through **overcoming quantification issues**. For example, the Handbook provides detailed and practical details of using alternative techniques such as to value through revealed or stated preferences.

2.2.3 Case study: AER's regulatory investment test guidelines

The NER require the AER to publish guidelines for the operation and application of the regulatory investment test for transmission (the RIT-T). The RIT-T is an economic CBA which is used to assess and **rank different electricity investment options**. The RIT-T must identify the *credible option* that maximises the present value of net economic benefit.

The purpose of the published guidelines is to provide guidance on the operation and application of the RIT-T, the process to be followed in applying the RIT-T, and how disputes regarding the RIT-T and its application will be addressed and resolved.

The Guidelines provide **certainty on the circumstances under which the test does not apply**—for example, if the cost of the investment is less than $5 million.

The Guidelines are **clear on the steps to be followed** in applying the test and explanation of the key concepts:

- Identify a need for the investment (known as the *identified need*)
- Identify the *base case* and a set of *credible options* to address the *identified need*
- Identify a set of *reasonable scenarios* that are appropriate to the *credible options* under consideration
- Quantify the expected *costs* of each *credible option*
- Quantify the expected *market benefits* of each *credible option*—calculated over a probability weighted range of *reasonable scenarios*
- Quantify the expected *net economic benefit* of each *credible option* and identify the *preferred option* as the *credible option* with the highest expected *net economic benefit*.

In explaining these steps in detail, the Guidelines cover the **key concepts and provide insights** on what the AER considers as reasonable approaches. For example, the AER outlines the types of options that may be considered as credible in the second step of the analysis. It also provides guidance on how to develop scenarios and how to attach weights to different scenarios through probabilities.

The Guidelines are reasonably **detailed where required** about how many scenarios need to be modelled and what types of sensitivity analysis should be carried out.

The guidelines are **rich in worked examples** that demonstrate, for example:

- what constitutes a *credible option*
- acceptable methodologies for valuing the costs of a *credible option*
- the classes of *market benefits* to be considered
- the suitable modelling periods and approaches to scenario development
- acceptable methodologies for valuing the *market benefits* of a *credible option*
- the appropriate approach to undertaking sensitivity analysis; and
- the appropriate approaches to assessing uncertainty and risks.

2.3 What lessons can we learn from these guidelines?

From these case studies, it is possible to draw out a number of conclusions on how high quality guidelines can provide greater transparency, certainty and predictability in regulatory decisions:

- *High quality guidelines codify the existing analytical approach*—Guidelines set how the regulator will carry out certain analyses based on existing methodologies and techniques. Hence, they define the analytical approach that is actually used in decisions. The guidelines should not prescribe untested techniques. Guidelines are a work in progress; even after publication. It is certain that gaps, ambiguities, and other sorts of problems will be discovered as attempts are made to use the Guidelines in real settings and, therefore, there will be a need for periodic updates
- *High quality guidelines adopt best practice and latest thinking*—the Guidelines follow best practice closely and reflect latest thinking on regulatory topics. For example, the *Merger Guidelines* were updated with an increased emphasis on the competitive theories of harm and removal of indicative market concentration thresholds or "safe harbours"
- *High quality guidelines achieve a balance between principles and prescriptive rules*—any set of guidelines will inevitably be roughly optimal at best. Trying to remedy this by increasing the detail of classifications, or relying only on principles, is a natural tendency but it is likely to be self-defeating. However, greater detail can be applied in the guidelines for those aspects where the maximum impact can be achieved (for example, where errors are likely to have the most serious consequences)
- *High quality guidelines explain how discretion will be exercised*—some of the topics and methods included in the guidelines involve very little discretion and others allow more discretion. The guidelines clarify complex issues, explain why a particular technique is chosen, or if multiple techniques are available, how to choose or rank competing techniques
- *High quality guidelines provide clarity on information requirements and advice on overcoming data limitations*—the guidelines are designed to provide clarity on the information requirements, timing, and how the data will be sourced. In some areas, the paucity of information may make discretionary judgment harder to avoid. For these areas, variants are sometimes proposed that bypass the information problem; and

- *High quality guidelines offer practical advice on the analytical approach and techniques through case studies and worked examples*—the guidelines provide worked examples and case studies which makes it easier to understand past decisions or carry out a self-analysis and, with a high level of confidence, anticipate the regulator's likely assessment.

3 The role of guidelines in the expenditure assessment task

In this section, we look at the AER's expenditure assessment task and consider the role of the Guidelines for delivering this task to the highest possible standard. In other words, we ask how the characteristics of the high quality guidelines identified in the previous section would translate to the characteristics required of the Guidelines specifically designed for the expenditure assessment task.

Since the purpose of the Guidelines is to provide transparency, clarity and predictability of regulatory decisions where there is a wide variety of approaches and options and trade-offs by regulators, they must inevitably describe both what the regulator will do, and what it will not do.

We understand that through the Guidelines, the AER wishes to improve its regulatory performance by:

- Introducing new techniques for expenditure assessment
- Refining the process by undertaking high level analysis and signalling emerging issues prior to draft determination.

This clearly poses a challenge. There are a large number of new techniques for expenditure assessment, and they are in different stages of theoretical and practical development. In order to achieve the objective of high quality guidelines, the AER Guidelines will need to distinguish between what techniques will be used in actual decisions, and those that will remain in development. We briefly examine the key approaches to the expenditure assessment task, and consider the implications of their varied states of development for the preparation of the Guidelines.

We also examine the implications of the intended process improvements for the Guidelines.

Given the complexities and challenges of introducing new assessment techniques and introducing process improvements, we ask whether the Issues Paper has indeed addressed all the necessary issues and set out those issues that need resolution in order to complete the task of establishing the Guidelines.

3.1 Debate on regulatory tools and processes is on going

In most regulatory sectors, both in Australia and internationally, there is on-going debate about the techniques and tools used by regulators for many purposes, including assessment of the expenditure proposals of regulated businesses.

The AER's task to create a set of guidelines for expenditure assessment has necessarily become embroiled in that debate as there is a natural desire from both regulated businesses and the regulators to improve the techniques and processes associated with expenditure assessment.

As an example of this, the AER's Issues Paper canvasses a wide variety of tools and techniques that aren't currently used by the AER and aren't widely used by other regulators both in Australia and internationally. A further example is the AER's suggestion that the regulatory process could be improved by performing some "first pass" expenditure assessment in the 40 day period between the initial Regulatory Proposal and the release of the AER's Issues Paper. This isn't done in the current process.

This breadth of issues in the Issues Paper reflects the complexity of the regulator's task in expenditure assessment. There are a wide variety of tools and techniques, all of which have strengths and weaknesses. The regulator's task thus involves balancing these strengths and weaknesses in such a manner that the trade-offs between different tools are transparent and that regulatory decisions on expenditure assessment are clear and—at least within a reasonable range—predicable. In other words, the role of the Guidelines in the expenditure assessment process is to provide stakeholders with sufficient guidance for them to understand in relation to the AER's discretion in the assessment of the expenditure of regulated businesses:

- In what circumstances will the discretion be exercised? (Transparency)
- How will the discretion be exercised? (Certainty)
- What will influence the way in which the discretion is exercised? (Predictability)

Below we look at the regulatory framework for the AER's expenditure assessment and also apply the lessons that can be learned from best practice guidelines to the development of the AER's expenditure assessment Guidelines.

3.2 Regulatory framework for expenditure assessment

In this section we look at the regulatory framework for the AER's expenditure assessment processes. We use as an example the assessment of operating expenditure for distribution services (Chapter 6 of the National Electricity Rules (NER)). The frameworks for electricity distribution capital expenditure assessment as well as electricity and gas transmission and gas distribution capital and operating expenditure are all broadly similar.

Clause 6.5.6 sets out the requirements and is summarised below with specific terms and requirements in quotations.

Operating expenditure objectives

The AER's expenditure assessment processes must allow a regulated business the expenditure "required in order to achieve" the "operating expenditure objectives".

Broadly those objectives are for the NSP to "meet or manage expected demand", "comply with regulatory obligations" and "maintain the quality, reliability and security of supply and of the distribution system".

AER acceptance of expenditure forecasts

The AER must accept forecast expenditure if it "reasonably reflects" the "efficient costs" of a "prudent operator" of meeting a "realistic expectation" of forecast demand.

Factors the AER must have regard to

In deciding whether to accept a forecast, the AER must have regard to the following matters:

- "Annual benchmarking reports"
- "Expenditure in the proceeding regulatory period"
- "The extent to which expenditure addresses the concerns of customers"
- "Relative prices of operating and capital inputs"
- "The substitution possibilities between operating and capital expenditure"

- "Consistent with any incentive schemes"
- "Arm's length terms" for contracts and outsourcing arrangements
- "The extent to which the DSP has considered non network alternatives"
- "Any other factors the AER considers relevant."

As we have seen, best practice guidelines explain key terms and concepts and variations on interpretations. There are many terms and concepts in the regulatory framework summarised above that require interpretation, and would benefit from clarification and illustration of how the current and proposed expenditure assessment tools and techniques will be used to support that interpretation.

Further, where the regulatory framework has a large number of matters that the AER must have regard to, again as detailed above, best practice guidelines would match the expenditure assessment tools and techniques to those matters and illustrate how the regulator's discretion will be determined. As a simple example, the AER's acceptance of an NSPs expenditure forecast requires it to determine the "efficient" costs of a "prudent" operator. The Guidelines should show on what basis costs are determined to be "efficient" and what information is necessary for an NSP to demonstrate that they are a "prudent operator"?

There need to be clear linkages in the Guidelines between the tools and techniques used and the requirements of the regulatory framework.

3.3 Approaches to the expenditure assessment task

The key objective of expenditure assessment task for regulators is to determine the efficient costs of the regulated businesses and thus to ensure that customers only pay efficient costs.

This isn't an easy task. The information asymmetry between a regulator and a regulated business ensures that the task is difficult and complex. All regulators struggle with getting the balance right between ensuring that customers don't pay too much and ensuring that businesses have sufficient revenue to meet their efficient costs and maintain investment and service levels.

For this complex task, regulators have developed two interlocking approaches:

- A variety of analytical tools and techniques to assess expenditure based on either top down or bottom up engineering assessments, or on econometric models and trend analyses that benchmark against comparator firms; and
- Incentive mechanisms such as *ex ante* revenue caps and efficiency benefits carryover schemes. These encourage businesses—through financial rewards—to reveal efficient costs.

We discuss the role of incentive mechanisms further in Section 6. Most regulators use a mix of the two approaches and recognise the interactions between the two—no regulator relies entirely on one to the exclusion of the other.

Analytical tools and techniques

There are a very large number of analytical tools and techniques used by regulators in the expenditure assessment process.

In Table 3.1 we show some of the essential characteristics of the tools and techniques referred to in the Guidelines Issues Paper.

Table 3.1: Range of assessment techniques covered in the Issues Paper

	Engineering review	Trend analysis	Governance and policy reviews	Expenditure benchmarks	Technical model	Category based assessment	Total Factor Productivity (TFP)	Econometric modelling (EM)	Stochastic Frontier Analysis (SFA)	Data Envelope Analysis (DEA)
Currently used?	Yes	Yes	Yes	Yes	Yes	Partial	No	No	No	No
Type of tool	Engineering assessment of targeted (sample) projects or activities	Forecasting tool	Process review	Benchmarking	Technical model	Combination of trend analysis, benchmarking and modelling	Economic benchmarking			
Objective	Replicate internal decision making process	Forecast future expenditure levels based on historical information	Review the adequacy of governance processes. Assess prudence of how business chooses what to do and when, and how it manages the cost of doing so.	Comparable information across expenditure categories	Replicate whole-of-business or specific activities	Set efficient expenditures based on relationship between variables and expenditures	All techniques assess the overall efficiency of the firm, and estimate relative efficiency and changes over time			
							Measures changes in productivity	Estimate a cost function using simple average of the industry. Estimates a benchmark cost function	Estimates a cost or production technology frontier. Provides insights into cost drivers and technology over time	Uses input and output quantities to compute a production frontier and provides a comparison of efficiency
Information requirements	High and specific to the sample projects	Historical information on expenditure categories	Documentation on existing processes such as governance and strategic planning	Costs and volumes of undertaking similar activities	Data intensive and require detailed definitions	More information required than existing techniques, and in a consistent format	All techniques require considerable cross-sectional data from a group of comparable firms. In addition, time series (for TFP and EM) or panel data (for SFA and DEA) is also required			
							Quantities and prices of inputs and outputs. Requires two observations (two DSNPs or	Volume of outputs, prices of inputs, and costs	Volume of outputs, prices of inputs, and costs	Price and volume of inputs, or costs and volume of outputs

	Engineering review	Trend analysis	Governance and policy reviews	Expenditure benchmarks	Technical model	Category based assessment	Total Factor Productivity (TFP)	Econometric modelling (EM)	Stochastic Frontier Analysis (SFA)	Data Envelope Analysis (DEA)
							two time periods).			
Advantages	Ability to deal with new or changing expenditure	Deals effectively with expenditures that exhibit consistent levels of expenditure over time	Relatively easy to gather information and identify gaps in processes or information	Covers both high level expenditures (total opex or capex), and detailed benchmarks	On-going operation is simple and mechanistic	Consistent basis for benchmarking types of expenditure	▪ Assist with assessment of productive efficiency ▪ Possibility of disaggregating efficiency into what can be controlled and is considered outside of control. ▪ Helps assess whether the actual cost of base year are efficient			
Disadvantages	Do not cover entire proposal and findings not easily extrapolated to entire proposal	Cannot cover new or changing expenditure levels	Difficult to quantify impacts of gaps in processes, so requires other tools to look into the gap areas	Lack of consistent reporting format	Initial establishment difficult and time consuming. Lack of standard definitions and expenditure categories	Not easy to overcome differences in cost allocation methodologies (for example, indirect costs) or differences in policy (such as capitalisation)	▪ Disagreement on definition and measurement of inputs and outputs ▪ Specification of the correct statistical/economic model subject of significant disagreement in academic community ▪ Results can be interpreted in different ways ▪ Results can be affected by data quality			

They are extremely varied—they range from high level benchmarking to very low level forensic analysis of costs. They also vary markedly in their data needs, in the methodology used to calculate results and in the margin of error for drawing conclusions.

We note that category assessment is currently only partially used as application is limited as a result of the lack of consistent data categories across regulated businesses.

For both regulators and regulated businesses this plethora of tools and techniques is both immensely helpful in analysis of the huge volume of data and information typically contained in a regulatory submission and potentially unhelpful when—as is highly likely—they result in different and often contradictory conclusions.

A simple example of this might be where:

- A benchmarking study based on comparison with similar distribution companies suggests that that forecast expenditure is higher than efficient; and
- An econometric model—with sound explanatory properties—suggests that the same forecast expenditure is lower than efficient levels.

Resolving these contradictions is the key area where guidelines can provide transparency, certainty and predictability. They should offer insight into why a regulator relied on one indicator of efficiency versus the other and what factors lay behind that decision.

The role of guidelines

The role of guidelines is thus to provide a way forward to deal with the wide range of results and information and conclusions that will be thrown up by the use of the many and varied expenditure assessment tools and techniques.

This suggests that the role of guidelines is twofold:

- **One to define and provide clarity on the tools and techniques**. That is for each tool or technique describe how it is to be applied—what data is needed and used, what algorithms are to be used, what processes are used and so on. The purpose of this part of the guideline is to enable replicability—that is regulated businesses and other stakeholders should be able to replicate the AER's analysis and results, given access to the same data; and
- **Secondly, to set out how the AER will use the information**—that is what weight will be placed on the results. This involves the Guidelines detailing the strengths and weaknesses of each tool or technique, outlining the circumstances in which each is best used and explaining why the AER might rely more on one outcome than another and what factors lay behind that decision. The purpose of this part of the Guideline is to give stakeholders an insight into the decision making process of the AER and allow stakeholders to understand at least the reasonable range of outcomes.

3.4 The guidelines and the next determinations

The AER is required to publish the Guidelines by 29 November 2013 and their first use will be for the NSW DNSPs and ActewAGL in the Framework and Approach Paper, due in February 2014.

This is a challenging timeframe and thus the key focus will need to be to produce guidelines that can be used and are useful for this next round of determinations.

This will require a high degree of prioritisation of the wide range of possible techniques and tools outlined in the Issues Paper. The likely unavailability of nationally consistent datasets that are required for many of the tools will see a heavy reliance on currently available techniques.

However, the Guidelines will not be a static document and should be considered a "work in progress". They will change as research and regulatory thinking evolves to develop additional tools and techniques that can be meaningfully implemented in the guidelines.

Thus, this isn't a single shot process with a hard date of 29 November, 2013 but a continuing process that will result in continuous enhancement and improvement.

3.5 Evolution of the expenditure assessment task

Since inception, the AER has carried out expenditure assessment for the operating and capital expenditure of electricity and gas networks. Broadly the tools for this task have been detailed engineering review, historical trend analysis, and some limited governance reviews.

The rule changes that gave rise to the need for the Guidelines haven't fundamentally changed the task. While the rule change has clarified the discretion and powers that the AER has in this area, the basics of the expenditure assessment task have not changed.

The AER has well developed tools and processes and these should form the basis for the new guidelines. They have important precedent value and the businesses in the next round of determinations have experience with them. In the interests of regulatory stability the first iteration of the Guidelines should be based largely on these processes and tools—which will inevitably continue to form the main part of AER's arsenal—with clear guidance on how new tools will be introduced and used, and how process improvements will work.

This will best support transparency, certainty, predictability

3.6 Expenditure process improvements

In Section 4.4 of the Issues Paper, the AER proposes a significant change in the way in which the expenditure assessment process is undertaken.

Currently, stakeholders—including the NSP—are only made aware of the AER's views on the NSPs expenditure forecasts at the draft determination stage. Under the current process, an NSP submits a regulatory proposal; stakeholders make submissions on that proposal and then the AER makes a draft determination.

Under the revised process introduced in the rule change:

- NSP notifies AER of forecasting methods to be used
- NSP lodges regulatory proposal
- AER publishes an Issues Paper (within 40 days) which must identify preliminary issues, whether or not arising out of the regulatory proposal, that the AER considers are likely to be relevant to its assessment of the regulatory proposal—this is the new step
- Stakeholders—informed by regulatory proposal and AER Issues Paper make submissions
- AER publishes draft determination
- Further submissions by stakeholders including the NSP

- AER publishes final determination

The AER Issues Paper proposes that after the lodgement of a regulatory proposal by the NSP, the AER will undertake a "first pass preliminary review" of the proposed capital and operating expenditure. The review and analysis will necessarily be high level as it is required to be carried out within 40 days of the submission of the Regulatory Proposal as the results will be included in the Issues Paper that the AER must publish within that time.

It is envisaged that this first pass assessment will highlight areas of expenditure that may warrant future investigation.

This additional step is potentially very useful as it will provide context and focus for stakeholder submissions. Also, to the extent that highlighting areas of concern and interest allows the NSP and the AER to concentrate the more detailed assessment task in specific areas, it has the potential to lower costs the costs of regulation and increase the efficiency of the process.

However, there are also risks that the short timeframe may result in this first pass assessment not producing reliable and meaningful information for stakeholders.

If—as a result of time limitations—the analysis is superficial and the results not reliable, preliminary analysis runs the risk of focusing stakeholder attention on matters that—on more detailed examination—aren't a problem. For example an econometric model may show that NSP forecast expenditure is higher than the projection. There may be many valid reasons why the forecast however is reasonable. For example the model could be incorrectly specified or there may be a step change in the scope and nature of the NSP's future activities. There is a risk that without the context and background of a more detailed analysis, stakeholders may focus their submissions on the apparent inefficiency.

Similarly, if the analysis isn't reliable it may focus NSP and the AER's attentions on debating the validity of the technique rather than on the actual assessment of the efficiency of the forecast expenditure.

If a reliable set of first pass tools could be developed, one of the advantages would be the ability to close off matters by directing attention to a few key areas. While, of course, the AER should never be precluded from examining all areas of an NSP's proposal, regulatory costs for both parties would be reduced if the non-contentious aspects could be mutually agreed as early as possible.

This proposal for a "first pass" assessment needs to be evaluated on its ability to lower the costs and increase the efficiency of the regulatory task.

Logically this initial review should be undertaken using analytical tools that are as tried and uncontroversial as possible to minimise the risks of producing preliminary information that is incorrect or misleading and will divert resources away from more substantive issues. However, this creates a problem in that there aren't any simple low cost and quick options in the current tool kit. This suggests a substantial opportunity to introduce some simple economic benchmarking techniques in this area.

Under this approach, the results from these tools would simply be a starting point for a conversation between the AER, the NSPs and other stakeholders on any areas of concern. However in the analysis of these targeted areas, the AER should utilise more precise tools, such as the current toolkit.

Such an approach would clearly meet the requirements of best practice guidelines. It would be clear that the role of certain nominated techniques in the expenditure

assessment task would be as a "first pass" screening test. The Guidelines would clarify how the techniques were used and what weight the AER would place on the results.

3.7 Implications for the proposed guidelines

The Issues Paper contains a great deal of discussion and analysis of a large number of possible tools and techniques for expenditure assessment. This detail is interesting and potentially useful in advancing the debate on expenditure assessment tools and techniques. However, it provides little assistance in answering the crucial questions that need to be answered in the development of the Guidelines.

The real question is whether the stakeholders can have confidence that the Issues Paper frames the issues in such a way as to be likely to lead to the production of best practice expenditure assessment guidelines. To advance the preparation of the guidelines, it is not sufficient to review various techniques at a high level. Rather, the Issues Paper needs to focus on:

- What techniques are more likely to be usable than others?
- What is the potential role of each of the techniques?
- What are the evaluation criteria for determining whether a new technique should be incorporated in the Guidelines?

In our view, this focus is missing. As a result, the Issues Paper provides a useful primer on various techniques, but is not useful in enabling the stakeholders to understand what will be the likely content of the future Guidelines, and how they will influence the AER's performance of its regulatory functions.

The likelihood of new techniques being usable

A good policy document addressing a complex set of issues will recognise that not all aspects can be resolved at once, and hence will set out priorities which stakeholders will understand. This sense of priorities is missing from the Issues Paper. There are some obvious questions that any stakeholder would ask—and that the AER needed to ask itself—is:

- What are the techniques that the AER is likely to place a high reliance on from the start, and which techniques are more speculative?
- How would the AER make assessments if different techniques provide conflicting information?
- Which developments will come first, and what is a long-term research program?

This suggests that the priority ought to be the codification of the existing techniques that the AER has relied on in the past, and which have strong precedent value, promoting regulatory certainty.

In regard to the proposed new techniques, the development priorities should be assessed after an initial high level appraisal of the likelihood of each techniques being able to be implemented in the Guidelines by November—even in a "first pass" role as suggested. This appraisal should include an assessment of the minimum amount of reliable historic data that would be required prior to implementation.

What's also missing is a clarification of the role that the new techniques might play—that is how is the AER likely to use them and what weight will it place on them? We have already discussed in the previous section that some of the econometric benchmarking

tools could potentially play a useful role in a "first pass" assessment to highlight areas for more detailed investigation by other techniques.

The evaluation criteria

Finally, the Issues Paper lacks an evaluation framework or any decision making criteria by which to assess the techniques.

Before any new techniques are included in the proposed Guidelines, there will need to be a regulatory cost benefit analysis showing:

- what are the likely benefits in terms of reducing the overall cost or improving the efficiency of regulation?
- what are the likely overall costs, particularly the implementation costs and the ongoing costs to collect and verify the required datasets?

The AER will need to be satisfied that there is an overall net benefit before introducing any new tool or technique.

Overall, the Issues Paper at present does not provide comfort that, when developed, the Expenditure Assessment Guidelines will have the required characteristics of high quality guidelines. In fact, the absence of focus, clarity and evaluation criteria creates concern that the Guidelines will not meet the standards reached by the AER in its previous guidelines.

In the following sections of the submission we set out recommendations for filling in the gaps left by the Issues Paper.

4 Current tools

The AER has been performing the regulatory task of assessing expenditure proposals for some time. In a good regulatory process, there is significant precedent value in the past decisions. In any case, while the AER is—and should be—constantly seeking to improve its techniques and processes—it is implausible to expect that a radical change in the assessment techniques should suddenly occur. This would imply that in the past the AER did not try to implement improvements.

Since good regulatory practice and common sense indicate that any change in assessment techniques would be evolutionary rather than revolutionary, the current assessment techniques should be the natural starting point for the development of the guidelines.

The current approach has evolved over many determinations by the AER and by predecessor state regulators such as ESC and IPART. The Victorian and NSW NSPs are now approaching their fifth five year reset under essentially the same approach—given that ESC and IPART did not make substantial use of econometric benchmarking tools.

Building on the precedent value of the current processes, we would suggest that the Guidelines in regard to those processes should:

- Codify the existing techniques—that is detail what techniques have been used in the past and describe the methodology, objectives and assumptions that have underpinned those previous approaches
- Identify strengths and weakness—the AER and its predecessors have substantial experience in the existing techniques and it would be valuable to detail the issues that have arisen in previous determinations
- Identify how could these techniques be improved—again, with the benefit of hindsight, the AER would appear to be well placed to suggest incremental improvements to the basic framework; and
- Detail in what circumstances they have been used in the past and how the AER proposes to use them in the future. Of particular interest will be the method of application—that is what data and assumptions will be used and what weight will the AER will attach to the results and conclusions.

The key issue for both the use and the incremental improvement of current assessment tools is the availability of a time series of reliable, accurate and nationally consistent datasets. This is also a key issue and limitation for the introduction of some of the economic benchmarking and category assessment tools. The Issues Paper suggests that the AER has largely used information templates compatible with those used by individual state regulatory predecessors.

An important work stream for inclusion in the guidelines will be to devise standardised annual reporting templates that will meet all regulatory purposes including:

- Annual compliance with economic determinations
- Annual reporting on NSP performance
- Annual compliance with license conditions and service standards
- Key output and performance metrics
- Data for use in expenditure assessment
- Data for use in AER's new role to produce an annual benchmarking report

This is an area that requires a high degree of consultation and engagement to ensure that the large and legitimate need for consistent data by the AER can be achieved at the lowest overall cost.

5 Introduction of future tools and techniques

There is a large amount of content in the Issues Paper discussing the methodology, merits and weaknesses of a number of economic benchmarking techniques. From this extensive discussion it is obvious that a large number of possible future expenditure analysis tools could be developed and used.

Our approach in this section is not to debate or discuss the individual techniques but to look at what use and reliance other regulators have made of these tools. This analysis of their experiences should provide insights to aid the AER in its development of the Expenditure Assessment Guidelines.

We look at four case studies:

- OFGEM's review of the future role of benchmarking in the United Kingdom in 2010 New Zealand Commerce Commission's experience with applying a TFP-based approach to the setting of X factors for distribution businesses in the period 2000 to 2009
- New Zealand Commerce Commission's current—post 2009—two stage regulatory process, which includes the initial use of econometric models to set expenditure allowances, and
- Use of Data Envelopment Analysis (DEA) by IPART in NSW as part of the process of setting X factors for the NSW NSPs in 1999.

From the four case studies we identify lessons that can be applied to the AER's task in establishing the initial expenditure review Guidelines.

5.1 Requirements for introducing new expenditure assessment tools

Like the AER, regulators around the world have been trying to improve their expenditure assessment approaches. For many years now, there has been an intense search for a model which avoids the problem of information asymmetry. In practice, regulators keep coming back to the tried and tested cost analysis tools. In developing the Guidelines, the AER needs to take this experience into account.

The reason this experience matters is because it highlights the difficulty in implementing new analytical techniques that meet the key requirements:

- **Robustness:** the analytical process and the resulting assessment must be regarded as robust by the submitters and peer reviewers
- **Transparency:** in essence, a methodology cannot be a "black box"
- **Promotion of efficiency:** the technique should strike an appropriate balance between costs and desired outputs
- **Consistency with the wider regulatory framework**, particularly the incentive mechanisms
- **Reasonableness of data requirements and costs** involved
- **Adaptability to changes in network output requirements** (for example, associated with distributed generation).

We have abstracted these requirements from the Ofgem study of the future role of benchmarking in regulatory reviews and suggest that they offer appropriate evaluation criteria for the introduction of new expenditure assessment techniques.

The case studies presented below are described briefly, as the AER no doubt is familiar with what other regulators do. However, the Issues Paper appears to signal that these relevant experiences have not necessarily been taken into account in considering how to prepare the Expenditure Assessment Guidelines.

5.2 OFGEM study on future role of benchmarking

In 2010 Ofgem undertook a review on the future role of benchmarking in regulatory reviews, including commissioning a major study on the application of expenditure assessment techniques.[3] In particular the study focussed on the potential role of total cost benchmarking and was aimed at providing practical recommendations.

The study concluded that the context for benchmarking was likely to change for a number of reasons, particularly the changing role for networks arising from the United Kingdom's climate change policies. Other reasons included the likely increase in the future level of capital expenditure as a result of assets nearing the end of their economic life and decreased risk of systemic inefficiency. That decreased risk arises, Ofgem believes, because the NSPs have been subject to twenty years of strong incentive based regulation.

As a result, the study concluded that benchmarking based on historic cost was problematic in a changing environment and that historic cost analysis had only a weak ability to inform on future expenditures. The changing circumstances required networks to invest and innovate and benchmarking based on historic costs was seen as undermining incentives to do so. The study concluded that the risk to customers of using benchmarks that might result in inadequate incentives for investment and innovation was greater than the risk of failing to penalise inefficiency.

For this reasons the study suggests that rather than focussing on historical cost, benchmarking should be focussed on the NSPs future plans ensuring that the represent value for money for customers. However, given the incentive for NSPs to inflate future plans, benchmarking should only be one of the regulatory tools and should work in conjunction with:

- Assessment of historical costs, using the results to challenge NSPs rather than to determine allowances mechanistically; and
- Incentive mechanisms such as Ofgem's Information Quality Incentive (IQI)[4] which substantially addresses the incentive to inflate future plans.

5.3 Use of TFP in New Zealand

When New Zealand electricity industry was reformed in the early 1990's there was no explicit price controls on NSPs. Information disclosure requirements were then applied from 1995 onwards on the basis that disclosure itself would prevent monopoly pricing.

In 2001 the New Zealand Commerce Commission was given power to regulate NSPs under part 4A of the Commerce Act. The new legislation allowed the Commission to apply price, revenue, or other controls to individual NSPs, but only if the NSP has breached certain "thresholds". The regulator set these thresholds using a TFP model based on the information disclosure data.

The thresholds approach was seen as a low cost way regulating a relatively large number of small companies—in 2003 there were 29 businesses regulated in this manner with an

[3] RPI-X@20: The future role of benchmarking in regulatory reviews, Ofgem, May 2010.

[4] See Section 6 for a discussion of Ofgem's IQI

average of around 60,000 customers each. A standard building blocks approach was seen as too costly.

The TFP thresholds act as a screening mechanism to ensure that NSPs:

> *"are limited in their ability to extract excessive profits"*

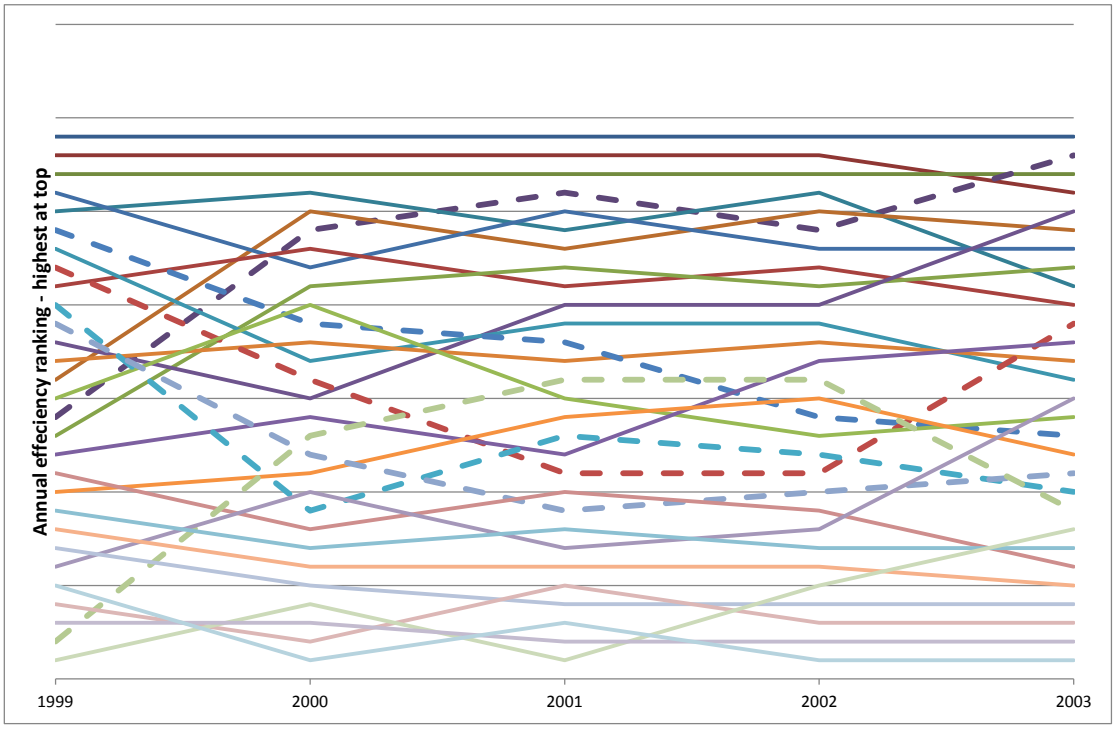
The X factors in the TFP thresholds are made up of three components: a B factor reflecting industry–wide TFP growth, a C1 factor reflecting comparative productivity performance and a C2 factor reflecting comparative profitability. The X factors have been set using the results of quantitative modelling using multilateral TFP and cost function methods. The TFP approach using a consistent dataset gathered through information disclosure.

The TFP approach was generally regarded as an unsatisfactory experiment because:

- The threshold determinations were retrospective in nature and consequently disadvantaged firms with significant forward-looking capital requirements
- The volatile results saw firms breaching the threshold in one year but not in others. This is partly due to technical deficiencies such as inaccurate CPI forecasts, measurement problems such as the specification of outputs and capital inputs as well as inherent limitations in the methodology; and
- Specifications of outputs for electricity networks were problematic. Output can simplistically be throughput but this ignores more important drivers of network costs such as supply quality (reliability), the ability to meet peak demand (capacity) and line length and number of connections (density).

The volatile results are shown in Figure 5.1. It shows the ranking of each of the 29 NSPs in each of the years from 1999 to 2003. While some are stable, for example the same NSP was the best performer in each of the four years; some are quite unstable moving randomly. The six most volatile performers are shown in dashed lines.

Figure 5.1: TFP Rankings of New Zealand NSP's 1999 to 2003



The results were particularly sensitive to customer density and changes to the weight of this variable tended to move rural and urban distributors to either the top or bottom of the table—that is there was no clear finding of the relative efficiency of rural versus urban NSPs.

While there was a wide variation in the MFP efficiency scores of the 29 NSPs—ranging from 0.75 to 1.5 with an industry average of 1.0, the actual X factors used by the Commission were a much narrow range suggesting that the Commission placed little reliance on the results. The results were only used to group NSPs into:

- Below average resulting in an X factor of -1 per cent
- Average resulting in an X factor of 0;
- Above average resulting in an X factor of 1 per cent.

There were several findings of breaches of the thresholds during this period. Following a breach, the Commerce Commission conducted a more detailed analysis. However, the post-breach processes were opaque and not clearly specified. This was partly the result of uncertainty that a firm that breached the threshold was inefficient or that its prices or profitability were excessive. The outcome of the post-breach inquiry was a "negotiated" settlement between the NSP and the Commission.

In summary, TFP was used largely as a low cost screening test with the results broadly interpreted to set X factors. Given that the previous regulatory methodology was limited to light handed price monitoring, TFP was seen as a natural step up from the previous light handed price monitoring approach

5.4 Use of econometric models in New Zealand

In 2008 the New Zealand Commerce Act was amended to implement a new regulatory framework for NSPs and other regulated industries consisting of:

- A mandatory Default Price Path (DPP) as a simple low cost way of setting prices for an NSP coupled with an optional Customised Price Path (CPP) where the DPP did not meet the requirements an NSP; and
- Input Methodologies—a detailed specification of the rules, requirements and processes for price setting regulation.

The change in legislation was largely due to the unsatisfactory nature—to all parties—of the previous approach based largely on TFP and described in Section 5.3.

Default/Customised Price Path Regulation

The aim of the DPP/CPP process is to provide a relatively low-cost way of setting price-quality paths for suppliers of regulated services, while allowing the opportunity for individual regulated suppliers to have alternative price-quality paths that better meet their particular circumstances.

The mandatory DPP analysis of expenditure, revenues and profitability is derived from:

- forecasts of expenditure by economic models based on data from provided by the NSPs through the information disclosure provisions; and
- forecasts of variables such as electricity demand and load growth from "publically available" forecasts such as regional GDP and population growth.

By relying on publically available data and the data from information disclosure the Commerce Commission does not require independent audit and verification of supplier specific forecasts. This reduces regulatory costs.

Capital expenditure forecasts are taken from the NSPs Asset Management Plans (AMP). These were tabled before their use in the DPP for electricity businesses was announced so they were presumed to be unbiased. For gas business, the Commission also used the AMP capital expenditure forecasts but capped at an arbitrary 20 per cent of the historical average in any future year to reduce or eliminate any incentive for NSPs to inflate their AMP forecast of expenditure.

If an NSP believes that the DPP price path is insufficient for them to meet their service quality standards then they can apply for a CPP. This might happen for example if the econometric models used don't accurately reflect the unique characteristics of the NSP or if there is a step change in expenditure—such as future capital expenditure that is more than the 20% cap.

The CPP is a full building blocks approach with full expenditure assessment and with independent verification and audit of supplier specific forecasts and cost data required.

Thus while DPP has little or no expenditure assessment—relying heavily on econometric modelling—the overall regulatory framework recognises that the DPP is not appropriate in all cases so the CPP exists as a safety net.

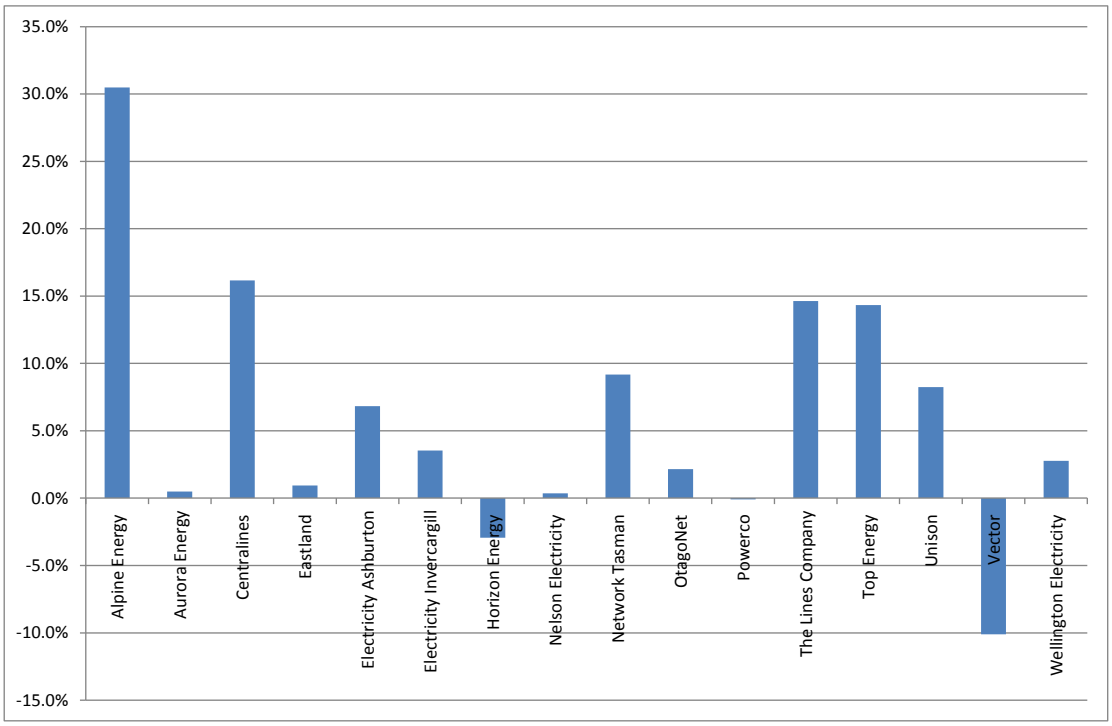
While DPP determinations were made for electricity and gas NSPs in 2012, only one NSP—Orion—has applied for a CPP as a result of Orion's extraordinary circumstances following the Canterbury earthquakes in 2010 and 2011.

The lack of application for CPPs for electricity businesses isn't surprising. This is because the determinations—which should have occurred in early 2010—were delayed until late 2012 by legal action taken by various NSPs on details of the methodologies. However the Commission had made a valid determination of the WACC in 2009 and this WACC was used in the 2012 final determination when, of course, risk free rates had declined. If however an NSP had requested a CPP, as this was a separate process, a 2012 WACC

would have been determined. There is also an implied threat in invoking the CPP process—that is there is no guarantee that the CPP result will be better than the DPP price path.

The late 2012 determination for the electricity NSP's resulted in a wide range of P0 adjustments to set prices and profitability to levels deemed reasonable by the Commission as shown in Figure 5.2. Note that increases above 10 per cent were capped and phased in over several years.

Figure 5.2: : 2013 P0 price adjustments for New Zealand Electricity NSP's



The highly variable P0 adjustments show that the previous TFP-only framework wasn't particularly effective at aligning prices and costs.

Input Methodologies

The purpose of the Input Methodologies (IM) is to promote certainty for suppliers and consumers in relation to the rules, requirements, and processes applying to the regulation of services under the Commerce Act.

The Input Methodologies for both the DPP and CPP approaches have been derived after an extensive consultation process over several years such that there is a high degree of regulatory transparency and predictability.

While not all stakeholders agree with all of the Input Methodologies—as evidenced by the various legal challenges that arose during their formulation—they are at least clear and transparent and aid regulatory predictability.

However, there are areas of the regulatory framework that aren't clearly specified in the IMs and these have been contested in recent decisions. Those areas include:

- The specification of the financial models used to determine the price paths—unlike the AER with an agreed roll forward model and PTRM. In the

electricity NSP DPP process new—and very different—models were introduced during the determination process; and

- The specification of the econometric models used to forecast expenditure and revenue and particularly the data sources used by those models.

Where econometric models were used for expenditure forecasting purposes, the Commission put forward a number of different formulation options with different variables and weights. The methodology by which the Commission determined the final model formulation was opaque, leading to a view by stakeholders that the preferred model was the one that produced expenditure forecasts in line with the Commission's expectations.

A particular problem was the weighting for variables such as network density and scale. The model results are very sensitive to assumptions in this area and it may be a non-solvable problem to find weighting that correctly reflects the relative efficiencies of networks with widely different physical characteristics.

As a result, this becomes an area of high regulatory risk. In a the recent determination for gas networks, for example, the Commission, in response to submissions from NSPs changed the way the relationship between network scale and operating expenditure was calculated between the draft and final determination. While this was generally positive for NSPs, it is an example of how the arbitrariness of econometric models adds to regulatory risk.

In summary, the extensive use of econometric models for forecasting expenditure and revenue in the DPP process has been adopted mainly because DPP is seen as a "first pass" low cost regulatory approach to suit New Zealand circumstances. The CPP, which will be derived from the use of the more traditional assessment techniques, exists as a safety net—a full cost of service expenditure assessment model to be applied where an NSP believes that the additional costs and risks are less than the financial consequences of an unreasonable price path that might result from the simplified DPP approach.

5.5 IPART use of Data Envelopment Analysis

As an input into the first determination of prices for electricity distribution NSPs in NSW for the period 1999 to 2004, the regulator, IPART commissioned an efficiency and benchmarking study.[5]

The study used Data Envelopment Analysis (DEA) to measure efficiency. The study measures the technical efficiency of the New South Wales distributors. This technique of efficiency modelling explicitly accounts for a range of the operating environment characteristics of the NSPs that may impact on efficiency, but are outside the control of managers and thus should result in measures of achievable efficiency gains.

The modelling was undertaken using a large database of comparable national and international NSPs to benchmark the economic performance of the NSW NSPs. The database includes 219 electricity distribution NSPs from Australia, New Zealand, England and Wales, and the United States.

Statistical analysis of the results indicated that the mix of customer, (e.g. proportion of domestic customers) and network configuration mix (e.g. proportion of overhead network) have a significant influence on the DEA score.

[5] Efficiency and benchmarking study of the NSW distribution businesses, London Economics for IPART, February 1999

The study suggests that to reach the performance of the average comparator firm, the NSW NSPs would need to reduce inputs by 34 per cent to 56 per cent.

In the final determination in December 1999, the Tribunal set X factors for cumulative real reductions in operating and maintenance expenditure of 5 per cent to 15 per cent over the five year determination period—much lower that suggested by the DEA analysis.

In the following determination, in 2004 for the period 2004 to 2009, the Tribunal did not use DEA—the previous study wasn't referenced or mentioned in the determination—and all assessment of expenditure was on the basis of engineering review of costs.

5.6 Implications for the Guidelines

The purpose of our examination of these case studies is to understand what we can learn from the experiences of other regulators with respect to:

- The circumstances in which they used these techniques?
- The problems that they encountered in their use?
- The weight that they placed on the results?
- The way the techniques related to other components of the regulatory framework.

Broadly, circumstances and motivations that lead to the use of these techniques were a combination of:

- Early attempts to measure NSP efficiency in regulatory frameworks that have now evolved away from significant reliance of benchmarking techniques
- A need for low cost regulation for small NSPs; and
- The use of benchmarking techniques as an initial step—a screening test—in the regulatory framework or as part of a regulatory framework that includes other expenditure assessment techniques such as engineering review and other efficiency drivers such as incentive mechanisms.

All of the benchmarking techniques used have strengths and weaknesses and inherent limitations and in all of the case studies there were problems and contested aspects of their use. The areas of debate are predicable—specifications of input and output measures, model specification and weighting of variables. These are areas where there isn't a settled position.

None of the regulators in the case studies relied solely—or indeed heavily—on TFP or econometric techniques for expenditure assessment (and we cannot find any regulators that rely solely of heavily on these techniques).

The case studies suggest that an important step in the development of the Guidelines will be to identify the role or roles that each of the techniques discussed may play. Some techniques may well be inherently more suited—for example—to use as a first pass screening test than others.

Categorising possible future techniques in this way will allow a high degree of prioritisation: what are the most promising techniques for the particular purpose of either high level screening or detailed expenditure assessment so that implementation efforts can be focused on these. To answer these questions, the preparation of the Guidelines should include an assessment of the data requirements for each technique versus what is likely to be available.

This process of prioritisation would be greatly aided by setting up a detailed evaluation framework. In fact, the Guidelines themselves may be a good place to articulate the criteria that must be met before a new technique is introduced into the expenditure assessment process. The Guidelines would then describe the cost benefit analysis that would need to be undertaken for a new technique to demonstrate that it can improve expenditure assessment accuracy or reliability without adverse consequences and without excessive data collection and other costs.

We propose an approach where the Guidelines set out the process and the requirements for a new technique to be introduced, and provide a "traffic light" indicator for each technique: red (in research), yellow (immediate development), green (ready for introduction). As the Guidelines evolve, various techniques will move along this pathway. A key component of this approach will be to specify at all stages of development the proposed role of the technique—that is ether informational to highlight areas for further analysis—or deterministic—that is forms part of the AER's decision on expenditure levels.

6 Expenditure assessment versus incentives

Expenditure assessment techniques are one aspect of the framework for regulation—a framework that operates as an integrated whole—not a series of components in isolation.

The key complement to expenditure assessment is the various incentive mechanisms in the framework. The basis of the framework for regulation of electricity and gas NSPs in Australia is incentive regulation.

In theory, such a framework with strong incentives needs less expenditure assessment on the basis that:

- the regulator can be confident that revealed historical costs are an efficient base for projection of future costs; and
- the efficiencies highlighted by the revealed costs of the NSP are shared equitably between customers and the NSP.

In practice, both incentives and expenditure assessment are needed and work together in a complementary manner.

To see how this works, we examine the role of incentive mechanisms. There are broadly two types:

- Incentives to provide accurate information
- Incentives to perform efficiently

Information incentives like Ofgems's IQI provide regulated businesses with an incentive to accurately forecast future costs and reduce or eliminate the incentive to over forecast. With the IQI the cost efficiency incentive rate varies depending on the extent to which an NSP's business plan forecast differs from Ofgem's assessment of the expected efficient costs of delivering outputs. In other words, the maximum efficiency benefit to the NSP occurs when it spends close to its forecast. If there is over forecasting and subsequent material underspending, the efficiency benefit reduces and may become a penalty.

Performance incentives are mechanisms like the ex-ante expenditure caps for capital and operating expenditure and efficiency benefit carryover schemes. Under these mechanisms once regulators have set the expenditure allowances, NSPs have incentives to outperform those allowances because they retain the financial benefit of that under expenditure, both within the period and into future periods under an efficiency benefits carryover scheme.

Information incentives and performance incentives give regulators confidence that the revealed historical costs are efficient and that they can reply on forecasts of future expenditure.

The role of expenditure assessment is not to over-ride the incentives, but to address the gaps which are not covered by incentives. For example, knowing that historical expenditure was efficient isn't necessarily helpful in projecting future expenditure as the future operating environment is unlikely to be the same as the past, and in fact may be radically different. That's why performance incentives need to be coupled with expenditure assessments to ensure that the NSPs response to changing circumstances is reasonable.

The AER's view on incentives

The AER's view on incentives as expressed in the Issues Paper appears to be that—at least to some extent—better expenditure assessment tools will reduce the role of incentive schemes, for example stating:

> *However, as we progressively increase the use of benchmarking assessment techniques to form a view about proposed expenditure, the need to use a carryover mechanism to counteract the incentive for NSPs to shift operating expenditure to the base year will decrease. This is because we will be less reliant on the revealed costs of an individual NSP in assessing and making adjustments to its forecast expenditure.*[6]

In our view, this misconstrues the purpose of performance incentive schemes. While such schemes may have the side benefit of reducing any incentive to shift operating expenditure to the base year, the primary goal of such schemes is to provide NSPs with a symmetrical incentive to pursue efficiency gains in each year of a regulatory determination.

Without such an incentive, as an NSP progresses through the regulatory period the benefits from efficiency savings becomes less and in the last year is simply the amount of the cost savings (or half that amount if the saving is incurred evenly throughout the year). Since efficiency measures almost always require investment and risk, then without an efficiency carryover scheme there is a declining reward for that investment and risk as the regulatory period progresses.

This symmetrical incentive is the dominant purpose of such schemes—a purpose that will not diminish if better expenditure assessment benchmarking tools are developed.

There are of course other techniques that can be used if the AER believes that cost shifting into the base year is a material issue, for example normalising the base year by comparison and analysis of previous years' expenditure or using an average of several years' expenditure to arrive at a representative base year.

Different responses to incentives

One of the claimed problems with incentive mechanisms is that the observed response of NSPs to such schemes is different—for example some NSPs have overspent rather than underspent their *ex ante* expenditure caps. This has led to a view by some observers that such schemes are therefore ineffective and that more reliance should be placed on comparative benchmarking to ensure efficient expenditure.

However, overspending the *ex ante* caps is not necessarily inefficient or proof of lack of response to incentives. There are many reasons why NSPs might overspend their allowances as their operational circumstances change. Further the allowances are only forecasts and all forecasts have a probability of exceedence—a P50 forecast, after all, has an equal chance of being higher or lower than the outcome.

Thus we suggest the "problem" of differing response to incentives needs further analysis to determine causes and possible solutions. There is no basis for assuming that there is a problem with incentives because some NSPs overspend on some occasions. There is similarly no basis for assuming that the appropriate response to an apparent failure to respond to incentives is to increase reliance on benchmarking techniques as suggested by the AER.

[6] Expenditure forecast expenditure assessment guidelines| Issues Paper, AER, December 2012, Section 4.5

If there is are failures of the incentive mechanism, in the first instance these should be addressed in the context of the design of the incentive mechanisms themselves—but only after the reasons for apparent failings have been fully analysed and understood. To do otherwise would be unreasonable and would penalise the NSPs that do and have responded to incentives.

No regulator relies solely on expenditure assessment in preference to incentives—all rely on the interaction of both. For this to occur, each must be an effective and robust mechanism. In any event, the NEM regulatory framework is clearly by legislative intent a strongly incentive based framework, so the expenditure assessment techniques need to recognise the incentive properties of the regime and need to be compatible and complementary with them.

7 Conclusions

In this submission, we have used an analysis of best practice guidelines as well as case studies of the use of economic benchmarking tools by other regulators to identify gaps in the Issues Paper.

As a result we see those gaps as:

- There is no clear and detailed objective or purpose for the Guidelines that aligns with those of best practice guidelines
- While there is much detailed analysis of a large number of possible techniques, there is very little focus on what techniques are likely to be more usable than others and how does each possible technique fit into the overall framework of expenditure assessment; and
- There are no evaluation criteria for determining whether a new technique should be incorporated in the Guidelines.

Lack of a clear objective or purpose for the Guidelines

The Guidelines are not an abstract exercise. Their purpose is to enable the stakeholder to predict, with a reasonable degree of certainty, how the AER will interpret various terms and concepts set out in the NEL and the NER, and how it will use various assessment tools to inform itself about how the individual circumstances of each NSP correspond to those terms and concepts.

In our view, one of the key gaps in the Issues Paper is that it does not set out a pathway for developing the Guidelines that will indeed address those needs.

How do the proposed techniques fit into the regulatory framework?

Our examination of four case studies of the use of economic benchmarking techniques by other regulators was to their experience and to understand:

- The circumstances in which they used these techniques?
- The problems that they encountered in their use?
- The weight that they placed on the results?
- The way the techniques related to other components of the regulatory framework.

The Issues Paper does not address these questions.

In the case studies we found that other than early attempts to use economic benchmarking techniques for deterministic purposes, most regulators use these techniques as an initial low cost screening test in the regulatory framework or as part of a regulatory framework that includes other expenditure assessment techniques such as engineering review and other efficiency drivers such as incentive mechanisms.

Lack of evaluation criteria

The Issues Paper doesn't explain the process by which the large number of suggested techniques will be evaluated to assess their suitability for inclusion in the Guidelines. We suggest the AER adopt criteria similar to that used by Ofgem for this purpose, being:

- **Robustness:** the analytical process and the resulting assessment must be regarded as robust by the submitters and peer reviewers
- **Transparency:** in essence, a methodology cannot be a "black box"

- **Promotion of efficiency:** the technique should strike an appropriate balance between costs and desired outputs
- **Consistency with the wider regulatory framework**, particularly the incentive mechanisms
- **Reasonableness of data requirements and costs** involved
- **Adaptability to changes in network output requirements** (for example, associated with distributed generation).

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