

# **Final Decision**

## **NSW and ACT Transmission Network Revenue Cap TransGrid 2004–05 to 2008–09**

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# Glossary

<b>ACCC</b>	Australian Competition and Consumer Commission
<b>ACG</b>	Allen Consulting Group
<b>ASX</b>	Australian Stock Exchange
<b>Capex</b>	Capital Expenditure
<b>CAPM</b>	Capital Asset Pricing Model
<b>COAG</b>	Council of Australian Governments
<b>Code</b>	National Electricity Code
<b>Contingent Projects</b>	Excluded Projects
<b>CPI</b>	Consumer Price Index
<b>DAC</b>	Depreciated Actual Cost
<b>DCST</b>	Double Circuit Steel Tower
<b>DRP</b>	Draft Regulatory Principles (for the Regulation of Transmission Revenues)
<b>DSM</b>	Demand Side Management
<b>EAG</b>	Energy Action Group
<b>EBDIT</b>	Earnings Before Depreciation Interest and Taxes
<b>ESAA</b>	Electricity Supply Association of Australia
<b>ESC</b>	Essential Services Commission
<b>EUAA</b>	Energy Users Association of Australia
<b>EUCV</b>	Energy Users Coalition of Victoria
<b>Gamma (<math>\gamma</math>)</b>	Likely Utilisation of Imputation Credits
<b>Guidelines</b>	Information Requirements Guidelines

<b>ICTP</b>	International Comparison of Transmission Performance
<b>IPART</b>	Independent Pricing and Regulatory Tribunal
<b>kV</b>	Kilovolt
<b>MAR</b>	Maximum Allowed Revenue
<b>MRP</b>	Market Risk Premium
<b>MVA</b>	Mega Volt Ampere
<b>MW</b>	Mega Watt
<b>NCC</b>	National Competition Council
<b>NECA</b>	National Electricity Code Administrator
<b>NERA</b>	National Economic Research Associates
<b>NEM</b>	National Electricity Market
<b>NEMMCO</b>	National Electricity Market Management Company
<b>NPV</b>	Net Present Value
<b>ODRC</b>	Optimised Depreciated Replacement Cost
<b>ODV</b>	Optimised Deprival Value
<b>OFGEM</b>	Office of Gas and Electricity Markets
<b>Opex</b>	Operating and Maintenance Expenditure
<b>ORC</b>	Optimised Replacement Cost
<b>PB Associates</b>	Parsons Brinckerhoff Associates
<b>PTRM</b>	Post Tax Revenue Model
<b>QCA</b>	Queensland Competition Authority
<b>RBA</b>	Reserve Bank of Australia
<b>SRP</b>	Statement of Principles for the Regulation of Transmission Revenues

<b>Historic Capex</b>	Historic Capital Expenditure
<b>SCST</b>	Single Circuit Steel Tower
<b>SKM</b>	Sinclair Knight Merz Pty Ltd
<b>SMHEA</b>	Snowy Mountains Hydro-Electric Authority
<b>TNSP</b>	Transmission Network Service Provider
<b>TUOS charges</b>	Transmission Use of System charges
<b>VENCorp</b>	Victorian Energy Networks Corporation
<b>WACC</b>	Weighted Average Cost of Capital

# 1 Executive Summary

## 1.1 Introduction

This document is the Australian Competition and Consumer Commission's (ACCC) Final Decision on TransGrid's revenue allowance for the period 1 July 2004 to 30 June 2009. TransGrid is one of two Transmission Network Service Providers (TNSPs) in New South Wales. It is the largest TNSP in the National Electricity Market (NEM) and its central location between Victoria and Queensland means that TransGrid's network plays a key role in facilitating wholesale competition in the NEM.

This Revenue Cap Decision, along with EnergyAustralia's Revenue Cap Decision, is the first of the 'second round' Revenue Cap Decisions. In the conduct of this review the ACCC has needed to clarify the detail of the existing regulatory framework, particularly in respect of capital investment. This has required the development and implementation of an approach to the ex post assessment of the prudence of investment during the past regulatory period. This has been particularly important since TransGrid has invested around 25 percent more than the prudent investment that was forecast in the ACCC's 2000 Decision.

In parallel with the conduct of this review, the ACCC has changed important elements of the regulatory regime to strengthen efficiency and service incentives. These include: the introduction of an ex ante allowance for capital expenditure; the refinement of an efficiency incentive mechanism for operating and maintenance expenditure (opex); and the development of service standard incentives.

This Executive Summary is set out as follows:

- Section 1.2 explains the process of this review;
- Section 1.3 describes the existing regulatory framework and explains how the ACCC has undertaken its responsibilities under this framework;
- Section 1.4 sets out the ACCC's decisions on TransGrid's opening asset base;
- Section 1.5 sets out the ACCC's decisions on TransGrid's forward capital expenditure;
- Section 1.6 covers the ACCC's considerations in relation to operating expenditure;
- Section 1.7 deals with the determination of the cost of capital;
- Section 1.8 is the ACCC's decision on service standards; and
- Section 1.9 details the outcome of this review in terms the Maximum Allowed Revenue (MAR) allocation for TransGrid for each year from 2004 to 2009.



## 1.2 Process of this review

On 26 September 2003, TransGrid submitted its Application to re-set its revenue allowance under clause 6.2.4(b)<sup>1</sup> of the National Electricity Code for the period 1 July 2004 to 30 June 2009. On receipt of all attachments to TransGrid's Application, the Application was placed on the ACCC's web page and submissions from interested parties were called for.

GHD Pty Ltd (GHD) was engaged to assist the ACCC in the review of TransGrid's Application. GHD's report to the ACCC on TransGrid's Application was emailed to interested parties on 8 April 2004 and placed on the ACCC's web site on 14 April 2004, and submissions from interested parties were invited.

During the course of the review, the need for a deeper examination of aspects of TransGrid's historic and future capital expenditure (capex) arose. As a result, Parsons Brinckerhoff Associates (PB Associates) was engaged to assist in the review of historic capex. Furthermore throughout the course of the review, Mountain Associates and Dr Darryl Biggar were engaged as internal consultants to assist the ACCC. Mountain Associates produced a specific report on the prudence of TransGrid's investment in the MetroGrid project.

In parallel with the development of this review, the ACCC suggested fundamental changes to the regulation of capital investment. TransGrid's forward capex application was assessed under this new framework, which includes an ex ante allowance, after resubmitting its future capex application in accordance with the new regime.

TransGrid's revised future capex application was the subject of the ACCC's Supplementary Draft Decision on future capex. The ACCC engaged PB Associates and Mountain Associates to assist in this review. This Decision incorporates the ACCC's final decision on TransGrid's future capex as well as decisions on the other elements of its Application.

TransGrid and EnergyAustralia are the first TNSPs to have their future capex allocated as a pre-determined allowance of expenditure. The details of this new regime have been explained and consulted upon as part of the ACCC's process of finalising the Draft Regulatory Principles.

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<sup>1</sup> In applying the form of economic regulation specified in clause 6.2.4(a), the ACCC is to set a revenue cap to apply to each TNSP for the regulatory control period which is to be a period of not less than 5 years. A description of the process and timetable for re-setting the revenue cap must be published by the ACCC at a time which provides all affected parties with adequate notice to prepare for, participate in, and respond to that process, prior to the commencement of the regulatory control period.

### **1.3 Regulatory framework**

The ACCC has assessed TransGrid's Application largely according to the Statement of Regulatory Principles (SRP). The SRP includes the new opex incentive mechanism, the new ex ante regime, and is the basis for the ACCC's decision to lock in TransGrid's asset base rather than revalue it.

At the core of the principles of the ACCC's regulation of TransGrid is the building block approach. This Decision examines each of the components of the building block approach from the previous regulatory period in order to arrive at a starting asset base for the current regulatory period. TransGrid's future capex allowance is added to this asset base in the manner described in the future capex chapter following.

In order to arrive at the ACCC's calculation of TransGrid's final revenue, the following stages must be examined:

- the setting of TransGrid's asset base (derived from the ACCC's decision on TransGrid's asset base and an ex post historic capex review);
- the ACCC's decision on TransGrid's forward capex; and
- the ACCC's decision on TransGrid's opex.

### **1.4 ACCC's decision on TransGrid's Opening Asset Base**

In order to establish an opening asset base for the current regulatory period, the ACCC has rolled prudent capex into the jurisdictional asset base as described in the Statement of Regulatory principles. The ACCC has undertaken an ex post assessment of TransGrid's historic capex in order to determine a prudent level of capex.

TransGrid's historic capex has been assessed according to the Draft Statement of Regulatory Principles (DRP) which established an ex post prudency review of TNSPs' capex. This has meant that TransGrid's allowance for capex has been determined after TransGrid has undertaken capital expenditure during the regulatory period. An outline of the ACCC's assessment of TransGrid's historic capex and the results of the ACCC's review is presented below.

#### **Historic capex**

With regard to determining an allowance for historic capex, the DRP recognised the core obligation of the ACCC as set out in Clause 6.2.3(d) of the Code which holds that the ACCC's regulatory regime must have regard to the need to provide a fair and reasonable risk-adjusted cash flow rate of return to TNSPs on efficient investment.

On this basis, the DRP envisaged a two-step process: first the development of a forecast of capex for the coming regulatory control period; and second an ex post prudency

review of actual capital expenditure, so that only expenditure determined to be prudent should be included in the Regulatory Asset Base (RAB).

In order to arrive at an efficient ex post expenditure allowance, the ACCC has implemented its prudence assessment in a three-stage process.

- First, it assessed whether there was a justifiable need for an investment;
- Second, it assessed whether TransGrid proposed the most efficient investment to meet that need; and
- Third, it assessed whether TransGrid efficiently delivered the chosen solution.

The ACCC has undertaken this review as follows:

- If expenditure on a project which was included in the capex forecast in the ACCC's 2000 Decision was equal to or less than the forecast, then a lower standard of ex post prudence assessment has been applied, on the basis that the investment was in effect approved by its inclusion in the 2000 Decision;
- There has been no specific re-examination of the prudence of projects that were included in the capex forecast in the ACCC's 2000 Decision, but which TransGrid did not develop. The cost of such a project has been removed from the RAB;
- A 'process-based' evaluation (an evaluation of the prudence of the investment selection and delivery processes used by TransGrid) has influenced the assessment of the prudence of maintenance and replacement capex;
- A higher standard of prudence assessment has been applied to large projects where actual expenditure incurred on those projects was materially higher than their forecast costs.

After completing its prudency review and its review of other adjustments, the ACCC has decided to allow TransGrid \$1.035 billion for its historic capex, \$72.9 million below TransGrid's actual capex of \$1.107 billion. Table 1.4.1 shows a break down of the prudency and other adjustments by area of expenditure.

**Table 1.4.1 Analysis of ex post prudency adjustments**

<b>\$nominal million</b>	<b>TransGrid's actual capex 1999/2004</b>	<b>ACCC decision allowance for 1999/2004</b>	<b>Adjustment</b>
<b>Augmentation</b>			
Kempsey-Nambucca-Coffs Harbour 132kV	56.3	56.3	0
Bayswater 500 kV	70.0	70.0	0
Sydney City CBD	276.5	245.7	-30.8
<b>Non-augmentation: replace/refurbishment</b>			
Telecommunication assets	41.7	39.7	-2
Other Sydney Projects	11.1	4.6	-6.5
<b>Support the business</b>			
Motor vehicle private use	37.4	36.5	-0.9
Ring fencing adjustment		-1.4	-1.4
<b>Other projects</b>	614.4	614.4	n/a
<b>Total prudency adjustment</b>	<b>1,107.4</b>	<b>1,065.8</b>	<b>-41.6</b>
<b>Other adjustments</b>			
Motor vehicle disposals			-19.9
Other disposals			-11.4
<b>Total adjustment</b>	<b>1,107.4</b>	<b>1,034.5</b>	<b>-72.9</b>

The two major matters that merit discussion here are the Bayswater 500 kV transmission line and the MetroGrid project.

### ***Bayswater 500 kV line***

The ACCC has decided that it will not re-optimize the Bayswater-Marulan 500kV line and that TransGrid will retain the \$70 million in its RAB from the 1999 Decision.

In its Draft Decision, the ACCC proposed to re-optimize this asset on the basis of the actual level of usage of the line. This was the approach foreshadowed in the 1999 revenue cap determination. In the 1999 Decision, the ACCC re-included in the RAB an estimated \$70 million mistakenly anticipating that the Bayswater line would operate at 500 kV during the past regulatory period.

In the SRP the ACCC stated that its preferred approach is to lock in the RAB rather than undertake periodic revaluation. The reason for adopting this principle was to minimise the risks of a TNSP facing an unpredictable revenue stream, shocks to consumer prices and the possibility of deterring efficient investment as a result of this uncertainty.

The application of this principle in the case of the Bayswater-Marulan 500kV line suggests that the ACCC should roll forward the valuation from the 1999 Decision rather than re-optimising this asset in 2005. The fact that the ACCC foreshadowed the possibility of re-optimisation in the 1999 Decision does not mean that the ACCC must now do so or that it necessarily should do so.

### ***MetroGrid project***

The MetroGrid project entailed the construction of a cable and substation in the Sydney metropolitan area. The Regulatory Test assessment of the cost of this project was \$142.5 million (in 1999 dollars). The actual cost of the project was \$276.5 million (nominal) excluding claims against TransGrid that total around \$40 million.

The ACCC's opinion is that for the MetroGrid project, TransGrid conducted inadequate analysis of the investment choices available to efficiently meet the investment need. In addition, TransGrid failed to respond appropriately to information that the actual project would cost considerably more than envisaged at the time of the Regulatory Test assessment. Therefore, TransGrid did not demonstrate that all of the investment in the MetroGrid project was prudent.

The ACCC has adopted a method of determining a prudency adjustment to TransGrid's expenditure on this project, proposed and explained in detail in the Mountain Associates Report. In summary, this approach assumes that:

- once TransGrid knew that the actual cost of the MetroGrid project was likely to be at least \$225.7 million, it re-assessed the possible investment options through a further application of the regulatory test;
- TransGrid brought forward the Demand Side Management program that it had envisaged occurring after completion of the MetroGrid project. This would have extended the network's compliance with a n-1 standard and deferred the need to implement a modified n-2 standard for at least two years, thus enabling the regulatory test analysis to be repeated; and
- after a re-examination of network options through the regulatory test, the preferred option would still be the MetroGrid project, with the design and cost anticipated in 2001 (\$227.5 million).

On this basis, a prudency adjustment is determined by comparing the present cost of:

- the MetroGrid project as envisaged during the original regulatory test analysis; and
- the MetroGrid project as envisaged in 2001, with the investment in Demand Side Management brought forward and the construction of the project deferred for two years.

The difference between the two represents the economic cost of TransGrid's failure to respond to the information available to it that it had considerably under-estimated the

cost of the MetroGrid project in its regulatory test assessment. As such, this difference represents an estimate of the portion of the expenditure on the MetroGrid project that was not prudent and which consumers should not be required to bear.

Using this approach, Mountain Associates determined a combined prudency adjustment for both TransGrid and EnergyAustralia of \$36 million in 1999 dollars. This equates to \$42.7 million in 2004 dollars. However, using the Mountain Associates' methodology, the ACCC has adopted different assumptions on the expected cost, in 2001, of EnergyAustralia's transmission element of the MetroGrid project. Specifically the EnergyAustralia cost was assumed to be \$59 million.<sup>2</sup> With these revised assumptions, the prudency adjustment for TransGrid is calculated to be \$30.84 million in 2003/4 dollars.

### **Summary of ACCC's Decision on TransGrid's Opening Asset Base**

On the basis of the ex post capex assessment described above, the ACCC has determined a regulatory asset base for TransGrid for the beginning of this regulatory period of \$3,012.76 million. This has increased from \$2923.25 million in the Draft Decision primarily because of the ACCC's decision to include the Bayswater-Piper-Marulan 500 kV line in the asset base. The ACCC's decision on TransGrid's closing asset base for the 1999-2004 regulatory period is set out in Table 1.4.2.

**Table 1.4.2 Final Decision: Reconciliation of closing RABs**

<b>\$2004 million</b>	<b>Total</b>
<b>TransGrid's Application</b>	\$3,047.40
<b>Draft Decision: ACCC roll-forward calculation</b>	\$2,923.25
<b>Final Decision: ACCC roll-forward calculation</b>	\$3,012.76

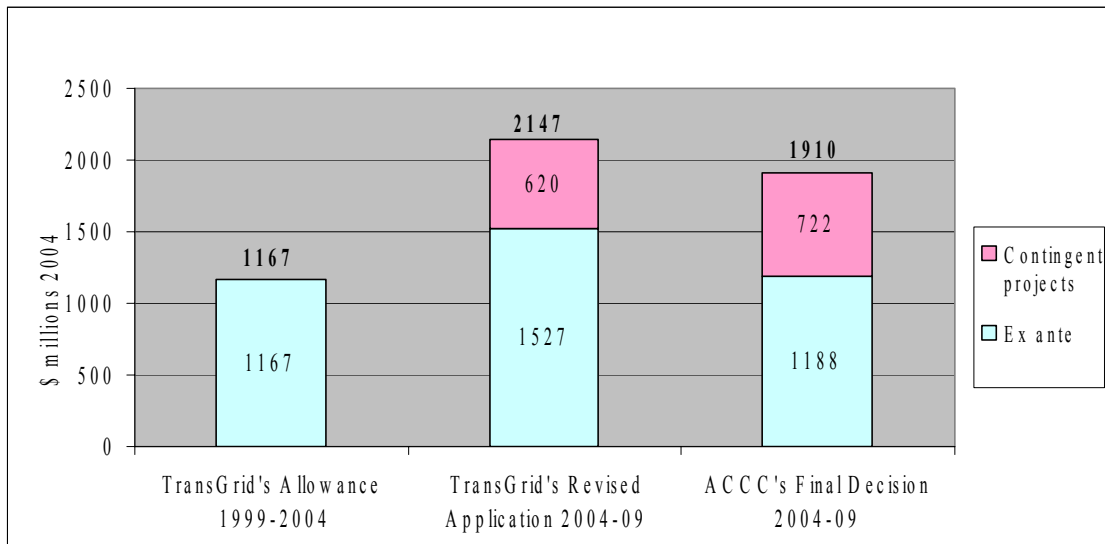
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<sup>2</sup> The ACCC's assumption on TransGrid's cost is unchanged from Mountain Associates' assumptions, but the Mountain Associates' model had used a value for TransGrid's expenditure of \$235.5 million rather than \$227.5 million, although the different cost does not make a material difference to the NPV calculations.

## 1.5 ACCC's decision on Forward Capital Expenditure

TransGrid applied for \$1.527 billion of ex ante expenditure and \$620 million in contingent projects. The ACCC has provided TransGrid with an ex ante capital allowance of \$1.188 billion and an estimated \$722 million in contingent projects. The ACCC's decision on the ex ante allowance compares with TransGrid's actual expenditure of \$1.167 billion (\$2004) over the first regulatory period.

**Figure 1.5.1 TransGrid's Application and ACCC's Final Decision**



As shown in Figure 1.5.1 above, the ACCC's decision gives TransGrid a greater investment allowance than in the last regulatory period. TransGrid has additional certainty regarding this allowance however, given that it has been allowed ex ante.

### *Newcastle-Sydney-Wollongong (N-S-W) corridor augmentation*

A major change in this Final Decision compared to the Supplementary Draft Decision is the shifting of \$194 million from the contingent category to the ex ante category to account for the likelihood of some part of the N-S-W corridor augmentation proceeding. Submissions from TransGrid and other interested parties convinced the ACCC that a significant amount of spending on the N-S-W corridor augmentation would be required in the current regulatory period. The ACCC's decision is not an endorsement of any specific project in this context.

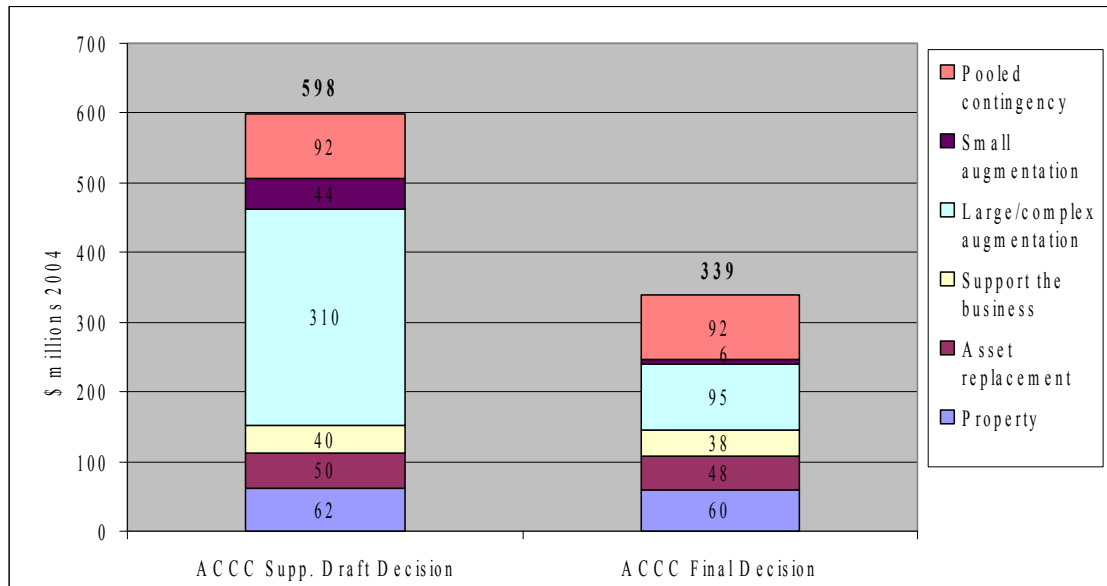
### *Adjustments from the Supplementary Draft Decision*

The ACCC's adjustment of TransGrid's ex ante application is based on the removal of double counted or inefficient investment and shifting of some expenditure into the contingent category.

In relation to specific components of forward capital expenditure, this decision recommends an ex ante allowance which is \$339 million less than the ex ante allowance proposed by TransGrid. This compares to the Supplementary Draft Decision

which recommended a downwards adjustment of \$598 million. Figure 1.5.2 illustrates the breakdown of capex adjustments adopted in the Final Decision, compared to the Supplementary Draft Decision.

**Figure 1.5.2 Final Decision capex adjustment by expenditure category**



### Contingent Projects

The ACCC has made a provision of \$722 million for contingent projects compared to TransGrid’s application of \$620 million. The ACCC’s allowed contingent projects with indicative costings are set out in Table 1.5.3.

**Table 1.5.3 ACCC Determined Contingent Project Groups**

Contingent Projects	Indicative cost \$2004 million
Mason Park 330/132kV GIS substation and Holroyd complex	193
Augmentation Newcastle-Sydney-Wollongong corridor	223
QNI Upgrade and Yass-Wagga transmission line	129
Easements and land	177
<b>Total contingent project costs</b>	<b>722</b>

The ACCC has decided to retain all of the projects that TransGrid applied for as contingent projects except for the Kemps Creek to Sydney South project which is disallowed on the basis that the ACCC considers that it is unlikely that this project will proceed during this regulatory period. In addition, the ACCC has made an ex ante allowance for the augmentation of the Newcastle-Sydney-Wollongong corridor and has also decided to include the Royalla project in the ex ante allowance on the basis that TransGrid is likely to incur some expenditure on these projects in this regulatory period.

The ACCC has grouped projects as a means of addressing specific limitations or events at defined elements in the network that would justify greater investment than provided in the ex ante allowance. Project costings are indicative only, project expenditure for



these contingent projects will be determined at the time of the contingent project assessment.

The ACCC has considered the need for triggers for these contingent projects and has adopted the trigger events identified in Appendix G. The ACCC will use these trigger definitions to assess whether it is appropriate to conduct a further investigation into a specific project proposal following an application by TransGrid during the regulatory period.

### **Summary**

In this decision a total of \$237 million has been disallowed from TransGrid's ex ante allowance. This reduction mainly comprises:

- \$19 million from property expenditure to reflect changes to cost allocation profiles of new projects and the deferral of some projects;
- \$32 million from large augmentation comprising: \$2 million relating to the QNI upgrade project; and \$30 million from the mid North Coast project. In its revised application TransGrid applied for an ex ante allowance of \$61 million for the mid North Coast project, and the ACCC has only included \$31 million of this in the ex ante allowance.
- \$48 million from the asset replacement category reflecting changes relating to the Wallgrove site, economies of scale and project deferrals;
- \$38 million from business support expenditure to reflect adjustments to motor vehicle expenditure, and inefficiencies and over allocation of IT expenditure; and
- \$92 million of a proposed pooled contingency fund as this expenditure is not considered necessary.

The ACCC has determined an ex ante allowance of \$1.188 billion (\$2004) for the period 2004/05-2008/09. A break-down of this by expenditure category is shown in the Table below.

**Table 1.5.4 ACCC Decision: Ex ante capital expenditure**

<b>\$2004 million</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>Total</b>
Asset replacement	62.56	53.33	56.21	51.23	56.16	279.49
Small augmentation	54.98	77.60	111.35	163.64	80.93	488.50
Large/complex augmentation	0.17	2.46	22.12	99.55	122.84	247.13
Property related	19.10	31.12	12.10	14.08	12.41	88.79
Support the business	16.78	16.78	16.78	16.78	16.78	83.88
<b>Total ex ante costs</b>	<b>153.57</b>	<b>181.28</b>	<b>218.55</b>	<b>345.28</b>	<b>289.11</b>	<b>1187.80</b>

## 1.6 ACCC's decision on Opex

Regarding the regulation of operating expenditure (opex), the regulatory regime in the DRP established a fixed ex ante allowance on opex. No arrangement was made for an efficiency carry-over mechanism and there was no scope for an ex post review of actual opex. TransGrid's actual opex exceeded the allowance determined in the 1999 Revenue Cap Decision. The existing regime explicitly requires that such an overrun be absorbed by TransGrid and not be passed on to its customers.

The ACCC has determined a total opex allowance for the period 2004 to 2009 of \$581.07 million compared to TransGrid's request of \$643.34 million. The allowance for the current regulatory period represents a real increase of 2.3 per cent over the allowance for the previous regulatory period. The ACCC's allowance in the 2000 Decision for the period 1999 to 2004 (plus SMHEA adjustments) was \$567.95 million (all figures \$2004).

There are three main reasons for the difference between TransGrid's application and the ACCC's Decision:

- **Starting Point for opex.** TransGrid chose a starting point for the current regulatory period on the basis of a forecast of actual opex for the year ending 30 June 2004 that was 20 percent higher than its opex in the first 3 years of the previous control period. The ACCC chose a starting point based on what it determined to be representative year of opex, and then excluded some one-off opex costs in that year.
- **Opex cost increases.** TransGrid assumed that the majority of its costs would increase at a rate of 5 per cent. The ACCC has modelled wage increases of 5 per cent for 2004/05 and 4.5 per cent for subsequent years.
- **Efficiency adjustment.** The ACCC has included a 2 per cent compound reduction in opex over the current period. This adjustment is designed to capture efficiencies that TransGrid could reasonably be expected to achieve over this regulatory period.

The ACCC has approved pass-through events for TransGrid for this regulatory period, and considerations on these matters are included within this Decision. In addition, the efficiency carry-forward mechanism detailed in the SRP will apply to TransGrid for the current regulatory period.

### *Changes from the Draft Decision*

The main changes between the ACCC's Draft Decision and this Decision are that:

- In this Decision all wage-related costs have been indexed by 5 per cent in the year 2004/5 and 4.5 per cent for the remainder of the regulatory period. These costs were indexed by 4.1 per cent in the Draft Decision;

- The ACCC has amended its calculation of the starting point for insurance costs and has made an allowance for self-insurance costs in TransGrid's opex allowance; and
- An efficiency adjustment has been made in the process of determining an opening opex allowance for 2004/05.

**Table 1.6.1 Final Decision: Opex Allowance**

\$2004 million	2004/05	2005/06	2006/07	2007/08	2008/09	Total
<b>TransGrid's Application</b>	123.29	125.88	128.65	131.31	134.21	<b>643.34</b>
<b>ACCC's Draft Decision</b>	115.37	114.61	113.93	113.26	111.05	<b>568.22</b>
<b>ACCC's Final Decision</b>	116.94	116.50	116.13	115.84	115.66	<b>581.07</b>

## 1.7 ACCC's decision on Cost of Capital

The Code requires the ACCC to provide TNSPs with a fair and reasonable rate of return on efficient investment. The ACCC uses the capital asset pricing model (CAPM) to estimate a fair rate of return on equity. The rate of return is then applied in the ACCC's post-tax revenue model.

Table 1.7.1 contains the parameters used to determine the weighted average cost of capital (WACC). It compares TransGrid's proposals with the ACCC's Final Decision.

**Table 1.7.1 Comparison of WACC parameters**

Parameter	TransGrid's Application (%)	Draft Decision	Final Decision (%)
Nominal risk-free interest rate ( $R_f$ )	5.01	5.89	5.98*
Expected inflation rate (F)	2.08	2.44	2.49
Debt margin (over $R_f$ )	1.485	0.87	0.90
Cost of debt $R_d = R_f + \text{debt margin}$	6.495	6.76	6.88
Market risk premium (MRP)	6.00	6.00	6.00
Gearing ratio	60 / 40	60 / 40	60 / 40
Value of imputation credits ( $\gamma$ )	0	0.50	0.50
Asset beta ( $\beta_a$ )	0.45	0.40	-
Debt beta ( $\beta_d$ )	0.00	0.00	0.00
Equity beta ( $\beta_e$ )	1.12	1.00	1.00

\* using a ten-day average of bond yields to determine the nominal risk-free rate

Table 1.7.2 compares the WACC proposed by TransGrid with the WACC calculations consistent with the Final Decision parameters in Table 1.7.1. The main difference in the values proposed by TransGrid and adopted in this Decision relate to the debt margin, equity beta and gamma. The ACCC considers that it is appropriate to benchmark a debt margin based on A-rated corporate bonds with a maturity of ten years. The ACCC notes that an equity beta of 1.0 is biased towards the service provider if exclusive reliance on market data is used. However, the ACCC would like to be confident that the market-derived beta will not systematically under compensate TNSPs and therefore, the ACCC is proposing an equity beta of 1.0 for TransGrid. The ACCC also proposes a value of 0.5 for gamma.

**Table 1.7.2 Comparison of the WACC**

	<b>Application (%)</b>	<b>Final Decision (%)</b>
Nominal post-tax return on equity	11.73	11.98
Post-tax nominal WACC	7.42	7.17
Pre-tax real WACC	8.35	6.78
<b>Nominal vanilla WACC</b>	<b>8.59</b>	<b>8.92</b>

## 1.8 ACCC's decision on Service Standards

For the 2004-2009 regulatory period, TransGrid has a financial incentive applying to its performance as measured by the performance indicators outlined in Chapter 9. These performance targets are based on TransGrid's service standards performance over the 1999-2004 regulatory period. They take into account factors that might impact on TransGrid's ability to meet the service standards targets in the future.

The ACCC will continue to require TransGrid to report on the performance measures contained in its service standards guidelines as part of the annual compliance reporting requirements set out in section 6.2.5 of the Code. The performance targets as set out in Chapter 9 will apply to TransGrid for the current regulatory period.

## 1.9 ACCC's decision on Total Revenue

The table below summarises the ACCC's decisions on the opening RAB, ex ante capex, opex and cost of capital.

**Table 1.9.1 Decisions on opening RAB, ex ante capex and opex and WACC**

<b>\$2004 million</b>	<b>TransGrid's Initial Application</b>	<b>Final Decision</b>
<b>RAB at 1 July 2004</b>	3,047.40	3,012.76
<b>Ex ante Capex</b>	1,527.21	1,187.80
<b>Opex</b>	647.60	581.07
<b>Nominal Vanilla WACC</b>	8.59%	8.92%

## Total revenue and CPI-X Smoothing in nominal terms

Based on the various elements of the building block approach, the ACCC proposes a smoothed revenue allowance that increases from \$432.75 million for 1 July 2004 to 30 June 2005 rising to \$456.50 million, \$481.56 million, \$507.99 million, and \$535.87 million in the subsequent financial years (Table 1.9.2). These figures incorporate revenue smoothing based on an X smoothing factor of -2.93 per cent. That is, the MAR will increase by CPI plus 2.93 per cent in each year of the regulatory period.

**Table 1.9.2 TransGrid's MAR components from 1 July 2004 to 30 June 2009**

\$ nominal million	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
<b>Return on capital</b>	268.74	279.87	293.63	311.14	341.93
<b>Return of capital</b>	39.64	44.56	49.46	52.78	59.02
<b>Operating expenses</b>	119.85	122.37	125.01	127.79	130.76
<b>Estimated taxes payable</b>	13.83	15.97	18.44	21.13	28.57
<b>Less value of franking credits</b>	6.92	7.99	9.22	10.56	14.28
<b>Raw revenue</b>	435.14	454.78	477.32	502.28	545.98
<b>Smoothed revenue</b>	<b>432.75</b>	<b>456.50</b>	<b>481.56</b>	<b>507.99</b>	<b>535.87</b>

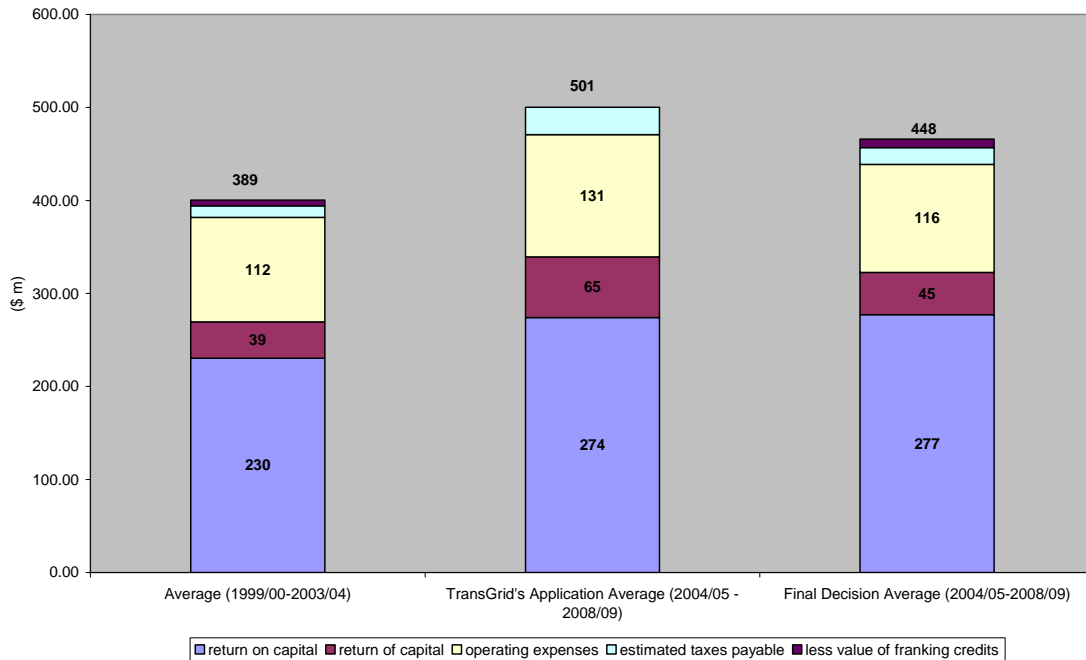
In constant dollar terms, TransGrid applied for revenue of \$462.76 million in the year 2004/05 rising to \$475.07 million, \$494.11 million, \$514.19 million, and \$559.53 million in the subsequent full financial years of the regulatory period. Based on the various elements of the building block approach, the ACCC proposes a smoothed revenue allowance in real terms of \$422.26 million in the year 2004/05 to \$434.63 million, \$447.37 million, \$460.48 million, and \$473.97 million in the subsequent full financial years of the regulatory period. Table 1.9.3 compares the ACCC's MAR and TransGrid's MAR over the regulatory period.

**Table 1.9.3 Comparison of MAR 2005/05 – 2008/09**

\$2004 million	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>ACCC's 2000 Decision</b>	398.27					
<b>TransGrid's Revised Application</b>		462.76	475.07	494.11	514.19	559.53
<b>Final Decision</b>		422.26	434.63	447.37	460.48	473.97

The revenue set by the ACCC for this Final Decision is on average 10.65 per cent below that sought by TransGrid. Figure 1.9.4 is a comparison of the building block revenues of the ACCC's 1999 Revenue Cap Decision, TransGrid's proposed revenue, and the ACCC's Final Decision for the regulatory period 2004/05 to 2008/09.<sup>3</sup>

**Figure 1.9.4 Building Block comparison of revenues (\$2004 millions)**



### Impact on transmission charges

Table 1.9.5 illustrates how, based on forecast energy demand in New South Wales over the regulatory period, TransGrid's Revised Application translates into real price changes. The Final Decision results in a 5.47 per cent increase in prices in the first year of the regulatory period and on average increases by around 0.8 per cent in the subsequent years of the regulatory period. The price changes arising from the Final Decision compare to TransGrid's proposed price increase in the first year of 15.59 per cent and an increase of around 2.74 per cent in subsequent years.<sup>4</sup>

**Table 1.9.5 Impact on transmission prices**

\$2004 / MWh	2004/05	2005/06	2006/07	2007/08	2008/09
<b>TransGrid's Revised Application</b>	15.59	0.35	1.80	2.30	6.52
<b>Final Decision</b>	5.47	0.61	0.74	1.19	0.76

<sup>3</sup> This comparison is based on TransGrid's initial Application and unsmoothed revenues.

<sup>4</sup> The transmission prices have been calculated by dividing the real smoothed revenue by the energy demand (MWh) for that respective year. The ACCC has used the MWh forecast from the NEMMCO Statement of Opportunities 2004.

## 2 Introduction

TransGrid is a state-owned corporation of the New South Wales government with over 12,400 kilometres of high voltage transmission line, 81 substations and switching stations with a total asset value of approximately \$3 billion as at 30 June 2004.

Under the National Electricity Code ('NEC' or 'Code'), the Australian Competition and Consumer Commission (ACCC) has been the regulator of the revenues received by the transmission network in New South Wales and the Australian Capital Territory (ACT) since 1 July 1999.

In June 1999, the NSW Government applied for and was granted a derogation from the Code which had the effect of delaying the date on which TransGrid would be subject to regulation by the ACCC under the ACCC's Revenue Cap framework. The derogation meant that TransGrid was permitted to earn revenues in accordance with pre-existing prices for the period between 1 July 1999 and 31 January 2000. From 1 February 2000 to 30 June 2004, TransGrid earned revenues in accordance with the ACCC's 1999/00 – 2003/04 Revenue Cap Decision (the 1999 Decision).

TransGrid and EnergyAustralia (a distribution company that owns some transmission assets within NSW) were the first transmission networks to have their Maximum Allowed Revenues (MAR) determined by the ACCC and so are the first of the 'second round' MAR determinations by the ACCC.

In parallel with the conduct of this review, the ACCC has developed important elements of the regulatory regime to strengthen efficiency and service incentives. These include the introduction of an ex ante allowance for capital expenditure; the refinement of an efficiency incentive mechanism for operating and maintenance expenditure (opex); and the development of service standard incentives. The details of this framework are contained in the Statement of Regulatory Principles Final Decision released by the ACCC in December 2004.

The timetable for the setting of TransGrid's revenue cap was placed on the ACCC's website but was revised to account for TransGrid's request to the ACCC of 12 March 2004 to extend this timetable in order to allow TransGrid more time to prepare its forward capex submission in response to the development of the regulatory framework under the SRP.

This Chapter explains the legal and regulatory framework for this review and outlines the key dates and processes that the ACCC has undertaken that are relevant to the setting of the allowance. Specifically, this Chapter sets out:

- the Code requirements in relation to the form of regulation to be applied to each TNSP's revenue (section 2.1);

- the review and public consultation processes followed by the ACCC in reaching its Decision (section 2.2);
- the structure of this document (section 2.3); and
- an overview of TransGrid's network (section 2.4).

## **2.1 Code requirements**

The core obligations of the ACCC in relation to the form of regulation to be applied to each TNSP's revenue are set out in clauses 6.2.2 to 6.2.5 of the Code. These provisions provide that the regulatory regime to be administered by the ACCC must achieve outcomes that: are efficient and cost effective; are incentive-based, share efficiency gains between network users and owners and provide a reasonable rate of return to network owners; foster efficient investment in, operation of, maintenance and use of network assets; recognise pre-existing government policies on asset values, revenue paths and prices; promote competition; and are reasonably accountable, transparent and consistent over time. The Code also requires the ACCC to implement a revenue cap with a CPI-X incentive mechanism and a regulatory control period of no less than five years.

Given the broad nature of these requirements, the Code grants the ACCC a measure of discretion and flexibility to determine an appropriate regulatory methodology provided that it is consistent with the Code's objectives and principles. The ACCC's Statement of Regulatory Principles is the ACCC's statement of the framework that it has determined as appropriate for the regulation of TNSPs.

Although the principles of regulation in this decision are largely consistent with the framework specified in the SRP, parts of the framework for the assessment of TransGrid's application were agreed with TransGrid prior to the release of the SRP and therefore differ in some respects from the SRP.

### **Statement of Regulatory Principles**

With the release of the Statement of Regulatory Principles, the ACCC has sought to establish a regulatory regime with improved incentives for TNSPs to pursue efficiency incentives. Subject to the implementation of Code changes to reflect the SRP framework, this has been achieved by:

- moving from an ex post to an ex ante investment regulatory incentive;
- providing a mechanism for assessing uncertain but significant projects (contingent projects);
- allowing the regulatory period to be re-opened if unexpected events have a material impact on TNSPs' costs (the revenue cap re-opener);



- improving the transparency of TNSPs' cost and service performance; and
- establishing an efficiency carry-forward mechanism for opex.

These elements of the new regime are examined in turn below.

### **Ex Ante Allowance**

The new capex regulatory framework involves the ACCC setting an allowance for a TNSP's investment at the start of the regulatory period, and enabling a TNSP to decide which investments it will make within this allowance, subject to service level considerations. This compares with the previous ex post system where an efficient allowance was determined after a TNSP had invested in capital projects.

The objective of the ex ante allowance is to provide certainty and incentives for efficient investment. This requires the allowance to be reasonably aligned with efficient costs over the period, and requires an analysis of a TNSP's proposed investment program at the beginning of each regulatory period.

The ex ante allowance will be expressed as a profile of spending for each year of the regulatory period. The profile of spending will be used, along with the opening RAB, to determine a TNSP's annual depreciation and return on investment over the regulatory period. This information together with other inputs such as opex, the opening RAB and the WACC will then be used to calculate the TNSP's allowed revenues for each year of the regulatory period.

At the end of the regulatory control period the closing RAB will be set equal to the depreciated value of the actual investment undertaken during the regulatory period, regardless of whether this closing RAB is larger or smaller than the closing RAB calculated on the basis of the target investment allowance. The effect of this arrangement is that if a TNSP spends less than its expenditure target during the regulatory period, it retains the benefit of that underspend (both return on and of capital) for the remainder of the regulatory period. Conversely, if it exceeds its expenditure target during the regulatory period it suffers a loss on that overspend (both return on and of capital) for the remainder of that regulatory period.

Although TransGrid has submitted a suite of projects in its forward capex application, there is no requirement that it spend the allowance allocated to it over the regulatory period on those particular projects, or according to the timeframe proposed. By conducting an ex ante evaluation of TransGrid's spending proposal, the ACCC is conducting an evaluation of the 'reasonableness' of the program put forward by TransGrid, assessed in the context of historical expenditure and future requirements. The ACCC is not mandating expenditure on individual projects. TransGrid may re-allocate or re-prioritise the ex ante allowance in any way it chooses.

The ACCC will require TransGrid to report on its actual level of expenditure at the end of the current regulatory period broken down into asset classes as specified by the ACCC.

## **Contingent Projects**

For the sake of clarity, the ACCC will revise the SRP, and in this Final Decision will refer to 'excluded' projects as 'contingent' projects.

The second element of the capex incentive is an allowance for significant but uncertain investment (contingent projects) which is not included in the main ex ante capex allowance, but which will be allowed when a TNSP can demonstrate that the investment is required. A key consideration underlying the approach to the design of the capex incentive is that projects should be excluded from the ex ante capex allowance to the extent that not doing this would lead to inefficient under-investment, declining service quality or excessive windfall gains or losses.

Projects will be treated as contingent projects if the expected error presented by the inclusion of that project in the main allowance quantified in terms of the revenue required to cover depreciation and the return on investment in that project, is equal to more than 10 per cent of the revenue required to cover depreciation and return on investment of all projects included in the calculation of the main ex ante capex allowance, or would lead to a significant error in the ex ante allowance, and to the extent that the drivers underlying the contingent project have not already been catered for in the main ex ante allowance.

Once the trigger(s) for a contingent project has been met, the project would then become the subject of a further 'mini' ex ante cap, commencing once the regulatory test assessment for that investment has been completed and investment in that project begins. Like investment under the 'ex ante' allowance, at the end of the five years of the contingent project incentive period the depreciated value of the actual expenditure on the contingent project will be included in the RAB.

## **Revenue Cap Re-opener**

To take account of events that could significantly alter the allowed efficient investment level, the ACCC will assess a 're-opener' proposal on application from a TNSP. Only a TNSP can initiate such a proposal.

If a TNSP requests that its revenue stream be re-opened in the middle of a revenue control period, the ACCC will conduct such an assessment, and alter the TNSP's revenue stream during a control period if allowed by the relevant legal instruments.

There is no limitation as to the nature of the event that could give rise to a re-assessment of the allowance. The ACCC will consider events that are both adverse and favourable to the TNSP in its re-assessment. Re-assessing the revenue cap will be conditional on:

- the TNSP being materially adversely affected by the event;
- the event being beyond the TNSP's control;

- the event not having been contemplated at the time the revenue control decision was made; and
- the benefits of revoking the revenue control outweighing the detriment to the TNSP's customers of revoking the revenue control.

## **2.2 Process of the review**

The key dates relevant to this review of TransGrid's application are as follows:

- On 26 September 2003, TransGrid submitted its Application in relation to the re-set of its revenue cap under clause 6.2.4(b) of the Code for the period 1 July 2004 to 30 June 2009, for the ACCC's consideration. The Application outlined TransGrid's views on key elements of the building block and revenue cap setting processes. The Application is available on the ACCC's website.
- The closing date for submissions on TransGrid's Application was 30 January 2004. The ACCC received several submissions in response to TransGrid's Application. These submissions are available on the ACCC's website.
- The ACCC engaged GHD to review TransGrid's capital expenditure, asset base, operating expenditure and service standards application. GHD's report is available on the ACCC's website.
- During the course of the review a consultant from PB Associates was retained to assist in the development of a better informed assessment of the efficiency of TransGrid's historic and proposed future investments. Mountain Associates and Dr Darryl Biggar were also engaged as internal consultants to assist the ACCC on a number of aspects of the Review.
- The ACCC conducted discussions on future and historic capex with TransGrid between 3-6 February 2004 and 10-12 February 2004.
- On 12 March 2004 TransGrid requested an extension of time in order to reformulate and resubmit its forward capex application in accordance with the ACCC's ex ante capex regime. The ACCC agreed to this request.
- On 14 April 2004, the ACCC released GHD's Final Report on TransGrid's application. The ACCC received several submissions on GHD's Report which have been taken into consideration by the ACCC, and are available on the ACCC's website.
- The ACCC made its Draft Decision on all aspects of TransGrid's revenue cap, excluding the future capex component, on 28 April 2004. The ACCC received a number of submissions on its Draft Decision from interested parties which have been taken into consideration in this Final Decision.

- On 18 June 2004 the ACCC held a Public Forum on its Draft Decision on TransGrid's Revenue Cap for the period 2004-2009.
- On 19 November 2004 TransGrid submitted its forward capex application.
- In November 2004, the ACCC engaged PB Associates to examine TransGrid's revised capex application. PB Associates' final report was released in January 2005 and is available on the ACCC's website.
- On 3 March the ACCC released its Supplementary Draft Decision on TransGrid's revised capex application. This document is on the ACCC's website.
- On 18 March the ACCC held a Public Forum on its Supplementary Draft Decisions on TransGrid and EnergyAustralia's revenue caps. Submissions at this Forum and other submissions on the Supplementary Draft Decision have been taken into consideration and are available on the ACCC's website.
- This Decision was released on 28 April 2005

## **2.3 Structure**

The remainder of this document explains the ACCC's Decision on TransGrid's application for its MAR over the regulatory period. It is structured as follows;

- Chapter 3 outlines the opex for TransGrid including the new opex efficiency regime;
- Chapter 4 outlines pass-through arrangements applicable to TransGrid;
- Chapter 5 outlines the relevant asset roll forward principles;
- Chapter 6 sets out the ACCC's determination on the prudence of TransGrid's historic spending and TransGrid's opening asset base at 1 July 2004;
- Chapter 7 sets out the ACCC's determination on TransGrid's forward capex allowance;
- Chapter 8 sets out the ACCC's determination on TransGrid's weighted average cost of capital (WACC);
- Chapter 9 sets out the ACCC's determination in respect of service standards;
- Chapter 10 sets out the ACCC's assessment of each of the elements of the building block model;
- Appendix A details the pass-through rules;

- Appendix B sets out the financial indicators;
- Appendix C presents the equations for calculating the financial incentives relating to service standards;
- Appendix D is a summary of the ACCC's forward capex decision;
- Appendix E sets out the framework for establishing revenue caps and the CPI-X adjustment;
- Appendix F sets out the ACCC's process in relation to the assessment of contingent projects;
- Appendix G sets out the details of the ACCC's conclusions on contingent projects and their triggers; and
- Appendix H details the parties that made submissions on TransGrid's Revenue Cap application.

## **2.4 Overview of TransGrid's network**

TransGrid operates more than 12,400 kilometres of transmission circuits as well as 81 terminal substations in NSW and the ACT. TransGrid's network spans an area that extends from the Queensland to Victorian borders and 400 kilometres inland from the east coast of Australia extending along the Murray River and up to Broken Hill. Figure 2.4.1 illustrates TransGrid's network and highlights the major load centres in NSW. Figure 2.4.2 illustrates TransGrid's network in NSW metropolitan areas.

TransGrid's network serviced a system maximum demand of 71 GW during the 2003/04 financial year. TransGrid has forecast demand to grow at about 3.2 per cent a year in the summer and 2.3 per cent in the winter. Further, TransGrid has forecast that approximately 1,600 MW of additional generation could be required within NSW during the next regulatory period.

NSW plays a central role in the NEM as a result of both its geographic location and its flexible generating plant. In the next regulatory period, both Queensland and Victoria are expected to rely on imports from NSW at times of high demand and export to NSW at other times.

**Figure 2.4.1 Coverage of TransGrid's Network**

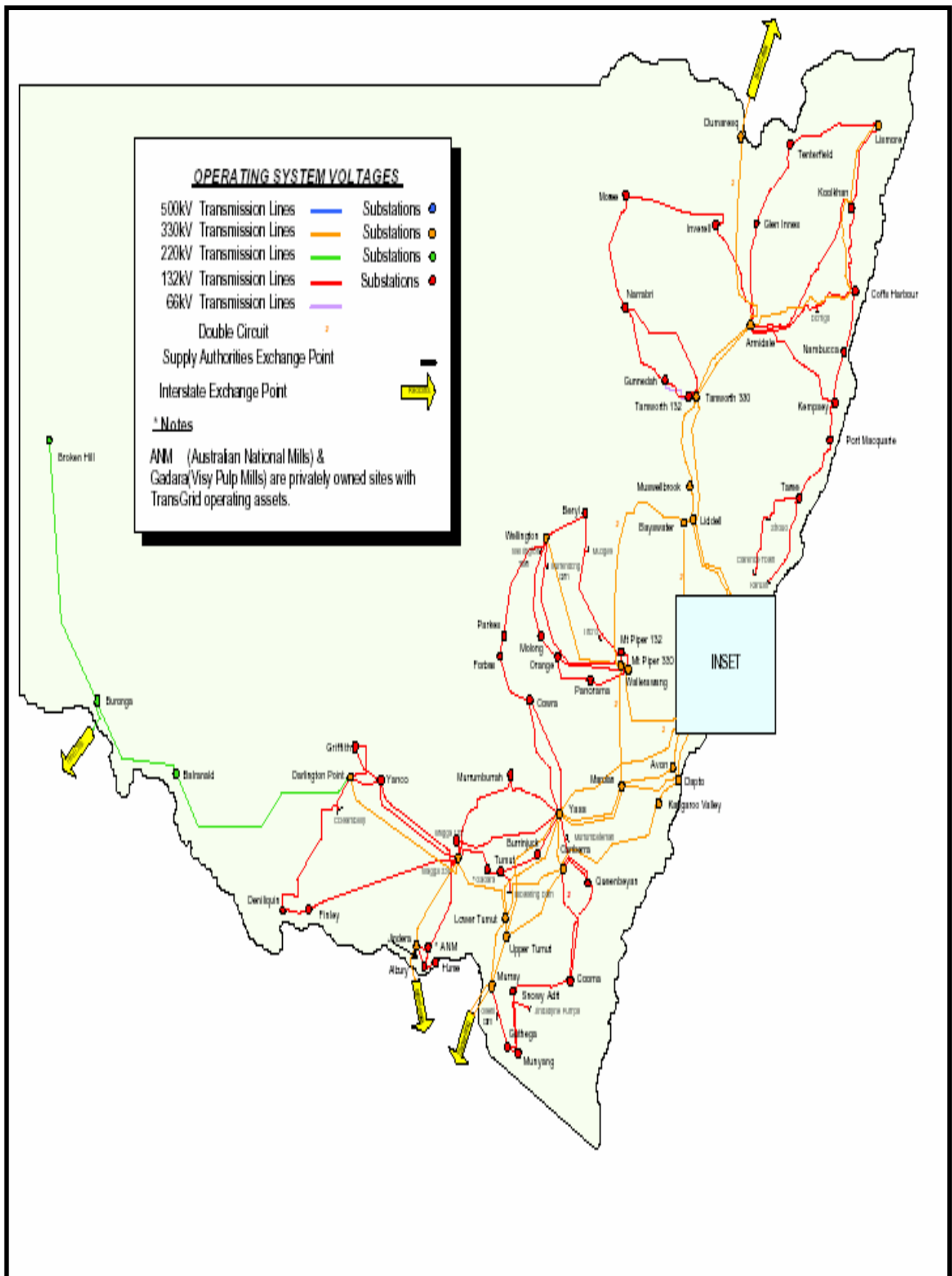
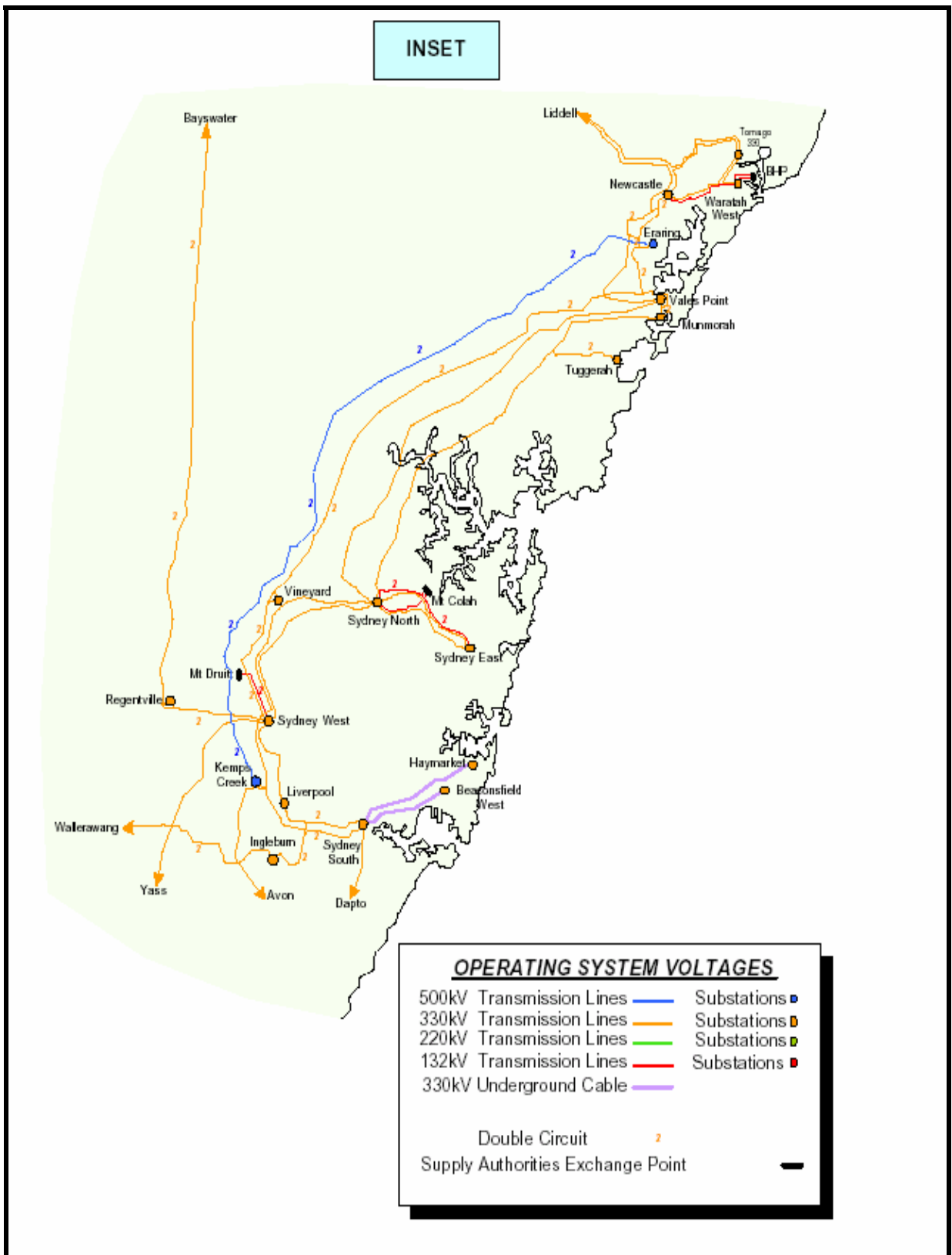


Figure 2.4.2 TransGrid's Network in Metropolitan Areas



## **3 Operating and Maintenance Expenditure**

### **3.1 Introduction**

This section sets out the ACCC's decision on the allowed expenditure for the operation and maintenance of TransGrid's assets to be included in the calculation of TransGrid's Maximum Allowed Revenue from 2005 to 2009.

The regulatory regime set out in the DRP established a fixed ex ante allowance on opex. No arrangement was made for an efficiency carry-over mechanism and there was no scope for an ex post review of the actual opex. TransGrid's actual opex in the previous regulatory period exceeded the allowance determined in the 1999 Revenue Cap Decision. The existing regime requires that such an overrun be absorbed by TransGrid and not be passed on to its customers.

This Chapter does not therefore detail an ex post prudence assessment of TransGrid's opex for the last regulatory period. This decision does, however, examine TransGrid's past opex in order to establish an appropriate starting point for opex into the next regulatory period.

The ACCC's responsibility to determine an opex allowance for TransGrid stems from the 'building block' approach to regulation adopted by the ACCC (in accordance with the Code). Under this approach, the ACCC has the responsibility of providing an opex allowance that compensates TransGrid for cash costs efficiently incurred in providing a transmission service. The ACCC also has an obligation to ensure that the allowance covers all the prudent operating costs that TransGrid faces, while enabling TransGrid to continue to provide a reliable, high-quality service.

The section is set out as follows:

- section 3.2 sets out relevant details of the regulatory framework;
- section 3.3 briefly reviews the ACCC's Draft Decision;
- section 3.4 summarises the submissions by interested parties on the ACCC's Draft Decision; and
- section 3.5 sets out and explains the ACCC's Final Decision.

### **3.2 Regulatory framework**

Part B of Chapter 6 of the Code sets out the ACCC's obligations in regulating opex. The framework that the ACCC has applied in regulating opex in the current regulatory period is set out in detail in the Statement of Regulatory Principles. The key features of these arrangements are as follows:



- An operating expenditure allowance is determined at the start of the regulatory period. Excluding the efficiency carry-forward mechanism discussed below, TransGrid will retain the full benefit of any underspend against this allowance and bears the full burden of any overspend against this allowance, during the regulatory period.
- There is an efficiency carry-forward mechanism that carries forward differences between actual and allowed expenditure into the next regulatory period. These differences are to be carried forward for a period of five years after the year in which the difference arises. In the first year of the control, the carry-forward amount is calculated as the difference between the allowed and actual expenditure. In subsequent years, the carry-forward amount for each year is calculated as the incremental difference between actual and allowed expenditure between the previous and current year.
- The determination of the allowance for opex in the subsequent regulatory period will consider outcomes in the previous regulatory period, but the ACCC will consider other information as well. There is therefore no systematic link between the determination of the opex allowances in the 2010 to 2014 regulatory period, and opex outcomes in the 2005 to 2009 regulatory period.

In addition, the ACCC considers that any change to the opex allowance that results from a pass-through made under this decision will not affect the calculation of the efficiency carry-forward amount.

### 3.3 Summary of the ACCC's Draft Decision

In its application, TransGrid applied for an increase of \$76 million or 11.9 per cent on the actual level of opex over the previous period (in constant currency). The ACCC's Draft Decision specified a decrease in opex for the current period of \$0.26 million or 0.2 per cent against the actual level of spending in last regulatory period.

The opex allowance in the ACCC's Draft Decision compares to TransGrid's opex application is set out in Table 3.3.1 below.

**Table 3.3.1 ACCC Draft Decision compared to TransGrid's application**

<b>\$2004 million</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>Total</b>
<b>TransGrid's actual expenditure 1999 - 2004</b>						567.95
<b>TransGrid's application</b>	123.29	125.88	128.65	131.31	134.21	643.34
<b>ACCC's Draft Decision</b>	115.37	114.61	113.93	113.26	111.5	568.22

#### Explanation of the approach taken in the Draft Decision

The detail of the approach taken in the Draft Decision is set out in that document. The key points are as follows:

- In its revenue application, TransGrid suggested that opex costs be determined on the basis of a 'maintenance unit' calculation that related the opex requirement to the

number of maintenance units. While the ACCC does favour an approach to opex determination based on a cost-driver analysis such as proposed by TransGrid, the ACCC rejected TransGrid's approach mainly because it considered that the maintenance unit approach was not sufficiently robust.

- In response to a request made by the ACCC, TransGrid provided information on the level of operating expenditure by expenditure category (such as salaries and wages, computer, fuel and running costs), and its view on how costs in each category would escalate over the course of the regulatory period. The sum of the costs across all of these categories, as well as the indexation of these costs, produced the same total opex requirement as TransGrid had sought in its application, based on its maintenance unit approach.
- The ACCC reviewed the cost category information provided by TransGrid and considered the basis on which these costs might escalate over time. As a result of this, the ACCC made changes to some cost escalation indices (such as the wage cost index). Other changes were made such as to allowances for insurance deductibles and self-insurance provisions. In addition, the ACCC chose a starting point based on 2002/3 actual opex levels rather than 2003/4 forecast actuals as TransGrid had proposed.
- Finally, the Draft Decision included an efficiency adjustment factor of 2 per cent per annum compounded over the course of the regulatory period. After application of this factor, the resulting annual opex allowance was determined.

### **3.4 Submissions on the ACCC's Draft Decision**

There were several responses to the Draft Decision. The key points are summarised here.

#### **Generation market participants**

Macquarie Generation was concerned that a reduction in the opex allowance could translate into longer network outages and this could have significant implications for market outcomes. Macquarie Generation considered that these market implications would considerably outweigh the ACCC's proposed reduction in opex.

#### **Consumer representatives**

The Joint Customer Groups and Energy Market Reform Forum (EMRF) made submissions on behalf of customers. The Joint Customer Group considered that increasing expenditure in the final years of TransGrid's regulatory control suggested gaming of the regulatory incentive by TransGrid in order to justify higher levels of opex in the next regulatory period.

The EMRF suggested that augmentation and refurbishment capex was likely to lead to a lower opex requirement while expansion of the network would result in a marginal or

proportionate decrease in opex depending on whether the expansion was embedded or external.

Both the EMRF and the Joint Customer Groups welcomed the efficiency adjustment factor but considered that it was not challenging enough.

### **Other network service providers**

SPI PowerNet agreed with the view expressed in the Draft Decision that the replacement of old equipment when combined with monitoring and support systems would generally decrease the maintenance requirements of the business. However, it considered that the effect would not be significant unless the age of the network was decreased considerably as a result of significant refurbishment and replacement expenditure. SPI also considered that the imposition of an arbitrary 2 per cent efficiency factor would compromise the incentive properties of the regime and be inconsistent with the intention of the Code.

Powerlink suggested that the ACCC should consider the broader consequences on service standards of disallowing more expensive practices such as live work and overtime. Powerlink also considered that the ACCC's analysis of the relationship between opex and capex was simplistic and misplaced.

Both SPI PowerNet and Powerlink considered that the replacement of old assets would only lead to a decrease in opex costs if there was a significant reduction in the average age of the assets.

Transend disagreed with the ACCC's decision not to grant equity raising costs. Transend also disagreed with the ACCC's efficiency adjustment on the basis that incentives should reflect past efficiencies, not possible future efficiencies.

### **TransGrid**

TransGrid provided a submission in response to the Draft Decision. Some of the main points raised in this submission are as follows:

- The starting point should be the actual 2003/4 opex out-turn adjusted for one-off increases in labour capitalisation;
- The ACCC has underestimated underlying cost increases, particularly in respect of wage cost inflation, and by disallowing insurance costs and because of arithmetic errors;
- The 2 per cent compounding efficiency gain is excessive having regard to labour productivity gains in the wider economy;
- Opex has reduced in real terms by 25 per cent from 1995/6 to 2002/3 and it is therefore inappropriate to expect TransGrid to reduce costs further without reducing service standards;

- The building of more transmission lines and substations during the regulatory period is expected to add around \$6.8 million to opex over the five years of the control;
- Investment in IT over the next regulatory period is mainly to refresh existing systems. IT investments required to make significant opex savings would involve significant reviews of business processes;
- On a variety of partial measures, TransGrid is more efficient than the National Grid Company and other Australian transmission network service providers; and
- The ACCC's Draft Decision is contrary to the Code because it does not allow a proportionate sharing of the benefits of efficiency gains between TransGrid and its customers. TransGrid's claim on this issue was supported by a report from NERA on the analysis of the benefit-sharing properties of the opex allowance. NERA's claims are addressed in the analysis below.

### **3.5 ACCC considerations**

This subsection sets out the ACCC's considerations relevant to its determination on opex, and describes and explains the reasons for the differences from the Draft Decision. Finally, the consideration underlying the ACCC's adjustment for efficiency improvement is discussed.

#### **The approach to determining the opex allowance**

Subject to the changes described below, the ACCC has decided to adopt the approach set out in the Draft Decision in setting an opex allowance for TransGrid. To arrive at a starting point for an opex cost base for the financial year beginning 1 July 2004, the ACCC has rolled forward TransGrid's actual 2002/03 figures to 2004/05.

#### ***Starting point***

The ACCC has chosen to model TransGrid's opex allowance for the current regulatory period on the basis of TransGrid's financial accounts for the year ended 30 June 2003. Subject to some adjustments which are outlined in this Decision, the ACCC considers that TransGrid's operating expenditure for 2002/03 is an appropriate representation of TransGrid's underlying opex costs. GHD also used these costs as the basis of its examination of TransGrid's operation.

One of the reasons stated in the Draft Decision for using 2002-03 as a starting point was that this was the last year for which audited data was available. While audited data is now available for the year ending 30 June 2004, the ACCC still considers 2002-03 to be appropriate.

The ACCC notes that TransGrid's actual opex for the year ending June 2003 was around 10 percent higher than the average opex of the previous three years in real

terms. Furthermore, TransGrid's forecast opex for the year ending June 2004 is around 3 per cent higher in real terms than the previous year.

The ACCC has sought to understand the reason for such sizeable annual cost increases between the final two years of the previous regulatory period and the earlier years of that period and has not received a satisfactory explanation from TransGrid, even after adjustment of the opex allowance for the incorporation of Snowy Hydro's transmission assets into TransGrid's asset base.

Given the clear and unexplained difference in levels of opex in the final two years and preceding years, the ACCC is not satisfied that TransGrid's final year operating expenditure is an appropriate base on which to project TransGrid's on-going opex needs. Consequently, the ACCC does not consider that TransGrid's calculation of the efficient starting point is appropriate. The ACCC acknowledges that using 2002-03 means that the starting point is based on a year in which opex was around 10 percent higher than the average opex of the previous three years in real terms. While this may be seen as favourable to TransGrid, the ACCC has decided not to depart from the starting point used for the assessment of TransGrid's application and in the Draft Decision.

As noted in the SRP Background Paper, the ACCC does not consider it appropriate, when determining an efficient opex allowance for a regulatory control period, to mechanistically relate future targets to past outcomes. Rather, the ACCC will consider past opex out-turns in combination with reasons as to why future opex may differ from past opex.

### ***Relationship between opex and capex***

TransGrid's initial revenue reset application was based on a 'maintenance unit' calculation that related the opex allowance in each year to the number of maintenance units added as result of TransGrid's investment activities. This postulates a direct relationship between the expansion of the network and the efficient level of opex. However, there are a number of reasons why the relationship between investment and the efficient level of opex is unlikely to be as simple as this. For example, there are significant scale economies in the operation and development of electrical infrastructure. Further, investment in upgrading assets that adds capacity can also simultaneously replace assets which require higher maintenance and operating costs, with new lower maintenance assets. In this case augmentation expenditure can reduce the efficient level of operating expenditure.

To reach a reliable conclusion as to the likely relationship between capital investment and efficient operating costs, regard needs to be had to a range of factors including the type of assets that are being developed and the operating environment of those assets.

The ACCC has therefore rejected TransGrid's approach and has instead used the line by line data on opex costs provided by TransGrid to calculate the efficient opex allowance.

## Explanation of differences from Draft Decision

This decision reflects a number of relatively minor differences to the analysis underlying the Draft Decision. The calculation of the opex target in each year is based on indexation of the previous year's numbers. As such, the difference made to numbers in any one year affects the calculation of the following year's numbers. This has implications for the appropriate way to present the changes between the Draft Decision and this Decision.

**Table 3.5.1 Differences between the ACCC's Draft Decision and Final Decision**

\$2004 million	\$ Effect of Change				
	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Starting Point Changes</b>					
Escalation of wage-based costs from 2002/03 to 2003/04 based on actual WCI of 5%	+2.40				
Escalation of wage-based costs from 2003/04 to 2004/05 based on TransGrid's award of 5%	+0.80				
Overtime allowances based on average of previous three years' out-turn	-0.90				
Provision of Self Insurance and calculation of starting point using actual 2002/03 out-turn	+2.40				
2% efficiency adjustment from 2002/03 to 2004/05	-2.72				
<b>Change during regulatory period</b>					
Change to debt-raising costs	-0.40	-0.41	-0.45	-0.54	-0.54
Correction of arithmetic error in 2008/09 values					+1.60
Escalation of wage-based costs by WCI of 4.5% from 2005/06 to 2008/09		+0.50	+0.90	+1.20	+1.60

The differences can be divided into changes that alter the level of opex in the first year (or starting point) of the control (which impact the allowance in subsequent years because this is based on the indexation of the first year's values) and differences where changes are made to the allowance during the regulatory period, after the first year.

The changes to the calculation of the allowed opex from the first year of the control are as follows:

- Wages, Outsourced Services and Overhead Recovery were indexed from 2002/3 to 2004/5 based on TransGrid's actual wage escalation of 5 per cent per annum, rather than based on a sectoral index as used in the Draft Decision.
- The overtime allowance was determined on the basis of the average overtime expenditure from 2000 to 2002, and then escalated at 5 per cent per annum from 2002/3 to 2004/5. Overtime costs have been quite volatile. The use of an average value to determine the overtime allowance diminishes the distortion from the use of a single year's outcome.
- A provision for self-insurance of \$0.755 million was included from 2004/05. This amount was indexed in the same way as other insurance costs. In addition, the ACCC used TransGrid's 2002/03 out-turn figure of \$5.1 million (an incorrect figure of \$3.55 million was used in the Draft Decision).

TransGrid's opex application in respect of self insurance consisted of two elements: an allowance of \$755,000 per year for "Towers and Wires" risks; and an allowance of \$800,000 per year for "Losses within insurance deductibles".

Both these figures were based on an actuarial assessment of the cost of risks faced by TransGrid conducted by Trowbridge Deloitte. In addition, TransGrid provided the ACCC with a board resolution acknowledging that TransGrid had agreed to assume the self insurance risks for "Towers and Wires".

After taking into account the relevant Code requirements and the principles discussed in clause 6.5 of the SRP, the ACCC affirms its draft decision to include, in the opex allowance in this Decision, an allowance of \$755,000 per year (\$2004) indexed by CPI for self insurance for "Towers and Wires" risks; and exclude the proposed allowance of \$800,000 per year as the definition of 'Insurance Event' in the pass-through rules covers the situation where the insured risk eventuates and the TNSP incurs a deductible.

In relation to "Towers and Wires" risks, TransGrid, in a submission dated 9 March 2005, raised concerns about the reporting requirements set out in clause 6.5 of the SRP and the operation of Australian Accounting Standard AASB 1044 "Provisions, Contingent Liabilities and Contingent Assets". The ACCC accepts the following reporting requirements proposed by TransGrid:

- the annual regulatory accounts will record the cost of self insurance as an operating expense, and will establish a self insurance reserve;
  - when a claim against self insurance is made, an appropriate deduction to the self insurance reserve will be recorded;
  - the arrangement will be internally audited and TransGrid will provide a duly certified formal statement from the auditor that the figures provided to the ACCC are an accurate representation of TransGrid's situation; and
  - TransGrid will have these arrangements subjected to independent third party review from time to time as reasonably required by the ACCC.
- Debt raising costs were changed to reflect a premium of 8 basis points multiplied by the RAB, rather than 10.5 basis points. The background to this change is set out in the cost of capital chapter.

### **Explanation of the determination of efficient allowable investment**

Although there have been several adjustments to the Draft Decision none have a major impact, and taken together they produce an allowance that is around 2 per cent higher than the allowance determined in the Draft Decision. While these adjustments are detailed and ultimately make only a small difference to the total allowance, the purpose in making these adjustments is to ensure that the approach that the ACCC has adopted is consistently applied using the most recent and accurate data.

However, it should be noted that the ACCC does not consider this approach, under which the ACCC has assessed the line by line data provided by TransGrid, to be the optimal approach to determining an efficient level of opex. It is an approach that was proposed by the ACCC only after TransGrid had submitted its application and after the ACCC had rejected TransGrid's maintenance unit approach. The ACCC favours an approach that distinguishes between controllable and uncontrollable operating expenditure and draws on management accounting best practice to deliver insights into cost drivers, the likely evolution of costs over the course of the regulatory period, and the manner in which operating expenditure is capitalised. While time and procedural constraints did not permit the use of such an approach for this decision, the ACCC will work with TNSPs in advance of submitting their revenue reset applications to ensure that this type of analysis is reflected in future applications. The approach used in this Decision should not be regarded as a precedent for subsequent determinations.

### **Determination of the scope for efficiency improvement**

In setting a revenue cap, the Code requires the ACCC to:

- take into account the TNSP's revenue requirements having regard to the ACCC's reasonable judgment of the potential for efficiency gains to be realised by the TNSP (clause 6.2.4(c)(3));
- seek to achieve an environment which fosters efficient operating and maintenance practices (clause 6.2.2(e)); and
- seek to achieve an incentive based regulatory regime which provides an equitable allocation between users and TNSPs of efficiency gains reasonably expected by the ACCC to be achievable by TNSPs (clause 6.2.2(b)(1)).

The ACCC has sought to comply with these requirements by:

- imposing an efficiency adjustment factor of 2 per cent, representing productivity improvements that the ACCC considers are consistent with efficient expenditure; and
- applying the efficiency carry-forward mechanism set out in the SRP.

### ***Efficiency adjustment***

An important element of the ACCC's Final Decision is the use of what was described in the Draft Decision as an efficiency adjustment factor of 2 per cent, representing productivity improvements that the ACCC considers are consistent with efficient expenditure. As discussed above, consumer groups considered that the factor was too low while several industry representatives considered that it was too high. Some respondents to the Draft Decision also considered that it was arbitrary and unsupported.



Before discussing the ACCC's consideration of this issue, it is important to be clear on how the 2 per cent factor was incorporated into the calculation of allowed opex. Specifically, it was applied after the cost categories had been escalated according to the various escalation indices which were not less than CPI and in some cases as high as CPI+5 per cent. Argument about whether the '2 per cent factor' is too high or low, in isolation from the rest of the decision, is therefore misplaced. The impact of the factor can only be determined after all the details of the decision have been incorporated. As such, any discussion of the efficiency assumptions underlying the ACCC's decision needs to focus on the 'bottom line'. The total opex allowance for the 2005 to 2009 regulatory period has in fact increased by \$13 million or 2.3 per cent in constant currency when compared to the allowance for the 1999 to 2004 revenue control period.

The ACCC's Code obligation is to determine an efficient opex allowance that will also allow TransGrid and its customers to share equitably in the distribution of gains arising from further efficiency improvement. These obligations could be seen as mutually inconsistent. For example, establishing the opex allowance based on 'efficient' investment would leave no scope for gains to be captured by TransGrid by improving its efficiency since, by definition, the allowance is already set at the efficient level of expenditure.

The ACCC considers that such an outcome is inconsistent with the broad intent of the Code which is to provide incentives that encourage TNSPs to reveal the efficient level of expenditure, and in so doing share in the gains of efficiency improvement. The ACCC takes this to mean establishing a target that may reflect a higher level of efficiency than currently observed, but which still leaves room for TransGrid to benefit from further improvement in efficiency.

This is the logic underlying the ACCC's decision. However an axiom of incentive regulation is that efficiency cannot be determined with certainty even if a forensic examination of existing and expected future costs is undertaken. Ultimately, the implementation of incentive regulation requires the regulator to exercise its judgment based on a reasoned assessment of the facts. To inform its judgement on the expected efficiencies that TransGrid could achieve, the ACCC considered the following factors:

- whether there was a change in the scope of TransGrid's activities that would justify increasing or decreasing allowed opex;
- whether the historic evidence of TransGrid's opex would suggest limited scope for further efficiency gains;
- how TransGrid fared in comparison to other network service providers exposed to incentive regulation;
- how future changes in capex to replace ageing assets could affect the efficient level of opex; and
- how the adoption of new technologies and business practices could be expected to affect the efficient level of opex.

### *The scope of TransGrid's activities*

As noted above, TransGrid's initial revenue reset application was based on a 'maintenance unit' calculation that related the opex allowance in each year to the number of maintenance units added as a result of TransGrid's investment activities. This postulates a direct relationship between the expansion of the network and the efficient level of opex. If this postulate is correct then the significant investment that TransGrid has undertaken during the last regulatory period, and expects to undertake during the 2005-2009 regulatory period, would suggest a significant increase in allowable opex.

However, there are a number of reasons why the relationship between investment and the efficient level of opex is unlikely to be as simple as this. These are discussed in the section above.

In response to the Draft Decision, TransGrid provided an analysis of the impact of new assets under management on its opex requirement. TransGrid's conclusion is that new assets under management would lead to an increase in opex of \$6.8 million over the five years from 2005 to 2009. Effectively TransGrid suggests that opex would need to rise by 1.2 per cent during the 2005 to 2009 regulatory period compared to the total opex incurred in the 2000 to 2004 regulatory period, to cater for the expansion of the network that it operates.

TransGrid's calculation assumes increases in the total length of the transmission lines operated by TransGrid of 1350 kilometres or around 11 per cent, over the course of the 2005 to 2009 regulatory period. Similarly the number of substations is projected to increase by 8, an increase of around 10 per cent from the existing 81 substations. The aggregated expected augmentation expenditure necessary to achieve this expansion is around \$1.3 billion over five years, adding around 40 per cent to the value of the asset base at the start of the regulatory period.

Based on TransGrid's analysis, a 10-11 per cent expansion of the size/capacity of the network which will involve a 40 per cent increase to the regulatory asset base, will only cause an increase of around 1 per cent in the level of opex. This is a significant conclusion and suggests that, based on TransGrid's own analysis a significantly higher level of opex due to the significant augmentation of the size/capacity of the network in the 2005 to 2009 regulatory period is not justifiable.

Other potential changes to the scope of TransGrid's business relate to changes to safety, environmental, financial and economic regulatory compliance costs. TransGrid referred to these factors in its application and in its response to the Draft Decision. In responding to the Draft Decision, Powerlink also referred to these factors as operating cost drivers.

The ACCC recognises that transmission network service providers in the NEM face increasing regulatory, environmental and safety obligations. Furthermore there can be

expected to be continual upward pressure on the expected range and quality of services that these businesses provide.

However, transmission network service providers are not alone in facing these pressures. It is reasonable to assume that across the Australian economy, all businesses will face these pressures to various degrees. The escalation of the Consumer Price Index captures the net effect of these pressures (and others) and takes account of the response of firms, across the economy, to these pressures. Indexing TransGrid's allowed operating expenditure by CPI therefore already compensates TransGrid for the costs associated with these additional burdens.

Indexing costs at a rate higher than the rate of inflation could only be justified if it could be argued that TransGrid (like other transmission network service providers) faces a disproportionately high increase in such compliance costs, compared with other firms in the Australian economy. It is not clear to the ACCC that this should be the case.

The conclusion from this is that the ACCC sees little merit in the argument that changes to the scope of TransGrid's business justify significant increases in real terms in the allowable level of opex of the next regulatory control period compared to the past regulatory period.

### ***TransGrid's historic opex trends***

In its response to the ACCC's Draft Decision, TransGrid said that it had reduced operating costs by 25 per cent in real terms between 1995/6 and 2002/3. The ACCC considers that if this claim were valid, it is a significant conclusion that should be taken into account when considering the scope for future efficiency gains. Specifically, such a large historic efficiency gain suggests that considerable caution should be taken when considering the scope for future gains.

After its study of this issue, the ACCC has concluded that TransGrid's position is not consistent with the ACCC's understanding of the facts.<sup>5</sup> While the exact calculation of opex changes over time cannot be determined with certainty, on the basis of the information before the ACCC, the ACCC considers that there is reason to believe that the decrease in opex costs was no more than 5.8 per cent in real terms between 1995/6 and 2002/3. Furthermore, depending on the years of comparison, TransGrid appears to have increased operating costs. For example, between 1998/9 and 2003/4, on a like-for-

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<sup>5</sup> Comparisons of costs over time require that adjustments be made to ensure that like-for-like comparison is conducted and therefore that results are comparable over time. Specific points of difference between the analysis undertaken by TransGrid and the analysis undertaken by the ACCC relate to the inclusion of the depreciated value of non-current assets sold as an operating expense, a misrepresentation of the unregulated business operating costs and inconsistencies between information contained in the ACCC's 1999 Decision on the capitalisation of overheads and TransGrid's current claims on this issue.

like basis operating costs appear to have increased by around 12.6 per cent in real terms.

On the basis of this analysis, the ACCC does not consider that TransGrid's historic operating cost performance supports its claim that significant economies have already been achieved, and therefore that there is limited scope for efficiency improvement in the future.

In light of this, the ACCC considers that its decision to increase TransGrid's opex allowance by 2.3 per cent in real terms above the allowance set for the previous regulatory period, shows that the ACCC has erred on the side of caution and that there is room for TransGrid to benefit considerably from efficiency improvements during the regulatory period.

### ***TransGrid opex efficiency compared to other network service providers***

A widely accepted approach in establishing opex incentives is to compare the performance of a utility with its peers in order to establish relative efficiency and hence the scope for efficiency improvement. However, comparisons are always difficult for a range of reasons including data definitions, and the manner in which adjustments are made to reflect a range of exogenous factors.

The ACCC has not yet established comparative benchmarks of TNSP opex performance other than the compilation and publication of a range of partial measures based on regulatory account information. The ACCC does consider that the establishment of robust benchmarks of Australian TNSPs would be helpful in informing decisions on opex allowances, and therefore the ACCC does intend to progress the development of such benchmarks.

However, it would be inappropriate for the ACCC to be blind to comparisons of operating costs between TransGrid and comparable industries whether in Australia or elsewhere. Many of the New South Wales electricity consumers whose electricity TransGrid transmits, need to compete in international markets to sell their products and services. For many of these businesses electricity is a significant proportion of their total cost, and in several cases, these businesses need to benchmark their products and services against their international peers. It would be reasonable for the ACCC to do likewise in establishing TransGrid's opex targets.

However, the ACCC recognises that international comparisons need to take account of the many differences between countries that could affect the absolute efficiency of firms, and the change in efficiency over time. For example, it would be problematic to make inferences on the basis of comparisons of electricity utilities in developed and developing countries; or between companies in countries that operate under incentive regulation compared to those that operate under rate of return regulation.

For these reasons, while it would be inappropriate to place undue weight on a comparison of TransGrid with the electricity transmission business 'National Grid UK'

(NG UK) which is part of the National Grid Group in the UK, such a comparison can be informative.

The starting point for this comparison is to note the significant differences between TransGrid and NG UK. NG UK is a privately-owned integrated electricity transmission network owner and operator. It delivers an annual peak demand around 4-5 times larger than TransGrid and operates a network that is much larger and more complex than TransGrid's. The geographic environment is also quite different, being more developed and congested in the UK, compared to the relatively sparser, hotter and more mountainous terrain in New South Wales. In addition, there is a significant difference between average wage costs in the UK and those in New South Wales. Since salary and wage costs are generally one of the most significant component of operating expenditure, this will have a significant impact on the level of opex of transmission companies in the UK compared to Australia. All of these differences point to the difficulty of developing a normalised comparison of the efficiency of TransGrid and NG UK at a single point in time.

However, these differences are much less significant when considering changes in efficiency over time. Both NG UK and TransGrid use a similar mix of inputs in operating their networks. Both use executives and staff that would have a similar training and, across the organisation, comparable job descriptions and duties. Both organisations face similar safety and reliability obligations. The operation and maintenance activities of NG UK and TransGrid use similar business processes since they operate the same sort of assets in comparable operating conditions.

Differences in the technologies used, the design of the network, the environment, the price and availability of resources are likely to justify different rates of change in efficiency. But broadly, over a suitably long period, subject to the issues discussed below, average rates of efficiency change in transmission utilities in the UK should provide a relevant point of comparison to rates of change in efficiency in Australia.

Some factors that may justify different rates of change in opex efficiency between NG UK and TransGrid could include:

- relative changes in the size of networks;
- the use of a different starting point for comparison;
- differences in the rate of change of prices of the main input costs;
- differences in the quality of service, since opex reductions may occur at the expense of degrading quality; and
- changes in the duties and obligations of the organisation.

Each of these factors is examined below to determine the extent to which they explain differences in the observed rate of change of opex efficiency between TransGrid and NG UK.

- **Relative change in the size of networks:** TransGrid's network may be expanding more quickly than NG UK's network. However, as discussed above, TransGrid's own analysis suggests that the impact of network expansion on operating costs can be relatively insignificant.
- **Different starting point:** The starting point can have a significant impact on trend rates of efficiency improvement. It could be argued that when NG UK and TransGrid were created as independent entities in 1991 and 1995 respectively, one was relatively more efficient than the other and hence any comparison of efficiency improvement since this time needs to take this into account. The ACCC is not aware of any definitive study of the relative efficiency of TransGrid and NG UK at the time that they were incorporated. However there appears to be no obvious reason to argue that either organisation was significantly more or less efficient than the other at the time that they were incorporated.
- **Differences in rate of change of input costs:** Wage and salary costs dominate TransGrid's opex budget. Similar costs can be expected to dominate NG UK's opex budget, although the ACCC has not analysed this. In both the UK and Australia, average wage rates typically increase faster than the rate of consumer price inflation.
- **Differences in quality of service:** Both NG UK and TransGrid provide a high quality network service. Ofgem reports that NG UK's quality of service has continued to improve. The ACCC has no reliable statistics of TransGrid's quality of service other than the measure of system minutes lost and availability reported in its annual report. From the information on this in its 2002 annual report, there is no reason to believe that there has been a significant change, either better or worse, in TransGrid's quality of service over the last decade.
- **Changes in duties and obligations:** TransGrid claims that since the creation of the NEM it has faced significant additional obligations as a result of its Code changes. The ACCC recognises that TransGrid has faced increasing compliance burdens due to several regulatory changes, not just those initiated by the ACCC. However NG UK also appears to have faced significant increases in compliance costs.
- **Different economic incentives:** In respect of opex, NG UK and TransGrid face very similar economic incentives imposed by a fixed opex allowance during the regulatory period. Until recently NG UK has also been exposed to a fixed four year allowance although it has recently changed to a five year allowance. However, this is unlikely to have had a significant impact on the strength of the incentive.

As discussed above, on the basis of the ACCC's analysis of TransGrid's historic opex costs, on a like-for-like basis these costs appear to have risen in real terms by around 12.6 per cent between 1998/9 and 2003/4.

By comparison, the evidence on the trend of operating expenditure by the network business of NG UK is a compound real decrease in controllable operating expenditure of 50 per cent. This is equivalent to a compound real annual reduction of 3 per cent from 1990 to 2003<sup>6</sup>.

Cambridge Economic Policy Associates (CEPA) reported a 5.2 per cent compound average annual growth rate in its measure of NG UK's Opex Partial Factor Productivity, based on published regulatory accounts between 1992 and 2003<sup>7</sup>.

Over the period 1996 to 2004, TransGrid achieved a 2 per cent real increase in reported opex adjusted for accounting changes. By comparison, applying the National Audit Office's (NAO's) calculation of the average compound decrease in controllable operating costs for the period 1996 to 2004, NG UK achieved a 27 per cent total reduction in controllable operating costs. Using the CEPA figures, the PFP opex reduction is equal to 52 per cent.

These metrics differ, although not significantly, and for the purposes of drawing a comparison between TransGrid and NG UK over comparable time periods, compound average opex improvements measured by CEPA and the NAO over the periods 1990 to 2003 and 1992 to 2003 respectively, have been super-imposed to the period 1996 to 2004. For this reason, the ACCC is unable to compare precisely the trend changes in opex efficiency of TransGrid and NG UK between 1996 and 2004. However, the comparative analysis suggests that NG UK has achieved considerably greater opex productivity improvements than TransGrid, over the period of evaluation.

For the reasons discussed above, the ACCC has placed limited weight on this finding in determining TransGrid's opex allowance. This is reflected in the increased allowance in real terms compared to the previous regulatory period. However, the ACCC does consider that the comparison between NG UK and TransGrid is instructive and does suggest that there is good reason to believe that there may be scope for significant efficiency gains in TransGrid's operating and maintenance activities.

### ***Impact of asset replacement on the efficient level of opex***

The replacement of old and defective assets, and the adoption of new technologies and business practices, may affect the efficient level of operating expenditure.

With respect to replacement expenditure, the 'headline' level of expenditure strictly related to asset replacement is expected to be relatively unchanged over the 2005 to 2009 regulatory period compared to the level of such expenditure over the 1999 to 2004 regulatory period. However this disguises the true increase in expenditure which

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<sup>6</sup> National Audit Office, UK, "Pipes and Wires", page 36.

<sup>7</sup> Productivity Improvements in Distribution Network Operators, Final Report, December 2003.

is actually related to the replacement of higher maintenance assets with new, lower maintenance infrastructure.

In particular, the ACCC's capex decision includes provision for a considerable increase in small augmentation expenditure, compared to the level of such expenditure during the last regulatory period. Expenditure in this category that is likely to have a significant impact on opex includes:

- A significant increase in expenditure on transformers in respect of 14 new transformer projects which will replace several older transformers with new, lower maintenance units;
- Substantial investment in reactive plant which will lead to a marked drop in expenditure required to service and maintain circuit-breakers;
- Investment in several new substations some of which will replace substations such as Orange, that were expensive to operate and maintain on account of restrictive lay-outs; and
- Substantial investment in new SCADA and remote monitoring systems. This reduces the need for manual operation and site inspection visits.

The expenditure in these areas has increased considerably compared to the previous regulatory period.

In addition, the significant capital expenditure in the last regulatory period has had a significant impact on average remaining asset lives. The average remaining life of all network asset categories was higher at the end of the regulatory period than at the start of the regulatory period. However, the impact is particularly marked in the case of cables where the average remaining asset life at 1 July 2004 is 45.9 years compared to 27.7 years on 1 July 1999. Similarly, the average remaining asset life of substations is 28.3 years on 1 July 2004 compared to 15.6 years on 1 July 1999.

In its response to the Draft Decision, TransGrid suggested that the expenditure on replacing assets or extending the life of existing assets is mainly a response to plant condition with the objective being to avoid in-service failure. The ACCC accepts that in many cases assets will be replaced not because they are presenting higher maintenance costs but because as they age the probability of failure increases, or because spare parts may no longer be available and so the impact of asset failure becomes more severe.

However to conclude from this that asset replacement has little impact on maintenance and operation costs, as TransGrid has done its response to the Draft Decision, ignores the fact that new assets are invariably cheaper to maintain and operate than the assets that they replace. In other words, simply because an asset is replaced because of reliability concerns does not mean that its replacement will not deliver reductions in opex.



Furthermore the ACCC considers that it would be unreasonable to dismiss the generally accepted relationship between operating expenditure and the age of an asset. This relationship is accepted by network service providers including SPI PowerNet which commented on this in response to the Draft Decision.

The relevant consideration is the proportion of TransGrid's total asset base that is being replaced during the coming regulatory period, and hence the implications of this for the level of efficient maintenance expenditure. To inform this question, a detailed engineering investigation by asset type would be needed to establish the incremental savings attributable to asset replacement.

In the absence of such a detailed engineering investigation, the ACCC considers that it would not be unreasonable to assume that the replacement of assets would at the least lead to no increase in the real level of opex on a like-for-like basis. In other words in the Australian economy generally, producers, distributors and service providers will, to varying degrees, be investing to replace existing assets with more productive and efficient new assets. As such the benefit of cost reductions flowing from this will already be reflected in the calculation of the CPI.

In TransGrid's case, the significant increase in the replacement of existing assets (whether replaced like-for-like or by higher capacity assets) compared to the previous regulatory period, would be reason to decrease the allowable opex in real terms. Again, by allowing an increase of 3.8 per cent compared to the previous regulatory period, the ACCC has erred on the side of caution.

***Impact of the adoption of new technologies and business practices on the efficient level of opex***

Like other businesses, TransGrid is able to benefit from the adoption of new technologies and more efficient business practises. Examples of technologies and business practises that would deliver increases in productivity and reduction in opex include:

- the increasing use and integration of Geographic Information Systems with asset management systems;
- moving from dedicated operators to a multi-skilled workforce;
- portable IT information gathering (such as handheld or in-truck devices) to enable mobile data entry and more efficient data processing;
- better procurement of resources, such as contractors, can take advantage of increasing labour market segmentation and specialisation;
- transformer oil and gas real-time monitoring;
- improving condition information (by volume and type) and analysis techniques; and

- the ACCC's capex decision has provided for a considerable increase in the allowable level of 'support the business' capex, compared to the last regulatory period, to allow TransGrid to fund the implementation of such business improvement practices.

The ACCC considers that the scope for efficiency gains from the implementation of such business improvement practices could be argued to be somewhat higher in monopoly service industries, such as electricity transmission, than in the economy generally. This is because transmission service providers have only recently been exposed to incentive regulation which attempts to promote efficiency through the use of economic incentives as a proxy for the efficiency-inducing pressures produced by the force of competition.

Nevertheless the ACCC's decision reflects an opex allowance that has increased in real terms across the two regulatory periods, further supporting the ACCC's view that it has erred on the side of caution and that the allowance creates opportunity for substantial benefit for TransGrid through opex efficiency improvements.

### **3.6 ACCC's decision: Opex**

For the reasons set out above, the ACCC has concluded that there is the potential for efficiency gains to be realised by TransGrid.

As noted above, the 2 per cent adjustment is applied after cost categories have been escalated by factors ranging from CPI to CPI plus 5 per cent. When it is looked at in the context of the 'bottom line' (a total increase in opex for the 2004 to 2009 regulatory period of 2.3 per cent from the allowance for the 2000 to 2004 period) the 2 per cent adjustment is a figure that, in the ACCC's judgment, is reasonable and achievable. Based on the analysis set out above, the ACCC believes there is potential for efficiency gains to exceed 2 per cent per annum. GHD's report provides further support for this judgment. While GHD's analysis was based on a limited review and without the benefit of benchmarking, GHD concluded that an efficiency target of between 1 and 5 per cent per annum was not unreasonable. Given that there is the potential for efficiency gains to exceed 2 per cent per annum, the ACCC is of the view that this figure strikes an appropriate balance in allocating expected efficiency gains between TransGrid and users.

The ACCC notes that it has not applied a general efficiency factor to EnergyAustralia's forecast opex. However, in assessing EnergyAustralia's forecast opex, the ACCC has identified specific cost drivers where scope for efficiency gains can be achieved. Because of this, it was decided that a further general efficiency factor was not required. The ACCC has not taken this approach to the specific cost drivers that underpin TransGrid's forecast opex.

In light of the factors discussed above, the ACCC concludes that a 2 per cent annual opex reduction over the 2004 to 2009 regulatory period:

- is consistent with TransGrid's potential to realise efficiency gains;

- will foster efficient operating and maintenance practices; and
- provides an equitable allocation between users and TransGrid of efficiency gains reasonably expected to be achievable by the ACCC.

### **Efficiency Carry-forward Mechanism**

As noted in section 2 of this Chapter, the SRP sets out the details of an efficiency carry-forward mechanism that allows a TNSP to carry forward differences between actual and allowed expenditure into the next regulatory period. The ACCC's reasons for implementing this mechanism are set out in section 6.6.2 of the SRP Background Paper.

The efficiency carry-forward mechanism set out in the SRP will apply to TransGrid for the 2004 to 2009 regulatory control period. Any change to the opex allowance that results from a pass-through or any re-opening of the revenue cap will not affect the calculation of the efficiency carry-forward amount.

### **Conclusion**

Table 3.6.3 below sets out the decision on allowed opex for each year of the regulatory control and then compares this to the Draft Decision and TransGrid's application.

**Table 3.6.3 ACCC Decision compared to TransGrid application and ACCC Draft Decision**

<b>\$2004 million</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>Total</b>
<b>TransGrid's Application</b>	123.29	125.88	128.65	131.31	134.21	<b>643.34</b>
<b>ACCC's Draft Decision</b>	115.37	114.61	113.93	113.26	111.05	<b>568.22</b>
<b>ACCC's Final Decision</b>	116.94	116.50	116.13	115.84	115.66	<b>581.07</b>

## 4 Pass-Through Rules

### 4.1 Introduction

Pass-through rules allow a TNSP's revenue to be adjusted for expenditure by the TNSP during the regulatory period when a specified risk eventuates.

This Chapter sets out:

- the Code requirements
- TransGrid's pass-through application and subsequent events, and
- the ACCC's considerations and decision.

### 4.2 Code requirements

The issue of risk management is discussed in chapter 6 of the Draft SRP Background Paper (18 August 2004). In summary, asymmetric specific risks could potentially be compensated for by:

- external insurance (with the cost of the insurance policy included in the opex allowance)
- self insurance (with a notional insurance premium included in the opex allowance)
- pass-through rules (which form part of the revenue cap) and
- re-opening the revenue cap (where permitted by the Code).

Under a pass-through mechanism, if the specified risk (the pass-through event) occurs, the maximum allowed revenue is adjusted for the resulting impact on the TNSP's expenditure (opex or capex). As the costs of the event are passed through, the mechanism transfers risk from the TNSP to users.

Clauses 6.2.2 to 6.2.4 of the Code set out the provisions relevant to the ACCC's assessment of pass-through applications. In particular:

- clause 6.2.4(a) provides that economic regulation is to be of the CPI minus X form (or some incentive-based variant). The ACCC is required to make a judgment as to the potential for efficiency gains (6.2.4(c)(3)) and to have regard to the need to provide the TNSP with incentives to increase efficiency (6.2.3(d)(1)) (see also 6.2.2(b) and 6.2.2(d)-(f));
- the ACCC is also required to take into account the revenue requirements of the TNSP having regard to the provision of a return on efficient investment and

operating expenditure (6.2.4(c)(5), 6.2.3(d)(4) and 6.2.2(b)(2)), service standards (6.2.4(c)(2) and 6.2.4(c)(3)), taxes (6.2.4(c)(6)), network support service payments to generators (6.2.4(c)(7)) and the on-going commercial viability of the transmission industry (6.2.4(c)(8)); and

- in addition, the ACCC must have regard to the need to provide certainty and consistency in regulatory processes, balance the interests of users and TNSPs and minimise the costs of regulation (6.2.3(d), 6.2.2(a) and 6.2.2(i)-(k)).

The application of the Code provisions in the context of pass-through mechanisms is discussed in section 4.6 below.

### **4.3 TransGrid's application**

In Attachment 13 of its revenue cap application (26 September 2003), TransGrid proposed that a pass-through mechanism would operate for five categories of events:

- change in taxes event
- service standards event
- insurance event
- unforeseen external event (including, but not limited to, events caused by terrorism)
- grid support payments.

On 26 March 2004, TransGrid provided amended pass-through rules which included proposals for three additional pass-through events:

- accounting standards event
- easements risk
- NewVic 3500 (proposed capex project).

The submissions received on this issue in response to the application (from Energy Markets Review Forum and Ergon Energy) are summarised in section 3.4 of Appendix 3 to the draft decision for TransGrid.

### **4.4 The ACCC's Draft Decision**

In the draft decision for TransGrid (Appendix 3), the ACCC proposed to approve the following events:

- change in taxes event

- service standards event
- terrorism event
- insurance event
- grid support payment event.

The ACCC proposed not to approve the following events:

- unforeseen external event – this event was too broad and ambiguous in scope in contrast to the more precisely defined Terrorism Event
- accounting standards event and easements risk – these events were capable of being dealt with in the TNSP’s opex or capex claims
- New Vic 3500 – no supporting information had been received at the time of the draft decision.

## **4.5 Submissions in response to the Draft Decision**

In response to the draft decision on this issue, the ACCC received submissions from TransGrid (2 July 2004), the Joint Customer Groups (20 July 2004) and ElectraNet (18 June 2004).

In summary, TransGrid raised the following issues:

- demand side management payments
- new land tax requirements
- NEMMCO communication standards.

The Joint Customer Groups raised the following issues:

- the definition of ‘terrorist events’ including whether a terrorist incident not directed at the TNSP’s assets but potentially impacting on the TNSP’s costs would be allowed
- the asymmetry of information and process where an event has occurred that would occasion a pass-through of reduced costs
- whether such costs should be fully passed on to consumers.

ElectraNet raised a point concerning the operation of self insurance and the pass-through arrangements, and commented that there should be a pass-through of costs available once those costs exceed the allowance granted for self insurance purposes.

## 4.6 Draft SRP and standard pass-through rules

As previously mentioned in this final decision, the revenue cap process for TransGrid (and EnergyAustralia) was conducted concurrently with the ACCC's review of its DRP. On 18 August 2004, the ACCC released its proposed revised statement of regulatory principles (the Draft SRP). Chapter 6 of the Background Paper to the Draft SRP discussed the ACCC's approach to the use of pass-through mechanisms as a means of addressing asymmetric specific risks.

In relation to pass-through applications, the ACCC considered that, in light of the Code requirements, a pass through event should, in general, have the following characteristics:

- it should be identified in advance with its scope precisely defined
- it should be beyond the control of the TNSP
- its financial impact should be better borne by parties other than the TNSP
- it should affect the TNSP, but not the market generally
- it should not already be compensated for in the forecast opex or other revenue cap costs
- it should not be more efficient for the TNSP to insure against the risk
- its financial impact should be material.

The Draft SRP (clause 6.7) also set out features that the ACCC considered should generally be included in the pass-through rules.

Chapter 1.4 of the Draft SRP Background Paper noted that, as the Draft SRP provided a better guide to the ACCC's thinking than the DRP, the Draft SRP would be relevant to the ACCC's consideration of revenue cap applications submitted prior to, but not finalised by, the release of the Draft SRP (being the revenue cap applications submitted by TransGrid and EnergyAustralia).

Clause 6.6 of the Draft SRP also noted that, to assist TNSPs, the ACCC had developed a standardised set of pass-through rules. These draft rules were developed to facilitate a consistent approach across revenue caps and to provide greater certainty for TNSPs and other parties. A copy of the draft rules was provided to TransGrid (amongst others) for comment on 4 August 2004.

In summary, the approach set out in the Draft SRP was considered to be consistent with the Code provisions as:

- although the Code creates an incentive-based regime, certain events do not necessarily lend themselves to incentive regulation. Pass-through rules provide a

mechanism for dealing with events that are beyond the control of the TNSP where the costs cannot be built into a TNSP's expenditure forecasts but may have a significant financial impact on the TNSP. Limiting pass-through events to exogenous, unpredictable events (and adjusting the pass-through amount if the TNSP acts inconsistently with good electricity industry practice) balances the revenue requirements (and commercial viability) of the TNSP against the requirement to administer an incentive-based regime, the need to provide efficiency incentives and the interests of other parties

- precisely defining the scope of the pass-through events and adopting a standard approach (where appropriate) promotes certainty and transparency. Setting a materiality threshold reduces the administrative cost of regulation.

#### **4.7 Response to Draft SRP and standard pass-through rules**

In response to the Draft SRP on this issue, the ACCC received submissions from SPI PowerNet, TransGrid, the Energy Users Association of Australia, EnergyAustralia, ESIPC, Powerlink, Ergon Energy, VENCORP, ElectraNet and Transend. The submissions are summarised in chapter 7.5 of the Background Paper to the final version of the SRP (8 December 2004).

In addition, EnergyAustralia (29 October 2004) and TransGrid (9 September 2004) provided specific comments with respect to the standard pass-through rules, and a joint (confidential) legal advice (25 January 2005). Amongst other things, TransGrid proposed five additional pass-through events:

- power system event
- environmental law event
- OH&S event
- public safety event
- electricity law event.

#### **4.8 Final SRP**

In chapter 7 of the background paper to the Final SRP (8 December 2004), the ACCC brought together the pass-through arrangements that had previously been discussed separately in the opex and capex sections of the Draft SRP.

The ACCC recognised the limitations of including pass-through rules as part of a revenue cap. In particular:

- the difficulty of distinguishing between endogenous and exogenous costs



- the difficulty in defining the exogenous events with sufficient precision for the purpose of the pass-through rules
- the difficulty in calculating the extent to which risks have been compensated in the decision of allowed expenditure and returns which could result in consumers paying the same cost twice
- the legal limitations in the drafting of pass-through rules which form part of the final decision setting a revenue cap.

Consequently, the Final SRP set out the ACCC's preference not to include pass-through rules in a revenue cap but to instead amend the Code to allow revenue caps to be re-opened within a regulatory period.

At present the revenue cap can only be re-opened in very limited circumstances (see clause 6.2.4(d) of the Code). In clause 7.2 of the Final SRP, the ACCC considered that the Code should be amended to allow the revenue cap to be re-opened subject to the following conditions:

- the TNSP being materially adversely affected by the event
- the event being beyond the TNSP's control
- the event not having been contemplated at the time the revenue control decision was made
- the benefits of revoking the revenue control outweighing the detriment to the TNSP's customers from revoking the control.

In a letter dated 11 November 2004, the ACCC advised TransGrid of the ACCC's preference to replace the proposed operating expenditure pass-through arrangements set out in the draft decision on TransGrid's revenue cap with a revenue cap re-opener (except in relation to taxes).

## **4.9 Arrangements subsequent to the Final SRP**

Although the ACCC's preference remains to replace pass-through rules with a revenue cap re-opener, the Code amendment is not in place at the time of this revenue cap decision.

Accordingly, in an email dated 6 April 2005, the ACCC advised TransGrid that, in the absence of a Code amendment, the ACCC proposed that pass-through rules be re-included in TransGrid's revenue cap.

In an email dated 15 April 2005, TransGrid confirmed its preference for a revenue cap re-opener as set out in the ACCC's letter of 11 November 2004. TransGrid also provided a legal advice (15 April 2005) concerning the drafting of pass-through rules.

## 4.10 ACCC's considerations

### *Inclusion of pass-through rules*

The ACCC affirms its preference, as set out in chapter 7 of the Final SRP Background Paper, to manage the uncertainty of unforeseeable events using a revenue cap re-opener. However, the ACCC understands that, although the NSW government has forwarded to NECA a proposed Code amendment, the Code will not be amended in time for this decision. Consequently, the options available to the ACCC are to:

- include pass-through rules in TransGrid's revenue cap 2004-2009; or
- flag an NPV neutral adjustment at the next revenue cap re-set.

Due to the late stage of the current process, the ACCC believes that the latter approach would be inappropriate. Therefore, the ACCC has included pass-through rules in TransGrid's revenue cap. This decision reflects the particular circumstances of TransGrid and does not alter the ACCC's general approach outlined in the Final SRP.

### *Form of pass-through rules*

The pass-through rules that form part of TransGrid's revenue cap are set out in Appendix A to this Decision. The rules are based on the standard pass-through rules referred to in the Draft SRP but have been revised in light of the submissions referred to in sections 4.5, 4.7 and 4.9 above. The changes made are discussed in chapter 6 of the final decision on EnergyAustralia's revenue cap. The following discussion responds to specific comments made by TransGrid in its submissions of 9 September 2004 and 2 July 2004.

### ***Excluded events: Power System Event, Environmental Law Event, OH&S Event, Public Safety Event and Electricity Law Event***

The ACCC has not accepted the five additional pass-through events proposed by TransGrid in its submission of 9 September 2004. In making its decision, the ACCC has considered the Code provisions and the application to pass-throughs (discussed in sections 4.2 and 4.6 above) and previous decisions made by the ACCC and jurisdictional regulators.

In summary, TransGrid proposed the following additional events:

- Power System Event – covers material financial impact arising from the Regulatory Test (including consideration of demand side options) and obligations under chapter 4 of the Code to secure grid support and/or interruptible loads
- Environmental Law Event – covers material financial impact arising from decisions made by an Environmental Agency or changes in environmental legislation excluding certain levies

- OH&S Event – covers material financial impact arising from decisions made by WorkCover or other Authorities, or changes in legislation
- Public Safety Event – covers material financial impact arising from an action the TNSP is required to take for reasons of public safety
- Electricity Law Event – covers material financial impact arising from obligations on TNSPs under the National Electricity Law or Code, or decisions of Authorities under the law or Code.

In relation to each of the events:

- Power System Event – the event is not confined to material changes in TNSPs’ obligations but includes costs arising from the operation of existing obligations. The definition is too broad to meet the principles discussed in sections 4.2 and 4.6 (in particular, that the event be exogenous and unpredictable). There is also an issue as to the degree of overlap with other parts of TransGrid’s application and its cost forecasts – for example, costs associated with the application of the regulatory test and TransGrid’s capex forecast; and costs associated with demand side payments and opex forecasts. In contrast, the Network (Grid) Support Event, which the ACCC has accepted, is more precisely defined and is limited to changes from the basis upon which the revenue cap was set.
- Demand side management payments

In its submission of 2 July 2004, TransGrid requested confirmation that demand side management payments (being payments by EnergyAustralia and TransGrid of \$1 million per year each over a period of 5 years as part of the conditions imposed in March 2002 by the NSW Department of Infrastructure Planning and Natural Resources to its approval of the MetroGrid Project) are covered as a Service Standard Event. However, in TransGrid’s submission of 9 September 2004, it stated that demand side management payments are currently incurred by TNSPs as a result of meeting obligations to secure grid support and/or interruptible loads under chapter 4 of the Code, and this was included under the definition of Power System Event.

However, as with its comments regarding the Power System Event generally, the ACCC is concerned as to the degree of foreseeability of this cost. It is also not clear that the event comes within the definition of Service Standards Event; and it is unclear whether the event is already compensated for in the revenue cap.

- Environmental Law Event – the definition is not limited to the costs of providing prescribed services. There is no definition of “Environmental Agency” nor “Environmental legislation”. The definition covers fines and penalties issued by an environmental agency which would impact on TNSPs’ incentives to comply with the law.
- OH&S Event - the definition is not limited to material changes in the costs of providing prescribed services. The definition covers fines and penalties for failing

to comply with current laws which would impact on TNSPs' incentives to comply with the law. There is an additional question as to the degree of any possible overlap with TransGrid's current self insurance arrangements for WorkCover. The ACCC also notes that, although IPART accepted occupational health and safety requirements as a pass-through event, this was limited to live-line working procedures.

- Public Safety Event - there is no definition of "public safety". The definition is not limited to material changes in the costs of providing prescribed services and also appears to cover the imposition of fines or penalties which would impact on TNSPs' incentives to comply with the law.
- Electricity Law Event - the definition could apply to many different types of costs, some of which may not be related to providing prescribed services or are better borne by the TNSP than other parties. In contrast, the Changes in Taxes Event (which includes levies and Authority charges and fees) which the ACCC has accepted is more precisely defined and is limited to costs that more clearly meet the principles discussed above.

In summary, the additional events proposed by TransGrid are too broad and imprecise. As a consequence:

- the definitions potentially cover an extremely wide range of costs. The definitions are not limited to events that are related to the provision of the regulated services; are beyond the control of the TNSP; and are unpredictable and therefore unable to be incorporated into the MAR at the time of the revenue cap determination. As discussed above, the ACCC is required to administer an incentive based form of regulation. Allowing pass-through of costs that are predictable and within the control of the TNSP would reduce incentives for TNSPs and be more consistent with a rate of return / cost of service regime
- the definitions potentially cover costs (namely fines and penalties) that should be borne by the TNSP (as otherwise the incentive of TNSPs to comply with the law would be significantly affected)
- the definitions are highly ambiguous. If accepted, parties would have no certainty as to what costs were covered. This is likely to result in future disputation and administration costs

The ACCC considers that the pass-through events that have been approved preserve the incentive power of the revenue cap, while also balancing the interests of affected parties.

***Other issues raised by TransGrid (2 July 2004 and 9 September 2004)***

The following comments respond to the remaining issues raised by TransGrid in its submissions of 2 July 2004 and 9 September 2004:

- New land tax requirements and NEMMCO Communications Standards

On the basis of the information provided by TransGrid, the ACCC confirms that:

- changes in land tax requirements come within the definition of Change in Taxes Event, and
- NEMMCO Communications Standards (which impose service performance obligations on TransGrid resulting in additional opex and capex costs) are covered as a Service Standards Event

(although any pass-through amount would still need to satisfy the rules).

The amendments proposed by TransGrid in its submission of 9 September 2004 have not been made as the amendments were not limited to NEMMCO Communications Standards and the provision of regulated services.

- Insurance deductibles

Requiring a TNSP to make a claim to an insurance provider where the expenditure arising from the incident does not materially exceed the deductible, may lead to additional costs for the TNSP. However, the ACCC considers that this is outweighed by the advantage of obtaining confirmation from the insurance provider that the incident is covered by the insurance policy (and therefore the deductible can be passed on to users under the pass-through rules). This protection is important as the pass-through costs are potentially considerable. For example, EnergyAustralia is liable to pay the first \$10 million under its bushfire policy.

- Initiation of pass-through

The ACCC agrees that the entitlement or requirement to submit a Notice of Proposed Pass-Through should arise only where the financial impact is material. However, the amendment proposed by TransGrid to clause 3.1(b) would also require changes to be made to other clauses. The current drafting of clause 2.4(a) already ensures that, by definition, the financial effect must be material before it can constitute a Pass-Through Amount and thus trigger the operation of clauses 2.3 and 3.1.

- Timing of events

TransGrid proposed that clauses 2.3(a) and 3.1(a) be deleted so that the rules would cover events that occur prior to the relevant regulatory period but which have a financial impact during the period. However, the draft standard rules in fact cover such events.

- Instructions to issue notice

The rules no longer include a power on the ACCC to direct a TNSP to provide a Notice of Proposed Pass-Through due to subsequent legal advice concerning limitations on the drafting of pass-through rules. However, if the ACCC has reason

to believe that a pass-through event has occurred, it will, in general, approach the TNSP on an informal basis.

#### **4.11 ACCC's decision: Pass-Throughs**

After taking into account the Code requirements, the revenue cap set by the ACCC for TransGrid for the period 2004-2009 includes the pass-through rules set out in Appendix A to this Decision. In summary, pass-throughs have been approved for:

- a change in taxes event
- an insurance event
- a network (grid) support event
- a service standards event
- a terrorism event.

## **5 Asset Base Roll-Forward Calculation**

### **5.1 Introduction**

This Chapter sets out the methodology that has been used to determine TransGrid's closing asset base at the end of the 1999-2004 regulatory period. This discussion of the principles and parameters of the roll-forward calculation for the purpose of this Decision includes consideration of:

- the regulatory principles and framework as it applies to this roll-forward and its implications for the design of the roll-forward mechanism;
- TransGrid's proposal on the roll-forward calculation;
- the ACCC's Draft Decision on the roll-forward calculation;
- issues raised by interested parties on the Draft Decision; and
- the ACCC's final determination on TransGrid's closing RAB for the 1999-2004 period.

### **5.2 Code requirements**

The Code provides a number of valuation options for the regulatory review for the current period such as revaluing existing assets on a periodic basis using the Optimised Depreciated Replacement Cost (ODRC) methodology or setting the asset base by adopting the initial jurisdictional valuation and adding in new investment at cost.

The ACCC has limited discretion in determining a particular approach as the Code requires that the ACCC satisfy a number of principles and objectives such as providing a fair and reasonable rate of return and having regard to the COAG's preference for the use of a deprivation valuation.

The ACCC considers that for existing assets, a roll-forward of the jurisdictional asset base best satisfies the objectives of the Code. Most importantly, the ACCC considers that a roll-forward of the jurisdictional asset base does not deter investment as a revaluation might.

### **5.3 Regulatory principles**

#### **Asset base calculation under the Draft Statement of Regulatory Principles**

For the purposes of calculating TransGrid's closing asset base at the end of the 1999-2004 regulatory period, this Decision follows the principles stated in the Draft Statement of Regulatory Principles (DRP). The guiding principle in this roll-forward

calculation is to ensure that TransGrid earns the regulated return on prudent expenditure.

The basic methodology underlying the roll-forward of TransGrid's asset base is that the closing value of the asset base from year to year is constructed by taking the opening value, converting it to a nominal figure by adding in an inflation adjustment, adding in any capital expenditure and subtracting disposals and nominal depreciation for the year. The closing value for one year's asset base becomes the opening value for the following year's asset base. The calculation of the closing RAB combined with the subsequent calculation of the Maximum Allowed Revenue (MAR) in the Post Tax Revenue Model (PTRM) must ensure that over the life of the regulated assets, the present value of revenue equals the present value of the sum of the allowed operating expenditure plus return on and return of capital (discounted at the allowed rate of return).

The building block approach is used so that the expenditure of each TNSP is appropriately amortised over time. This will ensure that each TNSP, given efficient expenditure practices and decisions, is adequately compensated for the cost of providing transmission services in the long run. In establishing the building block components for this roll forward:

- the operating expenditure allowance is established ex ante and is not subject to review, even if actual operating expenditure is ultimately different to the allowance. This means that any difference between forecast and actual opex in the roll-forward calculation is not considered; and
- in the DRP, capital expenditure is forecast ex ante but is subject to an ex post prudence assessment. This means that the roll-forward calculation needs to take account of any difference between the ex ante forecast and the actual out-turn that is deemed to be prudent and hence allowable in the RAB.

#### **Asset base calculation under the Statement of Regulatory Principles (SRP)**

Under the ex ante regime, the ACCC's preferred approach will be to lock in the RAB. As stated in the SRP, this approach involves locking in the value of the asset base of the previous regulatory period, adjusting for inflation and depreciation, and assessing capex incurred during the regulatory period according to the capex incentive framework. Additional prudent expenditure will be rolled in at actual cost at the end of the regulatory period.

### **5.4 TransGrid's application**

TransGrid provided the ACCC with a roll-forward model that established a closing RAB at 30 June 2004 of \$3,047.4 million including the Snowy transmission assets which were incorporated into TransGrid's RAB during the regulatory period.

The roll-forward model developed by TransGrid entailed a two-step calculation:



- Step 1: Calculate the closing RAB on the basis of the forecast capex using the following formula:

$$\text{Closing RAB (nominal)} = \text{Opening RAB (nominal)} - \text{Forecast Depreciation (real, scaled up for inflation)} + \text{Actual inflation multiplied by the RAB} + \text{Forecast Capex (nominal); and}$$

- Step 2: Adjust the RAB calculated in Step 1 for the difference between forecast and out-turn capex as well as the accumulated return on that difference.

In developing the calculations set out in these two steps, TransGrid needed to make assumptions on a number of parameters including: the calculation of depreciation and asset lives, the applicable WACC, and the treatment of inflation. Each of these parameters is discussed in the next section.

TransGrid also produced a closing RAB calculation on the basis of an ODRC calculation excluding easements. The 'ODRC' RAB was valued at \$3,062 million (as at 30 June 2004). TransGrid contends that both a roll-forward and an ODRC valuation would be consistent with the regulatory framework, but proposed that the RAB be established on the basis of a roll-forward calculation.

## **5.5 Submissions on TransGrid's application**

With regard to the roll-forward, SPI PowerNet believes the undepreciated replacement cost of the asset base is the appropriate value to use for any comparisons of opex or capex ratios. In addition, SPI PowerNet believes easement costs should be excluded from the asset values being used for the comparison for various reasons.

Transend submits that the ACCC has not clearly articulated the 'cash flow approach' that could be used to relate the closing RAB to the opening RAB in the event of differences between forecast and actual accounting data becoming available.

## **5.6 ACCC's Draft Decision**

The ACCC reviewed TransGrid's roll-forward calculation following consultation with TransGrid and after making some modifications to the model was satisfied that TransGrid's model accorded with the principles outlined above.

TransGrid's model calculated a nominal closing RAB and accumulated depreciation in total and in the various asset classes (substations, lines, cables) and so provided the necessary starting point for the ACCC's calculation of allowed revenue for the following regulatory period.

The formula described in Step 1 of TransGrid's calculation is a development of the conventional 'roll-forward' accounting formulation (closing assets equal opening assets

plus capex less depreciation) to ensure that the closing RAB is stated in nominal (money of the day terms).<sup>8</sup> This is required for the nominal allowed revenue calculation performed in the ACCC's PTRM.

Several proposed changes to TransGrid's model were identified by NERA on behalf of TransGrid. TransGrid's model has been adjusted to incorporate recommendations from NERA as set out in the ACCC's Draft Decision.

### **Specification of the parameters of the roll-forward calculation**

In order to carry out the roll-forward calculation, a range of parameters must be decided upon. Parameters that affect the roll-forward calculation include the choice of pre-tax or post-tax WACC, the treatment of inflation, and the calculation of depreciation and remaining asset lives. There are a variety of ways to specify each of these and each affects the determination of the closing RAB. These parameters are examined below.

### **Weighted Average Cost of Capital (WACC)**

The WACC affects the rolled-forward value of prudent 'unforecast' capex. A post-tax WACC has been used in the roll-forward calculations for the purposes of this Chapter. TransGrid's proposed model used a nominal pre-tax WACC but was later modified by the ACCC according to recommendations by NERA. NERA argued that it is unnecessary to use a higher pre-tax WACC if tax depreciation is calculated correctly.

In calculating the carried forward value of unforecast capex for the purposes of this Chapter, half the WACC for the year in which the expense was incurred and a full WACC for subsequent years have been applied. The half-WACC allowance is based on the assumption that capex will be uniformly distributed throughout the year.

### **Inflation**

The PTRM necessarily uses an inflation forecast in order to calculate the nominal MAR for each year of the regulatory period. This raises the issue of whether the roll-forward calculation should use this inflation forecast or use the actual inflation over the period of the control. The issue reduces to deciding whether in its 1999 Decision, the ACCC effectively determined a fixed nominal WACC (one that does not reflect differences between forecast and actual inflation) or a fixed real WACC (one that does reflect changes in actual inflation).

The clear intention of the regime developed in the 1999 Decision is not to create a risk that any difference between actual and forecast inflation could provide windfall gains to shareholders (if actual inflation turns out lower than forecast) or to consumers (if

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<sup>8</sup> The conversion from a "real" (constant currency) calculation to a "nominal" (money of the day) calculation requires that all parameters are adjusted for inflation (by multiplying by (1+ inflation)). However for the conversion of "real" depreciation to "nominal" depreciation it is necessary to multiply the "real" depreciation by (1+ inflation) but then subtract inflation multiplied by the RAB.

actual inflation turns out higher than forecast). In this Decision nominal inputs will be rolled-forward using a nominal WACC that reflect actual inflation in each year of the regulatory period. This is equivalent to a roll-forward of real inputs on the basis of a constant real WACC.

The March Quarter CPI has been adopted as the inflation index as this is consistent with the CPI rate used to adjust TransGrid's MAR over the regulatory period.

### Depreciation and asset life

The approach to the calculation of asset lives and depreciation as submitted by TransGrid and NERA will be used for the purpose of this Decision. TransGrid's approach provides that prudent capex that exceeds the forecast in the ACCC's 1999 Decision is not depreciated during the regulatory period in which it is incurred. However it is necessary to ensure that asset lives are adjusted to take account of the unforecast capex that results in assets that are commissioned during the regulatory period but that are not depreciated until the beginning of the next regulatory period. This adjustment will then affect the calculation of depreciation from the beginning of the next regulatory period.

The formula used to determine the average remaining asset lives for each asset class is:

$$ARAL_{t+1} = \frac{(ARAL_t - 1) * (ORAB_t - Dep_t + CPI_t) + SAL * Capex_t}{ORAB_t - Dep_t + CPI_t + Capex_t}$$

Where:

ARAL<sub>t+1</sub> is the average remaining asset life at the beginning of period t+1;

ARAL<sub>t</sub> is the average remaining asset life at the beginning of period t;

ORAB<sub>t</sub> opening regulatory asset base in period t;

SAL is the standard life of an asset category;

Dep<sub>t</sub> depreciation allowed in the ACCC's 1999 Decision in period t adjusted for actual inflation outcomes;

CPI<sub>t</sub> CPI allowance in the ACCC's 1999 Decision in period t adjusted for actual inflation outcomes;

and

Capex<sub>t</sub> capital expenditure in period t, as used by TransGrid to calculate the opening regulatory asset base for 1 July 2004.

The details of the roll-forward calculation used in the Draft Decision are set out in Table 5.6.5 with the impact of various changes to the models shown. Table 5.6.5 compares the roll-forward calculation used in this Decision with TransGrid's original submission, and NERA's March 2004 calculation. The ACCC accepted all of NERA's recommendations.

**Table 5.6.5 Draft Decision Reconciliation of closing RABs**

<b>\$2004 million</b>	<b>Non-Snowy assets</b>	<b>Snowy assets</b>	<b>Total</b>
<b>TransGrid's application</b>	\$2989.72	\$57.68	<b>\$3047.40</b>
<b>NERA memo March 2004</b>	\$2963.40	\$57.68	<b>\$3021.08</b>
<b>ACCC roll-forward calculation</b>	\$2865.57	\$57.68	<b>\$2923.25</b>

## 5.7 ACCC's decision: Asset Base Roll Forward Calculation

The ACCC's decision on TransGrid's closing asset base for the 1999-2004 regulatory period is set out in Table 5.7.1. This table compares the roll-forward calculation used in this Decision with TransGrid's original submission, and the ACCC's Draft Decision.

**Table 5.7.1 Final Decision: Reconciliation of closing RABs**

<b>\$2004 million</b>	<b>Total</b>
<b>TransGrid's application</b>	\$3,047.40
<b>Draft Decision: ACCC roll-forward calculation</b>	\$2,923.25
<b>Final Decision: ACCC roll-forward calculation</b>	\$3,012.76

The calculation of asset lives at the start of the regulatory period in this Final Decision (and for all subsequent years in the regulatory period) differs from the calculation used in the Draft Decision in that a change has been made to take into account the "overspend" during the last regulatory period. This overspend has been rolled into the RAB in the calculation of the weighted average remaining life of assets.

The Draft Decision did not take this overspend into account in calculating the average remaining asset life. The RAB determined in the Draft Decision was therefore based on an under-estimation of the correct average remaining life of all assets included in TransGrid's RAB. The effect of this change (retaining all other factors) generates relatively lower annual depreciation charges and relatively higher regulatory returns during the 2004-2009 regulatory period.

In accordance with the principles and parameters of the roll-forward calculation set out above, the ACCC has determined that TransGrid's closing asset base at the end of the 1999-2004 regulatory period is \$3,012.76 million. This has increased from \$2923.25 million in the Draft Decision primarily because of the ACCC's decision to include the value of the Bayswater-Piper-Marulan 500 kV line in the asset base.

## **6 Historic Capital Expenditure**

### **6.1 Introduction**

This Chapter sets out the ACCC's decision on the prudence of TransGrid's capital expenditure over the period 1 July 1999 to 30 June 2004 (1999-2004). This Chapter:

- provides an overview of the regulatory framework and the ACCC's approach to the assessment of capital expenditure from 1999-2004;
- outlines TransGrid's capital expenditure application for past capex;
- outlines GHD's review of TransGrid's application;
- summarises submissions from interested parties on TransGrid's application;
- outlines the ACCC's Draft Decision on TransGrid's capital expenditure from 1999-2004;
- outlines submissions from interested parties on the ACCC's Draft Decision; and
- provides the ACCC's Decision on the prudence of TransGrid's expenditure from 1999-2004.

### **6.2 Regulatory framework**

This section describes the relevant features of the regulatory regime as it applies to the regulation of TransGrid's capital investment over the period from 1999 to 2004. The relevant elements of the ACCC's regulatory regime for past capex include:

- The ACCC's Code obligations;
- The provisions of the Draft Regulatory Principles;
- General principles for the assessment of prudence; and
- The application of the prudence test to augmentation and non augmentation investment.

#### **Code Requirements**

The core obligations of the ACCC in relation to the regulation of capital investment by TNSPs are set out in Clause 6.2.3(d) of the Code. This clause provides that the regulatory regime to be administered by the ACCC must have regard to the need to provide a fair and reasonable risk-adjusted cash flow rate of return to TNSPs on

efficient investment given efficient operating and maintenance practices on the part of the TNSPs.

### **The provisions of the Draft Regulatory Principles**

The DRP elaborated on how the ACCC interpreted its Code obligations to regulate capital investment. The key elements of the DRP's approach to capital expenditure include that:

- the ACCC would determine an allowance for capital expenditure based on a forecast at the start of the regulatory period for the purpose of setting a price path and providing TNSPs with sufficient cash-flow to finance their expected investment programs; and
- at the end of the period (after the investment has been made) the ACCC would assess the prudence of actual capital expenditure to determine the amount of expenditure to be included in the Regulatory Asset Base.

Over the past regulatory period TransGrid developed at least 40 individual transmission reliability or augmentation projects, and several hundred further maintenance, replacement and 'support-the-business' investments were made. The practical challenge of assessing the prudence of several hundred investment projects has required the use of discretion in developing an ex post assessment approach that maximises the effective performance of the ACCC's Code obligations within its resource constraints and in view of the time available to complete the review. This discretion has been applied in the following ways:

- if a project was included in the capital expenditure forecast in the ACCC's 1999 Decision, and if the actual expenditure on that project turned out to be equal to or less than the forecast, then the prudence of that investment is taken by the ACCC to be approved through its inclusion in the 1999 Decision;
- there has been no specific re-examination of the prudence of projects that were included in the capex forecast in the ACCC's 1999 Decision, but which TransGrid did not develop and the cost of such projects has been removed from the RAB;
- a 'process-based' evaluation of the prudence of investment selection and delivery processes has been used to assess the prudence of maintenance and replacement, and 'support-the-business' capital expenditure;
- the amount of network capital expenditure characterised as 'miscellaneous' has been kept to a minimum, however investment which has remained under this category has been evaluated primarily through a process based-assessment; and
- a much more rigorous standard of prudence assessment has been applied to large projects where the cost of those projects has been materially higher than forecast.

The ACCC has adopted the Regulatory Test as the starting point in assessing the prudence of TransGrid's capex as foreshadowed in the 1999 Decision, rather than the definitive amount to be rolled into the RAB.

### **General principles for the assessment of prudence**

The DRP defines prudence in terms of 'good industry practice' which is not given a precise definition. An assessment of whether TransGrid developed a project in accordance with 'good industry practice' necessarily requires the exercise of judgement, taking account of the specific facts and circumstances of the investment.

In undertaking the ex post assessment of investment, the essence of the ACCC's task is to examine the TNSP's investment decisions considering the information available to the TNSP at the time the decisions were taken and assess whether, according to the benchmark of 'good industry practice', a prudent TNSP would have made the same decisions.

If the ACCC determines that different decisions would have been made by a prudent operator than were actually made by the TNSP, then the task is to quantify the difference in investment under each set of decisions. By implication, this difference represents the cost of 'inefficiency' to be excluded from the RAB. In this way, the ACCC is able to maintain consistency with its Code obligation to ensure a fair and reasonable risk-adjusted rate of return on efficient investment given efficient operation and maintenance practices.

### **The application of the prudence test to investment**

The purpose of the prudence examination for augmentation investment is to establish whether the TNSP made decisions at each stage of investment that are consistent with good industry practice. The examination consists of three sequential stages, and is applied whether or not the Regulatory Test has been conducted.

The three stages include: first an assessment of whether there is a justifiable need for the investment; second, assuming the need for an investment is recognised, assessment of whether TransGrid proposed the most efficient investment to meet that need that is consistent with 'good industry practice'; and third, assessment of whether the project that was analysed to be the most efficient was indeed developed, and if not, whether the difference reflects decisions that are consistent with 'good industry practice'.

A structured examination of the project in this manner provides the content and rationale for the prudence assessment and any possible reduction in the total cost of the project to be rolled into the RAB.

As mentioned earlier, the assessment of the prudence applied by the ACCC to non-augmentation expenditure, including business support expenditure, has principally consisted of a review of the processes TransGrid has used to assess the need for investment, to select the appropriate project and then to deliver that project.

The ACCC is applying the ex post prudency assessment of investment, described in the Draft Regulatory Principles framework for the first regulatory control period. The ex ante capex regime will be applied to TNSPs in the future and is outlined in the Statement of Regulatory Principles.

### **6.3 TransGrid's application**

TransGrid's capital expenditure application submitted in September 2003 for the period from 1 July 1999 to 30 June 2004 stated that it expected to have spent \$1,107.4 million over this period. This amount is in nominal dollars and excludes the return on investment during construction. The ACCC's 1999 Decision provided an allowance of \$904.2 million<sup>9</sup> over this regulatory period. This amount represents the carried-forward value of the expenditure, includes interest during construction (IDC), and is in nominal dollars.

To enable a fair comparison of the ACCC's 1999 Decision and the actual spend by TransGrid, a number of adjustments need to be made:

- the final year actual capex figure should replace the forecast figures;
- the ACCC's 1999 Decision and TransGrid's actual expenditure need to be brought to a common currency (2004 dollars); and
- the return on investment needs to be included in TransGrid's estimate of actual capital expenditure.

After adjusting for these factors, the ACCC's 1999 Decision is \$937.48 million and TransGrid's actual spend is \$1,226.93 million (\$2004). The difference is \$289.43 million, and represents the carried-forward value of the expenditure TransGrid made above the ACCC's Decision. This overspend is largely explained by TransGrid's actual investment exceeding the capital program envisaged at the time of the 1999 Decision. Specifically, 15 projects undertaken during this period exceeded the 1999 Decision budget by an aggregate \$250.61 million<sup>10</sup>. In its Application, TransGrid submitted that all capital expenditure incurred during this regulatory period was prudent.

### **6.4 Consultant's review of TransGrid's application**

GHD Pty Ltd (GHD) was engaged by the ACCC to undertake a review of the prudency and efficiency of TransGrid's expenditure from 1999-2004. GHD reviewed categories

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<sup>9</sup> Including the Snowy assets which were included in TransGrid's asset base as per the ACCC's SMHEA Decision.

<sup>10</sup> These Figures are based on numbers in Attachment 8 of TransGrid's application.



of TransGrid's expenditure relating to augmentation, refurbishment and business support.

The main conclusions and recommendations of GHD's review are summarised below.

- Based on sampling a range of projects totalling \$463 million from all categories of historic capex, GHD was unable to reach a conclusion on the prudence of \$301 million of capital expenditure during this period, due to insufficient information or a limited level of review, within the scope and resource constraints of the assignment.
- GHD considered that some \$115 million of capital expenditure during this regulatory period was prudent and efficient.
- GHD limited its review of augmentation expenditure to projects including: the Molong substation and line; Kempsey-Nambucca-Coffs 132 kV line; Tuggerah-Sterland 330 kV transmission line duplication; and reinforcement of Wagga area supply. Of these projects GHD found that only one project, the Molong substation and line, was not prudent but noted that other investment would have been required in its place, possibly at a lower cost. More generally, GHD found that TransGrid had some difficulty in tracking project costs, undertaking and providing adequate economic project justifications, and reviewing project costs after approval for projects in this category.
- In relation to refurbishment expenditure, TransGrid's inability to adequately categorise expenditure prevented GHD from arriving at a conclusion on the level of efficient expenditure in this category. Subsequent information provided by TransGrid in response to GHD's Draft Report more clearly showed categorisation of expenditure and the relationship between strategies and budget, however, GHD did not review this information.
- In relation to business support expenditure, GHD concluded that: IT expenditure for the period was justified in terms of need and that miscellaneous projects and equipment expenditure was efficient. GHD, however, considered that private use vehicles should be unregulated assets and, therefore, the associated \$0.9 million relating to private use vehicles should not be included in the regulatory asset base. GHD also recommended a downward adjustment of about \$25 million to motor vehicle expenditure to reflect vehicle sales revenue received by TransGrid.

## **6.5 Submissions on TransGrid's application**

The ACCC received submissions on TransGrid's application in relation to historic capex from VENCorp, Joint Customer Groups, Origin, the Energy Market Reform Forum (the EMRF) and the Total Environmental Centre Inc (TEC). TransGrid also responded to some of these submissions. Issues raised are summarised below:

- Origin raised concerns about the adoption of the new ex ante regulatory regime arguing that regulated network service providers should be subject to an ex post review of the efficiency and prudence of their expenditure.
- VENCORP submitted that TNSPs should be permitted to roll into the regulatory asset base the efficient cost of all investments that satisfy the Regulatory Test including costs associated with unforeseen demand growth and generation development. However, VENCORP considered that where the TNSP is best placed to manage risks such as asset maintenance, performance and availability over the life cycle, there is a case for not automatically rolling in the unforeseen amount.
- VENCORP noted that TransGrid's network investment criteria appear to be based on an interpretation of Schedule 5.1 of the Code that differs from VENCORP's interpretation. VENCORP is therefore concerned that this may lead to different levels of transmission investment (and possible network reliability) in different regions of the NEM.
- The EMRF and Joint Customer Groups noted their concern with the size of the differences between the forecast and actual capital expenditure and the front loading of capex over-runs in the earlier years of the regulatory period.
- The Joint Customer Groups and the EMRF considered that allowing TransGrid to roll into its asset base costs above those projected for the first regulatory period would undermine and negate the concept of incentive regulation. The Joint Customer Groups considered that this would diminish the incentives for the TNSP to be innovative and efficient, as would rolling in the foregone return on the overspend. The EMRF considered that allowing TransGrid to fully recover the cost of unexpected capital expenditure would simply mean a shift of its business risks onto its customers.
- The Joint Customer Groups noted that TransGrid's application does not provide any detail on how cogeneration, embedded generation and demand management has been considered to reduce the need for increased network augmentation.
- The Joint Customer Groups also noted that augmentation of the NSW transmission system to enable the flow of energy from Queensland to Victoria and South Australia and vice-versa does not benefit NSW customers and accordingly NSW customers should not be required to bear this cost.
- The TEC considered that in relation to TransGrid's proposal for the Wollar-Wellington line augmentation, TransGrid has failed to consult appropriately and has inappropriately defined, assessed and dismissed non-network alternatives to this augmentation project. The TEC further considered that a 132 kV line would cost considerably less than the proposed 330 kV Wollar-Wellington line, while providing the same capacity.
- TransGrid disagreed with the EMRF that neither additional prudent capex nor associated unrecovered returns should be recognised. TransGrid, however, agreed

with VENCORP that efficient costs of all investment that has satisfied the Regulatory Test should be rolled into the regulatory asset base.

- In response to the submission by the TEC, TransGrid argued that it had selected the Wollar-Wellington 330 kV line project primarily for voltage reasons and that a 132 kV line would not have been sufficient for this purpose. Regarding the assessment of non-network options, TransGrid argued that its assessment was appropriate.

## 6.6 ACCC's Draft Decision on the prudence of TransGrid's application

The ACCC's Draft Decision, which set out the ACCC's draft determination on the prudence of TransGrid's capital expenditure from 1 July 1999 to 30 June 2004, was released in April 2004. The ACCC's Draft Decision determined an overall capital expenditure allowance of \$980.65 million, compared to TransGrid's overall expenditure during this period of \$1107.4 million, a prudence adjustment of \$126.75 million. This adjustment broken down by category of expenditure and individual project is shown in Table 6.6.1. A discussion on the ACCC's draft determination of these projects is below.

**Table 6.6.1 Comparison of ACCC Draft Decision and TransGrid's actual expenditure**

\$ nominal million	Actual spend over 1999/2004	ACCC 2004 Decision allowance for 1999/2004	Prudence adjustment
<b>Augmentation</b>			
Kempsey-Nambucca-Coffs Harbour 132 kV	56.3	54.15	-2.15
Bayswater 500 kV	70.0	0	-70.0
Sydney City CBD	276.5	232.5	-44.0
<b>Non-augmentation: replace/refurbishment</b>			
Telecommunication assets	41.7	38.5	-3.2
Other Sydney Projects	11.1	4.6	-6.5
<b>Support the business</b>			
Motor vehicles	37.4	36.5	-0.9
<b>Other projects</b>	614.4	614.4	n/a
<b>Total</b>	<b>1,107.4</b>	<b>980.65</b>	<b>-126.75</b>

The ACCC's Draft Decision on the prudence and efficiency of TransGrid's investment during the regulatory period from 1999-2004 in all areas of expenditure is summarised below. The projects make up \$973.9 million of TransGrid's out-turn capex of \$1107.4 million. A much higher standard of prudence assessment has been applied to large projects, including MetroGrid, for which the cost turned-out to be much higher than forecast.

Due to the practical challenge of assessing several hundred investment projects the ACCC has not undertaken an ex post prudence assessment for projects undertaken

during this regulatory period for which expenditure was the same as or less than the allowance stated in the ACCC's 1999 Decision. The ACCC considers that all these projects undertaken during the regulatory period have in effect been approved through their inclusion in the ACCC's 1999 Decision.

### **Prudency Adjustments**

In its Draft Decision the ACCC determined prudency adjustments for the following projects. The prudency adjustments are shown in Table 6.6.1 above.

- **MetroGrid:** The MetroGrid project comprises an investment in a 330 kV cable to the CBD of Sydney and the construction of 330 kV substation at Haymarket. This project accounts for around one third of TransGrid's total capital expenditure during the first regulatory period. The total cost of the project at the time of the Draft Decision was estimated to be \$276 million. This is an overspend of \$134 million compared to the cost estimation in the 2000 Regulatory Test evaluation. TransGrid is also facing additional claims from various contractors and suppliers that could total around \$40 million.

The ACCC undertook a detailed review of the project with assistance from PB Associates and Mountain Associates. In the Draft Decision the ACCC determined that TransGrid conducted inadequate analysis of the investment choices available to best meet the investment need and considered that TransGrid did not adequately address information indicating that the actual project costs were likely to be considerably more than envisaged at the time of the regulatory test. Therefore, the ACCC determined that at least part of the investment in the MetroGrid project was not prudent and that an adjustment should therefore be made to the RAB.

The ACCC considered that a prudency adjustment determined by disallowing any return on investment in the MetroGrid project during the period of its construction, was clear, transparent and minimised uncertainty, inconsistency and cost.

The ACCC determined that a prudency adjustment based on disallowing 16 per cent of the return on investment during construction, equal to \$51 million in 2004 dollars, was appropriate. This approach provided a clear incentive to TransGrid to comply with Code requirements and to invest in a manner consistent with the outcomes of the Code assessment process and by doing so to make efficient investment decisions. The ACCC also determined that the same prudency adjustment approach should apply to any remaining expenditure on the project, based on the same rationale discussed above.

- **Bayswater-Mt Piper-Marulan 500 kV re-optimisation:** The Bayswater assets were developed in the late 1980s and early 1990s to operate at 500 kV, but were initially (and remain) operated at 330 kV. In a jurisdictional asset valuation in 1996, IPART optimised the value of these assets down to their 330 kV equivalent value (by \$70 million), so that electricity consumers were not burdened with the cost of paying for what it had considered to be inefficient investment. In the ACCC's 1999 Decision the ACCC added back the previously optimised asset value (\$70 million)

on the basis that the commissioning of the NSW-Queensland interconnector (QNI) would cause the Bayswater assets to be operated at 500 kV. In the 1999 Decision, the ACCC made it clear that it would 'not hesitate' to exclude the optimised amount again, if the Bayswater line continued to operate at a level below 500 kV. In the Draft Decision the ACCC determined that the \$70 million should be removed from the regulatory asset base, from 2001/02, on the basis that the Bayswater assets had not been operated at 500 kV during the regulatory period, but had continued to be operated at 330 kV.

- **Kempsey-Nambucca-Coffs Harbour 132 kV:** The Kempsey line is a dual circuit 132 kV transmission line using the route of a 66 kV transmission line operated by Country Energy, between Kempsey and Coffs Harbour. It also involved the construction of a 132/66 kV substation at Nambucca Heads. The ACCC's 1999 Decision provided an allowance of \$31.62 million for this project and the actual project cost was \$56.3 million. The differences between projected and realised costs may be attributed in part to inadequate estimation of costs of the project. In its Draft Decision the ACCC disallowed \$2.15 million for the cost of the conductors on one of the double circuit 132 kV lines, as it considered that there may have been double counting of these conductors by both TransGrid and Country Energy, and rolled the rest of the cost of the project, \$54.15 million, into the asset base.
- **Other Sydney Projects:** This category of expenditure includes the instalment of security equipment at substation sites as part of a wider security program. TransGrid proposed to spend \$11.1 million on this project in 2003/04 but subsequently revised its expenditure claim for 2003/04 to \$4.6 million. The ACCC, therefore, determined that \$4.6 million should be rolled into the asset base.
- **Telecommunication Assets:** In its 1999 Decision the ACCC provided an allowance for Telecommunications expenditure of \$54.85 million, and TransGrid claimed an expenditure of \$41.7 million. The majority of this amount relates to the replacement of TransGrid's microwave radio systems with a fibre optic (OPGW) network. The ACCC disallowed \$3.2 million for the cost of OPGW fibres which it considered could be leased on a commercial basis but rolled the rest of the investment for Telecommunications assets, \$38.5 million, into the regulatory asset base.
- **Motor Vehicles:** In its 1999 Decision, the ACCC provided an allowance for Motor Vehicles expenditure of \$30.9 million. TransGrid claimed an expenditure of \$37.4 million. The ACCC understood that TransGrid had capitalised the net cost of the motor vehicles, the purchase cost (\$37.4 million) less the trade-in-value. The ACCC considers that the use of private vehicles should be considered unregulated assets and the value excluded from the approved amount. The ACCC disallowed \$0.9 million from the regulatory asset base.

## Prudent expenditure

The projects described below were undertaken by TransGrid during the regulatory period from 1999-2004 and were determined in the ACCC's Draft Decision to be prudent and efficient. The ACCC therefore rolled the full costs of these projects into the asset base.

- **Queensland–New South Wales Interconnector (QNI):** QNI is an electricity transmission line linking the Queensland and New South Wales (NSW) region of the NEM. In its 1999 Decision the ACCC provided an allowance of \$131.86 million for this project, and TransGrid claimed a total spend of \$151.24 million. The ACCC considered cost overruns could be attributed to a number of factors including environmental issues and construction costs incurred in complying with Environmental Impact Statement conditions.
- **Tuggerah to Sterland 330 kV line duplication:** This project involves the construction of a double circuit 330 kV transmission line from Tuggerah - Sterland and the installation of a second 330/132 kV transformer and associated switchgear at Tuggerah substation with the former undertaken in the current regulatory period, and the latter proposed in 2008/09. The regulatory test evaluation of this project assumed a capital cost of \$28 million. The ACCC considered that the construction of a second Tuggerah to Sterland 330 kV line was undertaken in a window of opportunity, and was appropriate.
- **Yass 330/132 kV substation:** The Yass substation project relates to the replacement of two 330/132 kV, 200 MVA transformers, one 330 kV Reactor and a new 132/66 kV transformer at the Yass substation. The actual cost of the project is \$34.3 million. The economic assessment for this project, undertaken in 2001, found that the substation was in urgent need of refurbishment. The ACCC considered that there was a clear need for this project.
- **Sydney West Static Var Compensator (SVC):** The Sydney West SVC is a replacement project. No provision was made for this project in the ACCC's 1999 Decision but the ACCC determined that there was a genuine need for this project.
- **South Australia-New South Wales Interconnector (SNI):** In its 1999 Decision, the ACCC did not provide an allowance for SNI. The ACCC has capitalised TransGrid's total expenditure claim of \$11.2 million.
- **Miscellaneous items:** For all miscellaneous categories of expenditure discussed below, the ACCC's Draft Decision considered that TransGrid had seriously underestimated the quantity and, therefore, the cost of work required to complete these projects. However, the ACCC considered all miscellaneous item expenditure prudent and efficient and therefore rolled the full cost of these projects into the asset base.

- **Substation projects (miscellaneous substations):** In its 1999 Decision the ACCC provided an allowance for the miscellaneous substations of \$40.09 million. TransGrid claimed an expenditure of \$66.1 million. The ACCC concluded that expenditure was carried out in accordance with relevant maintenance strategies.
- **Transmission line projects (miscellaneous transmission lines):** In its 1999 Decision the ACCC provided an allowance for the miscellaneous transmission line projects of \$1.07 million. TransGrid claimed a total expenditure of \$21 million. The ACCC considers that only minor capital works should be included in this expenditure category and has netted out and reallocated all other costs to their correct cost allocations. The ACCC has allowed \$9.6 million relating to this category.
- **Transformer additions and replacements:** In its 1999 Decision the ACCC provided an allowance for the Transformer Additions and Replacements category of \$2.32 million. TransGrid claimed an expenditure of \$37.8 million. The ACCC understands that these replacements were based on either load data or condition based monitoring results.
- **Circuit breakers and current transformers:** In its 1999 Decision the ACCC provided an allowance for the Circuit Breakers and Current Transformers category of \$26.7 million. TransGrid claimed an expenditure of \$42.6 million for this expenditure category. The ACCC considered that the additional works were all associated with appropriate asset maintenance strategies.

## 6.7 Submissions on the Draft Decision

The ACCC received submissions on its Draft Decision in relation to past capex issues from TXU, the Joint Customer Groups, the Energy Market Reform Forum (EMRF), Transend and TransGrid. Issues raised in these submissions are summarised below, and have been taken into consideration by the ACCC in making this Decision.

TXU supported the ACCC's approach of applying a higher standard of prudence assessment to large projects, the actual cost of which has turned out to be materially higher than its forecast costs.

On the question of TransGrid's future capex on MetroGrid, the Joint Customer Groups submitted that it may be necessary to provide performance benchmarks for this project to ensure that customers get an adequate cost-value proposition.

The EMRF supported the ACCC's decision to disallow a return on unsubstantiated investment for TransGrid. It submitted that if the ACCC does not carry out a 'prudence and efficiency' examination of the historic capex, then the ACCC must not include any amount into the RAB. The EMRF also was concerned that the ACCC had been prevented from carrying out a rigorous assessment of past capex by the business practices and has used an approach that appears to significantly favour the businesses. Transend submitted the following regarding past capex:

- The ex post prudency review is incomplete which is far from ideal from the perspective of consultation. Also Transend is disappointed that the consultant's starting point is that a project is not prudent until prudency is proved definitely.
- Transend opposes an 'arbitrary cut' to capex on selected projects.
- It is possible that the nature of the penalty imposed on past capex projects will distort future investment plans away from large projects with long construction periods.
- The incentive mechanism on TransGrid for MetroGrid provides a strong incentive to minimise expenditure, rather than deliver the project efficiently.

Transend made several points on the timing of capitalisation including that the capitalisation approach would need to be considered on a case by case basis, and that the ACCC will need to make alterations to the PTRM related to this issue.

TransGrid's response to the ACCC's decisions on MetroGrid and TransGrid's 500 kV assets are outlined here as are its submissions on other projects.

Regarding the 500 kV assets TransGrid submitted the following:

- Aspects of the ACCC's interpretation of the 1999 Decision on this matter need to be reassessed. Specifically, operation or otherwise of an asset at its design voltage is not the essential consideration in assessing whether there has been a change in the service level of that asset.
- The Bayswater-Mt Piper and Mt Piper-Marulan 500 kV lines (the Bayswater line) should not be excluded from TransGrid's asset base under any reasonable interpretation of the optimisation regime applying to TransGrid.
- If the optimised value relating to the 500 kV assets is brought back into the RAB in the future, the draft Statement of Regulatory Principles requires the roll-forward of the optimised value at TransGrid's WACC. This has the effect of leaving customers essentially no better off than leaving the asset in TransGrid's current asset base. That is, removing the value of 500 kV assets from TransGrid's asset base creates costs and complexity that serve no substantive purpose.
- If the ACCC remains of the view that operation at 500 kV is the determining consideration for bringing the value of the 500 kV assets into the RAB then this will almost certainly arise during the 2005 to 2009 regulatory period. As a matter of proper process TransGrid would expect the ACCC's position on this to be clearly set out in the final decision to ensure that there is no confusion about such treatment in the future.

On the Draft Decision's findings on the MetroGrid project, TransGrid submitted that:



- The approach adopted by the ACCC to calculate a prudence adjustment is not consistent with the requirements of the Code and the ACCC's own SRP. Accordingly, there is insufficient basis for excluding any of the capital expenditure or associated returns on investment, resulting from the MetroGrid project, from being rolled into the Regulatory Asset Base.
- The approach adopted by Mountain Associates of attempting to estimate the costs which would have been incurred by a prudent operator acting in accordance with good industry practice, is sound. However, some of the conclusions drawn by Mountain Associates, particularly that the project could have been delayed with the assistance of Demand Side Management, are incorrect.
- Once the errors in the Mountain Associates report are corrected, it supports TransGrid's position that TransGrid's expenditure on the MetroGrid project is prudent.

On other projects TransGrid submitted that:

- The Coffs Harbour – Kempsey Transmission line was the correct project to be implemented from an economic perspective. This was the case following evaluation of network and generation options.
- The ACCC cannot justify a reduction of the cost of the 'conductors' used by Country Energy on the former Country Energy 66 kV line on the basis of 'double counting'. Double counting has not occurred as TransGrid did not purchase the 66 kV line from Country Energy.

## **6.8 ACCC's decision: Historic Capital Expenditure**

The ACCC's determination on TransGrid's overall capital expenditure allowance for the regulatory period 30 June 1999-1 July 2004 to be rolled into the regulatory asset base is \$1,034.5 million. This compares to TransGrid's overall expenditure during this period of \$1,107.4 million. Therefore, the ACCC's has determined an overall adjustment of \$72.9 million. This is shown in Table 6.8.1. This compares with the ACCC's Draft Decision adjustment of \$126.75 million.

Table 6.8.1 shows a break down of the prudence and other adjustments by area of expenditure, and compares the ACCC's Draft Decision and Final Decision adjustments. It can be seen that the ACCC has revised its prudence adjustments for expenditure on: the Kempsey-Nambucca-Coffs Harbour 132 kV project; Bayswater 500 kV; Sydney City CBD; telecommunications assets; and motor vehicles. The ACCC has also made an additional prudence adjustment for ring fencing of TransGrid's external business. The ACCC's Draft Decision prudence adjustments remain unchanged for all other projects and areas of expenditure. A discussion on the ACCC's decision on prudence adjustments is below.

**Table 6.8.1 TransGrid's actual spend and the ACCC's prudence adjustments**

(\$ million nominal)	TransGrid Actual capex 1999/2004	ACCC Final Decision allowance for 1999/2004	Adjustments	ACCC's 2004 Decision adjustments
<b>Augmentation</b>				
Kempsey-Nambucca-Coffs Harbour 132kV	56.3	56.3	0	-2.15
Bayswater 500 kV	70	70	0	-70
Sydney City CBD	276.5	245.7	-30.8	-44
<b>Non-augmentation: replace/refurbishment</b>				
Telecommunication assets	41.7	39.7	-2	-3.2
Other Sydney Projects	11.1	4.6	-6.5	-6.5
<b>Support the business</b>				
Motor vehicle private use	37.4	36.5	-0.9	-0.9
Ring fencing adjustment		-1.4	-1.4	
<b>Other projects</b>	614.4	614.4	n/a	n/a
<b>Total prudence adjustment</b>	<b>1,107.4</b>	<b>1,065.8</b>	<b>-41.6</b>	<b>-126.7</b>
<b>Other adjustments</b>				
Motor vehicle disposals			-19.9	
Other disposals			-11.4	
<b>Total adjustment</b>	<b>1,107.4</b>	<b>1,034.5</b>	<b>-72.9</b>	

The amounts shown in Table 6.8.1 illustrates the ACCC's decision on the deductions to be made from the total expenditure by TransGrid in each project. Exactly which year that deduction is taken from will effect the calculation of the closing RAB. The ACCC has decreased the total reported capital expenditure for each year based on the prudence adjustment as a percentage of the reported expenditure. Using this approach the resulting asset-base roll-forward calculation is shown in the table below.

**Table 6.8.2 TransGrid's 30 June 2004 Closing RAB**

\$ nominal million	1999/00	2000/01	2001/02	2002/03	2003/04	Roll in un-forecast capex	Total
Opening asset base	1996.99	2018.39	2122.63	2371.54	2427.14		
Decision capex at actual CPI	52.43	85.33	294.13	95.10	377.17		
CPI adjustment	55.75	120.91	62.38	81.60	48.10		
Economic depreciation	86.78	101.99	107.61	121.09	125.77		
Closing asset base	2018.39	2122.63	2371.54	2427.14	2726.64	<b>286.11</b>	<b>3,012.76</b>

This section sets out the ACCC's decision on the prudence and efficiency of TransGrid's overall investment during the regulatory period from 1999-2004 in all categories of expenditure. The projects assessed here only include projects for which the ACCC has determined an amendment to its Draft Decision. Projects which the ACCC assessed to be prudent and efficient in the Draft Decision and which the ACCC saw no further requirement to amend, have not been reassessed for the purpose of this

Decision. The ACCC has also not undertaken an ex post prudency assessment of projects for which expenditure was the same as or less than the allowance stated in the ACCC's 1999 Decision. The ACCC considers these projects are efficient and have in effect been approved through their inclusion in the ACCC's 1999 Decision.

### **Bayswater- Marulan 500 kV line**

With regards to the Bayswater 500 kV line, the issue for consideration is whether the ACCC should allow TransGrid to retain \$70 million in its RAB for the Bayswater line from 2001/02, or whether this amount should be excluded from the RAB. In the ACCC's Draft Decision, \$70 million was removed from TransGrid's RAB from 2001/02.

In its Draft Decision, the ACCC proposed to re-optimize this asset on the basis of the actual level of usage of the line. This was the approach foreshadowed in the 1999-2004 revenue cap determination.

The Bayswater-Marulan 500kV line can be distinguished from other historic capex considered by the ACCC in this determination. It is not an asset that was constructed during the 1999-2004 regulatory period. Rather, this is an unusual case where an existing asset was rolled into the RAB, but with a caveat that this could be reviewed at the next revenue cap re-set. In the absence of such a caveat, it is doubtful that the ACCC would have considered removing this investment from the RAB. It is relevant for the ACCC to consider whether, because of this caveat, it should now do so.

Clause 6.2.3(d)(4)(iv) of the Code gives the ACCC the discretion to re-value sunk assets (ie. assets in existence and generally in service as at 1 July 1999) and to determine the manner in which this is to be done.

However, in the SRP the ACCC stated that its preferred approach is to lock in the RAB rather than undertake periodic revaluation. The reason for adopting this principle was to avoid the potential for significant variations in the value of an asset base from one period to the next, and by doing so minimise the risks of a TNSP facing an unpredictable revenue stream, uncertain shocks to consumer prices and the possibility of deterring efficient investment as a result of this uncertainty. The ACCC's reasons are discussed in greater detail at pages 38 to 39 of the SRP Background Paper.

The application of this principle in the case of the Bayswater-Marulan 500kV line suggests that the ACCC should roll forward the valuation from the 1999 Decision rather than re-optimising this asset in 2005. The fact that the ACCC foreshadowed the possibility of re-optimisation in the 1999 Decision does not mean that the ACCC must now do so or that it necessarily should. It is conceivable that the Bayswater-Marulan 500kV line is not the only asset in TransGrid's network not being utilised at its full capacity. However, the only way to exclude the value of such investments from the RAB in a uniform and systematic manner would be through an ODRC re-valuation. This is precisely the exercise that the ACCC wishes to avoid for the reasons referred to above.

The ACCC is determined to establish a certain and consistent framework for the determination of the RAB and considers the lock in approach to be an important step towards achieving this objective. The ACCC is concerned that, having stated its intention to apply this principle, revaluing a sunk asset in this Decision could undermine its application in the future. It should also be noted that the ACCC has refused EnergyAustralia's request to re-value its RAB based on an ODRC methodology for the 2004-2009 period.

Accordingly, the ACCC has decided that it will not seek to re-optimize the Bayswater-Marulan 500kV line and that TransGrid will retain the \$70 million in its RAB from the 1999 Decision.

**MetroGrid:** As outlined in section 6.7 above, which discusses submissions in response to the ACCC's Draft Decision, TransGrid does not agree with the ACCC's Draft Decision that a prudency adjustment should be made in respect of its investment in the MetroGrid project.

Specifically, TransGrid disagrees with the assessment in the Draft Decision that at least part of the investment in the MetroGrid project was not prudent. Secondly, TransGrid suggests that even if it could be demonstrated that the investment was not prudent, the ACCC should make an adjustment based on the specific elements of the expenditure that it considered to be imprudent. TransGrid suggests that the ACCC's approach of disallowing the return on the expenditure during the regulatory period is arbitrary and inconsistent with the ACCC's Code obligations.

Dealing with the first issue (the prudency of MetroGrid expenditure), TransGrid disagrees with the Mountain Associates conclusion that it could have responded to the information that the MetroGrid project, as set out in the regulatory test, would cost significantly more than had been expected when the regulatory test was completed.

In its rebuttal of the ACCC decision on prudency adjustments, TransGrid did not provide any new information or argument to the information that had already been provided to the ACCC and its consultants. Rather, TransGrid restates its view that it had no alternative other than to develop the MetroGrid project even when it became clear that it would cost considerably more to develop than initially estimated. The ACCC was not persuaded of this when arriving at the decision set out in the Draft Decision.

In response to the Draft Decision, TransGrid also commissioned PricewaterhouseCoopers (PwC) to report on whether there are reasonable grounds to conclude that TransGrid's implementation of the MetroGrid project resulted in inflated or inefficient investment. The PwC report concluded that it was possible to justify a prudency adjustment of \$1.2 million, but that further detailed work was needed to substantiate any larger adjustment.

The PwC report did not critique or comment on the ACCC's analysis set out in the Draft Decision, or on the Mountain Associates report. Instead the report was based on a terms of reference set by TransGrid. The ACCC recognises that the PwC report may

have reached a different conclusion to that set out in the ACCC's Draft Decision. However, the extent of this difference cannot be determined with certainty because PwC suggested that after further detailed work, a larger adjustment than the \$1.2 million prudency adjustment that it had determined, could possibly be substantiated.

It does not appear that the PwC report has unearthed any critical new information not reviewed by ACCC staff and its consultants. In addition it has not provided evidence or argument on analytical or informational flaws in the ACCC's or its consultants' analysis of the prudency of the MetroGrid project. Accordingly, the ACCC does not consider that the PwC report provides reason to dismiss the conclusion that the ACCC reached in its Draft Decision on the prudency of the MetroGrid expenditure.

#### *Prudency of TransGrid's expenditure in the MetroGrid project*

The design and costing of possible network options for the original regulatory test assessment of the MetroGrid project was based only on a high level desk top analysis. The ACCC is of the view that this analysis was inadequate. The clearest evidence of this is the fact that the project actually developed bears little resemblance to the conceptual design of the project at the time of the regulatory test assessment. For the reasons stated on pages 58 and 59 of the Draft Decision, the ACCC believes a more detailed and thorough analysis of the design and costing of possible network options was justified. Had this been done the original process may have led to the selection of a different project or, at the very least, a change in the timing and order of investment options. Given the extent of the difference between the forecast design and costing of the project at the time of the regulatory test assessment, and the forecast design and costing of the project some 12 to 18 months later, the original regulatory test assessment does not establish the prudency of TransGrid's investment in the MetroGrid project.

From the documentation reviewed by the ACCC and its consultants, it is clear that approximately 12 to 18 months after the regulatory test assessment was completed (and before construction had commenced) TransGrid was aware that the estimated cost of the project would be approximately \$227.5 million, as opposed to the cost estimated at the time of the regulatory test assessment of \$142 million. The ACCC has concluded that, had it been acting prudently, TransGrid should have reviewed the MetroGrid project to determine whether, under the principles in the regulatory test, this project was still the best option.

There was no timing consideration that would have prevented TransGrid from deferring the implementation of the MetroGrid project long enough to review the efficiency of this investment. In the Draft Decision, the ACCC accepted TransGrid's analysis of the need to implement a modified n-2 standard for the CBD and Inner City. The ACCC also accepted the principle used by TransGrid to justify the timing of this investment. However, the implementation of this standard by October 2003 does not appear to have been a jurisdictional or Code requirement. For the reasons noted at page 59 of the Draft Decision, even at the time TransGrid began construction of the MetroGrid project it was not clear that the project would in fact achieve a modified n-2 standard. The

implementation of a modified n-2 standard by October 2003 was not justified at any cost.

By bringing forward investment in Demand Side Management, TransGrid could have continued to meet the existing n-1 standard for a sufficient period of time to enable this project to be reviewed. This would have been consistent with TransGrid's own principle for the timing of the investment to implement a modified n-2 standard, namely, when the network no longer satisfied the existing standard.

The ACCC has not attempted to assess the efficiency with which TransGrid managed the development of the MetroGrid project (developed the detailed design, hired contractors, purchased equipment). However, the manner in which TransGrid actually managed the development of the MetroGrid project does not affect the ACCC's conclusion as to the prudence of this investment. The ACCC is concerned with the selection of the MetroGrid project and the timing of its implementation.

*Prudence adjustment for the MetroGrid project*

In the Draft Decision, the ACCC proposed a prudence adjustment based on disallowing the return on the investment in the project during the period of its construction. This translated into a reduction in the value of the closing RAB for the 1999 to 2004 regulatory period of \$51 million (\$2004).

As noted above, in its response to the ACCC's Draft Decision, TransGrid argued that this method of determining a prudence adjustment is arbitrary and that the ACCC must quantify, on some reasonable basis, the difference in cost between the actual project and the project that would have been delivered without any deficiency in process and practice.

As set out in the Draft Decision, there are several reasons to determine a prudence adjustment that is not based on a forensic quantification of the specific elements of expenditure that could be determined to be imprudent. These include:

- The inevitable subjectivity of any such forensic analysis. The precise level of efficient investment is not knowable with certainty, it will always be subject to a number of subjective judgements no matter how precisely costs are examined or how many alternative projects are assessed. A careful analysis can lead to inconsistent and uncertain outcomes when applied to different projects over time, due to the subjective judgments involved;
- The high cost of producing a careful assessment of expenditure;
- The possibility that a forensic adjustment could be so large as to engender a disproportionately high degree of risk aversion which could result in the inefficient deferral or avoidance of investment.

The ACCC does not believe the approach outlined in the Draft Decision is arbitrary. It attempts to provide a return on TransGrid's capital investment that is fair and reasonable in all the circumstances, including the prudence of its investment decisions. In assessing the prudence of past capex, the ACCC's goal is not to punish or penalise TNSPs for inefficient investment. Rather, the ACCC's goal is to ensure TNSPs are provided with a fair and reasonable rate of return on efficient investment, while at the same time ensuring that users are not required to pay for inefficient investment.

However, the ACCC does acknowledge that the approach set out in the Draft Decision to determining a prudence adjustment involves a departure from the approach foreshadowed in the DRP (Statement S5.1), in that it does involve adding to the RAB capex that is not prudent. The DRP does not bind the ACCC in the same way as the Code and, subject to the requirements of procedural fairness, the ACCC can depart from it if it necessary and appropriate to do so. However, the application of these principles, where it is feasible to do so, will generally encourage certainty and consistency in the outcome of regulatory processes. Accordingly, the ACCC considers it preferable to determine an adjustment to TransGrid's RAB based on that part of the investment in the MetroGrid project that is deemed prudent, and to allow a return on the prudent investment.

The basis of the ACCC's conclusion on the prudence of the MetroGrid project was that TransGrid failed to review its decision to proceed with this project once it was clear that its cost would be approximately \$227.5 million rather \$142 million. This leaves the ACCC with the task of determining an adjustment to TransGrid's RAB for that part of the investment in this project that was not prudent. This task is made more difficult by the problems with the original regulatory test assessment and the fact that the decision to proceed with the MetroGrid project was not reviewed when the cost increases became known. While the ACCC could have attempted to undertake such an assessment (in effect, by re-creating the entire the regulatory test analysis) the ACCC does not consider it feasible to do so within the context of a revenue cap determination. The reasons for this are stated at pages 60 and 61 of the Draft Decision.

An alternative method for determining a prudence adjustment was proposed and explained in detail in Chapter 7.3 of the Mountain Associates Report. In summary, this approach assumes that:

- once TransGrid knew that the actual cost of the MetroGrid project was likely to be at least \$225.7 million, it re-assessed the possible investment options through a further application of the regulatory test;
- TransGrid brought forward the Demand Side Management program that it had envisaged after completion of the MetroGrid project. This would have extended the network's compliance with a n-1 standard and deferred the need to implement a modified n-2 standard for at least two years, thus enabling the regulatory test analysis to be repeated;

- after a re-examination of network options through the regulatory test, the preferred option would still be the MetroGrid project, with the design and cost anticipated in 2001 (\$227.5 million).

On this basis, a prudency adjustment is determined by comparing the present cost of:

- the MetroGrid project as envisaged during the original regulatory test analysis; and
- the MetroGrid project as envisaged in 2001, with the investment in Demand Side Management brought forward and the construction of the project deferred for two years.

The difference between the two represents the economic cost of TransGrid's failure to respond to the information available to it that it had considerably under-estimated the cost of the MetroGrid project in its regulatory test assessment. As such, this difference represents an estimate of the portion of the expenditure on the MetroGrid project that was not prudent and which consumers should not be required to bear.

Using this approach, Mountain Associates determined a combined prudency adjustment for both TransGrid and EnergyAustralia of \$36 million in 1999 dollars. This equates to \$42.7 million in 2004 dollars.

Subject to the modification explained below, the ACCC has decided to adopt this approach in determining a prudency adjustment for TransGrid's investment in the MetroGrid project. The ACCC believes this is a logical and appropriate means of determining a prudent level of investment. While this may not have been the only option available to TransGrid once it became apparent that the cost of the MetroGrid project had substantially increased, it is a feasible course of action that could have been undertaken by a prudent TNSP in TransGrid's position at this time. It is a conservative approach that makes a number of assumptions favourable to EnergyAustralia, including the deferment of the implementation of a modified n-2 standard for no more than 2 years and the assumption that a further regulatory test assessment would result in the MetroGrid project (as envisaged in 2001) being ranked as the preferred option.

For the purpose of the analysis in the Mountain Associates Report, it was assumed that, at the time of a second regulatory test assessment, the estimated cost of EnergyAustralia's component of the project would have increased (in comparison to the costs assumed during the first regulatory test assessment) by the same proportion as TransGrid's component.

Using the Mountain Associates' methodology, the ACCC has adopted different assumptions on the expected cost, in 2001, of EnergyAustralia's transmission element of the MetroGrid project. Specifically the EnergyAustralia cost was assumed to be \$59 million.<sup>11</sup> With these revised assumptions, the prudency adjustment for TransGrid is calculated to be \$30.84 million in 2003/4 million.

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<sup>11</sup> The ACCC's assumption on TransGrid's cost is unchanged from Mountain Associates' assumptions, but the Mountain Associates' model had used a value for TransGrid's expenditure of



**Kempsey – Nambucca- Coffs Harbour 132 kV:** Subsequent to its Draft Decision the ACCC re-examined information provided by TransGrid on this project and has found no evidence that expenditure on this project was not prudently incurred. The ACCC also considers that conductors on one of the circuits operated by Country Energy, operate in parallel with and in support of TransGrid's transmission network so are therefore considered part of the transmission network and should be included in TransGrid's regulatory asset base. Therefore, the ACCC proposes to roll the full value of the Kempsey project, \$56.3 million, into the asset base.

**Molong to Manildra:** The ACCC considers that this investment was necessary based on the information provided by TransGrid and has not found any evidence that the timing of the project was inappropriate. In relation to the issue of whether the conductors on the 132 kV line from Molong to Manildra are being accounted for in both Country Energy and TransGrid's asset bases, the 132 kV line is wholly owned and operated by TransGrid and forms part of its transmission system. Therefore, the ACCC has decided to roll the full cost of the Molong project into TransGrid's asset base.

**Telecommunication Assets:** As stated in the Draft Decision the ACCC has optimised \$3.2 million relating to the OPGW investment in excess of the 12 fibre provision for regulated services, as these fibres could be leased on a commercial basis and so should be excluded from the asset base. The ACCC has, however, determined that the cost of the fibres that could be leased on a commercial basis is better estimated at \$2 million, given that the network was progressively rolled out while the cost of the cable was falling. Therefore, the ACCC considers it appropriate to disallow \$2 million of the investment but has rolled into the asset base the rest of the investment for Telecommunications assets.

**Information Technology:** PB Associates reviewed and made recommendations on the prudence and efficiency of TransGrid's IT expenditure from 1999-2004. PB Associates found that TransGrid had investigated available options and selected and implemented appropriate solutions, based on minimising and where possible delaying the initial capital outlay, and reducing ongoing operating costs associated with both support and licence fees. PB Associates concluded that TransGrid's purchasing and procurement process and procedures should have resulted in efficient IT expenditure. The ACCC, therefore, considers that the need for significant IT investment over this period was efficient and has determined an allowance of \$55.5 million for the regulatory period.

**Motor Vehicles:** The ACCC considers that private vehicles should be considered unregulated assets and the value excluded from the regulatory asset base. In its Draft Decision the ACCC made a \$0.9 million downward adjustment to vehicle expenditure to reflect private use vehicles, and no further adjustments. However, the ACCC considers it appropriate to only allow for net motor vehicle and mobile plant expenditure. Net motor vehicle expenditure is gross expenditure adjusted for both

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\$235.5 million rather than \$227.5 million, although the different cost does not make a material difference to the NPV calculations.

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private use and disposal value of vehicles. Therefore, the ACCC has determined a further downward adjustment of \$19.89 million to TransGrid's gross expenditure motor vehicle application of \$37.4 million to reflect the disposal value of vehicles.

In calculating the net allowance for motor vehicles the ACCC has used the vehicle disposal values provided in the PB Associates Report rather than the vehicle disposal value provided by GHD. This is because PB Associates' Report provided a yearly breakdown of disposal values for the period from 2000-2009, rather than an overall estimated disposal value cost, as provided by GHD. Values provided in PB Associates' Report were also used to calculate the deduction for disposal value of vehicles in the second regulatory period.

The ACCC has, therefore, determined that the net allowance for motor vehicles should be \$16.61 million rather than \$36.5 million as stated in the Draft Decision after deducting vehicle sales revenue and private use vehicles.

**Ring Fencing of External Business:** Consistent with the ring fencing adjustment to business support expenditure for the second regulatory period, the ACCC considers that some proportion of capex associated with business support expenditure in the first regulatory period should also be allocated to the unregulated segment of TransGrid's business. This is because the unregulated segment of its business uses many of the support functions of the regulated business including: motor vehicles; information technology; and miscellaneous projects and equipment.

The ACCC considers that the same methodology and total operating figure of 1.7 per cent should be applied to calculate a ring fencing adjustment for the first regulatory period, as TransGrid's contestable business was in operation during this time.

Therefore, based on this methodology and the total operating expenditure figure of 1.7 per cent, the ACCC considers that TransGrid's overall support the business capital expenditure allowance of \$82.11 million, after adjusting for the 1.7 per cent, should be \$80.71 million over the regulatory period 1999-2004. Therefore, the ACCC has disallowed \$1.4 million from inclusion in the regulatory asset base.

**Other disposals:** The ACCC has made a reduction of \$11.4 million to the opening asset base for this regulatory period to reflect asset disposals other than motor vehicles.

# 7 Forward Capital Expenditure

## 7.1 Introduction

This Chapter sets out the ACCC's decision on TransGrid's future capex allowance for the current regulatory period. TransGrid's forward capex application was the subject of the Supplementary Draft Decision, released by the ACCC in March 2005. This Chapter also outlines the new ex ante regime established in the Statement of Regulatory Principles as it has been applied to TransGrid.

This Chapter:

- provides an overview of the Code requirements relating to the setting of a forward capex allowance;
- provides an overview of the ex post approach to assessing capex, used by the ACCC to determine TransGrid's RAB in this decision;
- outlines the new regulatory framework established in the SRP that has been used to assess TransGrid's forward capex application in this decision;
- summarises TransGrid's revised forward capex proposal;
- summarises the major findings of PB Associates' and Mountain Associates' reviews and submissions by interested parties on TransGrid's application and these consultants' reviews;
- summarises the ACCC's Supplementary Draft Decision on future capex and submissions on the Supplementary Draft Decision; and
- sets out the ACCC's determination on TransGrid's forward capex allowance for the current regulatory period.

## 7.2 Code requirements

The ACCC's obligations in assessing TransGrid's future capital expenditure are specified in Part B of Chapter 6 of the Code, and include the requirements that:

- when setting the revenue cap, the ACCC must have regard to the potential for efficiency gains in expected operating, maintenance and capital costs, taking into account expected demand growth and service standards; and
- The regulatory regime seeks to achieve an environment which fosters efficient use of existing infrastructure, efficient operating and maintenance practices and an efficient level of investment.

In order to undertake this task, the ACCC is required to make informed judgments on the adequacy, efficiency and appropriateness of capital expenditure proposed by TransGrid to meet its present and future service requirements.

The setting of TransGrid's revenue cap has involved an ex post prudency review of TransGrid's past capex, and an evaluation of TransGrid's future capex on the basis of a new, ex ante capex regime, which is detailed in the SRP. The ACCC considers that both regimes are consistent with the requirements of the Code.

## **7.3 Regulatory principles**

### **Overview of the previous approach to assessing capital expenditure**

The ex post method of capex review was established in the ACCC's 1999 Draft Statement of Regulatory Principles (DRP). This approach contained two distinct elements:

- A forecast of future capital expenditure would be determined ex ante to enable the ACCC to set a price path on the basis of expected capital expenditure over the regulatory period. This forecast was not based on a rigorous assessment of the efficiency of likely expenditure during the regulatory period but served as an estimate to establish a price path.
- An ex post assessment would be undertaken at the end of the revenue cap period in which all of the investment that had actually taken place during that regulatory period would be reviewed and adjusted where necessary to establish an efficient level of expenditure over that period, from which the opening RAB for the next regulatory period would be derived.

The ex post assessment was not limited by the previous forecast. The DRP stipulated that prudent and efficient, but unforecast, capex undertaken in the previous regulatory period would also be rolled into the RAB.

During this review of TransGrid's past capex the ACCC has elaborated on the means by which it conducted the ex post capex review of TransGrid. This elaboration is contained in the Chapter on Historic Capex. Key features include that capital projects that were forecast and were undertaken would not be subject to as rigorous an ex post review as un-forecast capex; and capital projects that were not forecast (or which exceeded their forecast) would be subject to a more rigorous prudency test.

In practice, the ex post approach was found to have several limitations.

- The potential for ex post optimisation of investments creates investment uncertainty for TNSPs.
- The Regulatory Test framework requires interested parties to effectively evaluate a TNSP's application of the test. It is unlikely that interested parties have sufficient

resources or expertise to make a sufficiently informed assessment of whether a TNSP has applied the test thoroughly and impartially.

- The ex post review has been found to be a demanding form of regulation. An ex post review requires detailed analysis of the costs and benefits of each project. In the context of the current TransGrid and EnergyAustralia revenue resets, an ex post assessment of the adequacy of the Regulatory Test processes undertaken by the TNSPs across a range of projects must also be made.

### **The ex ante regime**

In response to these shortcomings in the ex post regime, the ACCC decided to implement a new approach to transmission investment regulation through the introduction of a firm ex ante investment allowance for TNSPs, determined at the commencement of a TNSP's revenue reset. This approach involves a TNSP proposing a capex investment program assessed by the ACCC prior to the commencement of the new regulatory period. The ACCC will then establish an allowance for future capital expenditure at the start of the regulatory control period, expressed as a profile of spending for each year of the control period, rather than as a specified list of investments and their expected costs.

Under this regime, TNSPs will be free to decide which projects to build and when to build them with the knowledge that as long as the aggregate costs of these projects are less than the allowance, then they will be authorised to recover the cost of these investments through regulated charges. In the event that a TNSP invests at a level higher than the allowance, the additional investment will be included in its regulated asset base but the TNSP will not receive the return of capital and return on capital for that overspend for the remainder of the regulatory period. There will be no ex post optimisation of TNSPs' investments under the allowance.

### **Contingent Projects**

The second significant feature of the new regime is the provision for contingent projects, referred to as 'excluded projects' in the SRP. The SRP provided for the exclusion of specific projects from the 'ex ante' capex allowance for which the TNSP could apply once the need for the investment arose during a regulatory period. This provides the flexibility to adjust expenditure to meet changing investment needs during a regulatory period.

The justification in the SRP for excluding significant but uncertain investments from the main ex ante capex allowance is that the accuracy of the ex ante allowance is improved, and is more closely aligned with efficient costs.

In considering these arrangements, the ACCC was mindful of the complexity that the process for the approval of contingent projects may create but considers that on balance the benefit of a closer alignment of the expenditure allowance with efficient costs exceed the costs of any administrative complexity.

To provide a basis for deciding which, if any, projects should be treated as contingent projects the SRP details a rule (the 10 percent rule) that relates the maximum possible error in the ex ante allowance that would arise from provision for any specific project, to the total capital expenditure allowance. The 10 per cent rule is indicative only and TNSPs can apply to the ACCC for other specific projects to be excluded from the ex ante allowance. It will be at the ACCC's discretion as to whether these proposals will be considered to be contingent projects.

The remaining key elements of the contingent project incentive design can be summarised as follows:

- Submission of a 'contingent' project proposal by a TNSP to the ACCC should occur during a regulatory period after the ACCC has confirmed that the pre-defined trigger(s) giving rise to the need for further network augmentation have been met.
- Once the ACCC has confirmed that the triggers justifying further investment have been met, the specific project proposal should address the options available to meet that need, the rationale for the choice, costings and timing of the implementation of a particular solution.
- The ACCC will establish a target annual expenditure level for each project approved under this process. This will be converted into a revenue stream based on the depreciation of the determined expenditure over the life of the project, taking account of the WACC that applies during the regulatory period in which the investment on the project is made.
- The five year incentive period for a project assessed under this process will commence from the time that investment in the project is first committed, or such other date as determined as part of the incentive. This would mean, for example, that a project incentive could be established in the fourth year of the regulatory period. Such an incentive would run for five years (that is the fourth and fifth year of the current control, and the next three years of the next regulatory period.)

### **Implications for TransGrid's revenue reset**

The ACCC has assessed TransGrid's forward capex application under the ex ante framework. This has been possible because of TransGrid's willingness to have its future capex assessed under the new framework. On 12 March 2004, TransGrid requested additional time to reformulate its future capex application in accordance with the requirements of the newly developed assessment process.

The ACCC acknowledges that TransGrid's initial Application was not prepared with the objective of setting a fixed allowance for capital expenditure under the ex ante framework, but rather submitted to determine a path of prices and cash flows. The ACCC therefore agreed to TransGrid's request to reformulate its future capex application for assessment under an ex ante framework and TransGrid resubmitted its capex application on 18 November 2004.

The ACCC released a Supplementary Draft Decision on 3 March 2005 reflecting the ACCC's assessment of TransGrid's revised forward capital expenditure application. An outline of TransGrid's revised application, PB Associates' review of TransGrid's application, the ACCC's Supplementary Draft Decision, together with submissions on these documents, are provided below. The ACCC's final determination on TransGrid's forward capex program concludes this Chapter.

## 7.4 TransGrid's revised application

TransGrid submitted its revised application for forward capital expenditure for 2004/05 to 2008/09 on 18 November 2004. TransGrid's revised application included an allowance for expenditure in the ex ante allowance and an allowance for significant and uncertain investments (contingent projects, at that time referred to as 'excluded projects'). TransGrid's application is summarised below.

### Ex ante capex

TransGrid's revised application proposed capital expenditure of \$1,527 million (\$2004) over the period 1 July 2004 to 30 June 2008. This expenditure included the following:

- **Augmentation expenditure.** TransGrid proposed significant augmentation expenditure of \$987 million (including property related expenditure of \$149 million) over the regulatory period related to meeting reliability requirements and expanding the network to accommodate increased generation and interconnector capability.

TransGrid proposed \$495 million on small reliability augmentation projects.<sup>12</sup> This compared to estimated expenditure of \$284 million over the previous regulatory period. TransGrid's small augmentation program in the current period was driven by expected demand growth, and both large customer and DNSP requests to augment the network.

TransGrid proposed expenditure of \$344 million (excluding \$61 million on land and easements) over the regulatory period on large augmentation projects, compared with expenditure of \$476 million over the previous regulatory period. TransGrid proposed the following large augmentation projects:

- Royalla 330 kV substation (stage 1) estimated to cost \$19 million;
- Holroyd complex estimated to cost \$64 million;
- Mid north coast reinforcement estimated to cost \$61 million;
- QNI upgrade proposal estimated to cost \$5 million; and
- The upgrade of the western 500 kV system estimated to cost \$194 million.

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<sup>12</sup> Small augmentation projects are typically projects which cost less than \$10 million.

- **Asset replacement expenditure.** TransGrid proposed expenditure of \$326 million on asset replacement compared to an estimated \$301 million in the previous regulatory period. TransGrid's proposed asset replacement expenditure includes expenditure on substations, transformer replacements, upgrading the security of its assets, protection and metering, communication projects and upgrading regional depots.
- **Non-network expenditure.** TransGrid has proposed expenditure of \$122 million on non-network assets, which include information technology, motor vehicles and miscellaneous office equipment. This compares to support the business expenditure of \$88 million over the first regulatory period.
- **Contingency expenditure.** TransGrid has included a contingency fund of \$92 million (7 per cent of proposed expenditure) to deal with uncertainty regarding costs for major augmentation projects.

TransGrid's revised forward capex application is represented below as a profile of spending over this regulatory period.

**Table 7.4.1 TransGrid's revised capex application 2004/05 to 2008/09**

\$2004 million	2004/5	2005/6	2006/7	2007/8	2008/9	Total
<b>Augmentation related:</b>						
- small augmentations	51.0	71.1	113.0	171.0	89.0	495.0
- large / complex	0.0	4.0	35.0	142.0	162.0	344.0
- property related	19.0	50.0	21.0	37.0	22.0	149.0
<b>Asset Replacement</b>	67.0	74.0	67.0	57.0	61.0	326.0
<b>Support the Business</b>	24.2	24.2	24.2	24.2	24.2	122.0
<b>Contingency</b>	10.0	14.0	17.0	29.0	23.0	92.0
<b>Total ex ante</b>	<b>171.0</b>	<b>237.0</b>	<b>278.0</b>	<b>460.0</b>	<b>382.0</b>	<b>1,527.0</b>

Augmentation expenditure includes property related expenditure of \$149 million (approximately \$87 million of property related expenditure is related to small augmentation expenditure).

### Contingent projects

TransGrid's revised forward capex application proposed a number of contingent projects for significant and uncertain large expenditure over the regulatory period. These projects are outlined in the table below.

**Table 7.4.2 TransGrid's proposed contingent projects and expenditure 2004/05 to 2008/09**

Projects	\$2004 million
<b>Easements and Land</b>	136
<b>Newcastle and Lower North Coast Supply</b>	98
<b>Bannaby-Sydney 500 kV development</b>	125
<b>Kemps-Sydney South Development</b>	3
<b>Mason Park 330/132kV GIS Substation</b>	129
<b>Series Compensation at Dumaresq</b>	80
<b>Yass-Wagga 330 kV SC TL</b>	49
<b>Total</b>	<b>620</b>



TransGrid has indicated that the cost of these projects is significant and uncertain due to a range of factors. These uncertainties include: the high costs involved; the range of possible project solutions and timings; the need for joint planning with other TNSPs and DNSPs and uncertainty regarding possible generation developments. The costs estimated by TransGrid are indicative only and as indicated in the SRP, a firm allowance will be set by the ACCC during the regulatory period for contingent projects that are subsequently approved.

## **7.5 PB Associates' review**

PB Associates was engaged by the ACCC to assess TransGrid's forward capex application within the framework of the ex ante regime. The main conclusions and recommendations of PB Associates' review were that:

- TransGrid's capital governance arrangements applied in determining the needs, available alternatives and efficient estimates of costs appeared to be generally sound;
- TransGrid's asset replacement program and the identification of expected works within this program were both considered to be sound;
- all large augmentations identified by PB Associates were subject to considerable uncertainty in relation to needs and optimal solutions. These projects were assigned to the contingent projects category and PB Associates recommended that these projects be considered fully when specific 'triggers' that drive the need for each project were met;
- TransGrid's processes for identifying and selecting smaller augmentation projects were reasonably well defined. PB Associates considered that the program was generally sound. In some cases PB Associates recommended projects for deferral where the need for the project in the current regulatory period could not be conclusively demonstrated; and
- TransGrid's support the business (non-system) expenditure proposals were considered to be generally sound.

## **7.6 Submissions to the PB Associates' review**

A number of interested parties stated that PB Associates' recommendations on contingent projects were not consistent with the Code or the principles outlined in the SRP. In particular, TransGrid, Powerlink and Transend were concerned about the level of expenditure in the contingent projects category relative to the ex ante allowance and the lack of funding in the ex ante allowance to enable TransGrid to support the efficient deferral of network investment. Powerlink and TransGrid also stated that they considered that a full analysis of options, including full investigation and comparison with non-network solutions would be required before a major project could be included in the ex ante allowance.

In addition, TransGrid considered that PB Associates' recommendations on contingent projects were inconsistent with the Code as the involvement of the ACCC in the approval of significant contingent project expenditure broke the link between TNSP responsibility for transmission planning and investment and TNSP accountability for service delivery.

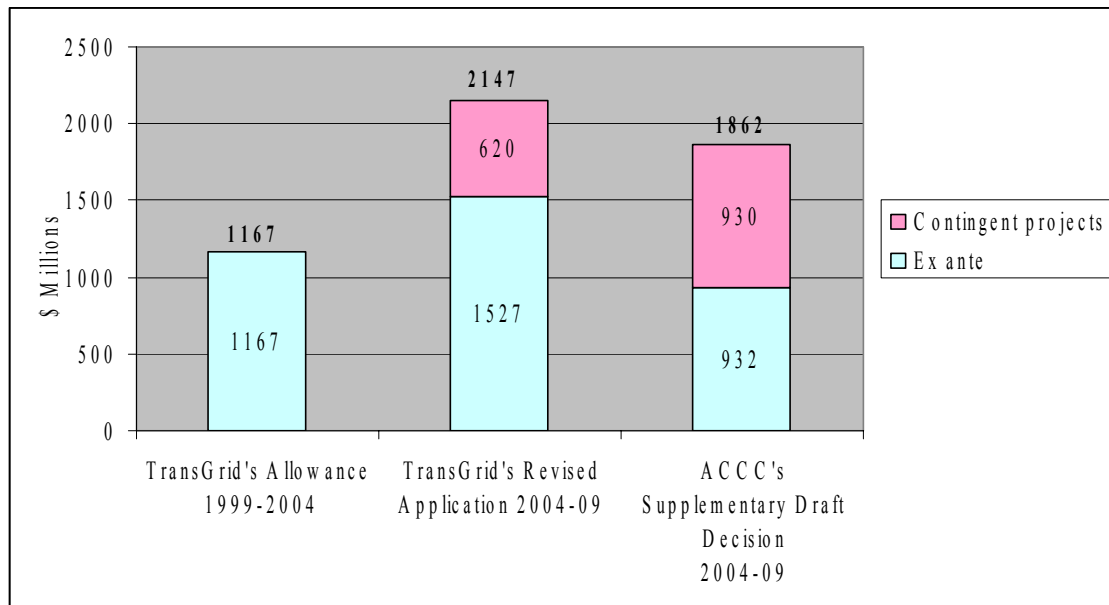
In relation to the assessment of costs, TransGrid submitted that 'efficiency' and 'contingency' factor adjustments applied by PB Associates to elements of TransGrid's cost structure were not appropriate.

The EUAA supported PB Associates' recommended downward adjustments to TransGrid's ex ante application, but is concerned that PB Associates' recommended capital expenditure for all categories, except business support, remain significantly higher than the amount requested by TransGrid in its original application. The EUAA also supported PB Associates: questioning of the appropriateness of the timing of the Sydney 500 kV project; suggestion that capital expenditure recommendations are likely to have implications for operating expenditure; and discussion on support payments to customers to reduce demand during times of system stress.

### 7.7 ACCC's Supplementary Draft Decision

The ACCC's Supplementary Draft Decision provided TransGrid with an ex ante capital allowance of \$931.7 million compared to TransGrid's application of \$1.527 billion. In addition, the ACCC provided TransGrid with an indicative contingent project allowance of \$930 million compared to TransGrid's application of \$620 million.

**Figure 7.7.1 Comparison of TransGrid's revised application and the ACCC's Supplementary Draft Decision (\$2004 million)**



A significant portion of the ACCC's reduction of TransGrid's ex ante application involved the shifting of projects into the contingent projects category. Further

reductions to TransGrid’s ex ante application were made to remove the double-counting of investment projects and to remove inefficiency margins and contingencies in TransGrid’s cost-estimating model.

The ACCC’s Supplementary Draft Decision determined a set of project groupings for contingent projects, with each grouping based on common triggers. This are set out in Table 7.7.2.

**Table 7.7.2 ACCC Determined Contingent Project Groups**

<b>Contingent Projects</b>	<b>Total Costs \$2004 million</b>
Royalla project (Stage 1)	8
Holroyd complex and Mason Park 330/132 kV GIS substation	193
Corridor augmentation Newcastle-Sydney-Wollongong corridor	420
QNI Upgrade and Yass-Wagga transmission line	129
Easements and land	180
<b>Total</b>	<b>930</b>

## **7.8 Submissions on the Supplementary Draft Decision**

The ACCC received submissions from interested parties regarding its Supplementary Draft Decision and also considered presentations at the Public Forum held in March 2005.

In an extensive response to the Supplementary Draft Decision, TransGrid argued that:

- the proposed ex ante regime required Code changes which are not in place. TransGrid contended that the process for administering contingent projects appeared intrusive and would add delays to the implementation of such projects. TransGrid proposed a simplified range of triggers for contingent projects;
- PB Associates’ so-called ‘efficiency factor’ reduction to the value of TransGrid’s small augmentation program of 6.8 per cent was unsubstantiated and contrary to available evidence about the appropriateness of TransGrid’s cost estimation model;
- that expenditure on the 500 kV ring should be included in the ex ante allowance as it would be incurred during the current regulatory period;
- the cost of capital projects is likely to rise faster than inflation over the current regulatory period, and regulated revenues should be linked to an index of input costs that incorporates these rises followed by an ex post assessment of actual cost deviations from forecast costs;
- total revenue was a more appropriate measure for the basis of the ring fencing adjustment to its regulated business, and that the adjustment should be based on marginal costs. TransGrid argued against retrospectively applying this adjustment;
- the ACCC should accept TransGrid’s ‘pooled contingency’ application;

- there are oversights and one technical error, totalling \$9.56 million which should be added to the ex ante allowance. In addition TransGrid argued that statements on TransGrid's head office accommodation strategies required correction;
- consideration of TransGrid's comments on PB Associates' report was inadequate; and
- the treatment of economic depreciation, and the role of depreciation in the incentive mechanism required clarification and adjustment.

In its submissions to the Public Forum, Powerlink contended that:

- the ex ante framework does not provide TNSPs with more investment certainty compared to the ex post regime and is not as efficient as the ACCC described;
- the ACCC must provide certainty by allowing adequate investment in the ex ante allowance to meet growth in peak demand as well as replace assets;
- there have been significant increases in material costs in recent years, and these will continue. These increases should be factored into TNSP cost allowances;
- the re-opener and contingent project allowance aspects of the ACCC Supplementary Draft Decision are inconsistent with the SRP;
- the maintenance of service levels, not the reduction of operating costs, is the driver for business support expenditure.
- the ACCC should attribute costs to the unregulated business based on a more comprehensive methodology than used in the Supplementary Draft Decision; and
- the ACCC has a misplaced focus on pricing outcomes. Powerlink contend that prices may vary when projects are reallocated from the ex ante to the contingent project category.

In its submission to the Public Forum, Transend argued that:

- the ACCC should ensure that the review of TransGrid does not result in the establishment of precedents for other TNSPs that are yet to be reviewed and the ACCC should maintain flexibility in developing the implementation of the SRP;
- contingent projects triggers and the trigger assessment process should be more clearly defined. In addition the relationship between the regulatory test and excluded projects should be clarified; and
- TransGrid should have the opportunity to re-submit a dynamic adjustment given that its contingency allowance has been disallowed; and that the pass-through rules applicable to TransGrid should include an allowance for more than just tax events.

TXU's concerns regarding the decision were that:

- the proposed re-opener provisions combined with the excluded projects regime applied in the decision are consistent with rate of return regulation; and
- the capital expenditure framework applied in the Supplementary Draft Decision will not encourage embedded generation options in the network.

Macquarie Generation contended that the Supplementary Draft Decision failed to adequately take account of key benefits of increased transmission investment including consideration of the role of a free-flowing, open-access transmission network in promoting competition. Macquarie Generation also considered TransGrid's plans to increase capacity in the 500 kV ring to be crucial capital expenditure.

The Energy Users Association of Australia contended that:

- the ACCC hastily published the Supplementary Draft Decision, and therefore has not adequately considered and reflected all comments raised in submissions.
- the ex ante regime provides weak incentives for efficiency, while providing TNSPs with gaming opportunities by changing the timing and size of their capex.
- savings achieved by TNSPs not proceeding with projects should be shared with customers. In addition the revenue cap will not be re-opened due to unforeseen events that lead to cost reductions.
- there has not been discussion of the trade off between capex and opex.

In its submissions ElectraNet raised the following matters:

- requiring high levels of certainty before projects are included in the ex ante allowance is inconsistent with a probabilistic approach to assessing capex requirements;
- it would support Code change to remove uncertainty about excluded projects; and
- real increases in input prices were a material problem, and estimates of future capital requirements must take account of forecast real price increases.

Delta supported the augmentation of the network to the Newcastle/ Sydney/ Wollongong load centres in the light of material and costly network constraints that it argues are occurring now, and becoming more persistent. Delta argues that elements of the 500 kV western link and the 500 kV Marulan/Bannaby load centre link must proceed in this regulatory period.

The Bardak Group was primarily concerned about the promotion of a true national grid in Australia. The Bardak Group considered that the ACCC's involvement in TNSP

investment planning was too detailed and that the ACCC was assuming the role of system planner in NSW, but had neither the mandate nor the expertise for this role.

In its submission to the Public Forum, the Energy Action Group argued that:

- the Supplementary Draft Decision was evidence of the ACCC's desire to micro manage the investment behaviour of TNSPs;
- the ACCC had failed to ensure that TransGrid is able to fulfil the role of supplying all of NSW's power needs, and had failed to facilitate the free flow of energy from Queensland to New South Wales and New South Wales to Victoria; and
- given that PB Associates suggested that Sydney may experience a voltage collapse in the next 3 to 10 years if the 500 KV ring main was not completed over that period, investment in the 500 kV ring should be undertaken as soon as possible.

At the Public Forum, Mr Bob Needham made a number of points regarding the Wollar-Wellington Line, and argued that a reinforcement of that line is not required given that it is extremely reliable. Mr Needham also contended that TransGrid did not factor appropriate generation options into its analysis before proceeding with the construction of the new 330 kV transmission line.

## **7.9 ACCC's considerations**

Although the *ex ante* allowance provides TransGrid with an expenditure allowance to undertake a suite of projects during the regulatory period, these projects are not mandated and TransGrid has the flexibility to adopt any expenditure profile that it considers to be optimal given that market conditions and information may change during the course of the regulatory period.

The ACCC's considerations on TransGrid's forward capex program are set out as follows:

- general issues;
- small augmentation expenditure;
- large/complex augmentation expenditure;
- asset replacement expenditure;
- support the business expenditure;
- property and easements; and
- contingent projects.

## General issues

This section covers the indexation of capital costs, the pooled contingency allowance, and the treatment of economic depreciation.

### *The indexation of capital costs*

In the Supplementary Draft Decision, the ACCC did not agree with TransGrid's suggestion to develop an index to benchmark relevant costs at the end of the regulatory period, to assist the ACCC in evaluating TransGrid's incurred costs. The ACCC has not altered this decision.

This issue, also raised by Powerlink, is based on evidence that indicates that real capital costs are expected to increase over and above inflation over the regulatory period due to increased construction costs and contractor costs, among other factors. Despite this, TransGrid did not apply for growth in real construction costs for its capital program. The ACCC also notes that TransGrid has not identified any countervailing factors that may offset real price increases such as technological improvements, scale efficiencies and improved business practices, higher exchange rates and the use of forward contracting to mitigate risk.

The ACCC considers that there are a number of approaches to incorporate expected increases in real unit costs in a TNSP's revenue cap, including:

- estimation of any real unit costs increases directly as part of the ex ante allowance; and
- construction of a pre-specified dynamically adjusting allowance to account for changes in exogenous costs.

TransGrid's application has neither forecast any real unit price increases in its proposed capital expenditure allowance nor provided any specific proposals on individual cost drivers for dynamically adjusting the allowance.

TransGrid recommends that the ACCC develop a unit cost index capable of being used on an ex ante basis and in an ex post review of capex in the current regulatory period. In relation to the development of such a unit cost index the ACCC has not received any specific proposals from TransGrid for dynamically adjusting the revenue cap in response to changes in specific investment drivers. In addition, the ACCC has indicated in its Supplementary Draft Decision that there are a number of difficulties associated with measuring changes to TransGrid's input costs. The ACCC maintains that it will consider any proposals put forward by TransGrid to adjust the revenue cap on an ex ante basis as outlined in the SRP for future regulatory periods.

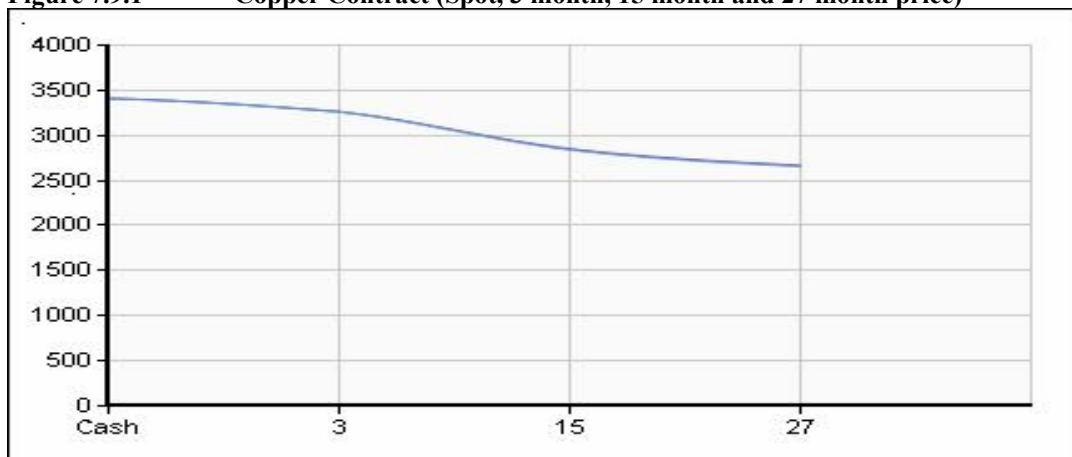
The ACCC has adopted an ex ante regulatory framework as reflected in the SRP and consistent with this approach, the ACCC does not intend to adopt an ex post review. However, the ACCC has indicated that there will be limited circumstances where it would consider adjusting for any differences between actual and forecast costs at the

next revenue reset to take account of differences between actual and forecast cost drivers. However, as discussed above these cost drivers must be pre-specified and agreed with the ACCC on an ex ante basis.

It should be recognised that to the extent that recent historical costs have been used to estimate capital expenditure, these costs will already capture some real unit increases in prices (for example Powerlink states in its response that between 2001 and 2004 the cost of steel has increased by 87 per cent).

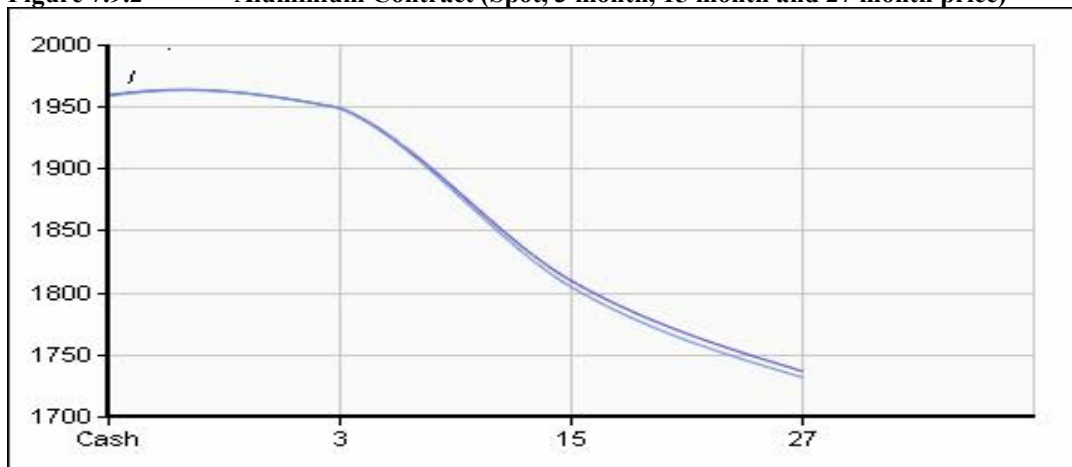
It is also unclear whether current price rises will be maintained. Evidence from forward contracts up to 27 months ahead indicates that copper and aluminium prices are expected to fall by 9 per cent and 17 per cent respectively. This is illustrated in the following figures.

**Figure 7.9.1 Copper Contract (Spot, 3 month, 15 month and 27 month price)**



Source: London Metal Exchange ([www.lme.co.uk](http://www.lme.co.uk)) 5 April 2005

**Figure 7.9.2 Aluminium Contract (Spot, 3 month, 15 month and 27 month price)**



Source: London Metal Exchange ([www.lme.co.uk](http://www.lme.co.uk)) 5 April 2005

It appears that the price of copper and aluminium may have peaked indicating that further price rises will not eventuate over the regulatory period. Indeed the evidence



from the forward market indicates that these costs are expected to fall over the regulatory period.

### ***The pooled contingency allowance***

The ACCC has decided not to provide an allowance for the 7 per cent pooled contingency provision. The ACCC stands by the reasoning in the Supplementary Draft Decision.

In addition, given that the pooled contingency allowance relates to unforeseen costs, the evidence provided by TransGrid and other stakeholders that some capital cost inputs have increased in the recent past does not appear relevant in this case. Given the cyclical nature of such cost increases, it is likely that a portion of future cost increases is already reflected in TransGrid's forward looking estimates.

To the extent that TransGrid has demonstrated that there is a systematic bias which reflects the historical uncertainty of delivered project costs, TransGrid's scoping factor already captures this uncertainty. Given that the ACCC has accepted the inclusion of this scoping factor in TransGrid's forward looking costs, the inclusion of an additional contingency is likely to bias estimated costs upwards.

In the SRP, the ACCC indicated that it would consider proposals for a capital expenditure allowance contingent on specified variables. The ACCC maintains that this is the appropriate framework for addressing potential forecast errors as part of revenue controls.

### ***Treatment of economic depreciation***

In this Decision, the ACCC has amended the Post Tax Revenue Model which determines a TNSP's revenue stream. This amendment aligns the treatment of the timing of depreciation and capital expenditure within the model. The amendment does not alter the present value of TNSPs' assets.

TransGrid has raised concerns regarding the consultation process on this change and asserts that it will have a material impact on TransGrid's funding arrangements and dividends during the current regulatory period. In addition, TransGrid states that arbitrarily reducing the level of economic depreciation has implications for the incentive characteristics of the regime.

The ACCC consulted on this change and provided the PTRM model to TNSPs including TransGrid in December 2003. TransGrid indicated that it did not have any concerns with the amended PTRM as proposed by the ACCC. This change was consulted on again in the Supplementary Draft Decision.

The ACCC has not arbitrarily shifted the depreciation profile as it is now consistent with the assumed timing of capital expenditure in the PTRM. It is important to recognise that this amendment to the depreciation profile will not affect the net present value of a TNSP's asset value.

### ***Incentive arrangements and Depreciation***

TransGrid submits that the use of depreciation in the proposed capital expenditure incentive mechanism distorts incentives and is unduly complex to implement and administer.

The ACCC's considerations on TransGrid's submissions are as follows:

- TransGrid has submitted that the ACCC's approach will distort investments towards longer lived assets relative to shorter lived assets. The ACCC considers that this bias would be very small and would not have a material impact on TNSPs' investments.
- TransGrid submits that the regime can create strong incentives to delay efficient expenditure. The ACCC considers that under the ex ante regime TNSPs will have improved incentives to minimise costs and that expenditure associated with short lived assets is not likely to be significant in the context of a TNSP's total expenditure program.
- TransGrid submits that this regime will provide an incentive for TNSPs to classify investment in longer lived assets where possible. The ACCC considers that there is limited overlap between the asset classes and that this is therefore unlikely to be a problem. In addition, as part of ex ante regime, the ACCC will review the information provided by TNSPs on the allocation of expenditure to these asset classes.

TransGrid submits that these distortions could be avoided at no cost to the power of the incentive regime if the ACCC defined the penalty/reward for over/under-spend as a constant percentage of the NPV of the under/overspend.

The ACCC does not accept this argument because:

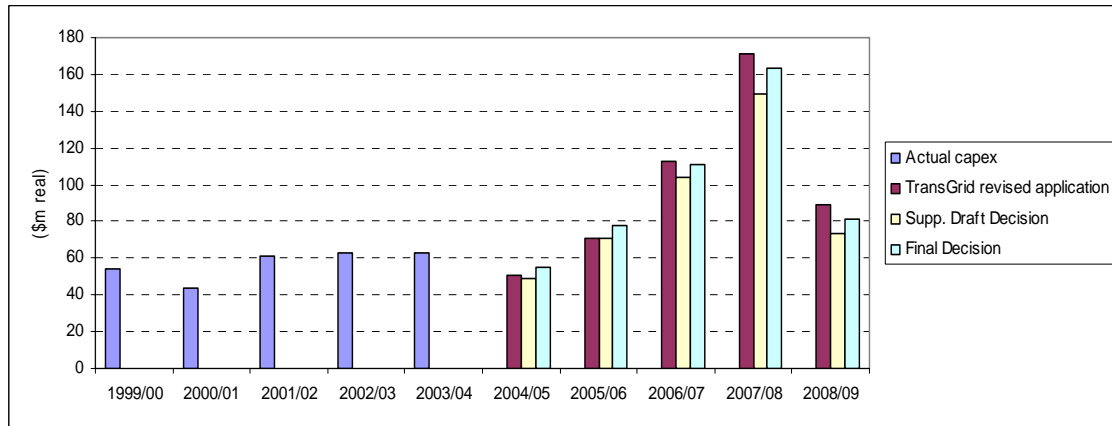
- While this approach may have the benefit of simplicity, the ACCC believes that the choice of the constant percentage would be arbitrary and that this approach would be inconsistent with the SRP which details the ACCC's position on depreciation.
- TransGrid's argument does not appear to consider the financing costs of any over/under-spend or the saving of any over or underspend against a revenue stream determined under an ex ante allowance.

Regarding the complexity of administration, TransGrid has argued that the ACCC's regime creates substantial complexity with regard to the creation of depreciation schedules. However, the ACCC considers that TNSPs will only be required to specify the seven asset classes already required for the ACCC's PTRM model. The ACCC does not expect this to be an onerous task.

## Small augmentation expenditure

The ACCC has determined an allowance of \$489 million for small augmentation for TransGrid. This compares to TransGrid's application of \$495 million. A comparison of these figures is in Figure 7.9.3.

**Figure 7.9.3** Historic and ex ante small augmentation capex (\$2004 million)



A significant proportion of TransGrid's investment program is driven by forecast network peak demand on specific parts of the network and the requirement to maintain network reliability. The ACCC notes that it is the responsibility of TNSPs to conduct network planning and that TransGrid has jurisdictional and Code obligations to maintain network reliability. TransGrid has indicated that it generally applies an n-1 criterion to network planning, but accepts some load at risk where the costs outweigh the benefits. The ACCC indicated in its Supplementary Draft Decision that it is within this framework that the ACCC has assessed the appropriateness of TransGrid's small augmentation expenditure for the forthcoming regulatory period.

TransGrid's proposed small augmentation investment program of \$495 million is substantially higher than the last regulatory period, (estimated to be \$284 million), a 74 per cent increase. As part of PB Associates' review TransGrid provided information which indicates that peak demand relative to the capacity of the network has been steadily increasing over the last ten years and that its proposed capital program for reliability investments will improve network capacity relative to network peak demand.

The ACCC's considerations on specific issues in this category are provided below. They cover:

- small augmentation investments;
- cost base for small augmentation projects;
- the MetroGrid project;
- Directlink conversion application;

- customer contributions; and
- correction of errors.

### ***Small Augmentation Investments***

In the Supplementary Draft Decision, the ACCC excluded the following investments amongst others from TransGrid's proposed investment program on the basis that they would not be needed in the current regulatory period. TransGrid in response stated that the following investments should be re-included in its capital program. The ACCC's considerations on each project are detailed below.

**Nambucca 66kV Capacitor Bank:** The ACCC has formed the view that the Nambucca 66kV capacitor bank estimated to be \$1.2 million should be included in TransGrid's capital program for the following reasons:

The Nambucca 66 kV Capacitor Bank project was scheduled to be commissioned by 2006 at a cost of \$1.2 million. The two 10 MVar capacitor banks were intended to alleviate unacceptable low voltages on the outage of either 965 Armidale – Kempsey or 965 Armidale – Coffs Harbour prior to the commissioning of the Coffs Harbour 330/132kV substation.

TransGrid submitted that:

- PB Associates' statement that the capacitor banks and the control scheme proposed for the area would mean an establishing an n-2 standard was incorrect given that it is not certain that the control system can be implemented.
- PB Associates recommended that if it is possible to implement the control scheme, contingent overloads and low voltages could be managed via dispatch of generation at Lismore, import from Queensland via Directlink or the provision of additional reactive support (capacitor banks). This showed that even if the control scheme can be implemented additional reactive support is still required. TransGrid also considers that reactive support will be required given the ACCC's decision to delay some network investment on the mid north coast.

The ACCC is not convinced that Directlink or the control scheme will be able to provide network support during the regulatory period. It also appears that reactive support may be required even if a control scheme can be implemented. For these reasons the ACCC has decided to allow the funds for this project.

**Tamworth Reactor Stage 2:** The ACCC has considered the Tamworth Reactor Stage 2 project further and formed the view that this investment of \$4.0 million should be included in TransGrid's forward looking capital program. TransGrid proposed the installation of a reactor to manage voltage levels following a black start incident as part of its capital program. TransGrid states that this would facilitate more rapid restoration of supply, particularly in the area north of Sydney.

In the Supplementary Draft Decision, the ACCC formed the view that this investment should not be allowed as the ACCC was not aware of NEMMCO requirements on TNSPs to manage voltage levels following a black start incident.

TransGrid submitted that:

- the provision of voltage levels outside the ‘acceptable range’ following a black start incident is not appropriate and allowing equipment to be exposed to excessive voltages risks damaging the equipment.
- The project would allow a faster restoration of supply following a black start requirement.
- the reactor would serve as an in-service spare in the event of failure of any of the existing 50MVA 330 kV shunt reactors in the state.

The ACCC considers that the costs of reduced disruption of supply to customers associated with this investment are more than likely to outweigh the costs of the additional investment. The ACCC has therefore included this investment in TransGrid’s forward looking capital program.

**Other projects:** With regard to the following projects:

- Sydney East, Sydney North and Sydney West Duplicate Breakers
- Cowra Transformer Replacement
- Dapto Substation, Additional 375 MVA Transformer
- Kempsey 132kV Transformers
- Koolkhan 132kV Transformers

the ACCC has considered TransGrid’s additional submissions but maintains its earlier decision has not included this investment in TransGrid’s forward looking capital program on the basis of the reasons outlined in the Supplementary Draft Decision.

***Cost base for small augmentation projects***

In the Supplementary Draft Decision, the ACCC adjusted TransGrid’s allowed capital costs for augmentation projects by 6.8 per cent. This was to remove a 10 per cent scoping factor which TransGrid had applied to its historical costs to account for a systematic difference between forecast and actual costs. The ACCC’s decision was based on PB Associates’ review of a sample of past projects on which TransGrid had included the scoping factor. In particular, the ACCC understands that there is a tendency for preliminary costs in relation to the design, materials, installation and

commissioning of plant and equipment to systematically underestimate TransGrid's actual delivered project costs.

As indicated in the Supplementary Draft Decision, the ACCC understands that PB Associates compared TransGrid's all up project costs to the NSW Treasury Guidelines as an additional source of publicly available information to assess the overall reasonableness of TransGrid's proposed costs. PB Associates acknowledged the limitations of such comparisons and noted that it has not primarily relied on the NSW Treasury Guidelines to remove this scoping factor.

On further review the ACCC has decided to include the scoping factor as proposed by TransGrid in determining costs. TransGrid has advised the ACCC that the scoping factor refers to:

- installation contracts which involves labour materials, plant hire and all the costs associated with the completion of contract installation works; and
- design, project management, site supervision and commissioning costs.

TransGrid has stated further that in determining project costs, historical tender costs are applied as the primary inputs for estimating equipment and installation costs. However, a comparison between historical tender costs and delivered costs reveals a systematic difference, where the delivered all up costs are 10 per cent higher than the initial historical tender costs. TransGrid has indicated that this difference is due to:

- tender prices that are based on the preliminary design stage of a project;
- final installation costs are based on detailed design and additional project requirements which are typically determined during completion of the project; and
- final installation costs also include the costs of dealing with issues that evolve during the completion of the project that could not be included in the initial tender stage costings.

The ACCC considers that the inclusion of the scoping factor is consistent with determining the all up forward looking efficient costs.

### ***MetroGrid***

In the Supplementary Draft Decision, the ACCC applied an incentive arrangement to the remaining expenditure applied for by TransGrid to complete the MetroGrid project. Under this incentive, only 84 per cent of the remaining \$17.8 million would be included in TransGrid's asset base. However, in light of the change to the prudence adjustment to TransGrid's historic expenditure on the MetroGrid project, as set out in Chapter 6 of this Decision, the ACCC no longer considers that there is a need for any adjustment to the expenditure required by TransGrid to complete this project. Accordingly, the ACCC has determined that the amount of \$17.8 million will be rolled into the asset base.

### ***Directlink conversion application and its impact on TransGrid investments***

The ACCC has decided to grant an allowance to TransGrid for the upgrade of the 966 line. The ACCC has formed the view that Directlink is not able to substitute for the upgrade of line 966 because network constraints in southern Queensland currently restrict the ability of Directlink to provide network support under the contingency in northern NSW that causes line 966 to be over loaded.

These network constraints are expected to be addressed by augmenting the networks supplying the Gold Coast/Tweed area. These augmentations are expected to increase the capacity for southward flows, and hence Directlink's ability to provide network support to the NSW north coast. Powerlink has initiated a project (Greenbank augmentation) that will alleviate network constraints in the northern Gold Coast area and it expects to complete this by the summer of 2006-07. However, even after the completion of these augmentations, network constraints will remain in the southern part of the Gold Coast. Joint planning between Powerlink, Energex and Country Energy of augmentations to address emerging constraints in the southern Gold Coast and Tweed areas is currently incomplete, and there is no certainty that these constraints will be removed before the 2007-08 summer.

This decision by the ACCC follows further consideration of this matter since the Supplementary Draft Decision. In that decision the ACCC decided, pending further information from TransGrid, not to include an allowance for the upgrade of line 966. The ACCC's key consideration was the extent to which Directlink is able to provide network support to TransGrid's northern NSW network during this regulatory period after 2006-07.

The ACCC is currently considering an application from the Directlink Joint Venture (DJV) to convert its 180 MW HVDC light transmission line from a market network service to a prescribed (regulated) service.

In support of the contention that Directlink provides network support to NSW, the DJV submitted that:

- based on a reasonable view of anticipated network augmentations in the Gold Coast region, the Gold Coast network will have sufficient southward capacity for Directlink to provide network support to northern NSW.
- TransGrid advised the ACCC in January 2005 that, based on joint planning studies, sufficient capacity from the north (southern Queensland) is potentially available for Directlink to provide network support to NSW up to 2010-12.
- its consultant's (BRW) modelling of network augmentations and joint planning for the Tweed area is based on reasonable predictions and these augmentations will provide the capacity required for Directlink to provide network support into the Lismore area.

Regarding the ability of Directlink to substitute for the 966 line upgrade, the ACCC considers that:

- It is unlikely that there is currently sufficient capacity at peak times in the southern Queensland network for Directlink to flow south in the event of a critical contingency in TransGrid's network in the NSW north coast. Evidence provided by NEMMCO suggests that if a contingency were to affect security in both regions NEMMCO would not dispatch Directlink to favour one region over the other. TransGrid has contended that the ability of Directlink to provide network support is dependant on the peak demands in the Gold Coast area and the NSW north coast being non-coincident. However, both TransGrid and Powerlink have informed the ACCC that the NSW north coast and Gold Coast areas typically have coincident or near coincident peaks given the geographic proximity of the regions. For example, in the summer of 2004-05 high loads in northern NSW have coincided with high loads in southeast Queensland. Powerlink has advised the ACCC that, with the current limitations in the southern Queensland network, it does not expect power to be available to flow south across Directlink at peak load times. Therefore, although Directlink may be able to provide network support to NSW when the Queensland load is less than the peak, present limitations within the Queensland network mean that TransGrid cannot rely upon Directlink to support the NSW north coast at peak load times.
- Powerlink's Greenbank augmentation is scheduled for completion in 2006-07 and this will provide increased capacity to Powerlink's network in the northern parts of the Gold Coast. However, expected constraints within the network supplying the southern part of the Gold Coast/Tweed area will limit the capability for Directlink to provide firm network support to the NSW north coast at times of high demand in the Gold Coast/Tweed area until further augmentations are completed. There is uncertainty surrounding the nature and timing of plans by Powerlink and Energex to augment the network in the Gold Coast/Tweed area. Owing to this uncertainty TransGrid has determined that it is essential to proceed with the immediate uprating of line 966 to improve the summer day thermal rating for supply to the NSW north coast. TransGrid anticipates completing the uprating of line 966 before the summer of 2006-07.
- Line 966 was constructed more than 40 years ago. In addition to the proposed uprating of line 966, it is anticipated that TransGrid will replace a small number of structures (poles) as part of its ongoing asset management plans. Once the augmentations to the Gold Coast/Tweed area are completed Directlink, in combination with the up-rated line 966, should be sufficient to defer the Dumaresq to Lismore 330kV line beyond this regulatory period.

The ACCC considers the timing of these developments to be the key issue in assessing Directlink's ability to defer the line 966 upgrade. The ACCC notes that the DJV highlights the fact that Powerlink, Energex and Country Energy are considering a range of investment options to address the southern Gold Coast network constraints but that the nature and timing of any possible solution is not clear.



### ***Customer Contributions***

TransGrid has proposed some augmentation projects where demand from a specific large customer has led to the need for network augmentation. The ACCC indicated in the Supplementary Draft Decision that where network investment is required to accommodate the connection of a customer or increased demand, the cost of this investment needs to be borne by this customer in accordance with the requirements of the Code. This has important implications for setting the revenue cap as the costs funded by the customer are not included in a TNSP's asset base. TransGrid has advised the ACCC that it adopts a 'shallow' connection charge for recovering the cost between the affected customer and existing customers in accordance with the requirements of the Code.

As part of future reviews, the ACCC will require the gross amount of proposed capital expenditure and the amount of customer contributions to be separately identified as part of TNSP applications. This will ensure that TNSPs adopt a consistent policy in terms of the recovery of connection costs over time and between TNSPs.

### ***Correction of errors***

TransGrid submits that there are two oversights and one technical error in the Supplementary Draft Decision which require the inclusion of \$9.56 million in the ex ante allowance.

- Regarding the upgrade of Tamworth-Gunnedah line 875 from 66kV to 132kV in the asset replacement program (\$26 million), TransGrid submitted that it appeared that only \$18.3 million had been included. However, the Supplementary Draft Decision provided an additional \$7.50 million in an easement category which accounts for the apparent discrepancy. Including TransGrid's scoping factor, the total allowance in this Decision is \$27.2 million.
- TransGrid's application for expenditure on the Wollar 330 kV switching station of \$15.14 million was approved by the ACCC but \$0.940 million of the cost in 2004/05 was not included. This amount is now included in the ex ante allowance.
- Regarding the second Glenn Innes transformer, the ACCC has included the full allowance of \$0.990 million as it accepts TransGrid's explanation that it is not possible for the old transformer to operate in parallel with the new number one transformer.

### **Large/complex augmentation expenditure**

TransGrid proposed a number of large/complex augmentation projects as part its ex ante allowance. In its Supplementary Draft Decision, the ACCC shifted these projects to the contingent project category due to the significant uncertainty regarding the need and timing of these projects with the exception of the mid north coast reinforcement and the QNI upgrade proposal. The ACCC has further considered these projects and revised some of the conclusions set out in the Supplementary Draft Decision.

Following are the ACCC's considerations on the mid-north coast reinforcement, the Royalla project, the QNI upgrade and the 500 kV ring. The ACCC's conclusions set out in the Supplementary Draft Decision relating to other projects remain unchanged

### ***Mid north coast reinforcement***

The ACCC has decided that given the uncertainty regarding the optimal timing of the mid-north reinforcement projects, an allowance of \$31 million will be included in TransGrid's ex ante allowance. TransGrid had proposed \$61 million for reinforcing the mid north coast set of projects.

In response to TransGrid's claim that the need and timing of a second Kempsey-Port Macquarie line is independent of any network support that may be provided to the Lismore area, the ACCC does not consider the allowance of \$31 million to be specific to a particular investment and to the extent that the timing of an investment is not known or not discretionary, the ACCC considers that an allowance has been provided in the ex ante allowance for this investment.

The ACCC notes that TransGrid has not provided any further information regarding the timing of these investments since the Supplementary Draft Decision and that the reconstruction of the 965 line to 330 kV will be initially operating at 132 kV. The key consideration for the ACCC is, given assumed demand conditions, over what period the 965 line is able to operate at 132 kV, as this will determine the timing of the upgrade. While TransGrid has provided information regarding the assumed timing of the reconstruction, it is not clear as to when this line will be operating at 330 kV.

In response to the Supplementary Draft Decision TransGrid also states that the expenditure allowance does not include funds to enable network support payments to be provided. The ACCC has not assumed that network support could be provided and has assumed that some of this investment may be deferred by TransGrid given the uncertainty regarding the timing of these investments.

The ACCC recognises that some expenditure will need to be incurred in this regulatory period and has provided an allowance of \$31 million for this. The full requested amount however has not been allowed given the uncertainty regarding the timing of these investments.

### **Royalla project**

TransGrid's application proposed a series of projects, grouped under the umbrella of the 'Royalla project' to address low voltages in the Cooma region and to upgrade the security of supply to Canberra. In particular, TransGrid identified the following investments as part of the Royalla project:

- Royalla 132 kV Switching Station estimated to cost \$10.7 million;
- construction of a Royalla-Gilmore 132 kV line estimated to cost \$7.8 million;

- development of a 330/132 kV substation at Royalla estimated to cost \$11.5 million;
- establishment of Bungendore 330/132 kV substation estimated to cost \$12.3 million; and
- construction of a Bungendore-Royalla 330 kV line estimated to cost \$29.2 million.

TransGrid estimated the total cost of these projects to be \$71.5 million in the current and forthcoming regulatory periods. The projects and costs proposed for the current regulatory period include:

- switching station costs estimated to be \$10.7 million to address low voltages in the Cooma region; and
- the construction of the Royalla to Bungendore 330 kV line and the Royalla to Gilmore 132 kV line to improve the security of supply to Canberra, estimated to cost \$8.2 million in the current regulatory period.<sup>13</sup>

In its Supplementary Draft Decision the ACCC provided an ex ante allowance of \$7.9 million for the development of the Royalla 132 kV switching station based on the PB Associates Report. The ACCC also included \$8.2 million in the contingent projects category for the further development of the Royalla to Bungendore 330 kV line and the Royalla to Gilmore 132kV line, estimated to be \$1.5 million and \$6.7 million respectively, during the current regulatory period. This expenditure was deemed contingent as it was not clear as to whether planning standards and therefore system security requirements to Canberra would change during the regulatory period.

Subsequently, the Australian Capital Territory (ACT) Government has indicated that the relevant planning standard in relation to supply into the ACT will change during this regulatory period. The ACCC has therefore decided to include \$8.2 million for the development of the Royalla to Bungendore 330 kV line and the Royalla to Gilmore 132kV lines in the ex ante allowance.

Overall, the ACCC has included an ex ante allowance of \$19.0 million for the development of the Royalla 132kV switching station and some of the costs for the Royalla to Bungendore and the Royalla to Gilmore lines for this regulatory period. As part of the next revenue control, the ACCC will assess the remaining forward looking costs for these projects.

### ***QNI upgrade proposal***

The ACCC has also included an allowance of \$4 million in TransGrid's ex ante allowance for a QNI upgrade proposal. The ACCC considers that the need for the QNI upgrade in 2007/08 appears reasonable. However the timing of this project is uncertain.

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<sup>13</sup> TransGrid has estimated the total cost of the Royalla to Bungendore 330 kV and the Royalla to Gilmore lines to be \$37 million over the current and forthcoming regulatory periods.

The ACCC has decided to adopt the methodology recommended by PB Associates to determine the cost of the project which assumes a two year deferral.

### ***Augmentation of supply capacity to the Newcastle-Sydney-Wollongong corridor***

**Supplementary Draft Decision:** The Supplementary Draft Decision did not make any provision for investment in network or non-network solutions to augment supply capacity to the Newcastle-Sydney-Wollongong (N-S-W) corridor. Instead it proposed that any such investment be treated as one or more contingent projects subject to triggers based on thermal limits on specific transmission lines and voltage stability limits in Sydney.

This decision differed from TransGrid's application in that TransGrid's application contained expenditure related to the upgrade of the western 500 kV transmission line as part of its proposed ex ante allowance, while several possible augmentations relating to supply to the N-S-W corridor were identified as contingent projects.

The ACCC's decision to set aside all investment related to the range of possible N-S-W augmentations from the ex ante allowance was based upon advice from Mountain Associates and PB Associates, which, while recognising the need for expansion of capacity to this corridor, considered that there was considerable uncertainty as to which of several alternative investments would ultimately be determined to be the most appropriate.

TransGrid also emphasised the uncertainty over the most economic investment to augment N-S-W capacity. In particular in its application, TransGrid suggested that *“to meet the lead-times in this revenue reset process, TransGrid has had to develop a very abbreviated approach to determining the future backgrounds and assigning the expected probability of occurrence to the backgrounds. The TransGrid processes are in embryonic form and have been pursued with as much rigour as the revenue reset timeframe has allowed in order to maximize the integrity of the outcomes”*<sup>14</sup>.

While TransGrid stressed that it was impossible to determine with any certainty what the most efficient investment would be, TransGrid also stressed that all 43 “backgrounds” that had been simulated, pointed to the need for supply reinforcement.

In the Supplementary Draft Decision the ACCC emphasised that it may be possible for it to determine a probabilistic ex ante allowance for augmentation related to N-S-W supplies. However this would require the ACCC to make decisions on the probabilities of various outcomes and an assessment of the range of possible investments needed to respond to those outcomes. Since TransGrid had not developed a base of information on probabilities or investment options, the ACCC considered that it could not confidently make such judgments on TransGrid's behalf.

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<sup>14</sup> TransGrid Application, Page 4 of Section 6

In the Supplementary Draft Decision, the ACCC considered that a probabilistic estimate based on ill-founded analysis and data would be unlikely to correctly estimate the efficient expenditure level during the current regulatory period. This meant that in making an ex ante provision for N-S-W corridor investment based on existing data, there would be a reasonable likelihood that a significant error could be introduced into the ex ante expenditure estimate. Therefore, the ACCC concluded that all major investments related to augmentation of capacity to the N-S-W corridor should be treated as contingent projects and that the focus should turn to defining contingent project triggers so that this expenditure could be handled under the contingent project regulatory regime.

**Responses to Draft Decision:** There were comments from several stakeholders on this aspect of the draft decision at a Pre-Decision Conference (PDC) held in Sydney on 18 March 2005. TransGrid suggested that one or more major components of the 500 kV ring would be needed during the regulatory period. It also suggested that an allowance for investment in the augmentation to the N-S-W corridor would fix fault levels and provide more options for future development; reduce investment lead times and pay for grid support or DSM. On this basis TransGrid considered that \$200 million would be justified for inclusion within the ex ante allowance.

Delta Electricity (a major New South Wales generator) expressed concern about increased Western and Hunter Valley capacity constraints attributable to worsening transmission constraints on the network elements conveying electricity into the Sydney load area from the south. Delta also considered that the incremental transmission costs attributable to the upgrade of capacity to the N-S-W corridor should be considered in the context of a significant upward impact on wholesale prices that would result if the network was not expanded. Finally Delta explained that in its view the majority of expected NSW capacity expansion was likely to be in locations that would increase the need for expansion of capacity to the N-S-W corridor, rather than reduce it.

Macquarie Generation (another major New South Wales generator) echoed Delta's concerns and suggested that the ACCC's decision should consider competition and energy price outcomes that would occur if network congestion increased as a result of a deferral of investment in the supply capacity to the Sydney load centre. Macquarie Generation also argued that if TransGrid and the ACCC waited until (generation) investors committed to a project that there may not be sufficient time to plan, develop and commission new transmission infrastructure to facilitate that generation investment. Uncertainty about access to the market may deter investors from undertaking the necessary work in planning and developing new generation projects.

**ACCC's Decision:** The submissions to the PDC by TransGrid and others did not provide any new information on the likely investments needed to augment transfer capacity to the N-S-W corridor. Indeed TransGrid's own submission to the PDC identified a range of possible investments that may be appropriate, including generation and demand-side contracts.

However the comments from several interested parties did corroborate the view that significant expenditure, of some form, would be needed to augment N-S-W transfer capacity during the current regulatory period.

Comments from interested parties also confirm that there is little reason to be confident that a significant amount of new generation is likely to locate in areas such as the central NSW coast, or close to load centres in Sydney or Newcastle, which would defer the need for N-S-W capacity augmentation.

While it is not appropriate for the ACCC to speculate on the future generation expansion developments in New South Wales, there is reason to consider that it is unlikely that generation will locate in sufficient quantity in favourable parts of the network, deferring the need for any expansion in transfer capacity to the N-S-W corridor. At this point the only possible generating unit that the ACCC is aware of that may assist in deferring the need for augmentation of N-S-W capacity is a possible 360 MW unit at Eraring. This is significantly less than the amount of additional favourably located capacity that would be needed to address the voltage stability or expected thermal constraints arising throughout this regulatory period. Furthermore, acting against this “helpful” investment is a possible “unhelpful” investment at Mt Piper (2 750 MW units) as well as likely upgrades to existing capacity in the Hunter Valley.

In summary, the ACCC considers that it is reasonable to assume that investment will be needed in one form or another to augment supply capacity to the N-S-W corridor during this regulatory period. The inability to identify that investment with any certainty is reason to treat this expenditure under the contingent project regime. This was the logic followed in the Supplementary Draft Decision. However, the ACCC recognises that there may be some significant disadvantages in adopting this approach.

In particular, in this specific circumstance there are clearly a number of potential investment alternatives. It may prove to be the case that the most efficient long term investment strategy will be a collection of small investments/expenditures in demand-side and generation contracts and also possibly in additional reactive capacity and power control devices, which could defer significant network expansion. It could also be the case that investment in different easement routes (or options to subsequently acquire future easements) could create investment alternatives that do not currently exist. In the long term, expenditure on such “options” may prove to be economically efficient.

The ACCC is concerned to ensure that regulatory arrangements do not impede the implementation of such relatively low cost opportunities to defer significant expenditures, or similarly, do not impede investment in options that would provide access to a greater number of efficient investment alternatives in future.

It could be the case that the transaction costs and management effort required to gain regulatory approval for a number of small projects to augment N-S-W capacity could act as a perverse incentive for TransGrid to seek approval for the largest (and possibly most costly) project, as this approach would minimise the number of times that TransGrid would need to return to the ACCC to gain regulatory consent. While this

approach might minimise regulatory transaction costs and minimise the distraction of management from its core business, it would not necessarily result in the most efficient expenditure in the long term.

While such an outcome would not necessarily follow, in the case of N-S-W augmentation the investment triggers as set out in the Draft Decision are inevitably complex and there are a considerable number of augmentation alternatives or combinations of alternatives. Further, the contingent project regulatory regime remains untested and it is appropriate to be circumspect about the prospects of this regime delivering the correct incentives and investment certainty in this specific case.

This suggests that the decision on whether to make an ex ante allowance for N-S-W corridor augmentation needs to weigh the detriment that may arise if an ex ante estimate of N-S-W augmentation turns out to be inaccurate; against the detriment of possibly inefficient investment that could arise if no ex ante provision is made and expenditure is handled through the excluded project regime.

On the basis that some investment in augmentation of N-S-W capacity will be needed, although it is not certain what investment, TransGrid suggested that the cost of the upgrade to the Bayswater assets should be included in the ex ante cap. As reported in the Draft Decision, TransGrid indicated that if an allowance such as this was made, it would provide the necessary investment certainty and it would be unlikely to apply for additional investment in N-S-W capacity as an excluded project. At face value this suggests that such a provision would avoid the possible detriments that may arise should all N-S-W augmentation expenditure be treated as excluded projects.

The other risk in making an ex ante allowance for N-S-W augmentation is that this allowance will turn out to be a significant over-estimate of the efficient level of investment needed during this regulatory period. While this will mean that consumers will, for this regulatory period, pay the return on and of capital on a much higher level of investment than actually turns out to be the case, the size of the detriment is reduced by the fact that the closing regulatory asset base will be reset based on actual investment rather than allowed investment. Furthermore, since the weighting of the expenditure allowance for the upgrade of the Bayswater assets is weighted substantially towards the end of the regulatory period, the impact of significant underspending will be diminished.

On balance therefore, the ACCC considers that the lesser detriment is likely to arise by making a provision for augmentation of N-S-W capacity within the ex ante cap. Rather than attempting to develop a probabilistic assessment, the ACCC considers that the provision should be based on TransGrid's estimate of the cost to upgrade the Bayswater assets to 500 kV operation.

However, it should be stressed that the ACCC considers that this is the best decision that can be made in the circumstances. It would be far preferable if much greater certainty existed on the likely level of efficient expenditure following a rigorous probabilistic analysis. The ACCC's decision to include a provision for expenditure on augmenting N-S-W capacity within the ex ante cap should not be considered as setting

a precedent to be followed in subsequent revenue control decisions. Furthermore the provision for expenditure based on the estimated cost to upgrade the Bayswater assets should not be seen as providing any preference for that specific project. It may well be the case, as discussed, that other investments or combinations may be more efficient. The ex ante allowance provides TransGrid with an economic incentive to pursue these alternatives if they are more economical and the ACCC expects TransGrid to respond to this incentive.

Finally, it should be noted that the ACCC considers that it would nevertheless be appropriate to allow TransGrid to make an excluded project application for additional N-S-W augmentation expenditure, in addition to the amount provided by the inclusion of the augmentation of the Bayswater assets in the ex ante cap, should the need arise during the regulatory period. However the determination of the amount of the excluded project allowance for such augmentation expenditure will be net of any amount of the allowance for the Bayswater upgrade that is not spent during this regulatory period.

### **Asset replacement expenditure**

The ACCC has accepted the majority of TransGrid's proposed asset replacement program and has reallocated some augmentation expenditure which should be classified as replacement. However, the ACCC has reduced TransGrid's proposed expenditure from \$326.0 million to \$279.5 million for the following reasons:

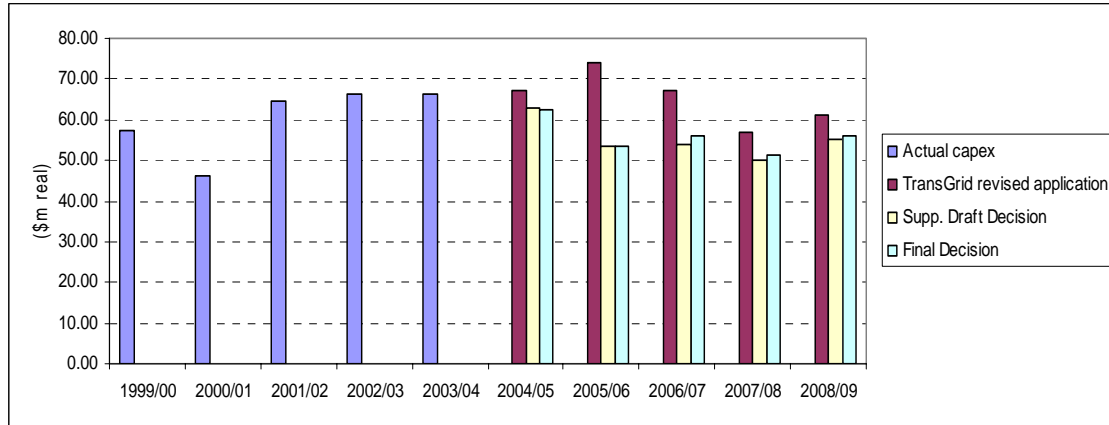
- **Minor Projects:** In relation to circuit breaker and instrument transformer replacements, the ACCC has adjusted TransGrid's application downwards to reflect economies of scale and time saving efficiencies. An adjustment for time saving efficiencies has also been made to TransGrid's protection system upgrade (relay replacement) program in a similar manner, as per PB Associates' recommendations.
- **Regional Depot Projects:** Where TransGrid has included contingency allowances for depot projects, the ACCC has eliminated these allowances from TransGrid's capital expenditure determination as per PB Associates' recommendations.
- **Regulatory Projects:** In relation to the contingency for future regulatory projects that have yet to be identified, the ACCC considers that TransGrid has not appropriately justified its requested allowance for costs falling into this category based on historical patterns of expenditure on projects. The ACCC has not included the contingency allowance.

The ACCC has accepted TransGrid's proposed expenditure associated with upgrading the security of its substations. This expenditure represents a significant 'step change' in expenditure as it includes an upgrade to security for all of TransGrid's substations. TransGrid's proposed expenditure is based on its 'Network Security Plan,' which adopts a risk based approach to asset security, with expenditure per substation varying depending on the level of risk. The ACCC has allowed expenditure of \$50 million for this current regulatory period. Of TransGrid's proposed investment program of \$54.6 million, \$4.6 million of expenditure has been incurred in 2003/04.



Regarding TransGrid’s submission to the Supplementary Draft Decision on its head office accommodation strategy, the ACCC agrees with PB Associates’ detailed treatment of this matter in its final report.

**Figure 7.9.5 Historic and forecast asset replacement expenditure (\$2004 million)**



### Support the business expenditure

In its revised application TransGrid applied for a total of \$121.7 million for business support expenditure comprising: Information Technology (IT) (\$73 million); motor vehicle and mobile plant (\$39.5 million); and miscellaneous assets (\$9.2 million).

In relation to expenditure on IT, the ACCC considers that TransGrid’s allowance should be reduced from \$73 million to \$61 million. This reduction is mainly due to the removal of an over-allocation for replacement IT expenditure, the adoption of lower unit costs for software and hardware and reduction of expenditure on business improvement to reflect historical levels of expenditure.

The ACCC considers that TransGrid’s motor vehicle and mobile plant expenditure application is reasonable, however, has determined that it is only appropriate to allow for net motor vehicle and plant expenditure. This is the gross capital expenditure adjusted for both private use vehicles and the disposal value of vehicles. The ACCC has therefore determined that an allowance of \$16.63 million should be included in TransGrid’s asset base compared with TransGrid’s revised application of \$39.5 million over the regulatory period.

In relation to miscellaneous assets and office equipment the ACCC has determined that \$1.4 million relating to state records upgrade should be removed to reflect double counting of this expenditure item. The ACCC therefore considers that TransGrid’s overall miscellaneous and office equipment capital expenditure program for this regulatory period should be \$7.8 million.

Other issues in relation to support the business expenditure include the ring fencing of TransGrid’s contestable business.

### ***Ring-fencing contestable business***

The Code requires TNSPs to comply with ring-fencing arrangements that are designed to prevent the use of monopoly market power and revenue to support competitive business operations. To this end, the ACCC is required to allocate a portion of TNSP costs to TNSPs' unregulated business operations.

The ACCC has determined that the adjusted total operating expenditure figure for 2003/04 of 1.7 per cent should be adopted as the proportion of TransGrid's costs to be allocated to its unregulated business and therefore not allowed as a regulated allowance. This figure calculated by PB Associates is the most recently available total operating figure and excludes the one off project provided to EnergyAustralia. This figure arose in the context of PB Associates considering a number of other potential approaches as a basis for the ring fencing adjustment. PB Associates concluded that the 2002/03 revenue figure is the most appropriate basis for calculating the adjustment. The ACCC has chosen the 1.7 per cent figure for the reasons given below.

Given that the 1.7 per cent figure is the most recently available figure and excludes the one off project, the ACCC considers that this figure provides the most accurate representation of likely future external business operations. The ACCC has calculated a total non-network allowance of \$83.88 million for the period 2004-2009 after adjusting for the 1.7 per cent.

The ACCC considers that the same methodology and figure should be applied to calculate a ring fencing adjustment for the first regulatory period, as TransGrid's contestable business, of approximately the same size, was in operation during this time.

The ACCC has revised its decision in the Supplementary Draft Decision which adopted unadjusted total operating expenditure averaged over 2002/03 and 2003/04 as the basis for the ring fencing calculation given that this did not represent the most recent figure and because it included a one-off transaction which made it less representative of future operating expenditure levels.

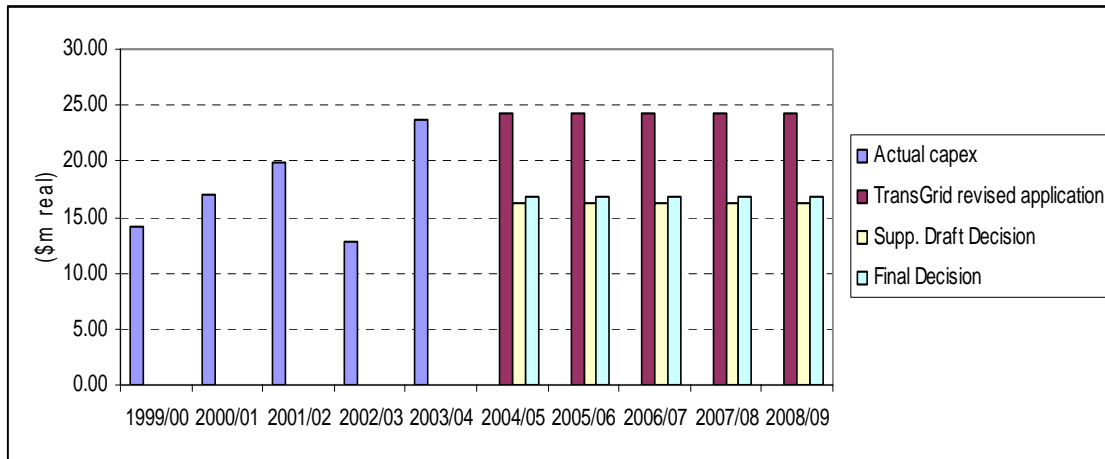
The ACCC considers total operating expenditure to be a more appropriate basis for this adjustment than total revenues, because the adjustment is not an attempt to capture the revenue or profitability of the contestable business, but rather the costs incurred by TransGrid in operating the unregulated business. Moreover, there is no direct relationship between costs associated with operating the unregulated business and revenue received from the business, as the business may run at either a profit or a loss. Therefore basing the ring fencing adjustment on total revenues may distort the calculation.

The ACCC also considers that total operating costs as opposed to a marginal cost measure would more accurately reflect the appropriate allocation of costs to the contestable business. This is because some proportion of the total costs including costs of establishing equipment and infrastructure required by TransGrid to operate its regulated business, but used in both its regulated and unregulated businesses, should be included in the ring fencing adjustment. Basing the adjustment on marginal costs

(assuming that the unregulated business is marginal to the regulated one) would mean that TransGrid's unregulated business would enjoy a benefit that its competitors would not: it would have been established without incurring normal start-up and operating costs.

The ACCC's Final Decision in relation to TransGrid's non-network capital expenditure compared to historical expenditure and TransGrid's revised application is provided in Figure 7.9.6.

**Figure 7.9.6 Historic and forecast non-network capital expenditure (\$2004 million)**



### ACCC Decision: Property and Easements Capex

The ACCC has decided that TransGrid's ex ante property and easement capital allowance will be \$88.8 million for the 2004-2009 regulatory period. The majority of this ex ante allowance is comprised of committed property expenditure worth \$64.7 million. The following issues also feature in the ACCC's decision on this category:

- The ACCC has allowed \$3.3 million for Bonville Golf Course litigation costs as TransGrid is currently liable for approximately \$2 million in costs and compensation and \$1.3 million in interest;
- As the ACCC has decided to include components of the Royalla Project in TransGrid's ex ante allowance, related property and easement expenditure to the value of \$2.7 million has been included in the ex ante allowance;
- The ACCC has decided not to provide an allowance for the acquisition of the site west of the Wallgrove substation. The ACCC acknowledges the site is a possible hub for future transmission supply and a possible augmentation alternative for future load growth. However, options over the land or integrated planning using other network or non-network solutions may satisfy TransGrid's property requirements.

- In keeping with its decision to define several projects as contingent projects, the ACCC has shifted \$41.3 million of related property costs into the contingent category. These components of the property program will be available to TransGrid should the proposed contingent projects eventuate. Property expenditure in this category includes easement acquisitions worth \$37.8 million over the period; and site acquisitions worth \$3.5 million over the period.

The relevant property and easement adjustments are detailed in Table 7.9.7 below.

**Table 7.9.7 ACCC Decision: Property and Easements Capex**

<b>Capex \$2004 million</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>Total</b>
TransGrid's Application	18.65	50.06	21.34	36.98	21.72	148.74
ACCC's Decision	19.10	31.12	12.10	14.08	12.41	88.79

### **Contingent Projects**

The ACCC has considered TransGrid's forward capex application and has decided to categorise the projects in the table below as contingent projects. These projects have an indicative cost of \$722 million. This compares with a contingent project allowance of \$930 million in the Supplementary Draft Decision, which included investment for the Royalla project and an allowance for the N-S-W corridor augmentation, both of which the ACCC has determined appropriate to include in the ex ante category in this decision.

**Table 7.9.8 ACCC's Decision: Contingent Projects**

<b>Contingent Projects</b>	<b>Indicative cost \$ million 2004</b>
Mason Park 330/132kV GIS substation and Holroyd complex	193
Corridor augmentation Newcastle-Sydney-Wollongong corridor	223
QNI Upgrade and Yass-Wagga transmission line	129
Easements and land	177
<b>Total contingent project costs</b>	<b>722</b>

The ACCC's considerations of contingent projects are outlined below.

#### ***Mason Park 330/132kV GIS substation and Holroyd complex***

The 'Holroyd complex' describes the development of a 132 kV switching station at Holroyd, and the subsequent development into a 330/132 kV transformer. The 'Mason Park 330/132 kV GIS substation' project includes the later construction of 330 kV cables linking the new Holroyd substation with a yet to be established 330/132 kV GIS substation at Mason Park.

The ACCC considers that the cost of these projects should not be included in the determination of the ex ante allowance, but rather be identified as contingent projects given that investment in these projects is highly unlikely during this regulatory period.

Analysis supporting this conclusion by the ACCC's consultants has been reviewed and not refuted by TransGrid.

### ***Corridor augmentation Newcastle-Sydney-Wollongong corridor***

The augmentation of capacity to the Newcastle-Sydney-Wollongong corridor covers investment in the following three projects driven by either load growth that could arise during the coming regulatory period:

- a new 500 kV line between the Hunter Valley area and the Newcastle area and possibly including a new 500/330 kV substation costing \$98 million in the 2004 to 2009 regulatory period;
- a new 500 kV line between Bannaby and Sydney and possibly the redevelopment of 500/330 kV transformation at Sydney West costing \$125 million in the 2004 to 2009 regulatory period; and
- the upgrade of the western system to 500 kV.

The ACCC has determined that investment in the first two projects should be classified as contingent based on studies indicating that less expensive investment options could relieve these limitations. The ACCC considers that generation/interconnection developments may also provide opportunities of more optimally staging the N-S-W corridor development. The ACCC, however, considers that investment in the 500 kV ring should be included in the ex ante allowance to support further investment in the NSW transmission network backbone. The ACCC has therefore included \$223 million in the contingent category compared to the allowance of \$417 million in the Supplementary Draft Decision.

### ***QNI Upgrade and Yass-Wagga transmission line***

This investment involves two projects including:

- series compensation on lines from Dumaresq to Bulli Creek and from Dumaresq to Armidale whose main purpose would be to increase the capacity of the QNI interconnector costing \$80 million in the 2004 to 2009 regulatory period; and
- a new 330 kV line from Yass to Wagga whose main purpose would be to increase VIC/Snowy/NSW interconnector capacity costing \$49 million in the 2004 to 2009 regulatory period.

TransGrid proposed that both of these projects should be contingent projects. The Mountain Associates/PB Associates report concluded that at this point neither of these projects appears to have a high probability of proceeding during the coming regulatory period. The ACCC considers that the low probability of these projects proceeding means that the projects should be classified as contingent projects.

## *Easements and land*

The ACCC has determined an allowance of \$177 million for easements and land associated with the above contingent project investments.

### **Consideration of contingent project issues**

In the process of working through the treatment of contingent projects, there have been many related issues for consideration. These issues include the definition of contingent projects, triggers for contingent projects and the process to be followed to set contingent project incentives. The ACCC's considerations of these issues are outlined below.

#### *Definition of contingent projects*

In the application of the SRP to TransGrid as part of this revenue cap process, the ACCC has elaborated on the definition of contingent projects and the manner in which they will be approved and assessed. The main points relevant to the definition of contingent projects are discussed below.

The starting point for the definition of contingent projects are the 10 per cent rule set out in the SRP; and of the ACCC's discretion to recognise projects as contingent. In the case of TransGrid's contingent project assessment, the ACCC has exercised its discretion to recognise projects as contingent given that the projects in TransGrid's revised application have not satisfied the 10 per cent rule. TransGrid indicated in its revised application that projects were proposed as contingent due to significant uncertainty regarding the cost, need and timing of projects.

In determining TransGrid's contingent projects, the ACCC has considered a number of options. These include:

- providing an allowance for the projects in the ex ante category, which requires an assessment of the probability of the project proceeding and its estimated cost. This effectively requires the ACCC to have sufficient information to determine a probability weighted assessment and in the absence of this information costs are likely to deviate substantially from efficient costs;
- remove the contingent project allowance and provide no corresponding adjustment to the ex ante allowance. The ACCC considers this approach to be appropriate where a project is highly unlikely to proceed during the regulatory period. However, this requires the ACCC to form a judgement in relation to probabilities regarding project development; and
- identify related contingent projects that would be triggered by a common investment driver as recommended by the Mountain Associates/PB Associates report.

The ACCC has adopted the third option to determine most of TransGrid's contingent projects and believes that this approach is consistent with the SRP.

The ACCC believes that it is vital to adopt clear triggers to limit areas of disagreement in the future regarding whether a contingent project has been triggered and has defined these triggers, with the assistance of its consultants and with consideration of submissions from interested parties, which form Appendix G to this Decision.

With regards to the ACCC's attitude to the future use of the contingent projects mechanism, there are two relevant points:

- in the future, the ACCC will expect that in most cases TNSPs should provide a probability weighted estimate of expenditure to address the uncertainty of major project developments over the regulatory period; and
- the ACCC considers that the contingent projects category should not be perceived to be a mechanism to collect all significant projects for which there is a very low likelihood of proceeding. In the interests of the optimal working of the mechanism, it would have as few projects as possible given that there is likely to be an overlap between ex ante expenditure and contingent projects, or between costs which could be borne by the connection applicants and those which could be borne by other network users. In particular, this category of expenditure should not be seen as a form of insurance against unforeseen future events.

### ***Contingent Project Triggers***

The ACCC considers that the triggers or circumstances that may invoke a contingent project should meet the following conditions to be accepted:

- they must be clearly specified at the time of the revenue control to ensure that any assessment of TNSP applications for invoking a contingent project minimises any potential overlap between expenditure already included in the ex ante allowance; and
- triggers should not relate to 'systemic' investment drivers such as demand growth or changes in input costs or statutory requirements. Consistent with this approach the joint Mountain Associates/PB Associates report has recommended that triggers should focus on specific limitations or events at defined elements in the network that would justify greater investment than had been provided in setting the ex ante allowance.

The ACCC considered the trigger amendments proposed by TransGrid which were designed to simplify the trigger requirements and provide more generic triggers. The ACCC has considered but does not propose to adopt TransGrid's proposed trigger amendments and has the following comments on them:

- The contingent project regime is designed to be limited to projects which are large and uncertain, but is not designed to catch all possible projects that might eventuate.
- To limit the over use of the contingent projects category, triggers have been tightly defined. The ACCC stands by its decision to do this.
- The ACCC does believe that TransGrid is correct when it says that irrelevant triggers should not impede a required project. The ACCC reserves its right to use its discretion when considering a trigger event to ensure that triggers remain relevant.

The ACCC therefore has not adjusted the contingent project triggers as they appear in the Supplementary Draft Decision. The ACCC's definition of triggers for contingent projects and the projects that are related to contingent projects, but have been included in the ex ante allowance, is in Appendix G.

#### ***Process to set contingent project incentives***

The ACCC has specified a process for the assessment of TransGrid's contingent projects in its Supplementary Draft Decision. The ACCC will adopt this process for assessing TransGrid's contingent projects. Appendix F provides the details of this process.

#### ***Ex ante allowance for assessment of contingent projects***

The ACCC is aware that the TNSPs will incur some costs associated with evaluating different options on projects that do not proceed before an application is made to the ACCC to invoke a contingent project. The ACCC has considered TransGrid's and others' submissions on this matter and considers that it is appropriate to capitalise these costs into contingent projects that proceed during the regulatory period. Regarding incentives for TNSPs to seek non-network investments as a substitute for network investment, the ACCC considers this to be an important issue and that it is an area for future review. The ACCC will assess network support payments as a pass-through event during this regulatory period, and in the context of setting an incentive on contingent projects.



## 7.10 ACCC's decision: Forward Capital Expenditure

The ACCC has determined an ex ante allowance of \$1.184 billion (\$2004) for the period 2004/05-2008/09. A break-down of this by expenditure category is shown in Table 7.10.1 below.

**Table 7.10.1 ACCC Decision: Ex ante capital expenditure**

<b>\$ 2004 million</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>	<b>Total</b>
Asset replacement	62.56	53.33	56.21	51.23	56.16	279.49
Small augmentation	54.98	77.60	111.35	163.64	80.93	488.50
Large/complex augmentation	0.17	2.46	22.12	99.55	122.84	247.13
Property related	19.10	31.12	12.10	14.08	12.41	88.79
Support the business	16.78	16.78	16.78	16.78	16.78	83.88
<b>Total ex ante costs</b>	<b>153.57</b>	<b>181.28</b>	<b>218.55</b>	<b>345.28</b>	<b>289.11</b>	<b>1187.80</b>

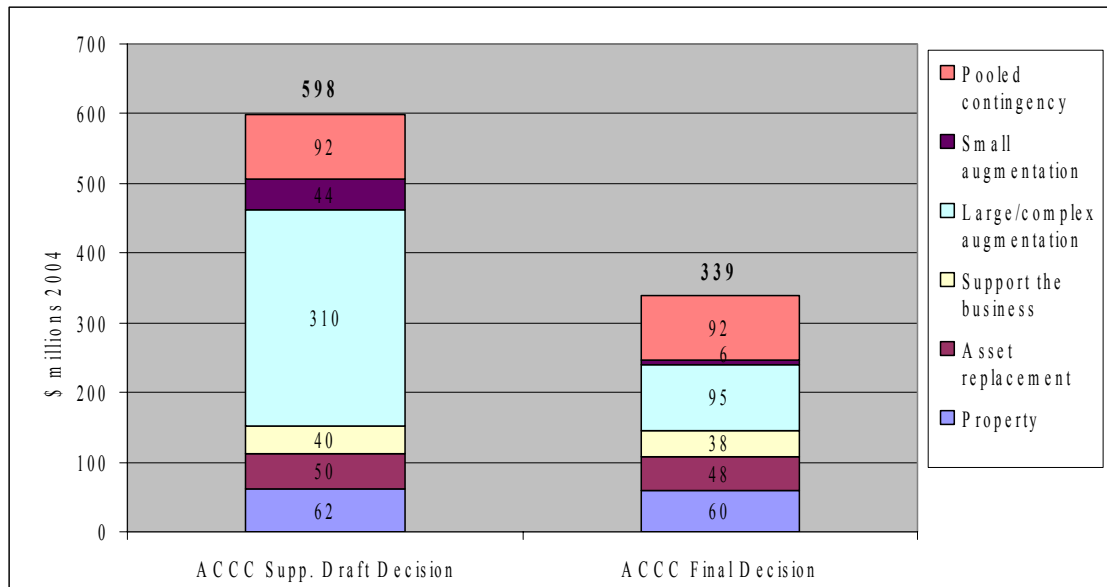
The ACCC has determined an indicative contingent project allowance for this regulatory period of \$722 million. Table 7.10.2 below shows contingent project groupings and their indicative costs.

**Table 7.10.2 Final Decision: Contingent Projects**

<b>Contingent Projects</b>	<b>Indicative cost \$2004 million</b>
Mason Park 330/132kV GIS substation and Holroyd complex	193
Corridor augmentation Newcastle-Sydney-Wollongong corridor	223
QNI Upgrade and Yass-Wagga transmission line	129
Easements and land	177
<b>Total contingent project costs</b>	<b>722</b>

This Decision recommends an ex ante allowance which is \$339 million less than the ex ante allowance proposed by TransGrid. This compares to the Supplementary Draft Decision which recommended a downwards adjustment of \$598 million. Figure 7.10.3 illustrates the breakdown of capex adjustments adopted in this Decision, compared to the Supplementary Draft Decision.

**Figure 7.10.3 Final Capex adjustment by category of expenditure**



A major change in this Final Decision compared to Supplementary Draft Decision is the shifting of \$194 million from the contingent category to the ex ante category to account for the likelihood of augmentation of some part of the N-S-W corridor proceeding. Submissions from TransGrid and other interested parties convinced the ACCC that a significant amount of spending on the N-S-W corridor would be required in the current regulatory period. The ACCC's decision is not an endorsement of any specific project in this context.

In this decision a total of \$237 million has been disallowed from TransGrid's ex ante allowance. This reduction mainly comprises:

- \$19 million from property expenditure to reflect changes to cost allocation profiles of new projects and the deferral of some projects;
- \$32 million from large augmentation comprising: \$2 million for the deferral of the QNI upgrade; and \$30 million from the mid North Coast project. In its revised application TransGrid's applied for an ex ante allowance of \$61 million for the mid North Coast project, and the ACCC has only included \$31 million of this in the ex ante allowance.
- \$48 million from the asset replacement category reflecting changes relating to the Wallgrove site, economies of scale and project deferrals;

- \$38 million from business support expenditure to reflect adjustments to motor vehicle expenditure, and inefficiencies and over allocation of IT expenditure; and
- \$92 million of a proposed pooled contingency fund as this expenditure is not considered necessary.

# 8 Cost of Capital

## 8.1 Introduction

The objective of this Chapter is to estimate the efficient benchmark cost of capital or WACC that TransGrid is likely to face when financing its transmission business over the regulatory period. The WACC is used to determine, in part, the return on capital.

This Chapter sets out the:

- background and formula for the WACC in section 8.2; and
- capital asset pricing model (CAPM) used to estimate the cost of equity capital in section 8.3.

The remainder of this Chapter addresses the individual parameters and related matters found in the WACC and CAPM framework as follows:

- timing for setting the bond rates in section 8.4;
- risk free rate in section 8.5.1;
- inflation rate in section 8.5.2;
- cost of debt in section 8.5.3;
- debt and equity raising cost in 8.5.4;
- market risk premium (MRP) in section 8.5.5;
- franking credits – gamma in section 8.5.6;
- gearing in section 8.5.7;
- betas in section 8.5.8;
- taxation in section 8.5.9; and
- other issues – championing new investment in section 8.5.10.

A summary of the ACCC's decisions for WACC parameters is presented in section 8.6.

## 8.2 Background

One of the objectives of economic regulation is to provide a fair and reasonable rate of return on efficient investment (clause 6.2.2(b)(2) of the Code). Clause 6.2.4(c)(4) of the Code provides guidance by stating that the ACCC must have regard to the WACC of the TNSP.

The ACCC uses the risk adjusted rate of return required by investors to establish the WACC for TransGrid.

Electricity transmission is a highly capital intensive industry where return on capital generally accounts for about half of the Allowed Revenue (AR). Relatively small changes to the cost of capital could have a substantial impact on the AR.

Therefore, correctly assessing the WACC is important because:

- if the return on equity is too low, the regulated network may be unable to earn sufficient returns for the owner. This could reduce the incentive to reinvest in the business;
- if the return on equity is too high, networks may have a strong incentive to overcapitalise, thus creating inefficient investment; and
- AR translates into prices for users. Hence, a higher AR would mean higher prices for end users.

In the SRP,<sup>15</sup> the ACCC outlined its views on the appropriate expression of the rate of return to be achieved and how it is to be used for deriving the AR in previous regulatory decisions:

The ACCC has historically adopted a WACC which is the weighted average of the nominal post-tax return on equity and nominal pre-tax cost of debt. This is known as the nominal vanilla WACC. The vanilla WACC does not include the impact of business income tax.

Hence, the WACC formula used in this Decision is:

$$\text{WACC} = r_e (E/V) + r_d (D/V)$$

where:

$r_e$	=	required rate of return on equity or cost of equity
$r_d$	=	cost of debt
$E$	=	market value of equity
$D$	=	market value of debt
$V$	=	market value of equity plus debt.

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<sup>15</sup> ACCC, *Statement of principles for the regulation of transmission revenues – background paper*, 8 December 2004, p.87.

The ACCC explicitly models the tax liabilities (interest expense and franking credits) of the TNSP in the cash flow model.

TransGrid has adopted the ACCC's post-tax approach to setting the WACC, expressed in nominal terms, in its application.

The remainder of this Chapter sets out the parameters in the WACC framework and assesses the issues identified in TransGrid's application and submissions from interested parties on both TransGrid's application and the ACCC's Draft Decision. The ACCC's decision on each parameter and the appropriate WACC for TransGrid is summarised at the end of this Chapter.

### 8.3 The Capital Asset Pricing Model (CAPM)

The regulatory regime administered by the ACCC must provide for:

a sustainable commercial revenue stream, which includes a fair and reasonable rate of return to Transmission Network Owners and/or Transmission Network Service Providers on efficient investment, given efficient operating and maintenance practices. (clause 6.2.2(b)(2) of the Code.)

Various methods can be applied to estimate the return on equity ( $r_e$ ) as outlined under schedule 6.2.2. of the Code, for example the price to earnings ratio, dividend growth model and arbitrage pricing theory. However, the Code indicates that the capital asset pricing model (CAPM) remains the most widely accepted practical tool to estimate the cost of equity.

The CAPM calculates the required return given:

- The opportunity-cost of investing in the market;
- The market's own volatility; and
- The systematic risk of holding equity in the particular company.

The CAPM formula is:

$$r_e = r_f + \beta_e(r_m - r_f)$$

where:

- $r_f$  = the risk-free rate of return (usually based on government bond rates of an appropriate tenure)
- $(r_m - r_f)$  = the market risk premium (MRP) which measures the return of the market as a whole less the risk-free rate
- $\beta_e$  = the systematic risk (equity beta) of the individual company's equity relative to the market.

The CAPM expresses the rate of return as the post-tax nominal return on equity.

However businesses are typically funded by equity and debt. Therefore by including the cost of debt we can derive the corresponding return on capital employed. This is known as the WACC. The determination of the WACC requires several parameters which are discussed in further detail below.

## **8.4 Setting the Bond Rate**

In determining the WACC, there are several parameters which the ACCC obtains directly from the capital market. These parameters are:

- nominal and real Commonwealth government bond rates (used as a proxy for the risk-free rate and deriving the forecast inflation rate); and
- corporate bond rate yields.

In previous revenue cap decisions, the WACC was updated for bond rates that are based on a moving average period from the date of the final decision. Despite the use of averaging to minimise short term volatility, the WACC reflects the prevailing rates from the capital market and is set on a forward looking basis. The ACCC notes that the WACC for TransGrid was set on the same principle of a forward looking basis at the time of the draft decision. Therefore under normal circumstances the ACCC would update the WACC for prevailing bond rates at the time of the originally scheduled final revenue cap decision in mid 2004.

However, this decision has been delayed due to the application of the incentive framework for capex as set out in the SRP. In 2004, a NSW derogation to the code (clause 9.16.5) enabled TransGrid to set its prices for 2004-05 based on the proposed MAR that was set out in the ACCC's draft decision dated 28 April 2004.

This derogation enabled TransGrid's MAR to be assessed and finalised part way through the 2004–2009 regulatory period. This means that the ACCC's final decision sets TransGrid's MAR after the start of the 2004–2009 regulatory period. This is a unique circumstance and the ACCC does not envisage that future revenue cap decisions will be made part way through a regulatory period.

Given that the price for 2004–05 has already been set, the ACCC considers that it would be inappropriate to retrospectively adjust the forecast WACC for current bond rates in the market. Instead the ACCC will finalise its estimate of the WACC for TransGrid with bond rates as at 28 April 2004.

It is important to recognise that normal regulatory practice is to set the WACC based on the latest information from the capital market (i.e. update the bond rates) before the start of the regulatory period as part of a final decision. The ACCC will continue to adopt the approach where the WACC is updated in the final decision for a TNSP's MAR prior to the start of the regulatory period.

## 8.5 The Parameters of the WACC Model

### Estimate of the risk-free interest rate

The risk-free rate measures the return an investor would expect from an asset with zero volatility and zero default risk. The yield on long-term Commonwealth Government Securities (bonds) is considered to be a proxy for the risk-free rate since the government can honour all interest and debt repayments. The two issues for consideration are the sampling period used to determine the risk-free rate and the term of the risk-free rate.

#### *Sampling period*

In the CAPM framework all information used to derive the rate of return should be as recent as possible at the time the decision comes into effect. In the case of interest rates and inflationary expectations, financial markets determine these on a continuous basis.

On this issue the SRP states:

the ACCC considers the period (between 5 to 40 days) used to calculate the moving average of the bond rate should be left to the discretion of the TNSP when making its application. However, the TNSP will not be allowed to change the averaging period after its application is lodged.

TransGrid initially proposed that a 10-day averaging period be used to estimate the risk-free rate. It subsequently requested a 40-day averaging period.

The ACCC is aware of the inherent limitations associated with using either an ‘on-the-day’ rate or an ‘historical average’ in calculating the risk-free rate.

The financial theory underlying the CAPM explicitly specifies the use of ex ante returns. Using an on-the-day rate gives the best estimate of ex ante returns. Therefore theoretically an on-the-day rate is more appropriate.

However, an on-the-day rate reflects short-term fluctuations which may differ from the long-term trend. Such market volatility can be minimised by averaging rates over some time before the start of the regulatory period. Several regulators have traditionally used an average rate as the risk-free rate.

The ACCC has adopted a 40-day moving average and has used it in several of its regulatory decisions. More recently, the ACCC has adopted a 10-day averaging period in its Tasmanian<sup>16</sup>, Victorian<sup>17</sup> and South Australian<sup>18</sup> revenue cap decisions.

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<sup>16</sup> ACCC, *Tasmanian Transmission Network Revenue Cap 2004-2008/09*, December 2003.

<sup>17</sup> ACCC, *Victorian Transmission Network Revenue Caps 2003-2008*, December 2002.

<sup>18</sup> ACCC, *South Australian Transmission Network Revenue Cap 2003-2007/08*, December 2002.



Consistent with the SRP, the ACCC accepts TransGrid's proposal to use a 10-day moving average.

### ***Term of the risk-free interest rate***

TransGrid argues that the 10-year bond rate should be used in its revenue cap reset. It contends that the term of the risk-free rate should be set equal to a period that is consistent with investors' time horizons. TransGrid further contends that if the ACCC continues to use the 5-year rate as the risk-free rate, then adjustments will need to be made to other parameters in the WACC to adjust for duration.

### ***Submissions on the application***

The ACCC received submissions relating to the selection of the risk-free interest rate from the Energy Markets Reform Forum (EMRF) and a joint submission from the Joint Customer Groups. The Joint Customer Groups include Australian Business Ltd, Australian Consumers Association, Energy Action Group, Energy Users Association of Australia, and the National Farmers' Federation.

Their comments focussed on:

- whether the risk-free rate should align with the life of the asset or regulatory period; and
- the recent GasNet tribunal decision.

### ***Alignment of the risk-free rate with the life of the asset or regulatory period***

The EMRF believe that the term of the MRP and bond rate maturity should coincide. It believes that if a 5-year bond rate is used as the risk-free rate then the MRP associated with the shorter term bond rate should be used.

The Joint Customer Groups state that, given the five year regulatory cycle, it is more appropriate for 5-year bond rates to be used as refinancing can occur to coincide with the regulatory cycle. They believe that the risk-free rate being set with reference to the bond rate yield consistent with the investment horizon is spurious as it ignores the fact that refinancing of debt can be readily undertaken in a financially mature market like Australia.

### ***Consistency with the recent GasNet Tribunal Decision***

The EMRF referred to the recent GasNet decision in which the Australian Competition Tribunal (Tribunal) supported the view that the risk-free rate should be the 10-year bond rate. However, the EMRF notes that the Tribunal did not comment on what adjustments should be made to other factors which modify this basic risk-free input, such as the debt margin, the MRP, the debt beta and the equity beta. In accepting the Tribunal's decision, the EMRF suggests that the ACCC adjust other input parameters to

the CAPM formula in order to not reward returns which are not in keeping with benchmarking.

### ***Submissions on the Draft Decision***

Transend and Benchmark Economics express their support for the ACCC in adopting the 10-year bond rate for setting the risk-free rate.

TransGrid states that the convention for quoting yields in Australia requires an adjustment to the bond yields for the purposes of setting a regulatory rate of return. The adjustment would convert the quoted yield to a compounded annual yield.

### ***ACCC's considerations***

The ACCC notes that some interested parties support the view of using the risk-free interest rate that matches the length of the regulatory period. Alternatively, other interested parties believe that bond rates with terms matching the life of the assets should be used. Transmission assets have long effective lives, far exceeding the term of the most traded Australian bond with the longest maturity period (i.e. 10 years). These parties suggest that 10-year bond yields should be used in the CAPM formula.

In December 2003, the Tribunal handed down its decision on its review of the ACCC's tariff determination for transportation services on GasNet's Victorian natural gas transmission network.<sup>19</sup>

Although the ACCC used a 5-year rate, the Tribunal accepted GasNet's approach to calculating the risk-free rate on the basis of a 10-year government bond rate. The Tribunal cited the fact that the traditional application of the CAPM and estimation of the MRP were based on a 10-year time horizon as the basis for its decision. It therefore considered that the service provider, under the terms of the Gas Code, was entitled to use a CAPM calculation based on a 10-year horizon as a legitimate basis for estimating the cost of equity.

Given the Tribunal's decision, the ACCC has adopted a 10-year government bond rate as a proxy for the risk-free rate.

Maturity dates on nominal and indexed bonds rarely correspond and require realignment using either interpolation or extrapolation, i.e. by estimating the rate at a given moment from a 'line of best fit'. The ACCC has used this approach in all of its revenue cap decisions, which is also consistent with jurisdictional regulatory decisions.

The ACCC also notes that a yield could be expressed for any defined period but typically it is convenient to quote annual rates. The ACCC has used an annualised bond rate in its calculations.

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<sup>19</sup> ACCC, *GasNet Access Arrangement 2004/05 – 2008/09*, January 2002.

For this Decision, the nominal 10-year bond rate and 10-day moving average for Commonwealth government bond rates as at 28 April 2004, results in a risk free rate of 5.98 per cent (annual compounding rate).

### **Expected inflation rate**

The expected inflation rate is not an explicit parameter in the return on equity calculation. It is a component of the risk-free rate (which has implications for the cost of both debt and equity), that can be estimated by the:

- difference between the nominal and indexed bond yields; or
- Commonwealth Treasury's inflation forecasts (based on its modelling).

The ACCC has historically forecast the inflation rate as the difference in the nominal bond rate and inflation indexed bond rate.

On this basis, for this decision the ACCC forecasts inflation of 2.49 per cent per annum.

### **Cost of debt**

The cost of debt on commercial loans is the debt margin added to the risk-free rate as illustrated by the formula:

$$r_d = r_f + d_m$$

where:

$r_d$	=	the cost of debt
$r_f$	=	the risk-free rate of return
$d_m$	=	the debt margin.

The debt margin varies depending on the entity's gearing, credit rating and the term of the debt. Applying the cost of debt to the asset base, using the assumed gearing, will generate the interest costs for regulatory purposes.

The SRP states:<sup>20</sup>

Once the relevant credit rating is established the debt margin can be determined from financial market sources. The debt margin (short-term averaging period equal to the averaging of the risk-free rate) should also reflect the prevailing market rates which represent current market expectations for debt issues at the benchmark maturity and credit rating for the regulated entity.

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<sup>20</sup> ACCC, *Statement of principles for the regulation of transmission revenues – background paper*, 8 December 2004, p.113

TransGrid proposes that a debt margin, excluding transaction costs of between 125 and 150 basis points would be appropriate for a benchmarked network business with a gearing ratio of 60 per cent. It argues that adopting the mid-point of this range, a debt margin of 137 basis points, provides reasonable confidence of adequate debt funding for new transmission investment at interest rate levels that do not require subsidisation by equity holders and is consistent with the data available.

TransGrid notes the ACCC's previous sampling of credit ratings for electricity firms. It believes that an appropriate credit rating is a credit rating based on the privately owned businesses in the ACCC's benchmarking sample. The average credit rating for these businesses is between BBB+ and A-. Therefore, TransGrid considers that a conservative approach is to adopt a credit rating of A-.

### ***Submissions on the application***

The Joint Customer Groups note that TransGrid is proposing a debt margin of 1.485 per cent and is concerned that there is no consistency in these values compared with other revenue cap decisions.

### ***Submissions on the Draft Decision***

The ACCC received a submission from TransGrid which argues:

- on the matter of benchmarking a credit rating, that the inclusion of government owned companies leads to a significant upward bias in the credit rating. A conservative approach would be to adopt a credit rating of 'A-' or below.
- the importance of annualising figures used in rate of return.

SPI PowerNet states that an appropriate benchmark credit rating for setting the debt margin would be 'A-' or 'BBB+'.

### ***ACCC's considerations***

In the SRP, the ACCC stated that it would not reference a TNSP's actual cost of debt because the actual cost of debt may not reflect efficient financing. A WACC based on an industry wide benchmark cost of debt may deter inefficient debt financing, as the revenue cap will only contain a return on capital allowance consistent with the return requirements of efficient financing.

The cost of debt is primarily dependent on the credit rating of the debt issuer. As a general rule, debt attached with a lower credit rating has a higher default risk and therefore attracts a higher risk premium. The ACCC considers that adopting a benchmark credit rating for the TNSP rather than an actual credit rating provides the firm with an incentive to minimise inefficient financing. Therefore the cost of debt should be determined through reference to a benchmark credit rating and the (market) debt margin associated with that rating.

Table 8.5.3 sets out the long term credit rating assigned by Standard and Poor's for ten Australian electricity network companies.<sup>21</sup>

**Table 8.5.3 Credit ratings of electricity companies**

Company	Long-term rating	Actual Gearing (%)
Ergon Energy	AA+	49.3
Country Energy	AA	68.3
EnergyAustralia	AA	51.4
Integral Energy	AA	51.3
SPI PowerNet	A+	76.8
Australian Gas Light	A	40.8
Citipower Trust	A-	54.1
ETSA Utilities	A-	64.1
Powercor Australia	A-	38.1
ElectraNet	BBB+	71.9
Average	A to A+	56.6

Source: Standard and Poor's, *Australian Report Card Utilities*, October 2004

Table 8.5.3 also shows that the average credit rating of these entities is 'A' to 'A+' and their average gearing is about 57 per cent which is close to the assumed benchmark of 60 per cent.

The ACCC considers that relevant Australian electricity transmission and distribution companies should be used as the basis for calculating a benchmark TNSP's credit rating.<sup>22</sup> There are also an insufficient number of 'transmission only' entities with publicly available credit ratings to provide a reliable industry sample.

It could be argued that the inclusion of distribution companies in the sample may provide a lower credit rating (that is they have the effect of biasing the sample towards TNSPs) because distribution is regulated by way of a price cap rather than a revenue cap (which is more likely to provide a stronger business profile). According to Fitch Ratings, while distribution operations typically involve a low business risk similar to transmission operations:

...they have more exposure to volume risk than transmission companies (i.e. volumes are sensitive to mild winters or summers).<sup>23</sup>

<sup>21</sup> United Energy (now United Energy Distribution) and TXU Electricity (now SPI Electricity) are not included in the sample because they were recently acquired and undergoing restructuring which would have an impact on their long term credit ratings. However, in the future, once their business operations stabilise or restructuring is complete, these firms may be included in the sample.

<sup>22</sup> The ACCC has drawn a distinction between electricity and gas companies for the purpose of sampling credit ratings for the following reasons. In assessing the credit worthiness of Australian gas companies, Standard and Poor's would consider a number of key issues. They relate specifically to regulatory risk; counterparty risk and overall volume of demand for gas (see Standard and Poor's, *EnergyAustralia and New Zealand*, November 2001, p.14)

<sup>23</sup> Fitch Ratings, *Australian Electricity Sector – At that awkward adolescence stage*, March 2004, p. 47.

Therefore a transmission company is expected to have a stronger credit rating than other players in the electricity industry.

In its sampling of the average credit rating for electricity network businesses the ACCC has included both private and government owned entities. The ACCC considers that choosing stand-alone and private companies would provide too small a sample to obtain an appropriate average credit rating for the electricity industry. The ACCC acknowledges that the inclusion of some government owned companies in the sample is likely to create an upward bias to the credit rating. For instance, Standard and Poor's has stated that the stronger 'AA' credit rating is predominantly given to a government owned utility.<sup>24</sup>

Offsetting this is the inclusion of distribution companies in the sampling of credit ratings. In most Australian states, other than South Australia and Victoria, the distribution companies are bundled with retail operations. According to Standard and Poor's, retailers operate in a highly competitive market and their credit quality will always be at the riskier end of the credit spectrum.<sup>25</sup> Further it is Fitch Ratings' experience that there would be only limited situations where the existence of a retailing capacity would strengthen a distributor's stand-alone credit profile.<sup>26</sup> Therefore the ACCC's sampling, which includes the credit ratings of bundled distribution network companies, is likely to provide a conservative credit rating for the purposes of a benchmark TNSP.

Notwithstanding this, government/parent ownership is only one factor which may affect a credit rating. According to Standard and Poor's, the method used to rate power companies incorporates an assessment of both the financial and business risk characteristics of the entity. The financial risk assessment focuses upon the ability of an entity to generate sufficient cash flows to service its debt and therefore involves consideration of the stability of an entity's revenue and gearing levels. The business risk assessment typically considers a broader range of issues which affect the key business or operating characteristics such as:

- regulation;
- markets;
- operations; and
- competitiveness.

By taking into account these additional factors, the ACCC is satisfied that the Standard and Poor's credit rating does not simply reflect the ownership structure, but considers more broadly, the stability of the entity's operations. This conclusion can also be seen in statements made by both Standard and Poor's and FitchRatings who state:

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<sup>24</sup> Standard and Poor's, *Australian and New Zealand Electric and Gas Utilities Ripe for Rationalization*, May 2002, p.1.

<sup>25</sup> Standard and Poor's, *Energy-Australia and New Zealand*, November 2001, p.9.

<sup>26</sup> Fitch Ratings, *Australian Electricity Sector – At that awkward adolescence stage*, March 2004, p. 47.

...the 'A' rated entities are generally stable network or transmission businesses.<sup>27</sup>

...the transmission company should enjoy stronger credit ratings than other players in the electricity chain, because of the strong regulatory environment and low operating risks currently evident in Australia.<sup>28</sup>

On balance, the ACCC considers its use of an average 'A' credit rating for a benchmark TNSP, based on the statements of credit rating agencies and a sample of Australian electricity network companies, is consistent with the overall environment in which TNSPs operate.

Having established a credit rating, a debt margin can be determined. The debt margin should reflect the prevailing market rates for debt issues at the benchmark maturity and credit rating for the regulated entity. This explains the differences in the debt margins applied by the ACCC in previous revenue cap decisions (as queried by the Joint Customer Groups).

In previous revenue cap decisions, the ACCC has assumed a benchmark debt margin with a term equal to the regulatory period for the regulated entity. This position was consistent with the ACCC's use of a risk-free rate matching the regulatory period. However, as discussed earlier in this Chapter, the ACCC now recognises that the 10-year bond rate can be used as a proxy for the risk-free rate. To maintain consistency between the two cost of debt components, the ACCC considers that the term of the relevant corporate bond rate should also match the term of the risk-free rate being used.

For this decision, the ACCC considers it is appropriate to reference the debt margin to the CBASpectrum benchmark which estimates a fair yield curve (of various terms and credit ratings) for Australian corporate bonds. The 10-day moving average benchmark debt margin over the government bond yields as at 28 April 2004, for 'A' rated corporate bonds with a term of 10 years, is 90 basis points.<sup>29</sup> Consistent with calculating the risk-free rate, this was adjusted to an effective annual compounding rate. Combined with the nominal risk-free rate of 5.98 per cent, it provides a nominal cost of debt of 6.88 per cent for use in the WACC estimate.

## **Debt and equity raising costs**

### ***Debt raising costs***

To raise debt, a company has to pay debt financing costs over and above the debt margin. Such costs are likely to vary between each debt issue, depending on the borrower, lender or market conditions.

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<sup>27</sup> Standard and Poor's, *Australian and New Zealand Electric and Gas Utilities Ripe for Rationalization*, May 2002, p.1.

<sup>28</sup> Fitch Ratings, *Australian Electricity Sector – At that awkward adolescence stage*, March 2004, p. 40.

<sup>29</sup> CBASpectrum website: [www.cbaspectrum.com](http://www.cbaspectrum.com)

A recent consultancy was undertaken by the Allen Consultancy Group (ACG), on behalf of the ACCC, to consider the appropriateness of allowing transaction costs associated with debt and equity financing and to determine a benchmark allowance for these costs.<sup>30</sup> According to the consultancy, the debt raising cost being considered should be the transaction cost of re-financing fixed rate bonds to the value of the notional gearing component of the TNSP's RAB (assuming a consistent benchmark credit rating). The allowed debt benchmark does not relate to:

- acquisitions by the regulated firm; and
- non-core construction or investment activities that are being undertaken.

Therefore the transaction costs associated with the benchmark cost of debt should not relate to activities outside of the re-financing of bonds for the regulated firm's core activities.<sup>31</sup>

TransGrid notes that the ACCC has allowed between 10.5-12.5 basis points per year for debt raising costs in previous regulatory decisions. TransGrid believes a value in the middle of this range (11.5 basis points) to be appropriate.

TransGrid's application states that equity raising costs (being 0.23 per cent a year of the equity portion of the RAB) should be allowed in the opex forecasts. It argues that this is in line with the previous practice of the ACCC.

### *ACCC's considerations*

The ACCC considers that TNSPs should be provided a benchmark allowance for debt raising costs that reflects current market costs.

In its Draft Decision, the ACCC allowed debt raising costs of 10.5 basis points a year (bppa). This allowance was based on advice provided by a number of commercial banks, which indicated that debt raised on capital markets is likely to incur fees in the range of 8 – 12.5 bppa. The ACCC noted that the practice of allowing debt raising costs is relatively new in regulatory decisions. In the SRP, the ACCC also stated that it would undertake a further review of debt and equity raising costs.

In the recent consultancy undertaken by ACG, it concluded that debt raising costs were a legitimate expense that should be recovered through the revenues of the regulated utility.<sup>32</sup>

ACG considered that given transaction costs associated with debt would continue to be incurred for the whole value of the investment, the most appropriate means of recovering these costs would either be as an addition to the estimated WACC or as a direct allowance to operating expenses.

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<sup>30</sup> ACG, *Debt and Equity Raising Transaction Costs – Report to the ACCC*, December 2004.

<sup>31</sup> *Ibid.*, p.5.

<sup>32</sup> *Ibid.*, p.xiii.



ACG based its benchmark on debt raising costs applicable to Australian international bond issues or joint Australian market/international issues. In developing the benchmark, ACG calculated a gross underwriting fee benchmark of 5.5 bppa based on a 5-year maturity. To this, it added allowances for legal and roadshow expenses; credit rating fees for the firm and for each issue of bonds; and registry and paying charges. The build up of debt raising costs and total recommended benchmark for bond issues is displayed in Table 8.5.4.

**Table 8.5.4 Benchmark debt raising costs for bond issues**

Source: *ACG Debt and Equity Raising Transaction Costs – Report to the ACCC, 2004, p.xviii.*

Fee	Explanation/Source	1 issue	2 issues	4 issues	6 issues
Amount raised	Multiples of median bond issue size	\$175M	\$350M	\$700M	\$1,050M
Gross underwriting fees	Bloomberg for Aust. Intl. issues, tenor adjusted	5.50	5.50	5.50	5.50
Legal and roadshow	\$75K - \$100K: Industry sources	1.14	1.14	1.14	1.14
Company credit rating	\$30K - \$50K: S&P ratings	2.86	1.43	0.71	0.48
Issue credit rating	3.5 (2-5)bps up-front: S&P ratings	0.70	0.70	0.70	0.70
Registry fees	\$3K per issue: Osborne Associates	0.17	0.17	0.17	0.17
Paying fees	\$1/\$1M quarterly: Osborne Associates	0.01	0.01	0.01	0.01
<b>Total</b>	<b>Basis points a year</b>	<b>10.4</b>	<b>9.0</b>	<b>8.2</b>	<b>8.0</b>

On the basis of the evidence provided by ACG, the ACCC considers it is appropriate to allow benchmark debt raising costs derived in accordance with the above table. TransGrid has an opening RAB of \$3,012.76 million and the assumed benchmark gearing ratio is 60:40. This provides the notional debt component of the RAB to be around \$1,781.3 million.

According to Table 8.5.4, the overall debt size of this amount would require 6 or more issues. Therefore the ACCC considers an allowance of 8 basis points for debt raising costs is a reasonable (conservative) benchmark for TransGrid. The allowance for debt raising costs is about \$1.5 million per year on average over the regulatory period. This is included as part of opex (see chapter 3) because it is an identified cost category.

### *Equity raising costs*

Equity raising costs are paid by an entity when it raises capital. The cost of initial public offerings (floats) can be used as a proxy for transaction costs of raising equity. The structure of fees seen in a typical float includes:<sup>33</sup>

- management;
- underwriting;
- selling;

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<sup>33</sup> Ibid, pp.56-57.

- legal and accounting;
- consulting; and
- other out of pocket fees.

For initial equity raising costs, a fundamental point is whether the RAB has already been determined, and in the case of privately owned utilities, whether a RAB was established prior to privatisation.

For costs associated with raising subsequent equity capital, the practice by utilities has generally been for acquisition activity outside of the regulated business. In most situations, it is expected that the need for access to external equity funds would not arise if the entity financed in a manner consistent with the regulatory benchmarks.<sup>34</sup>

### *Submissions on the Draft Decision*

Transend argues that the ACCC should provide a benchmark allowance for equity raising costs. Transend states that the ACCC has been inconsistent in its treatment of equity raising costs as it has provided debt raising costs based on benchmarked industry costs and a benchmarked level of debt.

### *ACCC's Considerations*

In previous regulatory decisions, the ACCC provided a benchmark allowance for equity raising costs. More recently, in the Transend revenue cap decision, the ACCC did not provide an allowance for equity raising costs on the basis that the TNSP would be unlikely to incur equity raising costs during the regulatory period. In the SRP, the ACCC also stated that it would undertake a further review of this issue.

The recent consultancy undertaken by ACG, on behalf of the ACCC, considered the legitimacy of recovering equity raising costs and benchmark value for such costs incurred by an entity through initial public offerings (IPO) and seasoned equity offerings (SEO).

ACG determined that if the RAB for a regulated entity has already been established, it is not appropriate to include an allowance for the cost of raising equity.<sup>35</sup> However, where new stand-alone assets are built and a RAB is yet to be established, the opening regulated asset value should reflect all costs, including an allowance for the cost of raising the equity. This would be subject to how the assets are financed.<sup>36</sup>

In the event where equity raising costs should be allowed, ACG recommended the use of IPO costs as a proxy for equity raising costs. It proposed a benchmark of 3.83 per cent transaction cost allowance. This is the median IPO transaction cost measured across a sample of seven infrastructure capital raisings. It was found that utility floats

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<sup>34</sup> Ibid, pp.xi-xii.

<sup>35</sup> Ibid, pp.54-55.

<sup>36</sup> Ibid, p.x.

can be expected to have a lower transaction cost due to their stable and regulated cash flow streams. ACG also recommended the cost of raising equity be treated as part of the optimised replacement cost (ORC) value and depreciated along with other assets to the depreciated optimised replacement cost (DORC) value.<sup>37</sup>

In financing subsequent capital expenditure, ACG found that firms finance the equity share of their subsequent capital expenditure in the least cost manner. This implies financing from retained earnings where possible and debt financing in preference to equity financing.

On the basis of ACG's findings, the ACCC considers that equity raising costs should not be allowed for TransGrid because:

- TransGrid's RAB has already been established and would be rolled forward. Hence there is no case to now include an allowance for IPO costs. It is reasonable to assume that such costs have been included in the RAB, either explicitly or implicitly; and
- it is unlikely that TransGrid would engage in raising equity to finance subsequent capital expenditure during the regulatory period as this would be an inefficient practice.

### **Market risk premium**

The MRP is the margin above the risk-free rate of return that investors expect to earn if they held the market portfolio. That is, the return of the market as a whole less the risk-free rate:

$$\text{MRP} = r_m - r_f$$

Under a classical taxation system, conventional thinking suggests a value for the MRP of around 6 per cent.

Determination of the return on capital for a regulated business is a forward looking process. However estimates of the future cost of equity are not readily available. Practical applications of the CAPM therefore rely on the analysis of historic returns to equity when estimating the MRP.

TransGrid proposes an MRP of 6 per cent in its application. Although, TransGrid contends that if the 5-year bond rate is used as a proxy for the risk-free rate then a corresponding rate of 6.2 per cent should be used for the MRP.

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<sup>37</sup> Ibid, p.xi.

### ***Submissions on the application***

The EMRF argues that the historical MRP has declined over recent times due to fundamental changes in the competitive environment in Australia. The EMRF and the Joint Customer Groups contend that, as the CAPM is intended to be a forward looking model for setting regulated returns, the use of historical average figures does not adequately reflect current and expected future conditions.

The EMRF's analysis shows that over recent years the MRP has averaged 3.0 – 3.3 per cent, which is consistent with recent surveys.

The Joint Customer Groups believe that recent regulatory decisions using an MRP of 6 per cent grossly inflate the returns on equity above the level required by the market.

### ***Submissions on the Draft Decision***

The EMRF raised concerns similar to those it raised in its submission on EnergyAustralia's application. It identifies that there are various studies which indicate different levels of MRP. It believes that the transmission businesses seek higher levels of MRP because it will lead to higher WACCs and enhance the return to their shareholders. Equally, consumers would seek the lowest appropriate levels of MRP to minimise the WACC and pay less for the service.

The Joint Customer Groups also believe that the MRP of 6 per cent is too high. It suggests that recent studies and surveys indicate an MRP in the region of 4 – 5 per cent would more accurately reflect the Australian financial market.

Transend believes that the ACCC's views on the MRP reflect a reasonable and balanced judgement of the available evidence.

In the pre-determination conference that was held on the 18 June 2004, the Joint Customer Groups questioned why the ACCC has not adopted an MRP similar to those used by UK regulators (around 3.5 per cent).

### ***ACCC's considerations***

Although there is a substantial amount of research undertaken on the MRP, there is continuing debate as to the appropriate value. The ACCC notes that there is support for an MRP of 6 per cent in submissions received in response to the Draft Decision. However, arguments for lower values were also received from interested parties.

### ***Historic measures***

The rationale for using historical data as a measure of the expected MRP is that investors' expectations will be framed on the basis of their experience. The ACCC

considers the value of the MRP, based on a traditional long term view using historic measures (ex post measure), remains around 6 per cent.<sup>38</sup>

The ACCC notes the EMRF's comment that the MRP has fallen to around 3 – 4 per cent over recent years.<sup>39</sup> However, the ACCC is cautious that this may partially reflect short-term market trends. Further, statistical estimates over the shorter periods tend to provide standard errors which are typically higher than the mean estimates. This suggests that caution must accompany the interpretation of these results.

### ***UK MRP and the ex ante method***

The ACCC notes that the UK regulators appear to use a forward looking MRP based on an ex ante (supply-side) approach. The ex ante approach estimates the MRP as the sum of the expected dividend yield and the expected capital gain from shares. The MRP estimates from an ex ante approach are generally lower than historic estimates of MRP. Australian applications of similar ex ante approaches have arrived at an estimate of 4-5.7 per cent.<sup>40</sup> A major part of the differential appears to be driven by the Australian assumption of a significantly higher long run growth in gross domestic product.

Most of the research on the ex ante approach has been undertaken in the USA market. Given the relatively limited research on the Australian application of the ex ante approach, the ACCC considers caution must accompany the interpretation of these results. Therefore the ACCC considers it is not appropriate to rely exclusively on the ex ante approach for the purposes of estimating a MRP.

### ***Benchmarking of international data***

An alternative approach for determining the Australian MRP is through the benchmarking of international data. A study by Bowman estimated the Australian MRP to be 7.8 per cent from using the benchmarking approach on the basis of:<sup>41</sup>

- a USA MRP in the range of 6 to 9 per cent; and
- making adjustments for incremental risk factors of 0.1 to 2.4 per cent on the USA MRP for differences in taxation, market differences, country risk and time horizon.

The ACCC is cautious about this approach. Apart from the issues associated with estimating the USA MRP, the benchmarking approach also involves the estimation of

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<sup>38</sup> There appears to be consensus that the MRP cannot be easily predicted over shorter periods and is likely to have poor statistical properties.

<sup>39</sup> Headberry Partners and Bob Lim, *Further capital markets evidence in relation to the market risk premium and equity beta values-for ECCSA*, December 2003, p.48.

<sup>40</sup> Lally, *The Cost of Capital Under Dividend Imputation*, June 2002, pp.29-34.

<sup>41</sup> Bowman, *Estimating Market Risk Premium*, JASSA, Issues No. 3, 2001.

adjustment factors which are arbitrary and add more doubt to the accuracy of the estimation.

### ***Survey data***

Another approach to determining the MRP is using survey data as referenced by the EMRF. The ACCC considers that there are problems associated with survey data because surveys are conducted at a specific point in time and may only reflect transient market sentiments. The reliability of survey data is also a concern. Common issues include obtaining a representative sample and framing the survey so as not to induce bias in respondents. Due to general concerns about the reliability of survey data, the ACCC will consider but tend not to place much weight on survey data.

### ***Consultancies***

A study undertaken by Associate Professor Lally<sup>42</sup>, on behalf of the ACCC, assessed various approaches and estimates of the MRP. Associate Professor Lally determined that across four different approaches (including historic based and ex ante methods) the average estimate for the MRP in Australia was 6.1 per cent.<sup>43</sup> He concluded that:

...the range of methodologies examined give rise to a wide range of possible estimates for the market risk premium and these estimates embrace the current value of 6 %. Accordingly the continued use of the 6 % estimate is recommended.<sup>44</sup>

ACG has also reviewed the empirical evidence on the Australian MRP. Based on the evidence presented which includes an analysis of international trends in MRP, the ACG concluded that:

...there is no justification for applying an MRP different from 6 %, as is the practice of Australian regulators.<sup>45</sup>

The ACG noted that while the point estimate of the MRP provided by historical evidence suggests a higher figure, the qualitative and empirical evidence from ex ante models provide persuasive evidence that 6 per cent overstates the expected MRP.

### ***Conclusion***

The ACCC considers that the consultancies prepared by Associate Professor Lally and the ACG demonstrate that 6 per cent is an appropriate balance of the available evidence on the MRP. Although historical premiums typically suggest a higher MRP than 6 per

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<sup>42</sup> Associate Professor Martin Lally is an academic member at The School of Economics and Finance, Victoria University of Wellington.

<sup>43</sup> This was the average derived using: historical averaging of the Ibbotson type (0.07); historical averaging of the Siegel type (0.056); the Merton methodology (0.07); and 0.04 – 0.057 from the forward looking approach with a point estimate of 0.048.

<sup>44</sup> Lally, *The Cost of Capital Under Dividend Imputation*, June 2002, p.34.

<sup>45</sup> ACG, *Review of studies comparing international regulatory determinations*, 2004, p.113.

cent, further estimates of the MRP over more recent periods and forward looking estimates typically suggest a lower MRP than 6 per cent. Therefore, for this Decision, the ACCC will maintain its current estimate of 6 per cent for the MRP but will continue to monitor the available research.

### **Value of franking credits**

Australia has a full imputation tax system under which a proportion of the tax paid by a company is, in effect, personal tax withheld at the company level.

The analysis of imputation credits and their impact on cost of capital in Australia is a developing field. The rate of use of tax credits or gamma ( $\gamma$ ) may have an effect on the WACC (where a TNSP actually pays tax) and there is little doubt that franking credits have value (schedule 6.1(5.2) of the Code):

As the ultimate owners of government business enterprises, tax payers would value their equity on exactly the same basis as they would value an investment in any other corporate tax paying entity. On this basis, it would be reasonable to assume the average franking credit value (of 50 per cent) in the calculation of the network owner's pre-tax WACC.

TransGrid proposes a value for  $\gamma$  of 0 in its application. It states that global equity markets are highly integrated. Australian equity markets rely heavily on foreign investment in order for businesses capital requirements to be met. TransGrid argues that in effect, 30 per cent of Australian equities are held by foreign investors, whilst Australian equities constitute 1 per cent of world equities suggesting an elastic demand for Australian equities by foreign investors. Hence, foreign investors would have a greater affect on Australian equity prices than Australian investors.

According to TransGrid, since foreign investors do not gain any value from franking credits, they would not accept a perceived reduction in their rate of return given the level of risk observed and would reduce their holdings of Australian equities and re-optimize their portfolios accordingly, decreasing the price of Australian equities.

As such, TransGrid claims that Australian companies must offer a rate of return equal to that required by foreign investors. This implies a 0 value of franking credits.

### ***Submissions on the application***

In considering TransGrid's argument that a significant amount of the capital of enterprises is held off-shore (and therefore is not a beneficiary of dividend franking), the EMRF states that this is inapplicable as all other inputs into the WACC calculation are based on the results of analysing Australian businesses.

The Joint Customer Groups state that TransGrid's proposal to set  $\gamma$  at 0 is an ambit claim. It notes that this claim assumes TransGrid is totally dependent on foreign sources for equity investment. It further notes that setting  $\gamma$  at 0 is as inappropriate as setting  $\gamma$  at 1 to reflect the fact that TransGrid is in fact wholly owned by the NSW government.

The Joint Customer Groups state that given it is acknowledged that around 30 per cent of the Australian market is foreign owned then a gamma of 0.7 should be set to reflect this ownership level.

### *ACCC's considerations*

The  $\gamma$  parameter incorporates both dividend payouts issued that carry franking credits and the proportion of those credits that could be used by investors to offset tax payable on other income.

In previous decisions, the ACCC has assumed a domestic CAPM, which values equity in the presence of franking credits. Given that the value of these credits is somewhere between 0 and 1.0 (no value and full value), the ACCC has consistently applied an average value for  $\gamma$  of 0.5.

In considering the ratios of franking credits assigned to company tax paid for the eight largest listed companies in Australia, as studied by Associate Professor Lally, the result is a ratio of 1.0.<sup>46</sup> Given that these companies constitute 50 per cent of total equity listed in Australia, he suggests that this ratio is close to 1.0 for most industries.

It is therefore apparent that franking credits do have some value. However, the proportion that can be used by investors to offset tax payable on other income is ambiguous. In the past, the estimate of the average value once distributed has ranged from 50-90 per cent.<sup>47</sup>

The ACCC notes that 30 per cent of Australian equities are held by foreign investors and those Australian equities constitute a relatively small proportion of total global equities. However, it cannot be determined from this alone that a relatively elastic demand for Australian equities by foreign investors exists and that foreign investors are not willing to accept a perceived reduced rate of return. The foreign investor may not be able to take advantage of franking credits, but there may be other foreign tax or other benefits that could increase their perceived rate of return.

The ACCC also notes that it is not sufficient to support a conclusion that, for even a partly owned foreign company, foreign capital is required to finance a firm's projects. Even assuming that a significant proportion of foreign ownership is required, the ACCC considers that it does not prove the  $\gamma$  should be set at 0 as it does not rule out overseas investors obtaining foreign tax advantages not available to local investors. The likelihood that such foreign tax benefits exist suggests that  $\gamma$  should lie above zero.

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<sup>46</sup> Lally, *The Cost of Capital under Dividend Imputation*, June 2002, p.19

<sup>47</sup> According to IPART Australian industrial stocks currently show an average dividend payout ratio of approximately 70 per cent. IPART, *The Rate of Return for Electricity Distribution Networks, Discussion Paper*, November 1998, p.22.



The ACCC considers that there is no well founded basis for discriminating in the selection of  $\gamma$  in favour of one type of investor over another. Such an approach may distort pricing outcomes on the basis of share ownership.

Given the inconclusive nature of the empirical evidence on this issue, the ACCC considers that the selection of  $\gamma$  is ultimately a matter of judgement, having regard to the empirical evidence. Furthermore there does not seem to be consensus among Australian academics and finance practitioners to date on adjusting the rate of use of franking credits. Accordingly, the ACCC has decided to retain using the value of 0.5 for  $\gamma$ .

## **Gearing**

The ACCC uses benchmark gearing, rather than actual gearing to calculate the WACC. Schedule 6.1(5.5.1) of the Code states that:

Gearing should not affect a government trading enterprise's target rate of return ... For practical ranges of capital structure (say less than 80 per cent debt), the required rate of return on total assets for a government trading enterprise should not be affected by changing debt to equity ratios.

TransGrid adopts the ACCC's benchmark gearing of 60 per cent in its application.

## ***Submissions on the application***

The EMRF provides an analysis which highlights that implied gearing for a company is much higher than 60 per cent and that this comprises a mix of interest bearing debt (60 per cent of total capital) and non-interest bearing debt such as retained cash (15 per cent of total capital), with an equity element of 25 per cent of total capital. It argues that using a higher level of equity and not providing for non-interest bearing debt in the CAPM framework (incorrectly) inflates the WACC calculation.

## ***ACCC's considerations***

In determining a required rate of return, the ACCC adopts the accepted practice of calculating the WACC based on capital structure of equity and debt financing. Therefore a gearing ratio is needed to establish a TNSP's appropriate weighted average cost of debt and equity. The ACCC can choose the actual gearing of the service provider or an appropriate benchmark.

The ACCC's regulatory regime is both light-handed and incentive based. It sets the benchmarks allowing regulated entities to operate freely. The entities gain by performing better than the benchmarks and vice versa. Accordingly, in the SRP the ACCC stated that it would not be using the actual gearing of a TNSP, but an appropriate benchmark instead.

A firm's capital structure (expressed as gearing) is unlikely to affect its WACC according to predictions from the theory of Modigliani and Miller. However, this theory is based on specific assumptions. In reality this is only true within reasonable

boundaries where the risk of the total assets does not change and neither would the cost of capital for the firm's assets.

Typically regulators have assumed a gearing of 60 per cent in calculating the WACC. This WACC should still be applicable within a reasonable range of actual gearing, say of 40-70 per cent.<sup>48</sup>

The ACCC notes that a Standard and Poor's survey suggested that gearing ratios for transmission and distribution businesses are between 55 and 65 per cent.<sup>49</sup>

Further, as set out in Table 8.5.7 the ACCC's sample of electricity network companies provides an average gearing level of 57 per cent. A larger sample of electricity network companies (Table 8.5.9) also shows an average gearing of approximately 57 per cent which is close to the assumed benchmark gearing of 60 per cent.<sup>50</sup>

**Table 8.5.7 Gearing of electricity companies**

Company	Actual Gearing (%)
Aurora Energy	52.0
Australian Gas Light	40.8
Citipower Trust	54.1
Country Energy	68.3
ElectraNet	71.9
Energex	55.3
EnergyAustralia	51.4
Ergon Energy	49.3
ETSA Utilities	63.5
Integral Energy	51.3
Powercor Australia	38.1
SPI PowerNet	76.8
TransGrid	55.3
Western Power	62.5
<b>Average</b>	<b>56.5</b>

Source: Standard and Poor's, *Australian Report Card Utilities*, October 2004.

Standard and Poor's, *Australia and New Zealand CreditStats*, June 2004.

The ACCC notes the EMRF's comments but considers that it departs from the accepted practice of calculating the WACC based on a capital structure of equity and debt financing. The ACCC also notes that even retained cash would have some form of opportunity cost attached, which can be attributed to either debt or equity.

On balance, given the average level of gearing in the electricity network industry, the ACCC has decided to adopt a benchmark gearing of 60 per cent.

<sup>48</sup> Officer, *A weighted average cost of capital for a benchmark Australian electricity transmission business – a report for SPI PowerNet*, February 2002, p.38.

<sup>49</sup> Standard and Poor's *'Rating Methodology for Global Power Companies'*, 1999.

<sup>50</sup> The electricity companies listed in the Table 8.5.7 are not only operating in the regulated transmission and distribution sectors, but some also operate in unregulated areas such as retail and generation.

## Betas and risk

The equity beta is a measure of the expected volatility of a particular stock relative to the market portfolio. It measures the systematic risk of the stock, that is, the risk that cannot be eliminated in a balanced and diversified portfolio.

Generally, the Australian stock index is used as a proxy for the market portfolio. An equity beta of less than 1 indicates that the stock has a low systematic risk relative to the market (the market portfolio beta being equal to 1). Conversely an equity beta of more than 1 indicates the stock has a higher risk relative to the market.

Calculating equity betas for publicly listed companies is straightforward. A company's return is calculated by adding the dividend income to changes in the value of the stock. Then the company's return is compared to the market return. Market return is calculated in the same way, by adding the dividends and changes in values of all the companies listed on the Australian Stock Exchange (ASX).

Calculating equity betas for unlisted firms is more complicated, as their returns cannot be calculated directly. Conventional practice is to find the beta of a similar listed company or the average beta for the sector, and then adjust it. For Australian regulated electricity networks even this approach is problematic, as few similar stocks are listed.

The equity beta of a firm may also be dependent on its capital structure. Hence, to estimate the beta of a regulated firm, the beta of the comparable (listed) firm has to be adjusted for differences in capital structure.

Usually, practitioners start with the equity beta of a firm. Then by 'de-levering' it, to approximate a firm without debt (100 per cent equity), they arrive at the 'asset' or 'un-levered' beta.

The asset beta is common for all firms in a similar business. Equity beta for a particular level of gearing is obtained by 're-levering' the asset beta. While there are a number of levering formulae, the ACCC has consistently applied the formula developed by Monkhouse:

$$\beta_e = \beta_a + (\beta_a - \beta_d) \left[ 1 - \left( \frac{rd}{1+rd} \right) (1-\gamma) T_e \right] \frac{D}{E}$$

where:

$\beta_e$	=	equity beta
$\beta_a$	=	asset beta
$\beta_d$	=	debt beta
$r_d$	=	cost of debt
$\gamma$	=	value of franking credits
$T_e$	=	effective tax rate
$E$	=	market value of equity
$D$	=	market value of debt.

The debt beta captures the systematic risk of debt and is used to de/re-lever the equity beta. When converting asset betas to equity betas, one includes the systematic risk for

debt in the capital structure. The debt beta shows the sharing of a firm's systematic risk between the systematic risk of equity and the systematic risk of debt.

TransGrid adopts a debt beta of zero combined with an asset beta of 0.45 which, in accordance with the Monkhouse formula, provides a re-levered equity beta of 1.12.

### ***Submissions on the application***

The EMRF suggests that the equity betas used by regulators assume that regulated businesses are 'average'. It notes that the market accepts that regulated businesses exhibit a 'conservative' rating, recognising that while providing a lower return, there is enhanced certainty of return. The EMRF argues that the market assesses regulated firms as exhibiting a lower equity beta than 1. It states that equity betas for regulated electricity transport businesses should be in the range of 0.5-0.7.

The Joint Customer Groups submission also takes this point of view, suggesting that an equity beta of less than 1 is required for a business with TransGrid's risk profile. Given that 99 per cent of TransGrid's revenue is guaranteed, the Joint Customer Groups state that it is preposterous of TransGrid to propose an equity beta of 1.12 which would indicate TransGrid being more risky than the market as a whole.

### ***Submissions on the Draft Decision***

The EMRF raised concerns regarding the ACCC's decision to adopt an equity beta of 1. Similar to its submission on the application, the EMRF believes that an equity beta lower than 1 is sufficient for regulated businesses. It believes that at the hearing involving the ACCC and GasNet in 2003, the ACCC offered very sound arguments that the equity beta should be no more than 0.7.

The Joint Customer Groups state that the ACCC should rely more on market data in determining an estimate of the proxy equity beta. With the emergence of market data, the Joint Customer Groups believe the ACCC is still reluctant to lower the equity beta. It would like to see the ACCC begin the process of removing bias against customers and lower the equity beta to, say 0.7 or 0.8, while continuing with its investigations.

The Joint Customer Groups also submitted examples of various impacts that changes in the equity beta would have on TransGrid's WACC and the impact on its revenue and TUOS.

Transend believes the ACCC's view on the equity beta reflects a reasonable and balanced judgement of the available evidence. However it is concerned that the ACCC is signalling its future intention to place greater weight on contemporary market information which, in Transend's view, indicates that a lower equity beta is appropriate. It believes that such comments suggest that regulatory risk is an on-going concern.

## ACCC's Considerations

**Equity Beta:** The ACCC notes that in previous revenue cap decisions, an equity beta estimate of 1 was adopted. This suggests that TNSPs experience the same volatility as the market portfolio in general. However, this is not consistent with the frequently held view that gas and electricity transmission businesses are less risky relative to the market, irrespective of their gearing. This view is predicated on the observation that the earnings of gas and electricity business are more stable than most other businesses in the market. Greater stability of cash flows suggests that the equity beta should be less than 1.

In the SRP, the ACCC noted that market evidence shows regulated energy firms listed on the ASX have an equity beta of below 1 (after adjusting for gearing differences) and thus do not face the same market risk relative to the market portfolio beta. Table 8.5.8 lists the equity betas for recent regulatory decisions by other jurisdictional regulators.

**Table 8.5.8 Recent regulatory decisions on equity betas for electricity industry**

Decision	Network Type	Equity Beta
IPART, NSW (2004)	Distribution	0.78 – 1.11
ICRC, ACT (2004)	Distribution	0.9
ESC, VIC (2000)	Distribution	1.0
QCA, QLD (2005 draft)	Distribution	0.9
ESCOSA, SA (2004 draft)	Distribution	0.8

**Asset Beta:** The asset beta is only relevant within the de/re-levering process. The asset beta is simply the equity beta for a firm that is 100 per cent equity financed and has no debt in its capital structure. It is not observable and must be de-levered from the observed equity beta.

**Debt beta:** The ACCC notes that a debt beta estimate of zero has been applied in its previous electricity revenue cap decisions. The ACCC, in the past, considered that as the systematic risk of debt is low (given the risk of debt is primarily related to default risk) then a relatively low debt beta is appropriate and as such treated the debt beta as a residual parameter.

A report prepared by ACG for the ACCC considered this information and suggested that an appropriate range for the debt beta would be between 0 and 0.15.<sup>51</sup>

Nonetheless, as long as there is consistency in the value of the debt beta between the de-levering and re-levering process, its effect on the equity beta is generally negligible.

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<sup>51</sup> ACG, *Empirical evidence on proxy beta values for regulated gas transmission activities, final report for the ACCC*, July 2002, pp. 28-29.

### *Estimating equity beta from market data*

The ACG report suggested an equity beta for Australian gas transmission companies of just below 0.7, based exclusively on market evidence.<sup>52</sup> ACG also considered data for comparable businesses in the USA, Canada and the UK. This data produced lower beta estimates and ACG concluded that this secondary information supports the view that Australian estimates are not understated. However, due to several qualifications to their analysis, ACG did not recommend relying only upon domestic empirical information.

ACG recommended that a conservative approach to beta estimation be retained by Australian regulators with an equity beta estimate of 1. ACG however, noted that:

In the future, however, it should be possible for greater reliance to be placed upon market evidence when deriving a proxy beta for regulated Australian gas transmission activities.<sup>53</sup>

As shown in Table 8.5.9, the ACCC has derived re-levered equity betas from comparable Australian firms<sup>54</sup> based on September 2004 and December 2004 data from the Australian Graduate School of Management (AGSM).<sup>55</sup> For calculation purposes, the ACCC has had regard to raw (unadjusted ) beta estimates, the debt beta was set at zero, and the corresponding gearing levels were from Standard and Poor's.<sup>56</sup> The sample market beta estimates (average re-levered beta of 0.20 in September 2004 and average re-levered beta of 0.24 in December 2004) suggest that the ACCC has been conservative with its estimate of the equity beta in its previous regulatory decisions.

**Table 8.5.9**                      **Comparable sample betas**

Company	Gearing level	September 2004 AGSM data			December 2004 AGSM data		
		Unadjusted $\beta_e$	De-levered $\beta_a$	Re-levered $\beta_e$	Unadjusted $\beta_e$	De-levered $\beta_a$	Re-levered $\beta_e$
<b>Australian Pipeline Trust</b>	66.4	0.34	0.11	0.29	0.44	0.15	0.37
<b>Envestra</b>	80.8	0.44	0.08	0.21	0.41	0.08	0.20
<b>AlintaGas</b>	56.2	0.42	0.18	0.46	0.40	0.18	0.44
<b>Australian Gas Light</b>	36.5	-0.01	-0.01	-0.02	0.03	0.02	0.05
<b>GasNet</b>	68.9	0.05	0.02	0.04	0.18	0.06	0.14
<b>Average</b>	<b>61.76</b>	<b>0.25</b>	<b>0.39</b>	<b>0.20</b>	<b>0.29</b>	<b>0.10</b>	<b>0.24</b>

<sup>52</sup> Ibid. p.46.

<sup>53</sup> Ibid, p.43.

<sup>54</sup> These firms are comparable because they operate in a similar line of business (regulated network) as the target firm such that the systematic risk of the underlying assets is likely to be of similar magnitude. It should be noted that some of these firms are involved in other business areas (non-regulated) which is likely to overstate the systematic risk of a target regulated network firm.

<sup>55</sup> The AGSM uses monthly observations over 48 months of the firm's trading history (with a minimum of 20 observations).

<sup>56</sup> Standard & Poor's, *Australia & New Zealand CreditStats*, June 2004.

In the SRP, the ACCC stated that emerging market data suggested the appropriate equity beta for TNSPs may be less than 1.<sup>57</sup> The ACCC also stated that it would continue to undertake further work in this area.

The ACCC considers current statistical methods for estimating the equity beta from market data tend to produce varying confidence interval (and sample average) estimates. In this context, the ACCC notes that recent jurisdictional regulatory decisions provided analysis of a comparable sample of equity betas based on monthly and weekly observations which produced different results.<sup>58</sup> The analysis indicates that the weekly beta estimates tend to be higher than the monthly beta estimates.

The ACCC also notes that the estimated re-levered equity betas for comparable firms have fallen from around 1 in 2000 to around 0.2 in 2003.<sup>59</sup> This is consistent with the ACCC's estimates of market derived equity betas considered in recent regulatory decisions. The ACCC considers that the time period of the market data is not long enough to satisfy the concern that market derived equity betas would not systematically under compensate the TNSPs. That is, the current decline in the measures of beta from market evidence may reflect a short term deviation from normal trend.

For these reasons, the ACCC considers it is appropriate to continue to exercise judgement in the application of empirical evidence from the market and to maintain using an equity beta value of 1. On balance, the ACCC considers that an equity beta of 1, while biased in favour of the service provider, is appropriate for TransGrid.<sup>60</sup>

### **Conclusion**

TransGrid's proposed equity beta of 1.12 suggests that it has a higher risk relative to the market portfolio. In previous electricity regulatory decisions, the ACCC has consistently applied an equity beta of 1.

For the purposes of this Decision, the ACCC has decided to adopt a conservative equity beta value of 1. The ACCC considers an equity beta of 1 adequately compensates TransGrid for its systematic risk. However, in future decisions, the ACCC may place greater weight on contemporary market information in determining appropriate beta values.

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<sup>57</sup> ACCC, *Statement of principles for the regulation of transmission revenues – background paper*, 8 December 2004, pp. 107-108.

<sup>58</sup> ESCOSA, *Draft 2005-2010 Electricity Distribution Price Determination Part A-Statement of Reasons*, November 2004, pp.171-173.  
QCA, *Regulation of Electricity Distribution-Draft Determination*, December 2004, pp.102-103.

<sup>59</sup> *Ibid.*, p.170.

<sup>60</sup> The equity beta of 1 is not re-levered from a debt beta of 0 and an asset beta of 0.4. There were no comparable Australian market based data on equity betas which re-levered to an asset beta of 0.4.

## Treatment of taxation

The effective tax rate is defined as the difference between pre-tax and post-tax rates of return. It is sensitive to several factors, including the corporate tax rate and the range of available tax concessions that lessen or defer tax liabilities. Although the tax rate on accounting income is always at the corporate rate, in any year the income assessable for tax purposes can be quite different from the net revenues available to the business.

The timing aspect and the fact that taxes are assessed on the basis of nominal income means that the prevailing inflation rate also has a significant impact on the effective tax rate.

In its early decisions, the ACCC applied the statutory company tax rate of 30 per cent. This was in the context of difficulties in determining a satisfactorily accurate long-term tax rate as part of the pre-tax real framework being used at the time. However, the capital-intensive nature of electricity utilities has historically meant that the effective tax rate for such networks has been less than the statutory tax rate.<sup>61</sup>

The ACCC considers that adopting the post-tax nominal framework which uses the effective tax rate can potentially generate more appropriate cost reflective revenue caps.

### *ACCC's considerations*

Based on the ACCC's approach to modelling the effective tax rate, the ACCC has derived an effective tax rate of 19.32 per cent.

## Other issues

**Championing of new investment:** In its application, TransGrid contends that the Code requires transmission companies to be a proponent of investment proposals. Furthermore, this institutional setting does not provide for a 'true cost of capital' as there are costs associated with the approval process which are not included in the regulated capital base of the investment. Setting the regulated cost of capital equal to the actual cost of capital will create a disincentive for a transmission company to champion new investment.

TransGrid believes that the asymmetrically higher costs of under investment as opposed to over investment and the nature of the investment approval process, suggest that it would be appropriate for the ACCC to place a modest positive margin of around 50 basis points on the WACC when determining the regulated cost of capital.

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<sup>61</sup> According to IPART's calculations, the average effective tax rate paid by the NSW distributors amounted to 25 per cent in 1996/97 (see IPART, *The Rate of Return of Electricity Distribution Networks*, Discussion Paper, November 1998, pg. 9).



### *Submissions by interested parties*

VENCorp queries the rationale for the margin given that provision for the costs referred to by TransGrid are included in a TNSP's regulated revenue stream. The market cost of capital represents the return that investors expect to receive on a risky investment and represents the price at which that risk is traded in the capital market.

### *ACCC's Considerations*

The ACCC considers that the costs associated with championing new investment projects are not a reflection of the risk adjusted rate of return which the WACC is meant to represent. TransGrid has neither justified the 50 basis points increment to the WACC nor described a process by which this cost can be determined.

The ACCC agrees with VENCorp's view on this issue. It is likely that such costs would be reflected in opex or in the capital costs of the projects themselves in any case and there does not seem to be a justification for opening up this new revenue stream. . Therefore, the ACCC considers that this increment to the WACC is inappropriate.

## **8.6 ACCC's decision: Cost of Capital**

In considering the values to adopt for TransGrid's cost of capital, the ACCC has considered TransGrid's application, the submissions received by interested parties on the application, as well as the submissions received on the ACCC's Draft Decision. The ACCC has carefully considered the values that should be assigned to TransGrid's cost of capital, given the nature of its business and current financial circumstances. The parameter values adopted for this decision are shown in Table 8.6.1.

**Table 8.6.1 Comparison of cost of capital parameters**

<b>Parameter</b>	<b>ACCC Decision</b>	<b>ACCC Draft Decision</b>	<b>TransGrid's proposal</b>
Nominal risk-free interest rate ( $r_f$ )	5.98 %	5.89 %	5.01%
Real risk-free interest rate ( $rr_f$ )	3.41 %	3.37 %	3.34 %
Expected inflation rate ( $f$ )	2.49 %	2.44 %	2.08
Debt margin (over $r_f$ )	0.90 %	0.87 %	1.485 %
Cost of debt $r_d = r_f + \text{debt margin}$	6.88 %	6.76 %	6.495 %
Market risk premium ( $r_m - r_f$ )	6.00 %	6.00 %	6.00 %
Gearing ( $D/V$ )	60 %	60 %	60 %
Value of imputation credits $\gamma$	50 %	50 %	50 %
Asset beta $\beta_a$	-	0.40	0.45
Debt beta $\beta_d$	-	0.00	0.00
Equity beta $\beta_e$	1.00	1.00	1.12
Nominal post-tax return on equity	11.98 %	11.87 %	11.73 %
Post-tax nominal WACC	7.17 %	7.03 %	7.42 %
Pre-tax real WACC	6.78 %	6.75 %	8.35 %

## 9 Service Standards

### 9.1 Introduction

Clause 6.2.4 (c) (2) of the Code recognises that the ACCC determines a revenue cap on the services that a TNSP provides and the level of service provided. Clause 6.2.4 states:

‘In setting a separate revenue cap to be applied to each Transmission Network Owner and/or Transmission Network Service Provider (as appropriate) in accordance with clause 6.2.4(b), the ACCC must take into account the revenue requirements of each Transmission Network Owner and/or Transmission Network Service Provider (as appropriate) during the regulatory control period, having regard for:

(1) ...

(2) the service standards referred to in the Code applicable to the Transmission Network Owner and/or Transmission Network Service Provider (as appropriate) and any other standards imposed on the Transmission Network Owner and/or Transmission Network Service Provider (as appropriate) by any regulatory regime administered by the ACCC or by agreement with the relevant Network Users;

On 12 November 2003, the ACCC released its Service Standards Guidelines. The Guidelines explain the ACCC’s approach to setting performance incentives within the transmission revenue cap process and outline the ACCC’s information requirements to implement the service standards performance incentive scheme. The Guidelines require TNSPs to report on service standard performance on a calendar year basis. This allows any reward/penalty to be incorporated into Transmission Use of System (TUOS) charges for the next financial year

The service standard target, or performance incentive (PI) scheme, is designed to provide an incentive for TNSPs to reduce their costs below the forecast level set by the ACCC’s revenue cap, as well as provide an incentive to improve service quality.

The PI scheme is based on five performance indicators:

- Transmission circuit availability;
- Average outage duration;
- Frequency of ‘off-supply’ events;
- Inter-regional constraints; and
- Intra-regional constraints.

The definitions of these performance measures are provided in the ACCC’s Service Standards Guidelines.

The ACCC aims to create a service standard incentive by linking each TNSP's revenue cap to its performance, or service standards. TNSPs are rewarded for improvements over performance targets and penalised for deteriorations. The maximum reward is 1 per cent of the annual revenue. Overall the scheme is designed to have an expected value of zero.

A TNSP's average performance during the previous three to five years is generally set as the performance target. However, some adjustments to targets may be made taking into account factors affecting future performance.

### **Previous findings on service standards**

In the ACCC's 1999 Decision, the service standards regime was still being developed. The ACCC stated:

Due to the incomplete nature of the ACCC's work in relation to service standards and the changes currently taking place in NSW, the ACCC notes that it will, at the next regulatory reset, consider adjusting TransGrid's revenue cap to reflect any non-performance during the current period against the level of service standards presently contained in the NEC as well as the service standards proposed by the network during this inquiry at the performance levels assessed by SKM. TransGrid will be required to provide the ACCC with information suitable to make such an assessment as part of its annual regulatory reporting requirements.

Beyond the next reset, the ACCC intends to benchmark TransGrid's performance against the suite of indicators being developed at present. The ACCC also intends to further consider the need for, and scope of, any penalty (and/or bonus) regime that should apply to non-performance against those standards. In this respect, the ACCC also plans to examine the experiences associated with the performance regime included in the recent South Australian Electricity Pricing Order.<sup>62</sup>

The ACCC's Service Standards Guidelines were finalised and released on 12 November 2003, and are based on a consultancy report produced by Sinclair Knight Merz (SKM)<sup>63</sup>. The ACCC's Decisions outlining the revenue caps for ElectraNet, SPI PowerNet and VENCORP were finalised before the ACCC released the Draft Guidelines, and were based on SKM's recommendations. However, since the Guidelines were finalised in November 2003, the ACCC engaged GHD to provide a review of TransGrid's historic service standards performance and recommend performance targets for the upcoming regulatory period.

The remainder of this Chapter sets out:

- TransGrid's application and proposed service standards for the upcoming regulatory period and the views of interested parties on these;
- the consultant's report and recommendations on TransGrid's service standards;
- the ACCC's considerations; and

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<sup>62</sup> ACCC, *NSW and ACT Transmission Network Revenue Caps: Decision*, 25 January 2000, p131.  
<sup>63</sup> SKM, *Transmission Network Service Providers – Service Standards*, March 2003.

- the ACCC’s conclusions on TransGrid’s performance incentives for the upcoming regulatory period.

## 9.2 TransGrid’s application

TransGrid proposed service measures that focus on the following areas:

- Circuit Availability, which encompasses three specific measures:
  - Transmission line availability (%);
  - Transformer availability (%); and
  - Reactive plant availability (%).
- Reliability. In the form of loss of supply event frequency, this category is split into two measures reflecting different magnitudes of the event, as follows:
  - Number of events greater than 0.05 system minutes; and
  - Number of events greater than 0.4 system minutes.
- Average Outage Restoration Time. This is measured in minutes, with a seven-day cap per event.

**Table 9.2.1 Service Standards proposed by TransGrid**

Performance measure	Unit of measure	Revenue at risk (%)	Collar	Dead Band Knee 1	Target	Dead Band Knee 2	Cap
Transmission Line availability	%	0.2	98.9	-	99.4	-	99.7
Transformer availability	%	0.15	98.0	-	99.0	-	99.5
Reactive Plant Availability	%	0.1	97.0	-	98.5	-	99.3
Reliability (Events >0.05 system minutes)	Number	0.25	4	-	6	-	9
Reliability (Events >0.4 system minutes)	Number	0.2	0	-	1	-	3
Average Outage Restoration Time (7 day cap per event)	Minutes	0.1	2400	1800	1500	1200	800

TransGrid states that the service measures and targets set out in the above table provide a sound basis for implementing service performance incentives linked to TransGrid’s MAR. TransGrid also noted that the implementation of the proposed service standards would be subject to three factors:

- the ACCC incorporating TransGrid's required capital and operating expenditure in the ACCC's MAR decision on the Maximum Allowed Revenue.
- achieving an appropriate definition of 'force majeure' events; and
- satisfactorily clarifying the definition of the performance measures involved.

In relation to incentives for TransGrid to be more responsive to market conditions, TransGrid proposed that:

- additional costs associated with rescheduling of outages to improve wholesale market efficiency be treated as a 'pass-through' for TransGrid's next reset period pending agreement on an improved incentive framework; and
- work continue jointly with the ACCC and Market Participant representatives to develop improved TNSP incentive arrangements.

Finally, TransGrid submits that before adopting the proposed service standards targets set out in its application, it would be necessary for it to understand the ACCC's position in advance, as to what actions or remedies are to be implemented in 'reassessing' performance targets when reviewing a TNSP's actual performance data.

### **9.3 Submissions on TransGrid's application**

The ACCC received a number of submissions in response to TransGrid's application from interested parties on the issue of service standards as outlined below.

VENCorp proposes solutions to address the issue of linking the performance incentive regime to the market impacts of transmission outages. It says that the performance incentive scheme that presently applies to SPI PowerNet is an example of arrangements that provide stronger incentives to the network asset owner to optimise the availability of network infrastructure, having regard to:

- the potential market impacts of the infrastructure being unavailable; and
- the need to ensure that the transmission asset owner is not unduly exposed to risks that are beyond its control.

VENCorp suggests there is merit in the ACCC considering the applicability of a similar scheme to TransGrid.

The Energy Retailers Association of Australia (ERAA) and the Joint Customer Groups both submit that the service standards should be consistent with best industry practice, directed at wholesale market outcomes that benefit electricity users, and universally applied to all TNSPs. The ERAA also submits that TNSPs should be required to adopt developments in service standards immediately, instead of having them adopt the changes to the service standards after the subsequent revenue cap determination.

The Joint Customer Groups also submit that the financial incentive of 1 per cent is inadequate, and that the ACCC should apply incentives that ensure that consumers do not pay for an incentive bonus for the better performance that the increased investments would bring in any event.

#### **9.4 ACCC's Draft Decision**

In its Draft Decision, the ACCC decided to implement the proposed performance measures and targets for TransGrid for the 2004-2009 regulatory period as recommended by GHD in Table 9.6.3. These recommended performance targets are based on TransGrid's service standards performance over the 1999-2004 regulatory period. GHD also took into account any factors that might be expected to impact on TransGrid's ability to meet the service standards targets in the future.

The ACCC also decided that TransGrid will be required to report on the performance measures contained in its service standards guidelines as part of the annual compliance reporting requirements set out in section 6.2.5 of the Code. TransGrid was granted a derogation where the performance targets set in the Draft Decision would apply until the release of this Decision.

#### **9.5 Submissions on the Draft Decision**

The ACCC received a number of submissions in response to the Draft Decision from interested parties on the issue of service standards as outlined below.

TransGrid argues that the service standards parameters set down in the Draft Decision are ambiguous, and that the Chapter should be corrected to show that TransGrid proposed the use of 7-day cap and 1500 service minutes outage restoration measures which were consistent with the Guidelines. TransGrid also opposes the proposed Transformer Availability Cap service-level increase, and maintains that the new allowance would be set at a level which cannot be achieved while carrying out all policy mandated maintenance.

Powerlink contends that in the interests of regulatory consistency, when introducing service standards aimed at reducing the impact of network outages on the market, the ACCC must allow the consequential higher opex needed to deliver the desired outcomes.

The Joint Customer Group welcomes the ACCC's decision to adopt GHD's recommended performance incentives for TransGrid, although they contend that placing 1 per cent revenue at risk to encourage high service levels is simply too small an incentive to have an effect on the behaviour on TNSPs, and a more substantial risk/reward arrangement is needed to make an impact.

## **9.6 Consultant's review of TransGrid's application**

The ACCC engaged GHD to recommend an appropriate set of service standards and performance targets for TransGrid for the upcoming regulatory period.

GHD evaluated TransGrid's proposed service standards against its actual performance in the previous regulatory period, to evaluate the reasonableness of the proposed measures. To recommend a set of service standards, GHD took into account the items that are expected to impact upon the performance of TransGrid against the proposed measures in the upcoming regulatory period. The ACCC has corrected this Decision for an error in the Service Standards Guidelines which implied that TransGrid had applied for a cap that was not in line with the Guidelines.

### **Selection of performance measures**

GHD notes that the cap proposed by TransGrid aligns closely with the Service Standards, exposing  $\pm 1$  per cent of its maximum allowed revenue (MAR) at risk. GHD considers that using a 7-day cap for single outage events provides sufficient flexibility to set a reasonable target, cap, collar and deadband, and thus enables it to set a sound incentive scheme for this outage measure.

GHD acknowledged that the ACCC recognises that TNSPs may be operating at high-levels of performance, and as such an asymmetric performance incentive can help balance the risk associated with achieving performance targets in some cases. GHD noted that TransGrid has proposed asymmetric incentive schemes.

Finally, GHD observed that the ACCC and SKM documents propose measures and targets only, but do not propose details on specific caps, collars or deadbands, which TransGrid has included in its proposal.

## Historic Performance Comparison

Tables 9.6.3 and 9.6.4 show the performance of TransGrid based upon the measures proposed by TransGrid against the actual performance over the past eight years. The results show that TransGrid would receive a net bonus for the previous regulatory period.

**Table 9.6.3 Historic Service Standards Performance**

Performance measure	Unit of measure	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Transmission line availability	%	99.49	99.45	99.26	99.31	99.55	99.63	N/A	N/A
Transformer availability	%	98.26	99.18	98.74	99.16	99.10	99.47	N/A	N/A
Reactive plant availability	%	98.30	99.09	98.44	96.97	98.72	98.97	N/A	N/A
Reliability (Events >0.05 system minutes)	Number	4	6	5	6	5	3	7	N/A
Reliability (Events >0.4 system minutes)	Number	0	0	0	2	0	0	2	N/A
Average Outage Restoration Time (7 day cap per event)	Minutes	2143	1540	1241	1769	793	N/A	N/A	N/A

**Table 9.6.4 Summary of Associated Bonuses/Penalties**

Performance measure	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	Sum of bonus /penalties
Transmission line availability	0.060	0.033	-0.056	-0.036	0.100	0.153	N/A	N/A	0.255
Transformer availability	-0.111	0.054	-0.039	0.048	0.030	0.141	N/A	N/A	0.123
Reactive plant availability	-0.013	0.074	-0.004	-0.100	-0.052	0.059	N/A	N/A	-0.037
Reliability (Events >0.05 system minutes)	0.250	0.000	0.125	0.000	0.125	0.250	-0.083	N/A	0.667
Reliability (Events >0.4 system minutes)	0.200	0.200	0.200	-0.100	0.200	0.200	-0.100	N/A	0.800
Average Outage Restoration Time (7 day cap per event)	-0.057	0.000	0.000	0.000	0.100	0.082	N/A	N/A	0.125
<b>Annual totals (max +/- 1%)</b>	<b>0.328</b>	<b>0.361</b>	<b>0.226</b>	<b>-0.188</b>	<b>0.503</b>	<b>0.885</b>	<b>-0.183</b>		<b>1.932</b>



GHD states that two measures stood out during the historic review of the performance incentive scheme proposed by TransGrid, Average Outage Restoration Time and Reliability Measures. These are discussed below.

### **Average Outage Restoration Time**

TransGrid proposed a 7-day cap instead of the 14-day cap outlined by SKM and the ACCC's Service Standards Guidelines, stating that its annual target of 1500 minutes is firmly linked to the 7-day cap. The ACCC has found that the Guidelines were in error and should have proposed a 7-day cap. The implications of this proposed variation are that all events that cause outages within the 7 and 14-day range would be incorporated into the measure as 7 day events, thus the target that the ACCC has set allows for this.

GHD's analysis of TransGrid's historic performance with regards to the Average Outage Restoration Time with a 7-day cap per event found that half of the results lie within the deadband set for this measure. If the proposed service standard for this measure were applied over the six years of available data, TransGrid would have returned a total bonus of 0.125 per cent of MAR.

### **Reliability Measures**

The reliability performance measures are divided into two segments:

- Events greater than 0.05 system minutes, and
- Events greater than 0.4 system minutes.

These reliability measures are allocated 45 per cent of the revenue that is put at risk by the PI scheme. GHD states that based upon the historic comparison in the previous Tables, TransGrid would have received 72.6 per cent of its bonus for the period through these reliability measures on the basis of the PI scheme proposed by TransGrid. GHD states that it is noteworthy that both of these measures would have recorded losses in 2002/03, which was probably the result of the impact of the NSW bushfires.

GHD states that there is a potential impact of future investment on reliability and outage measure performance. GHD considers that given the increased capital investment planned, TransGrid will have to manage the planned outages better in order to deliver the same levels of performance.

### **Financial Impact for TransGrid**

GHD calculated the financial impact of TransGrid's service standards according to the formula set out in the ACCC's Service Standards Guidelines. The results of applying this equation against the one available data point for TransGrid are summarised in the

following tables. Only those periods with a full set of reference data have been included in Table 9.6.6.

**Table 9.6.6 Historic Performance against TransGrid's proposed service standards**

<b>Six months beginning</b>	<b>1 % of Averaged Annual Revenue \$ million</b>	<b>Performance 'S'</b>	<b>Financial Incentive 'FI' for TransGrid \$M</b>
01 July 1997	3.7		
01 January 1998		-0.328	1.215
01 July 1998	3.7		
01 January 1999		0.361	1.3357
01 July 1999	3.7		
01 January 2000		0.228	0.8436
01 July 2000	3.7		
01 January 2001		-0.188	-0.6956
01 July 2001	3.7		
01 January 2002		0.503	1.8611
01 July 2002	3.7		
01 January 2003		0.885	3.2745
01 July 2003	3.7		
01 January 2004			

### **Suggested Performance Incentive Scheme**

GHD found that TransGrid in general has high levels of performance in the measured areas. As such, asymmetric performance incentives are reasonable in many cases. It is also noticeable that TransGrid often has higher targets than some other TNSPs.

In terms of the incentive properties contained in the ACCC's service standards system, GHD notes that the performance levels should be set so that they are revenue neutral against current levels of performance, providing an incentive for performance improvement.

With this in mind GHD recommends the following modifications to TransGrid's proposed incentive scheme:

#### **Transmission line availability (%)**

- Collar: Increased from 98.9 to 99
- Target: Increased from 99.4 to 99.5
- Cap: No change

#### **Transformer availability (%)**

- Collar: Increased from 98 to 98.2
- Target: No change
- Cap: Increased from 99.5 to 99.7

### Reactive plant availability (%)

- Collar: No change
- Target: Increased from 98.5 to 98.6
- Cap: No change

### Number of events greater than 0.05 system minutes

- Collar: Decreased from 9 to 8
- Target: Decreased from 6 to 5
- Cap: Decreased from 4 to 3

### Number of events greater than 0.4 system minutes

- Collar: Decreased from 3 to 2
- Target: No change
- Cap: No change

### Average Outage Restoration Time

- Collar: Decreased from 2400 to 1800
- Dead Band Knee 1: Decreased from 1800 to 1600
- Target: No Change
- Dead Band Knee 2: Increased from 1200 to 1400
- Cap: No Change

GHD's recommendations for the upcoming regulatory period are summarised below.

**Table 9.6.7 Summary of Service Standards suggested by GHD**

Performance measure	Unit of measure	Revenue at risk (%)	Collar	Dead Band Knee 1	Target	Dead Band Knee 2	Cap
Transmission line availability	%	0.2	99.0	-	99.5	-	99.7
Transformer availability	%	0.15	98.2	-	99.0	-	99.7
Reactive plant availability	%	0.1	97.0	-	98.6	-	99.3
Reliability (Events >0.05 system minutes)	Number	0.25	8	-	5	-	3
Reliability (Events >0.4 system minutes)	Number	0.2	2	-	1	-	0
Average Outage Restoration Time (7 day cap per event)	Minutes	0.1	1800	1600	1500	1400	800

This incentive scheme would return a total bonus over the 1996/97 – 2003/04 period of 0.602 per cent based on the available data, as opposed to the total bonus from TransGrid's proposed incentive scheme of 1.932 per cent for the same period.

GHD indicates that of the 0.602 per cent performance achieved by TransGrid within the GHD scheme, 0.600 of this measure results from the reliability measure for events greater than 0.4 system minutes. GHD states that, using this particular measure, it was unable to develop a reasonable cap, target and collar arrangement that would derive a near-neutral revenue result. GHD submits that performance levels should be set close to revenue neutral against current performance levels in order to provide a clear incentive for the TNSP to improve its performance beyond historical levels.

In dollar terms, this would return a total bonus of \$3.584 million, compared to the total bonus from the incentive scheme proposed by TransGrid, which would have provided a bonus of \$7.827 million for the same period.

In its annual notification to the ACCC of its MAR, TransGrid will include its calculation of the 'S' factor. TransGrid will use the respective performance measure tables in Appendix C to calculate 'S' at the end of each year. The ACCC will audit TransGrid's calculation and approve 'S', making adjustments if necessary. The total 'S' factor is equal to the sum of the individual 'S' factors for each performance target. The equations are demonstrated in detail in Appendix C.

## **9.7 ACCC's considerations**

### **Relationship between TransGrid's capex and opex requirements and the proposed service standards**

TransGrid submitted that the service standards arrangements and associated incentive arrangements would need to be adjusted according to any reductions in its capex and opex requirements. TransGrid suggested that the ACCC determine the proposed service standards for TransGrid after it has finalised these matters.

The service standards regime is intended to provide TNSPs with an incentive to reduce costs and achieve profits without sacrificing service quality by linking a TNSP's service standards performance with a reward element that is built into the revenue cap. The revenue cap set by the ACCC aims to enable the TNSP to achieve a return on the efficient costs of maintaining and improving the network. In determining the revenue cap, the ACCC considers the level of investment that is necessary to enable the TNSP to deliver a reliable and efficient transmission supply and which enables the TNSP to meet its statutory obligations. Therefore, the ACCC considers that the process that it follows to decide a service standards target is appropriate for enabling TNSPs to fulfil their obligations.

### **Definition of 'force majeure' events**

The ACCC will apply the force majeure definition from its Service Standards Guidelines to TransGrid's Revenue Cap. The ACCC will consider excluding any event that TransGrid believes to be a force majeure event on a case by case basis. The factors that the ACCC would take into account are set out in the Service Standards Guidelines.

## **Definition of performance measures**

The ACCC notes TransGrid's recommendation that the definition of the Loss of Supply Event Frequency Index be amended to reflect 'System minutes' instead of 'Minutes'. This was amended in the ACCC's Decision on the Service Standards Guidelines.

## **Average outage restoration time**

TransGrid has proposed a 7 Day cap on outage restoration time. This is in accordance with GHD's recommendations. The ACCC believes that the outage restoration targets recommended by GHD are appropriate.

## **Best practice performance**

The ACCC acknowledges the ERAA's submission that the service standards should be focused on industry best practice. As outlined in the Service Standards guidelines, the ACCC considers that best practice would represent the frontier of transmission service performance. However, the ACCC believes that there would be considerable difficulties in determining the position of the frontier, and which TNSPs if any, were operating at such a level. Consequently, the ACCC has chosen not to refer to 'best practice' performance in setting performance targets. Instead, the ACCC will use a TNSP's own recent performance as a benchmark.

## **Market impact incentives**

An initial objective of the performance incentive scheme was to include performance measures linking market impacts to TNSP behaviour. In this context, the ACCC acknowledges the respective solutions proposed by VENCORP and TransGrid regarding the market impacts of transmission outages. The ACCC also notes that the Terms of Reference for the Service Standards Working Group envisages that, in considering how the guidelines might be improved, the group will specifically focus on how market-based performance measures could be incorporated into the performance incentive scheme. The ACCC considers that the Working Group is the appropriate forum for discussing proposed changes to the scheme.

## **Other matters**

The ACCC acknowledges TransGrid's opposition to the Transformer Availability Cap service level increase and has decided to set a Transformer Availability Cap of 99.5% for TransGrid's performance measure targets, rather than adopt GHD's recommended cap of 99.7%. This decision was made following consideration of TransGrid's submission that it would be unlikely to achieve a 99.7% service level while carrying out all policy mandated maintenance.

The ACCC notes TransGrid's submission that it requires advance notice of the actions or remedies that the ACCC would implement after 'reassessing' a TNSP's actual performance data against the targets. However, the ACCC considers that in arriving at a

position, it would be appropriate for it to consider the information that is available and relevant at the time of making the decision.

## 9.8 ACCC's decision: Service Standards

For the 2004-2009 regulatory period, TransGrid has a financial incentive applying to its performance as measured by the performance indicators outlined in the table below.

**Table 9.8.1 ACCC Decision: Summary of Service Standards**

Performance measure	Unit of measure	Rev. at risk (%)	Collar	Dead Band Knee 1	Target	Dead Band Knee 2	Cap
Transmission line availability	%	0.2	99.0	-	99.5	-	99.7
Transformer availability	%	0.15	98.2	-	99.0	-	99.5
Reactive plant availability	%	0.1	97.0	-	98.6	-	99.3
Reliability (Events >0.05 system minutes)	Number	0.25	8	-	5	-	3
Reliability (Events >0.4 system minutes)	Number	0.2	2	-	1	-	0
<i>Average Outage Restoration Time (7 day cap per event)</i>	<i>Minutes</i>	<i>0.1</i>	<i>1800</i>	<i>1600</i>	<i>1500</i>	<i>1400</i>	<i>800</i>

The table reflects the change since the Draft Decision in the Transformer Availability Cap which has been set at 99.5%. These performance targets are based on TransGrid's service standards performance over the 1999-2004 regulatory period. They take into account any factors that might be expected to impact on TransGrid's ability to meet the service standards targets in the future. Any reward/penalty will be taken into account in calculating TransGrid's MAR, and thus included in TransGrid's price setting for the next financial year.

The ACCC will continue to require TransGrid to report on the performance measures contained in its service standards guidelines as part of the annual compliance reporting requirements set out in section 6.2.5 of the Code. The Service Standards Guidelines require TNSPs to report their performance on a calendar year basis.<sup>64</sup> Reporting by calendar years minimises the lag between when the actual performance is measured and when the financial incentive for that performance can be recovered. That is, performance is to be reported annually in February and then the financial incentive can be included in the prices published in May.

The ACCC acknowledges that reporting on a calendar year basis is inconsistent with the timeframes of a revenue cap. Due to the regulatory period starting in the middle of the 2004 calendar year, the incentive scheme can only apply from 1 July to 31 December in 2004. TransGrid has reported its performance on the six month period

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<sup>64</sup> Para. 4.7 of the Service Standards Guidelines.

from 1 July 2004 to 31 December 2004<sup>65</sup>. Following this, TransGrid must report on a calendar year basis for the years 2005-2008.

Similarly, due to the regulatory period ending in the middle of the 2009 calendar year, the incentive can only apply from 1 January to 30 June in 2009. However, to avoid duplication, the ACCC will attempt to combine the reporting process where two regulatory periods overlap. However this will depend on the incentives set for the 2009-2014 regulatory period.

Where performance is reported for a six month period the incentive would be based on the proportion of the Annual Revenue (AR) that the TNSP should recover in that six months. This would equate to 0.5 per cent of the AR for that year.

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<sup>65</sup> TransGrid has reported its performance for period from 1 July 2004 to 31 December 2004 according to the performance targets and measures set out in the April 2002 Draft Decision, following a derogation to allow for this.

## **10 Total Revenue**

This Chapter details the ACCC's considerations in relation to the application of the discount provisions contained in the Code to TransGrid for the current regulatory period. This Chapter then outlines TransGrid's proposal in relation to calculating its Maximum Allowed Revenue (MAR), and concludes with the ACCC's determination on TransGrid's MAR.

### **10.1 Introduction**

The main components of TransGrid's revenue cap have been discussed in detail in the preceding chapters. This Chapter explains the ACCC's calculation of TransGrid's allowed revenue (AR) from 1 July 2004 to 30 June 2009.

The ACCC's role as regulator of transmission revenues is limited to determining a TNSP's Maximum Allowed Revenue (MAR). As shown below, the MAR is calculated by adding (or deducting) a financial incentive related to service standard performance and pass-through amounts to (or from) the AR. Details on how the financial incentive component is calculated are provided in Appendix C.

TNSPs are responsible for calculating the transmission charges payable by their customers in accordance with the principles contained in part C of chapter 6 of the Code. The annual revenue that a TNSP recovers through these charges must not exceed the MAR set by the ACCC. Any over or under recoveries must be offset against a TNSP's revenues in the following year.

### **10.2 Discount recovery**

Clause 6.5.8 of the Code allows TNSPs to recover from other customers the amount of a discount on TUOS charges (general and common service charges), subject to ACCC approval in accordance with the discount recovery guidelines. The ACCC published discount recovery guidelines on 3 May 2002.

Where an application for approval of a discount recovery was made prior to publication of the discount recovery guidelines, the Code allows for the ACCC to approve the discount recovery at the time of the application.

Where applications for approval of a discount recovery have been made after 3 May 2002 the Code requires that these discount recoveries must be approved at each revenue reset. In these cases, the ACCC must include its assessment of the discount recovery application in its revenue decision.

In order to comply with the discount recovery provisions of the Code, TransGrid is required to include such information as is necessary to satisfy the ACCC that:



- where an application was made prior to 3 May 2002, the terms of the discount and amounts being recovered remain in accordance with any approval given; or
- where an application was made after 3 May 2002 there have been no substantial errors or omissions identified in the information provided at the time a discount recovery application was made.

The ACCC has confirmed that TransGrid has been recovering discounts, offered to large customers, from other customers. Details of discounts remain confidential, however, the ACCC is satisfied TransGrid has complied with the guidelines for recovering discounts.

### 10.3 The accrual building block approach

The building block formula, below, is used to calculate the AR in the first year. The MAR is equivalent to the AR for the first year:

$$\begin{aligned} \text{MAR} &= \text{return on capital} + \text{return of capital} + \text{opex} + \text{taxes} \\ &\quad \pm \text{service standards} \\ &= (\text{WACC} * \text{WDV}) + \text{D} + \text{opex} + \text{taxes} \pm \text{service standards} \end{aligned}$$

where:

WACC	=	post-tax nominal weighted average cost of capital;
WDV	=	written down (depreciated) value of the asset base;
D	=	depreciation allowance;
opex	=	operating and maintenance expenditure
taxes	=	income tax liability allowance and
service standards	=	ACCC performance incentive scheme.

In determining the MAR, the Code requires the ACCC to take into account the service standards that TNSPs are expected to maintain. Therefore, the ACCC will adopt an annual service standard adjustment in the calculation of MAR, that is:

$$\begin{aligned} \text{MAR}_t &= (\text{allowed revenue}) + (\text{financial incentive}) \\ &= (\text{AR}_t) + \left( \frac{(\text{AR}_{t-1} + \text{AR}_{t-2})}{2} \times S_{ct} \right) \end{aligned}$$

Where:

MAR	=	maximum allowed revenue
AR	=	allowed revenue
S	=	service standards factor
t	=	regulatory period
ct	=	calendar year

## **10.4 TransGrid's proposal**

In its Application TransGrid applied for revenue in nominal terms of \$476.26 million in the year 2004/05 rising to \$498.97 million, \$531.88 million, \$567.25 million, and \$632.60 million in the subsequent full financial years of the regulatory period.

TransGrid claims that a substantial revenue increase is required due to:

- Additional opex requirements resulting from increases in network growth, wages and network utilisation.
- An increase in forecast capex from the previous regulatory period relating to demand and generation development.
- The rolling in of unforecast capital expenditure and the additional return on capital on the unforecast capital expenditure into the regulatory asset base.

## **10.5 ACCC's considerations**

### **Operating and maintenance expenses**

The ACCC has included a total opex allowance in nominal terms of \$625.84 million (nominal) over the regulatory period. This amount is inclusive of debt raising costs.

The ACCC proposes a reduction of \$66.84 million (nominal) from TransGrid's application, based on an adjustment to the initial starting opex figure which has been reduced to reflect an efficient starting point. The growth rates of key cost drivers have been adjusted to reflect the ACCC's and GHD's assessments. More detail regarding the ACCC's assessment of TransGrid's operational expenditure claim is provided in Chapter 3.

### **Opening asset base**

To establish the appropriate return on capital, the ACCC modelled TransGrid's asset base over the life of the regulatory period, and the WACC (estimated on the basis of current financial market information).

As explained in Chapters 3 and 4, the ACCC has determined the value of TransGrid's asset base as at 30 June 2004 to be \$3,012.76 million. Table 10.5.3 presents TransGrid's asset base over the upcoming regulatory period (2004/05 – 2008/09).

**Table 10.5.3 TransGrid's return on capital, 1 July 2004 to 30 June 2009**

\$ million, nominal	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
opening asset base	3,012.76	3,137.53	3,291.86	3,488.16	3,833.27
capital expenditure	164.41	198.89	245.75	397.89	341.45
economic depreciation	39.64	44.56	49.46	52.78	59.02
closing asset base	3,137.53	3,291.86	3,488.16	3,833.27	4,115.70
return on capital	268.74	279.87	293.63	311.14	341.93

### Capital expenditure

The ACCC has included a total capital expenditure allowance in real terms of \$1,187.8 million over the regulatory period.

The ACCC proposes a reduction of \$339 million (22 per cent) from TransGrid's revised Application. The details regarding the ACCC's assessment of TransGrid's proposed capital expenditure are provided in Chapter 7.

### Depreciation (return of capital)

The ACCC used a straight-line depreciation method (based on the remaining life per asset class of existing assets and the standard life for new assets) to model economic depreciation. The resulting figures (referred to as return of capital) are shown in Table 10.5.8.

### Weighted average cost of capital

The ACCC's estimate of TransGrid's WACC is explained in Chapter 8. The ACCC has considered the nature of TransGrid's business and its current financial circumstances in establishing the WACC. It notes that although there is a well recognised theoretical model for establishing the WACC, there is not full agreement on the precise magnitude of the various financial parameters used.

The ACCC has applied a post-tax nominal return on equity of 11.98 per cent, which equates to a nominal vanilla WACC of 8.92 per cent.

### Estimated taxes payable

Tax estimates relate to the network's regulated activities only. The ACCC anticipates that TransGrid will be paying income tax during the regulatory period based on TransGrid's tax depreciation profile. The ACCC's assessment of taxes payable are based on the 60 per cent gearing assumed in the WACC parameters as opposed to TransGrid's actual gearing. The ACCC's estimates of TransGrid's tax payments are as shown in Table 10.5.8.

## Total revenue and CPI-X smoothing in nominal terms

Based on the various elements of the building block approach, the ACCC proposes a smoothed revenue allowance that increases from \$432.75 million for 1 July 2004 to 30 June 2005 rising to \$456.50 million, \$481.56 million, \$507.99 million, and \$535.87 million in the subsequent financial years (Table 10.5.8). These figures incorporate revenue smoothing based on an X smoothing factor of -2.93 per cent. That is, the MAR will increase by CPI plus 2.93 per cent in each year of the regulatory period..

The ACCC's Draft Decision allowed revenue of \$432.75 million to be recovered in 2004-05. After taking into consideration the issues relating to RAB, capex, opex and other WACC parameters raised in response to the draft and the supplementary draft decisions the ACCC's decision is that the appropriate revenue TransGrid should have recovered in 2004-05 was \$435.14 million. This under-recovery of about \$2 million has been smoothed, in NPV terms, across the MAR for the remaining four years.

**Table 10.5.8 TransGrid's MAR from 1 July 2004 to 30 June 2009**

\$ nominal million	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
Return on capital	268.74	279.87	293.63	311.14	341.93
Return of capital	39.64	44.56	49.46	52.78	59.02
Operating expenses	119.85	122.37	125.01	127.79	130.76
Estimated taxes payable	13.83	15.97	18.44	21.13	28.57
Less value of franking credits	6.92	7.99	9.22	10.56	14.28
Raw revenue	435.14	454.78	477.32	502.28	545.98
Smoothed revenue	<b>432.75</b>	<b>456.50</b>	<b>481.56</b>	<b>507.99</b>	<b>535.87</b>

## TransGrid's Revised Application and the ACCC's Decision

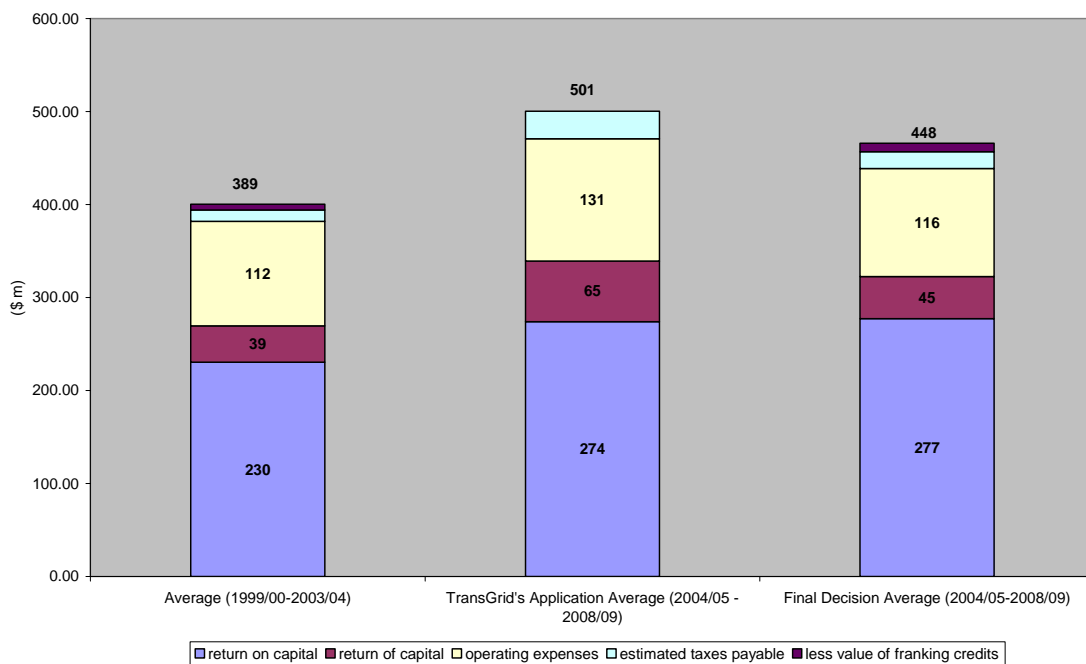
In constant dollar terms, TransGrid applied for revenue of \$462.76 million in the year 2004/05 rising to \$475.07 million, \$494.11 million, \$514.19 million, and \$559.53 million in the subsequent full financial years of the regulatory period. Based on the various elements of the building block approach, the ACCC proposes a smoothed revenue allowance in real terms of \$422.26 million in the year 2004/05 to \$434.63 million, \$447.37 million, \$460.48 million, and \$473.97 million in the subsequent full financial years of the regulatory period. Table 10.5.9 compares the ACCC's MAR and TransGrid's MAR over the regulatory period.

**Table 10.5.9 Comparison of MAR 2005/05 – 2008/09**

\$2004 million	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>ACCC's 2000 Decision</b>	398.27					
<b>TransGrid's Revised Application</b>		462.76	475.07	494.11	514.19	559.53
<b>Final Decision</b>		422.26	434.63	447.37	460.48	473.97

The revenue set by the ACCC for this Final Decision is on average 10.65 per cent below that sought by TransGrid. Figure 10.5.10 is a comparison of the building block revenues of the ACCC's 1999 Revenue Cap Decision, TransGrid's proposed revenue, and the ACCC's Final Decision for the regulatory period 2004/05 to 2008/09.<sup>66</sup>

**Figure 10.5.10 Building Block comparison of revenues (\$2004 millions)**



### Impact on transmission charges: \$2004

Table 10.5.11 illustrates how, based on forecast energy demand in New South Wales over the regulatory period, TransGrid's Revised Application translates into real price changes. The Final Decision results in a 5.47 per cent increase in prices in the first year of the regulatory period and on average increases by around 0.8 per cent in the subsequent years of the regulatory period. The price changes arising from the Final Decision compare to TransGrid's proposed price increase in the first year of 15.59 per cent and an increase of around 2.74 per cent in subsequent years.<sup>67</sup>

<sup>66</sup> This comparison is based on TransGrid's revised Application and smoothed revenues.

<sup>67</sup> The transmission prices have been calculated by dividing the real smoothed revenue by the energy demand (MWh) for that respective year. The ACCC has used the MWh forecast from the NEMMCO Statement of Opportunities 2004.

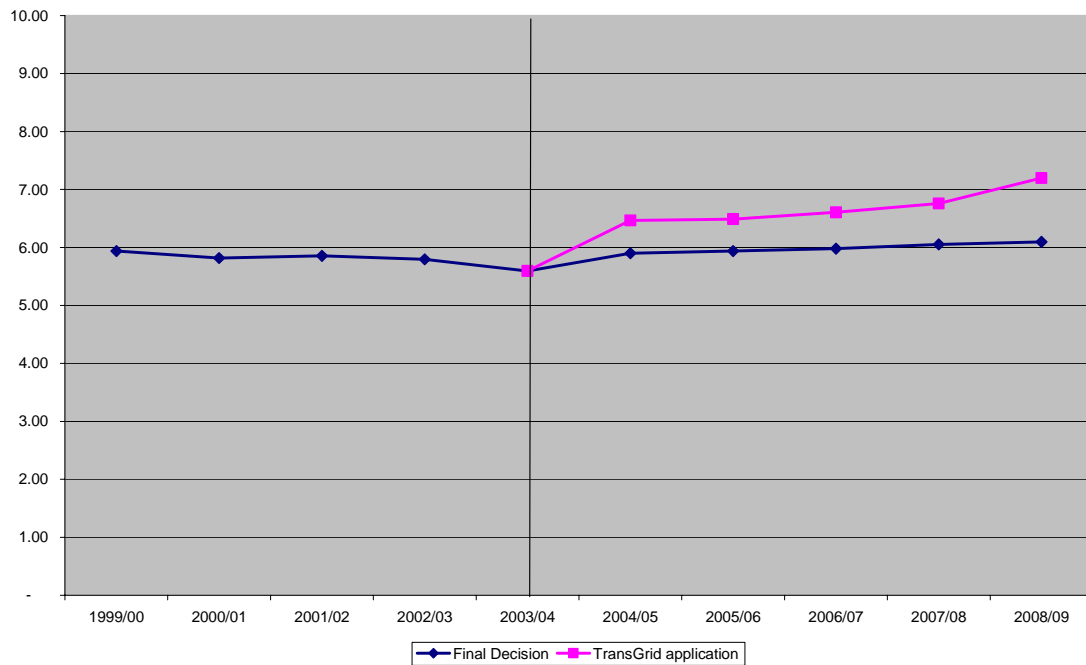
**Table 10.5.11 Impact on Transmission prices**

\$2004 / MWh	2004/05	2005/06	2006/07	2007/08	2008/09
<b>TransGrid's Revised Application</b>	15.59	0.35	1.80	2.30	6.52
<b>Final Decision</b>	5.47	0.61	0.74	1.19	0.76

The overall increase in prices has been a result of growing demand and the need to accommodate efficient investment needed to ensure a reliable supply of electricity to NSW.

Table 10.5.12 shows the resulting price path of this Decision over the regulatory period compared to TransGrid's initial Application, and the ACCC's 1999 Decision.

**Table 10.5.12 Illustrative price path 2002-03 to 2008-09 (\$2004/MWh)**



## 10.6 ACCC's decision: Total Revenue

On the basis of the ACCC's forecast inflation, the ACCC has determined a revenue cap in nominal terms for TransGrid that increases from approximately \$432.75 million for 1 July 2004 to 30 June 2005, to \$535.87 million from 1 July 2008 to 30 June 2009.

The actual CPI for 2004–05 (March 2004 to March 2005) is scheduled for release by the Australian Bureau of Statistics on 27 April 2005. The ACCC has made this decision at a time prior to the official release of the actual CPI. Therefore, this decision is based on an annual forecast inflation figure of 2.49 per cent for 2004–05 to 2008–09. Chapter 8 details the ACCC's treatment of CPI.

## **Appendix A Pass-Through Rules**

### **TransGrid Transmission Network Revenue Cap**

#### **Pass Through Rules**

The pass through rules commencing on the following page form part of the revenue cap set by the ACCC for TransGrid for the period 1 July 2004 to 30 June 2009.

# **TransGrid Transmission Network Revenue Cap Pass-Through Rules**

## **1. Introduction**

In accordance with clause 6.2.4(b) of the National Electricity Code ('Code'), the Australian Competition and Consumer Commission (ACCC) in a Decision dated 27 April 2005 ('Date of Determination') set a revenue cap ('Revenue Cap') to apply to TransGrid ('TNSP') for the regulatory control period ('Regulatory Control Period') from 1 July 2004 ('Commencement Date') to 30 June 2009 ('End Date').

## **2. Regulated Pass-Through**

### **2.1 Rules form part of Revenue Cap**

These Pass-Through Rules form part of the Revenue Cap. Any Pass-Through Amount determined under these Pass-Through Rules forms part of the Maximum Allowed Revenue determined by the Revenue Cap.

### **2.2 Pass-Through Events**

Each of the following is a Pass-Through Event:

- (a) a Change in Taxes Event;
- (b) an Insurance Event;
- (c) a Network (Grid) Support Event;
- (d) a Service Standards Event; and
- (e) a Terrorism Event.

### **2.3 Entitlement or requirement to Pass-Through**

If:

- (a) a Pass-Through Event takes effect or will take effect on or before the End Date; and
- (b) the Pass-Through Event has a financial impact on the TNSP during the Regulatory Control Period,



then, if the Pass-Through Amount (being the amount determined by clause 2.4) for that Pass-Through Event is:

- (c) positive, the TNSP is entitled to increase its Maximum Allowed Revenue by that Pass-Through Amount provided that the procedure set out in clause 3 is satisfied; or
- (d) negative, the TNSP must follow the procedure set out in clause 3, and, in any event, must decrease its Maximum Allowed Revenue by that Pass-Through Amount.

## 2.4 Pass-Through Amount

The Pass-Through Amount for a Pass-Through Event is the increase or decrease in the Maximum Allowed Revenue over one or more *financial years*, required to ensure that the net financial effect of the Pass-Through Event on the TNSP's provision of *prescribed services* during the Regulatory Control Period is neutral, taking into account the following factors:

- (a) The Pass-Through Amount (whether it be positive or negative) must be material.
- (b) The Pass-Through Amount must be adjusted by the extent to which:
  - (i) where the Pass-Through Amount is positive:
    - (1) the Pass-Through Event was caused or aggravated by any act or omission of the TNSP that is inconsistent with *good electricity industry practice*; and
    - (2) the TNSP failed to take all steps that would be consistent with *good electricity industry practice* to remedy or abate the Pass-Through Event; or
  - (ii) where the Pass-Through Amount is negative, any act or omission of the TNSP that is inconsistent with *good electricity industry practice* reduced the net financial effect of the Pass-Through Event.
- (c) The Pass-Through Amount must take into account the time cost of money.
- (d) The Pass-Through Amount must take into account the amount (if any) for such a Pass-Through Event included in the operating expenses or other inputs used to determine the Revenue Cap.

- (e) Without limiting the generality of clauses 2.4(a)-(d), in relation to a Change in Taxes Event, the Pass-Through Amount must take into account the amount of any increase or decrease in another tax, rate, duty, charge, levy, rebate, Authority fee or other like or analogous impost which offsets or will offset in whole or in part the financial effect on the TNSP of the relevant Change in Taxes Event (and the manner in which, and the period over which, that increase or decrease occurs).
- (f) Without limiting the generality of clauses 2.4(a)-(d), in relation to an Insurance Event, the Pass-Through Amount must take into account:
  - (i) any material increase or decrease in premium paid or required to be paid by the TNSP as compared to the premium that was provided for in the Revenue Cap in relation to that risk;
  - (ii) any material deductible incurred or that will be incurred by the TNSP as compared to the allowance for the deductible (if any) that was provided for in the Revenue Cap in relation to that risk; and/or
  - (iii) if the Insurance Event occurs and the TNSP either does not continue the relevant Insurance or continues the Insurance on different terms, any material losses resulting from any uninsured event where that event would have been insured or would have been fully insured by the Insurance that was provided for in the Revenue Cap in relation to that risk (but only if the TNSP is able to demonstrate that the TNSP's decision not to continue the relevant Insurance or to continue the Insurance on different terms (as the case may be) was consistent with *good electricity industry practice*).
- (g) Without limiting the generality of clauses 2.4(a)-(d), in relation to a Network (Grid) Support Event, the Pass-Through Amount must take into account any material costs (including all reasonable project feasibility and management costs) resulting from the Network (Grid) Support Event.
- (h) Without limiting the generality of clauses 2.4(a)-(d), in relation to a Service Standards Event, the Pass-Through Amount must take into account any material costs resulting from the Service Standards Event.

- (i) Without limiting the generality of clauses 2.4(a)-(d), in relation to a Terrorism Event, the Pass-Through Amount must take into account any material loss, damage, cost or expense directly resulting from:
  - (i) the Terrorism Event; or
  - (ii) action taken in controlling, preventing or suppressing the Terrorism Event.

## 2.5 Period and form of Pass-Through Amount

- (a) Subject to clauses 2.5(b)-(d):
  - (i) the period over which the Pass-Through Amount is to be recovered; and
  - (ii) if the period over which the Pass-Through Amount is to be recovered consists of two or more *financial years*, the allocation of the Pass-Through Amount over those *financial years* (being the form of the Pass-Through Amount),  
  
are to be determined by the TNSP.
- (b) The period and form applied by the TNSP under clause 3.6(b) must have been specified by:
  - (i) the TNSP in a Notice of Proposed Pass-Through under clause 3.2; or
  - (ii) the ACCC in notice to the TNSP under clause 3.5.
- (c) The first day of the period:
  - (i) must be the start of a *financial year*;
  - (ii) must not be a date earlier than the Commencement Date;
  - (iii) where the Pass-Through Amount is positive, must not be a date earlier than the date upon which the procedure set out in clause 3 is satisfied;
  - (iv) where the Pass-Through Amount is positive and the date upon which the procedure set out in clause 3 is satisfied falls within the period commencing on 15 May and ending on 30 June, must be a date after 1 July of that year; and

Note: For example, if the procedure set out in clause 3 is satisfied on 31 May 2005, the first *financial year* in which the Maximum Allowed Revenue could be varied to include the Pass-Through Amount would be 1 July 2006 to 30 June 2007. This is because clause 6.5.7 of the Code requires *Transmission Network Service Providers* to publish the *transmission service* prices to apply for the following *financial year* by 15 May each year.

- (v) must not be a date after the End Date.
- (d) The last day of the period:
  - (i) must be the end of a *financial year*; and
  - (ii) must not be a date after the End Date.

### 3. Procedure

#### 3.1 Initiation of Pass-Through

If:

- (a) a Pass-Through Event takes effect or will take effect on or before the End Date; and
- (b) the Pass-Through Event has a financial impact on the TNSP during the Regulatory Control Period,

then, if the Pass-Through Amount for that Pass-Through Event is:

- (c) positive, the TNSP may give a Notice of Proposed Pass-Through to the ACCC in accordance with clause 3.2; or
- (d) negative, the TNSP must promptly (and, in any event, within three *months* of the TNSP becoming aware that the Pass-Through Event had taken effect or will take effect (as the case may be)) give a Notice of Proposed Pass-Through to the ACCC in accordance with clause 3.2.

#### 3.2 Notice of Proposed Pass-Through

A Notice of Proposed Pass-Through must include:

- (a) a description of the relevant Pass-Through Event;

- (b) the date on which the relevant Pass-Through Event took effect or will take effect;
- (c) if the Notice of Proposed Pass-Through is provided under clause 3.1(d), the date on which the TNSP first became aware that the Pass-Through Event had taken effect or will take effect;
- (d) the estimated financial effect of the Pass-Through Event on the TNSP's provision of *prescribed services* (being the proposed Pass-Through Amount);
- (e) the proposed period over which the Pass-Through Amount should apply;
- (f) if the proposed period over which the Pass-Through Amount should apply consists of two or more *financial years*, the proposed allocation of the Pass-Through Amount over the *financial years*; and
- (g) the supporting information referred to in clauses 3.3(a) and (b).

### **3.3 Provision of information**

- (a) The TNSP must attach to its Notice of Proposed Pass-Through such information and documentation as the *ACCC* requires to enable the *ACCC* to form an opinion as to:
  - (i) whether a Pass-Through Event did take effect or will take effect;
  - (ii) if the Notice of Proposed Pass-Through is provided under clause 3.1(d), whether the TNSP complied with the requirement to give promptly such Notice to the *ACCC*;
  - (iii) whether, and to what extent, the TNSP's Maximum Allowed Revenue should be varied as a result of the Pass-Through Event (being the Pass-Through Amount);
  - (iv) the period over which the Pass-Through Amount should apply; and
  - (v) if the period over which the Pass-Through Amount should apply consists of two or more *financial years*, how the Pass-Through Amount should be allocated over the *financial years*.

- (b) Without limiting the generality of the obligation in clause 3.3(a), the supporting information must include, where the Pass-Through Event is:
- (i) a Change in Taxes Event – the relevant instrument before the Change in Taxes Event and the relevant instrument implementing the Change in Taxes Event;
  - (ii) an Insurance Event – the relevant insurance policy, cover note and premium invoice (as the case may be) before the Insurance Event and the relevant insurance policy, cover note and premium invoice (as the case may be) implementing the Insurance Event;
  - (iii) a Network (Grid) Support Event – if applicable, the relevant decision of *NEMMCO* or other Authority before the Network (Grid) Support Event and the relevant decision of *NEMMCO* or other Authority implementing the Network (Grid) Support Event;
  - (iv) a Service Standards Event – the relevant decision or Applicable Law before the Service Standards Event and the relevant decision or Applicable Law implementing the Service Standard Event.
- (c) Regardless of whether a Notice of Proposed Pass-Through has been given, the TNSP must, in relation to risks that were covered by the TNSP’s Insurances that were provided for in the Revenue Cap:
- (i) provide to the *ACCC*, within one *month* after the Date of Determination or Commencement Date (whichever is later), a copy of the TNSP’s insurance policies, cover notes and premium invoices:
    - (1) upon which the Revenue Cap was set; and
    - (2) as at the Commencement Date (if different from the documents referred to in clause 3.3(c)(i)(1)); and
  - (ii) at the time of providing to the *ACCC* the annual reporting information prescribed in the *ACCC*’s Information Requirements Guidelines, provide to the *ACCC* a copy of any of the TNSP’s insurance policies, cover notes and premium invoices that are different from those previously provided to the *ACCC* in accordance with clause 3.3(c).

### 3.4 Procedure to be followed by ACCC

- (a) In considering a Notice of Proposed Pass-Through, the *ACCC* may decide to seek public comment on the Notice.
- (b) Disclosure by the *ACCC* of the supporting information provided by the *TNSP* in accordance with clauses 3.2(g) and 3.3 shall be governed by the procedure set out in clauses 6.2.5(e) and 6.2.6 of the Code.

### 3.5 Verification by ACCC

- (a) The *ACCC* will, within the Assessment Period, form an opinion on:
  - (i) if the Notice of Proposed Pass-Through was provided under clause 3.1(d), whether the *TNSP* complied with the requirement to give promptly such Notice to the *ACCC*;
  - (ii) whether the Pass-Through Event specified in the Notice of Proposed Pass-Through did take effect or will take effect;
  - (iii) if so, the Pass-Through Amount (if any) in respect of the relevant Pass-Through Event (determined in accordance with clause 2.4);
  - (iv) the period over which the Pass-Through Amount should be applied (which must satisfy clauses 2.5(c) and (d)); and
  - (v) if the period over which the Pass-Through Amount should be applied consists of two or more *financial years*, how the Pass-Through Amount should be allocated over the *financial years*,

and notify the *TNSP* in writing of the *ACCC*'s opinion.

Note: If the *TNSP* disputes the *ACCC*'s findings referred to in:

- (a) clauses 3.5(a)(ii) and/or (iii), the *TNSP* may seek judicial review of the relevant finding;
- (b) clauses 3.5(a)(iv) and/or (v), the *TNSP* may determine the period over, and form in which, the Pass-Through Amount set out in the *ACCC*'s notice will be applied (subject to the requirements of clause 2.5). This may require the *TNSP* to give

the *ACCC* a further Notice of Proposed Pass-Through.

- (b) If the *ACCC* does not give notice to the TNSP under clause 3.5(a) on or before the last day of the Assessment Period, then the *ACCC* is taken to have notified the TNSP of its opinion that the Pass-Through Amount (and the period over, and form in, which the TNSP will apply the Pass-Through Amount) should be as specified by the TNSP in the Notice of Proposed Pass-Through.

### **3.6 Application of Pass-Through Amount**

- (a) If the TNSP has received or is taken to have received a notice under clause 3.5, the TNSP must promptly notify its affected customers and *Co-ordinating Network Service Provider* (if applicable) of:
  - (i) the Pass-Through Amount (if any) set out in the notice from the *ACCC* under clause 3.5; and
  - (ii) the period over, and form in, which the Pass-Through Amount is to be applied (to be determined by the TNSP in accordance with clause 2.5).
- (b) Where the Pass-Through Amount is:
  - (i) positive, the TNSP may, in accordance with clause 2.3(c), after providing notice in accordance with clause 3.6(a), increase its Maximum Allowed Revenue by the Pass-Through Amount over the period, and in the form, specified by the TNSP in the notice under clause 3.6(a);
  - (ii) negative, the TNSP must, in accordance with clause 2.3(d), regardless of whether or not the TNSP has provided notice in accordance with clause 3.6(a), decrease its Maximum Allowed Revenue by the Pass-Through Amount specified or taken to be specified in the notice from the *ACCC* under clause 3.5 over the period, and in the form to be determined by the TNSP in accordance with clause 2.5.

## **4. Definitions**

### **4.1 Code definitions**

In these Pass-Through Rules, unless the context otherwise requires:



- (a) words appearing in italics have the meaning assigned to them from time to time by the Code; and
- (b) if a word in italics is no longer defined in the Code, it will have the meaning last assigned to it by the Code.

#### 4.2 Additional definitions

In these Pass-Through Rules, unless the context otherwise requires:

**Applicable Law** means any legislation, delegated legislation (including regulations), codes, licences, guidelines, determinations and directions relating to the provision of one or more *prescribed services*, and includes the Code and the National Electricity Law.

**Assessment Period** means:

- (a) two *months* from the date the *ACCC* receives from the TNSP a Notice of Proposed Pass-Through that satisfies the requirements of clauses 3.2 and 3.3; or
- (b) if the *ACCC* so notifies the TNSP prior to the expiry of the initial two *month* period, four *months* from the date the *ACCC* receives from the TNSP a Notice of Proposed Pass-Through that satisfies the requirements of clauses 3.2 and 3.3.

Note: For example, if the *ACCC* receives from the TNSP a valid Notice of Proposed Pass-Through on 31 May 2005, the TNSP must receive written notice of the *ACCC*'s opinion on or before 31 July 2005 (or 30 September 2005 in the event that the initial period is extended).

**Authority** means any government department, instrumentality, minister, agency, statutory authority or other body in which a government has a controlling interest, and includes *NECA*, *NEMMCO* and the *ACCC* and their successors.

**Change in Taxes Event** means:

- (a) a change in the way or rate at which a Relevant Tax is calculated (including a change in the application or official interpretation of a Relevant Tax); or
- (b) the removal of a Relevant Tax or imposition of a new Relevant Tax,

to the extent that the financial effect of the change, removal or imposition results in a material change in the amount the TNSP is

required to pay or is taken to pay during the Regulatory Control Period as compared to the allowance that was provided for in the Revenue Cap.

**Code** means the ‘National Electricity Code’ as defined in the National Electricity Law set out in the schedule to the *National Electricity (South Australia) Act 1996* (SA).

**Commencement Date** means 1 July 2004, being the first day of the period covered by the Revenue Cap.

**Date of Determination** means 27 April 2005, being the date of the ACCC’s final decision setting this Revenue Cap.

**End Date** means 30 June 2009, being the last day of the period covered by the Revenue Cap.

**Information Requirements Guidelines** means the ‘Information Requirements Guidelines’ issued by the ACCC under clause 6.2.5 of the Code on 5 June 2002 (including any subsequent amendment or replacement).

**Insurance** means insurance whether under a policy or a cover note or other similar arrangement.

An **Insurance Event** occurs where, in relation to a risk that was the subject of Insurance and for which a premium was provided for in the Revenue Cap:

- (a) the cost of the premium paid or required to be paid by the TNSP becomes materially higher or lower than the premium that was provided for in the Revenue Cap;
- (b) the risk eventuates and the TNSP incurs or will incur all or part of a deductible (where that amount is materially higher or lower than the allowance for the deductible (if any) that was provided for in the Revenue Cap);

Note: For the avoidance of doubt, clause (b) requires confirmation from the relevant insurance provider that the risk comes within the scope of the relevant Insurance.

- (c) Insurance becomes unavailable to the TNSP; and/or
- (d) Insurance becomes available to the TNSP on terms materially different from those upon which the Revenue Cap was set,

provided that the TNSP is able to demonstrate that no act or omission of the TNSP which is inconsistent with *good electricity industry practice* caused or aggravated the occurrence of that event.

**Maximum Allowed Revenue** is the amount referred to in clause 6.3 of the Code (which is determined by the Revenue Cap).

A **Network (Grid) Support Event** occurs where the cost of *network* support becomes materially higher or lower than the per annum cost of *network* support (if any) provided by the ACCC in the Revenue Cap. For example, this may occur where:

- (a) the TNSP agrees, or acquires an option, to purchase services from *generators* (as referenced in clauses 5.6.2(m) and 6.2.4(c)(7) of the Code) or *customers* to effect the efficient operation, maintenance or development of its *transmission system*, where the payments are a cost-effective and practical substitute for *network augmentation*; or
- (b) *NEMMCO* or some other Authority causes costs, obligations or liabilities for *network* support to be imposed or removed (or varied if previously imposed) on the TNSP in respect of the operation of the *transmission system*.

**Notice of Proposed Pass-Through** means a notice described in clause 3.2.

**Pass-Through Amount** means a variation to the TNSP's Maximum Allowed Revenue as a result of a Pass-Through Event determined in accordance with these Pass-Through Rules (which form part of the TNSP's Revenue Cap). A Pass-Through Amount may be positive or negative.

**Pass-Through Events** means the events specified in clause 2.2:

**Regulatory Control Period** means the period starting on the Commencement Date and ending on the End Date.

**Relevant Tax** means any tax, rate, duty, charge, levy, rebate, Authority fee or other like or analogous impost that is:

- (a) paid, to be paid, or taken to be paid by the TNSP in connection with the provision of *prescribed services*; or
- (b) included in the operating expenses or other inputs used to determine the Revenue Cap,

but excludes:

- (c) income tax (or State equivalent tax) and capital gains tax;
- (d) penalties and fines (including penalties and interest for late payment relating to any tax, rate, duty, charge, levy, Authority fee or other like or analogous impost);
- (e) charges and Authority fees paid or payable in respect of a Service Standards Event;
- (f) stamp duty, financial institutions duty, bank accounts debits tax or similar taxes or duties;
- (g) any tax, rate, duty, charge, levy, rebate, Authority fee or other like or analogous impost which replaces the imposts referred to in (c) to (f).

**Revenue Cap** means the *revenue cap* set by the ACCC in accordance with clause 6.2.4(b) of the Code in a final decision issued on the Date of Determination to apply to the TNSP for the Regulatory Control Period.

**Service Standards Event** means a decision made by any Authority or any introduction of or amendment to an Applicable Law that:

- (a) has the effect of:
  - (i) imposing, removing or varying minimum standards on the TNSP relating to *prescribed services*;
  - (ii) altering the nature or scope of services that comprise the *prescribed services*;
  - (iii) varying the manner in which the TNSP is required to undertake any activity forming part of *prescribed services*; or
  - (iv) increasing or decreasing the TNSP's risk in providing the *prescribed services*,

from that upon which the Revenue Cap was set; and
- (b) results or will result in the TNSP incurring materially higher or lower costs in providing *prescribed services* than would have been incurred but for that event.

**Terrorism Event** means an act including but not limited to the use of force or violence and/or the threat thereof, of any person or group(s) of persons, whether acting alone or on behalf of or in connection with any

organisation(s) or government(s), which from its nature or context is done for, or in connection with, political, religious, ideological, ethnic or similar purposes or reasons, including the intention to influence any government and/or to put the public, or any section of the public, in fear.

**TNSP** means TransGrid ABN 19 622 755 774

#### **4.3 References to certain general terms**

Unless the contrary intention appears, a reference in these Pass-Through Rules to:

- (a) **(variations or replacement)** a document (including these Pass-Through Rules) includes any variation or replacement of it;
- (b) **(clauses)** a clause is a reference to a clause in these Pass-Through Rules;
- (c) **(reference to statutes)** a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;
- (d) **(singular includes plural)** the singular includes the plural and vice versa;
- (e) **(person)** the word ‘person’ includes an individual, a firm, a body corporate, a partnership, joint venture, syndicate, an unincorporated body or association, or any Authority;
- (f) **(successors)** a particular person includes a reference to the person’s successors, substitutes (including persons taking by novation) and assigns;
- (g) **(meaning not limited)** the words ‘include’, ‘including’, ‘for example’ or ‘such as’ are not used as, nor are they to be interpreted as, words of limitation, and, when introducing an example, do not limit the meaning of the words to which the example relates to that example or examples of a similar kind;
- (h) **(reference to anything)** anything (including any amount) is a reference to the whole and each part of it.

#### **4.4 Headings**

Headings (including those in brackets at the beginning of paragraphs) are for convenience only and do not affect the interpretation of these Pass-Through Rules.

# Appendix B Financial indicators

## Code requirement

The Code requires that the ACCC consider various issues when setting a revenue cap for a TNSP. One requirement when considering a TNSP's revenue requirement is to take into account 'any other financial indicators' as prescribed by clause 6.2.4(c)(9) of the Code.

*'6.2.4 (c) In setting a separate revenue cap to be applied to each Transmission Network Owner and/or Transmission Network Service Provider (as appropriate) in accordance with clause 6.2.4(b), the ACCC must take into account the revenue requirements of each Transmission Network Owner and/or Transmission Network Service Provider (as appropriate) during the regulatory control period, having regard for:*

*(1) .....*

*(9) any other relevant financial indicators.'*

## Previous financial indicator analysis

In previous Revenue Cap Decisions the ACCC has calculated and analysed various financial indicators. The purpose of this analysis was to predict the impact of the allowed revenue on the TNSP's ability to obtain credit. Consistent with previous revenue caps, Table B.1 provides the same financial indicators based on TransGrid's AR.

Table B.1 assumes a business profile of 'above average', which results in a minimum credit rating of 'A'. Hence the ACCC believes that its revenue cap for TransGrid will not adversely affect either TransGrid's ongoing financial viability or its ability to access capital markets.

The estimated credit ratings are set on the basis of the Standard and Poor's ratings shown in Table B.3. The individual financial ratios have been calculated using the formulae in Table B.2.

The ACCC is satisfied that, by setting an appropriate WACC, it has already addressed TransGrid's ability to obtain credit. In determining TransGrid's WACC, the ACCC has benchmarked TransGrid's gearing at 60 per cent and sets the debt margin based on a benchmark credit rating of 'A'.

The ACCC considers that TransGrid's credit rating is likely to be above that suggested in Table B.1 because of the stability of its earnings and the lack of competitors for its services.

**Table B.1 Financial Indicators**

	2004/05	2005/06	2006/07	2007/08	2008/09
EBIT to Revenues (%)	72.46	73.09	73.81	74.56	76.05
EBITD to Revenues (%)	81.57	82.89	84.17	85.07	86.86
EBIT to Funds Employed (%)	10.47	10.59	10.70	10.74	10.83
EBIT to regulated assets (%)	10.47	10.59	10.70	10.74	10.83
Pre-tax interest cover (times)	2.57	2.60	2.62	2.62	2.64
Funds Flow Net Interest Cover (times)	2.90	2.95	2.98	2.99	3.01
S&P Rating	BBB	BBB	BBB	BBB	BBB
Funds Flow Net Debt Pay Back (years)	7.78	7.57	7.40	7.37	7.26
S&P Rating	BB	BB	BB	BB	BB
Internal Financing Ratio (%)	124.34	110.28	95.85	63.01	81.85
S&P Rating	AAA	AAA	A	BBB	BBB
Gearing	0.60	0.60	0.60	0.60	0.60
Payout Ratio	14.50	14.50	14.50	14.50	14.50

**Table B.2 Financial ratio formulae**

EBIT/funds employed	Earnings Before Interest and Tax/(debt + equity)
Dividend payout ratio	Dividends/Net Profit After Tax (NPAT)
Funds flow interest cover	(NPAT + depreciation + interest + tax)/interest
Funds flow net debt pay back	(Debt - (investments + cash))/(NPAT + depreciation)
Internal financing ratio	(NPAT + depreciation - dividends)/capex
Pre-tax interest cover	EBIT/interest
Gearing	Debt/(debt + equity)

**Table B.3 Standard and Poor's key indicators**

Utility business profile	Funds flow interest cover (times)				Funds flow net debt payback (years)				Internal financing ratio (per cent)			
	AAA	AA	A	BBB	AAA	AA	A	BBB	AAA	AA	A	BBB
Excellent	4.00	3.25	2.75	1.50	4.0	6.0	9.0	12.0	100	70	60	40
Above average	4.25	3.50	3.00	2.00	3.5	5.0	7.0	9.0	100	80	70	50
Average	5.00	4.00	3.25	2.50	3.0	4.0	5.5	7.0	100	100	90	55
Below average	-	4.25	3.50	3.00	-	4.0	5.5	7.0	-	100	100	75
Vulnerable	-	-	4.00	3.50	-	-	4.0	6.0	-	-	100+	90

Note:

AAA Extremely strong capacity to meet financial commitments.

AA Very strong capacity to meet financial commitments.

A Strong capacity to meet financial commitments but somewhat susceptible to adverse economic conditions and changes in circumstances.

BBB Adequate capacity to meet financial commitments but more susceptible to adverse economic conditions however is not considered vulnerable.

Ratings in the BB, B, CCC, CC and C categories are regarded as having significant speculative business, financial and economic conditions.

## Appendix C Calculating the financial incentive (Service Standards)

When calculating ‘S’, the following equations should be used.

Where  $S = S1 + S2 + S3 + S4 + S5 + S6$ .

For each individual performance measure,

**$S = \text{Gradient} \times \text{Availability or Performance} + \text{Intercept}$ .**

TransGrid’s performance against these measures will determine whether ‘S’ will be calculated as a bonus or penalty.

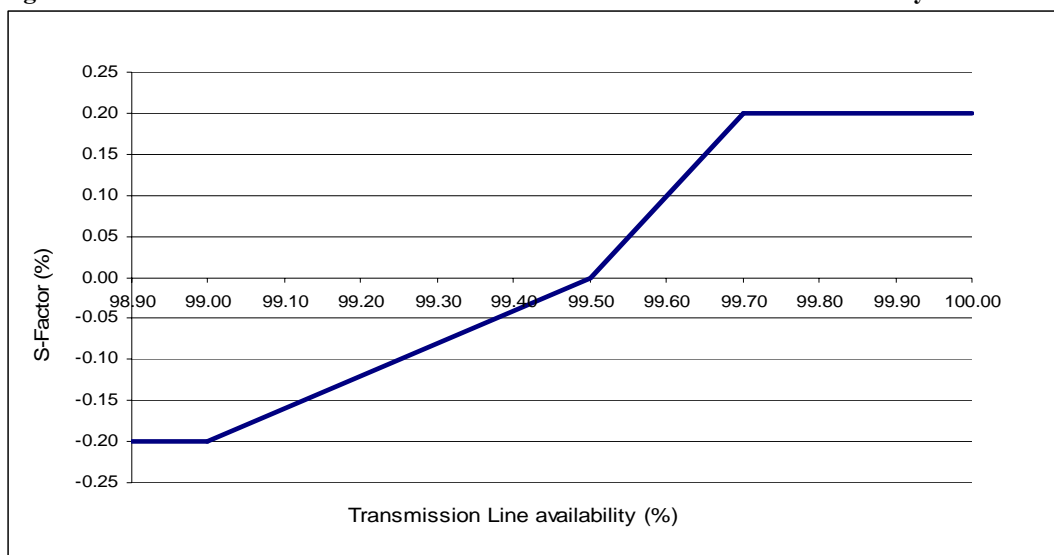
The equations for each individual performance measure are given in the tables following.

**Table C.1 S1 = Transmission line availability**

S-Factor	=	Gradient	x	Availability (%)	+	Intercept	Where:				
S1	=	-0.002						Availability	<	99.00	
S1	=	0.004	x	Availability	+	-0.398	99.00	<	Availability	<	99.50
S1	=	0.000						Availability	=	99.50	
S1	=	0.010	x	Availability	+	-0.995	99.50	<	Availability	<	99.70
S1	=	0.002					99.70	<	Availability		

The financial incentives for TransGrid’s performance in relation to Transmission Line Availability, as implied by the above equation, are demonstrated in Figure C.2.

**Figure C.2 Financial incentive curve – S1 Transmission Line Availability**



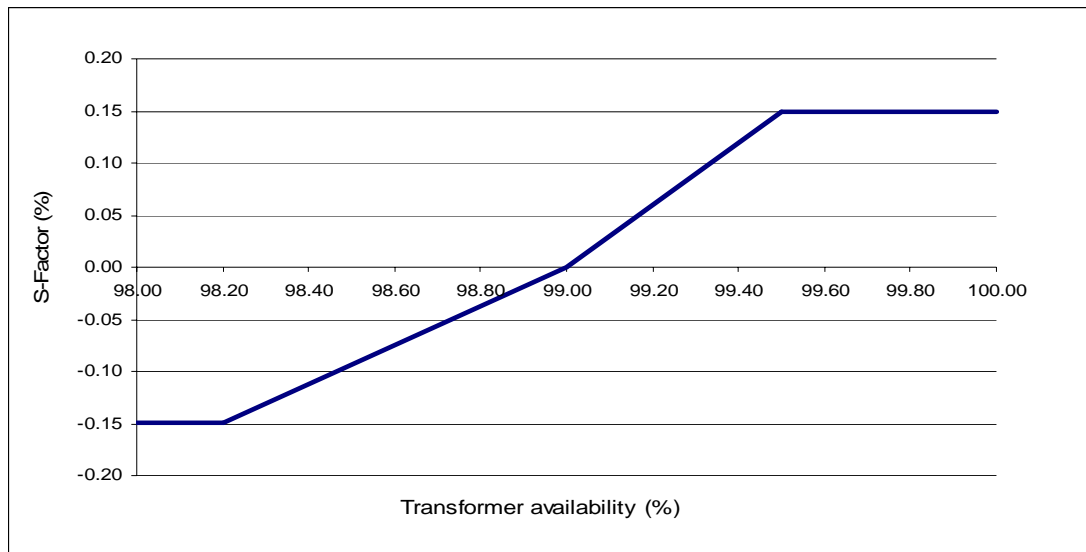


**Table C.3 S2 = Transformer availability**

S-Factor	=	Gradient	x	Availability (%)	+	Intercept	Where:			
S2	=	-0.001500							Availability	< 98.20
S2	=	0.001875	x	Availability	+	-0.185625	98.20	<	Availability	< 99.00
S2	=	0.000000							Availability	= 99.00
S2	=	0.003000	x	Availability	+	-0.297000	99.00	<	Availability	< 99.50
S2	=	0.001500					99.50	<	Availability	

The financial incentives for TransGrid’s performance in relation to Transformer Availability, as implied by the above equation, are demonstrated in Figure C.4.

**Figure C.4 Financial incentive curve – S2 Transformer Availability**

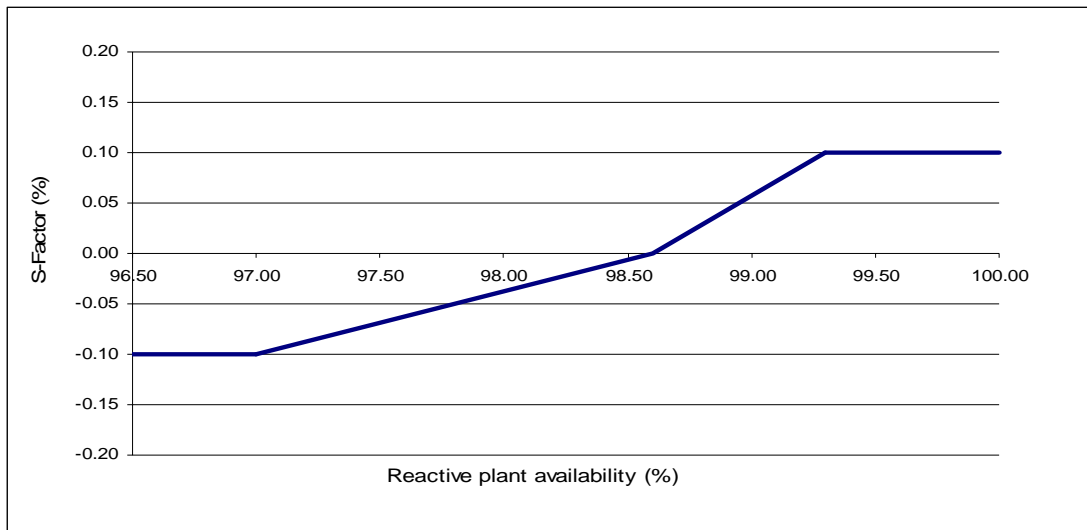


**Table C.5 S3 = Reactive plant availability**

S-Factor	=	Gradient	x	Availability (%)	+	Intercept	Where:			
S3	=	-0.001000							Availability	< 97.00
S3	=	0.000625	x	Availability	+	-0.061625	97.00	<	Availability	< 98.60
S3	=	0.000000							Availability	= 98.60
S3	=	0.001429	x	Availability	+	-0.140857	98.60	<	Availability	< 99.30
S3	=	0.001000					99.30	<	Availability	

The financial incentives for TransGrid’s performance in relation to Reactive Plant Availability, as implied by the above equation, are demonstrated in Figure C.6.

**Figure C.6 Financial incentive curve – S3 Reactive Plant Availability**

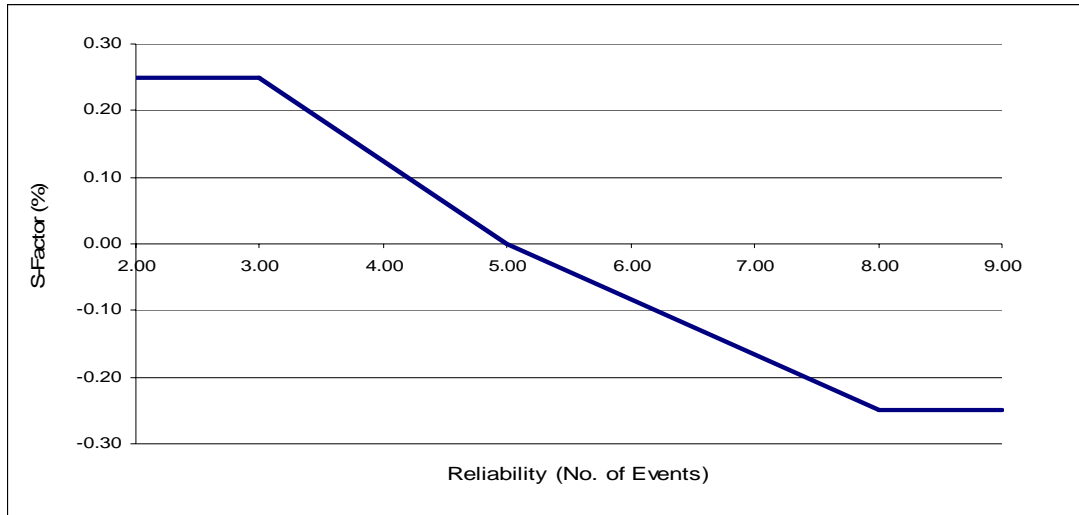


**Table C.7 S4 = Reliability (Events >0.05 system minutes)**

S-Factor	=	Gradient	x	No. of Events	+	Intercept	Where:				
S4	=	0.002500							No. of Events	<	3.00
S4	=	-0.001250	x	No. of Events	+	-0.061625	3.00	<	No. of Events	<	5.00
S4	=	0.000000							No. of Events	=	5.00
S4	=	0.000833	x	No. of Events	+	-0.140857	5.00	<	No. of Events	<	8.00
S4	=	-0.002500					8.00	<	No. of Events		

The financial incentives for TransGrid’s performance in relation to Reliability Events (> 0.05 system minutes), as implied by Table C.7, are demonstrated in Figure C.8.

**Figure C.8 Financial incentive curve – S4 Reliability Events (> 0.05 system minutes)**

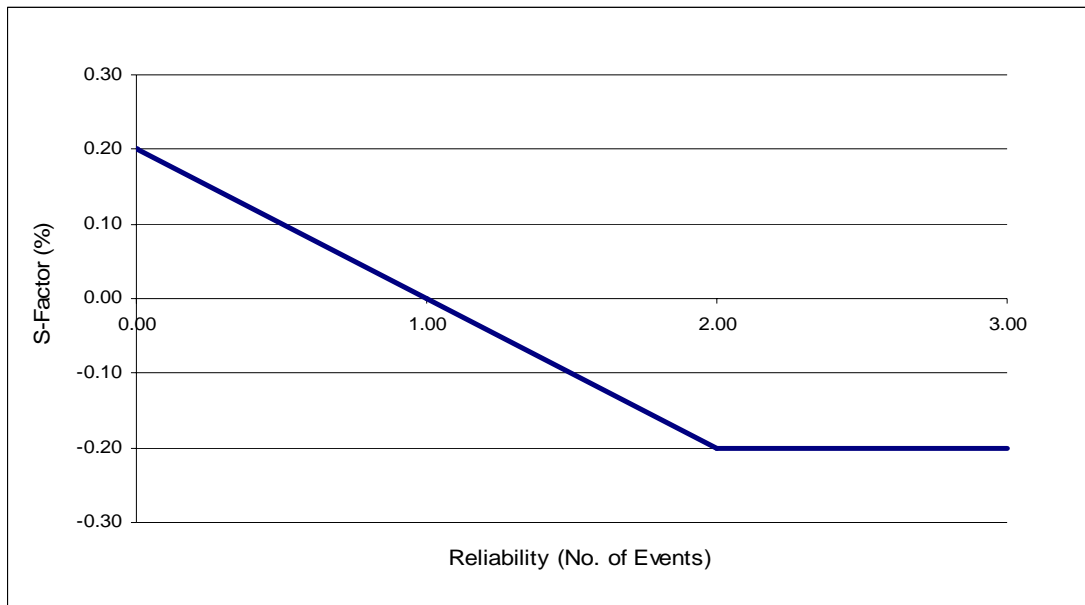


**Table C.9 S5= Reliability (Events >0.4 system minutes)**

S-Factor	=	Gradient	x	No. of Events	+	Intercept	Where:				
S5	=	0.002							No. of Events	<	0.00
S5	=	-0.002	x	No. of Events	+	0.002	0.00	<	No. of Events	<	1.00
S5	=	0.000							No. of Events	=	1.00
S5	=	-0.002	x	No. of Events	+	0.002	1.00	<	No. of Events	<	2.00
S5	=	-0.002					2.00	<	No. of Events		

The financial incentives for TransGrid’s performance in relation to Reliability Events (>0.4 system minutes), as implied by the above equation, are demonstrated in Figure 5.5.

**Figure C.10 Financial incentive curve – S5 Reliability events (> 0.4 system minutes)**

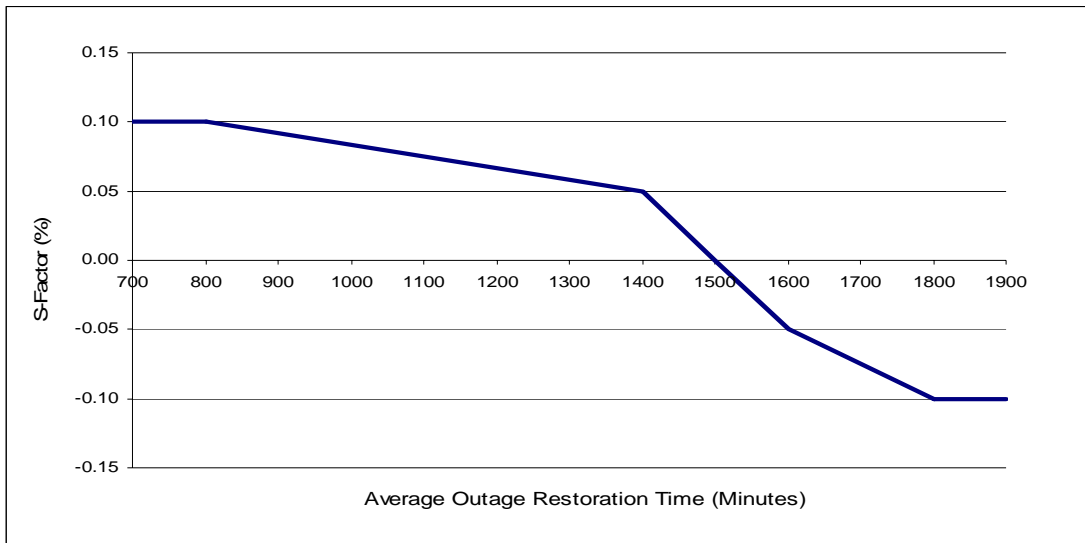


**Table C.11 S6 = Average Outage Restoration Time (7 day cap per event)**

S-Factor	=	Gradient	x	Duration (mins)	+	Intercept	Where:				
S6	=	0.00100000							Duration	<	800
S6	=	-0.00000083	x	Duration	+	0.00166667	800	<	Duration	<	1400
S6	=	0.00050000	x	Duration	+	0.00750000	1400	<	Duration	<	1600
S6	=	-0.0000025	x	Duration	+	0.00350000	1600	<	Duration	<	1800
S6	=	-0.00100000					1800	<	Duration		

The financial incentives for TransGrid’s performance in relation to Average Outage Restoration Time, as implied by the above equation, are demonstrated in Figure C.12..

**Figure C.12 Financial incentive curve – S6 Average Outage Restoration Time**



**Total S factor**

As noted above, the total ‘S’ factor is equal to the sum of the individual ‘S’ factors for each performance target. According to the performance measures that have been recommended by GHD, the total ‘S’ factor is 0.001 or 1%.

## Appendix D Summary of the ACCC's Forward Capex Decision

Table D.1 Summary of figures used in the ACCC's Forward Capex Decision

Summary Sheet	2005	2006	2007	2008	2009	5 Year Total
<b>Ex ante allowance</b>	<b>153.58</b>	<b>181.28</b>	<b>218.55</b>	<b>345.28</b>	<b>289.11</b>	<b>1187.80</b>
<b>Asset Replacement</b>	<b>62.56</b>	<b>53.33</b>	<b>56.21</b>	<b>51.23</b>	<b>56.16</b>	<b>279.49</b>
<b>Minor Projects</b>						
Substation Projects	18.03	13.97	11.34	9.51	13.34	66.19
Mains Projects	5.12	4.82	3.02	3.06	2.88	18.89
Protection & Metering Projects	0.31	0.73	0.35	0.25	0.25	1.90
Communications Projects	1.85	1.88	2.69	2.10	1.33	9.84
Security Projects	8.75	14.02	10.42	7.91	8.90	52'0.00
Committed Asset Replacement Projects	17.95	0.80	0.00	0.00	0.00	18.75
Major & Combined Projects	9.13	11.77	23.47	21.33	27.83	93.53
Regional Depots Projects	0.45	3.24	3.19	7.08	1.64	15.60
Regulatory Projects	0.96	2.11	1.72	0.00	0.00	4.80
<b>Support the Business</b>	<b>16.78</b>	<b>16.78</b>	<b>16.78</b>	<b>16.78</b>	<b>16.78</b>	<b>83.88</b>
<b>Property and Easements</b>	<b>19.10</b>	<b>31.12</b>	<b>12.10</b>	<b>14.08</b>	<b>12.41</b>	<b>88.79</b>
Easement Acquisitions	4.69	5.43	0.83	4.57	4.57	20.07
Site Acquisitions	0.45	1.11	1.11	1.22	0.11	4.00
Committed Property	13.96	24.58	10.16	8.29	7.74	64.72
<b>Augmentation</b>	<b>55.15</b>	<b>80.06</b>	<b>133.48</b>	<b>263.19</b>	<b>203.76</b>	<b>735.64</b>
<b>Small and Committed Augmentations</b>						
Committed	41.64	22.33	23.97	46.52	2.17	136.63
Small Augmentations - New Lines	4.37	11.35	12.51	23.27	31.65	83.15
Small Augmentations - Substations	3.41	10.73	40.06	66.75	27.03	147.97
Small Augmentations - Reactive Plant	3.49	19.13	15.40	5.95	3.95	47.91
Small Augmentations - Transformers	1.57	13.32	12.21	17.82	9.77	54.69
Technical Services - Miscellaneous	0.50	0.75	7.21	3.34	6.36	18.16
<b>Large/Complex</b>						
500 kV Ring System Development (NSW Corridor)	0.11	1.70	15.11	80.57	96.87	194.35
Royalla (Stage 1)	0.06	0.61	4.35	8.36	5.59	18.96
Mid North Coast Reinforcement	0.00	0.15	2.04	9.07	18.83	30.08
QNI Upgrade	0.00	0.00	0.63	1.55	1.55	3.74

Summary Sheet	2005	2006	2007	2008	2009	5 Year Total
<b>Contingent Projects</b>	<b>0.14</b>	<b>5.43</b>	<b>41.92</b>	<b>282.12</b>	<b>393.28</b>	<b>721.90</b>
<b>Easements and Land</b>	0.14	1.99	20.20	141.00	13.98	<b>177.31</b>
Easements and Land as applied for in Application	0.00	0.00	12.00	124.00	0.00	136.00
Additional Contingent Easements and Land	0.14	1.99	8.20	17.00	13.98	41.31
<b>N-S-W Corridor Group</b>	0.00	1.00	8.00	28.00	186.00	<b>223.00</b>
Newcastle and Lower North Coast Supply (Stage 1)	0.00	0.00	3.00	12.00	82.00	98.00
Bannaby - Sydney 500 kV Development	0.00	1.00	5.00	16.00	104.00	125.00
<b>QNI Upgrade Yass-Wagga Group</b>	0.00	0.44	2.72	56.12	69.30	<b>128.59</b>
Series Compensation at Dumarseq	0.00	0.00	0.00	50.00	30.00	80.00
Yass - Wagga 330 kV SC TL	0.00	0.44	2.72	6.12	39.30	48.59
<b>Mason Park-Holroyd Group</b>	0.00	2.00	11.00	57.00	124.00	<b>193.00</b>
Mason Park 330/132kV GIS Substation	0.00	1.00	3.00	30.00	96.00	129.00
Holroyd Complex	0.00	1.00	8.00	27.00	28.00	64.00

# Appendix E    Establishing the Revenue Cap and CPI-X Adjustment

## Step 1: Establishment of revenue caps and CPI-X adjustment

<b>Establishment of revenue caps and CPI-X adjustment</b>	
<b>Step 1.</b>	
Decision parameters at start of period: The regulatory asset base (A) Post-tax WACC	Collect forecast variables for each year of the regulatory periods: O&M (OM) Capital expenditure (K) Change in CPI ( $\Delta$ CPI) <i>That is estimate:</i> $OM(i), K(i), \Delta CPI(i), A(I)$ for $i=1,2,..5$
<b>Step 2.</b>	
Compute Target Revenues (TR) on the basis of forecasts	Sum forecast elements of cost for each year (taking into account any forecast efficiency improvements) to determine total revenue for each year: That is: $TR(i) = OM(I) + A(i)+K(i) - A(i+1) + r \times A(i) + Tax$
<b>Step 3.</b>	
Choose the revenue cap for Year 1  Usually select $AR(1)=TR(1)$	The chosen revenue cap that will be used as the basis for the revenue cap in the following years via the CPI-X adjustment mechanism is given by: $AR(i) = AR(i-1) \times (1 + \Delta CPI(I)) \times (1 - X)$
<b>Step 4.</b>	
Calculate X	Determine the revenue caps to give same net present value as the target revenues (net of O&M) – using WACC as discount rate That is: $NPV(TR(1),...TR(5)) = NPV(R(1),...R(2))$
<b>Step 5.</b>	
Calculate Maximum Allowed Revenue (MAR)	Annual revenue is adjusted by a service standards performance incentive (PI) as outlined in Chapter 9 That is: $MAR (i) = AR(i) + (PI)$



### Adjustments At End Year I

<p>Establish Actual Revenue Cap for Year i+1 i.e. AR(i+1) Given: AR(1)=R(1)</p>	<p>Re-apply CPI-X adjustment using CPI outcome for year just past <math>\Delta ACPI(i)</math> That is: <math>AR(i+1) = AR(I) \times (1 + \Delta ACPI(I)) \times (1 - X)</math></p>
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## **Appendix F Assessment of Contingent Projects**

This appendix outlines the process the ACCC intends to use to assess future TransGrid requests to invoke a contingent project.

Appendix G lists the contingent projects that might be invoked during the regulatory period. It also lists triggers that must be satisfied for contingent projects to be invoked.

The process outlined in this appendix should be considered indicative of the process that will be followed in the future. This process and times indicated are likely to vary to account for the needs of the projects and the timing of TransGrid's investment decision making process.

### **ACCC's Considerations**

#### **Stage 1: Invoking the contingent project assessment process**

In the first instance TransGrid should identify the needs or drivers of the project. Typically this will be associated with the contingent project triggers defined in Appendix G. Hence the outputs provided to the ACCC should include supporting information and an explanation that shows how the contingent project has met the trigger events.

The complexity of the needs and the trigger events will dictate whether the ACCC requires expert assistance in this first stage. It will also dictate what supporting information the ACCC will request to form an opinion.

Upon receiving any expert advice and supporting information from TransGrid, if required, the ACCC will write to TransGrid to inform it whether the ACCC considers an event that triggers the assessment of a contingent project has occurred.

For information only, the ACCC will also publish via its website its letter to TransGrid. It will also place on the website any other information about the identification of needs that is not commercially sensitive under the Code.

#### **Stage 2: Investment appraisal**

In assessing contingent projects, the ACCC's considerations will include an examination of the options, their forecast costs, sensitivities and the associated risks for each possible scenario to ensure the most efficient project is selected.

#### ***Development of feasible options***

This stage of the process will include TransGrid identifying a range of possible options to address the needs identified in Stage 1 above. These options should include both demand management and network options and include the relevant costs involved. This step is intended to assess the options that require further detailed assessment.

TransGrid's assessment of the feasible options should consider the impact of required environmental and other developmental approvals. Such approvals will, likely, have an impact on both timing and cost of the options. Therefore, without these considerations the most efficient options cannot be selected.

### ***Plan and justify***

Once the feasible options have been selected, TransGrid will be required to produce a more detailed review of the options to determine that they still satisfy the technical needs. In addition, an economic assessment is undertaken to ensure the most efficient option is selected.

The ACCC considers that at this stage it is often too late to make substantial changes to a preferred option. Therefore, detailed assessment of the alternative options should be available so the ACCC can determine the most efficient option.

### ***Public consultation process***

The ACCC will undertake consultation with interested parties throughout the assessment of the contingent project. However in this stage it is likely to be more significant than the other stages. It may also include more consultation than is required by the regulatory test.

In this stage the ACCC is likely to obtain an independent assessment of the contingent project by an appropriate expert.

The public consultation is likely to include a call for interested parties to make written submissions prior to TransGrid finalising its investment decision. Interested parties would be requested to make submissions on any expert advice received.

Also it might be appropriate for TransGrid to provide a draft justification of project selection for interested parties to comment on.

### **Stage 3: Setting the incentive**

The ACCC will write to TransGrid informing it of the value the ACCC intends to include in the RAB for the period of the incentive.

In forming an opinion about the value to be included in the RAB the ACCC would consider:

- the issues raised by submissions;
- the draft justification of project selection (and TransGrid's considerations up to that point); and
- any expert advice the ACCC obtains.

For information only, the ACCC will also publish via its website its letter to TransGrid. It would also request that TransGrid's final justification of project selection report be placed on the ACCC website for information purposes only.

The incentive that the ACCC designs for each contingent project will include the following for the incentive period:

- the start date of the incentive period;
- the end date of the incentive period;
- the annual profile of the target capex; and
- the AR, which will comprise of a return of capital and return on capital.

The revenue cap cannot be adjusted during the regulatory control period as a result of the ACCC's approval of the contingent project. In the absence of a Code change to permit this to occur, the ACCC's decision will be implemented at the re-set of the revenue cap in the manner discussed at Stage 5 below.

#### **Stage 4: Investment in the contingent project**

This stage involves the delivery of the project where TransGrid invests in the contingent project according to the capex selected in the regulatory test or other investment appraisal.

#### **Stage 5: Implementation of the contingent project approval**

This revenue cap is due to expire on 30 June 2009. At the re-set of the revenue cap:

- the ACCC will add to the closing RAB the target capex and AR approved at Stage 3 above for each year of the incentive period leading up to the re-set; and
- the ACCC will add to the ex ante capex allowance the target capex and AR approved at Stage 3 above for each year of the incentive period that comes after the re-set.

At the revenue cap re-set following the completion of the incentive period, the ACCC will add to the closing RAB the depreciated value of the actual investment in the project that complies with the requirements of the Code. This will include the return on and return of the actual investment for the period between the end of the incentive period and the revenue cap re-set

#### **Timing**

The ACCC would like to be able to forecast the amount of time it requires to assess the contingent project, that is, the time required from stage 1 to the completion of stage 3.

However this would to a large extent depend on the timing of TransGrid's decision making process.

In its typical decision making process the ACCC would suggest allowing about 4 weeks for each of the following:

- public submissions;
- expert review; and
- ACCC consideration of all issues and formally providing advice to TransGrid.

The times stated above are intended to provide an indication of the times expected for each review. Some of these events could overlap and the length of time required may change. To complete the regulatory test process in accordance with the Code as well as the complexity and scope of the project being reviewed could also affect the time required.

The ACCC expects that the assessment process for a contingent project proposal may take from two to six months, after the ACCC has confirmed that the trigger(s) for the proposed project have been met. As discussed above, however, this indicative time frame largely depends on the specific requirements of the project.

## Appendix G Contingent Projects and their triggers

The following discussion sets out the ACCC's consideration of the range of contingent projects within TransGrid's application, the triggers that will be required to be met to signal the need for investment in these projects and the augmentations related to those contingent projects that have been included within the ex ante allowance.

The ACCC will consider the relevance of the triggers to the contingent project in question in each case..

**Contingent Project:**            **Increased capacity to Newcastle-Sydney-Wollongong (N-S-W) corridor**

**Triggers:**

The triggers for this contingent project expenditure include:

- Limitation 1 - Thermal Limitation - Hunter valley to Central Coast 330 kV line (Liddell to Newcastle 330 kV DC): The line ratings associated with the Liddell to Newcastle and Tomago 330 kV lines are as follows: Continuous rating 1220 MVA; sustained emergency rating 1430 MVA; 15 min 1500 MVA (15 min rating applicable for post contingency generation re-dispatch or network switching). The worst case contingency for loading the remaining in service 330 kV circuit is an outage of the other Liddell to Tomago or Liddell to Newcastle 330 kV circuit.
- Limitation 2: Reactive deficiency / voltage stability for transfers to Sydney: The reactive margin criteria discussed here is defined as: Reactive deficiency (Sydney West)<sup>68</sup> + 200 MVar – 280 MVar (Sydney West SVC). The worst case contingency for calculation of this limitation is an outage of either the Bayswater to Regentville or Wallerawang to Ingleburn 330 kV circuits.

Any application by TransGrid for contingent project expenditure related to augmentation of capacity to the N-S-W corridor should be related to specific demonstration that one or both of the above limitations are binding. Much of the existing power system studies conducted by TransGrid assist in defining the network limitation and relationships with generation dispatch patterns. For a future review of whether investment has been triggered an analysis encompassing the following would be desirable:

- Clear descriptions of both limitations indicating the multi dimensional nature with Sydney/Newcastle demand levels and generation dispatch patterns. This may be in

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<sup>68</sup> The reactive deficiency at Sydney West has been calculated from a load flow study with a QV type generator at Sydney West. The voltage of the QV generator is adjusted to determine the knee point and the reactive deficiency is calculated as the Q value at this knee point. The knee point is the voltage that results in the minimum Q value.

the form of some type of equation such that a demand and dispatch pattern can be defined, and from this it may be able to demonstrate whether a limitation is violated. The analysis would need to address overload, voltage knee point, and reactive deficiency issues. The definition of the limitations would need to be supported by power system study results that can be reviewed to verify the limitations.

- For a medium to long term assessment of the need for network development, further development of the network limitations following the assumed network developments would be required, and the ACCC would expect that the modelling for such further development to be similar to that described above.
- NEM supply / demand / minimum reserve market analysis to better define the capability of the NEM system to supply NSW at the peak, and the ability to economically and reliably alleviate the limitations, particularly via dispatch of central coast generation and generation from south of Sydney.

The technical and economic evaluation would have to show how an economic assessment across a medium/long term horizon impacts the prudent network development. This is particularly important to assess the optimal timing of a major network reinforcement such as an augmentation to the N-S-W corridor, with a new line development, and which stage should be first and second.

TransGrid has also advised that environmental and planning issues result in difficulties with obtaining new lines which results in a preference for no new line solutions. However, it is still important that all reasonable options are evaluated first from a technical and economic perspective. Following some form of PV or NPV type of analysis, the criticality of planning issues and potential lead times can be better understood.

Based upon the information provided by TransGrid to date, there is a range of possible solutions to the limitations discussed above. The discussion of the limitations in the PB Associates report indicates the possible non-network options that would defer the need for major network reinforcement. However, if firm commitments on the non network options can not be obtained, or a reliable system and economic outcome can not be maintained, then some form of network option may be required during this regulatory period.

The non-network options that should be evaluated could include:

- generation dispatch patterns favouring dispatch in the Sydney / Newcastle region, and south of Sydney; or
- pre contingent load curtailment, or automatic load curtailment system in the Sydney/Newcastle region; or
- additional generation in favourable locations (Newcastle, Sydney and south of Sydney); or

- a combination of the above.

Network solutions could include:

- Some form of network switching option (this would probably require a special protection scheme to automatically operate post contingent)
- Shunt compensation – capacitor banks above those assumed in the TransGrid application (TransGrid indicates options for this are exhausted by 2008/09 – only impacts reactive limitation)
- Line series compensation on existing 330 kV lines
- Phase angle regulator(s) on existing 330 kV lines
- New line development – Hunter Valley to Central Coast
- New line development – Bannaby/Marulan to Sydney
- Other line upgrade or development option
- Combinations of above, particularly over medium/long term

For an evaluation over the short, medium and long term planning horizon, it would be expected that a combination of the above would be obtained. The optimal outcomes across a range of generation development scenarios should also be obtained. These scenarios should assess the network developments required if generation is obtained in more favourable locations and times as well as the minimum reserve margin scenario (as in the existing TransGrid backgrounds) to better understand the relationship between future generation levels and locations, and the impact on the future network development.

Note on major interconnector upgrades

At times of peak NSW demand, interconnector flows must transfer power into NSW. However, the flows from Vic/Snowy are more favourable than those from Queensland in reducing the two limitations discussed above.

As flows from Vic/Snowy are preferential over flows from Queensland with respect to reducing the limitations, it would appear reasonable to expect that the upgrading of the interconnections should be considered within the evaluation of any project related to the transfers to Sydney. This will relate to the prospective levels of generation in all regions and the coincidence of peak demand in NSW with the other regions.

Note on Kemps Creek to Sydney South development:

The needs for this project are not related to the limitations described above. The Kemps Creek to Sydney South project is most likely required in the next regulatory period. The



prudent solution to this requirement may well be impacted by the developments related to the transfers to Sydney and as such the possible options for developments related to the Kemps Creek to Sydney South development will be required to be included in the analysis related to the limitations discussed here.

**Contingent Project: Upgrade to Mason Park/ Holroyd complex**

**Triggers:**

The three relevant triggers (for different elements of the Holroyd complex and Mason Park substation expenditure) are as follows:

- Limitation 1 (need for Holroyd 132 kV) - Integral Energy supplies to Parramatta limitation: This is a TransGrid/Integral Energy planning issue. Information provided by TransGrid indicates that Integral Energy could manage this limitation until well past this regulatory period if an adequate refurbishment strategy for the existing Integral Energy 132 kV cables is implemented. As such it appears that joint planning with Integral Energy is still required on this issue.
- Limitation 2 (need for Holroyd 330 kV) - Sydney West 330/132 kV transformer limitation: Based upon information provided by TransGrid, limitation 2 (Sydney West transformers) will not occur until the next regulatory period. As such the ACCC does not consider that this limitation can be cast as a trigger for the development of 330 kV capacity at Holroyd during this regulatory period.
- Limitation 3 (need for Mason Park 330/132 kV) –330/132 kV supplies to EnergyAustralia in inner Sydney. TransGrid study results indicate that Limitation 3 could occur in summer 2008/09.

In an assessment of whether the triggers for the Holroyd complex and/or Mason Park investment have been met, the TransGrid's technical and economic evaluation (taking account of joint planning with EnergyAustralia and Integral Energy) would need to demonstrate consideration of a range of solutions addressing both EnergyAustralia and Integral Energy's longer term plans, and would need to demonstrate that all opportunities to economically defer investment through short term network or non-network solutions, had been exhausted.

Short term network solutions that could defer substantial investment in the Mason Park substation and associated Holroyd complex works would include pre or post contingency network switching (particularly on EnergyAustralia's 132 kV system) possibly linked with short term transformer ratings or a special protection scheme. Longer term network solutions would include:

- phase shift compensation to control power flows;
- increase in 330 /132 kV transformer capacity;
- new EnergyAustralia 132 kV circuits;

- new 330/132 kV supply (one option for location is Mason Park – other options would have to be considered); or
- combinations of the above (e.g. new 132 kV cable plus transformer capacity increase)

The technical and economic evaluation of the 132 kV supplies to Parramatta limitation would have to be conducted through the joint planning process with Integral Energy. It should include the range of possible Integral Energy and TransGrid options, clearly discussing any issues relating to the Integral Energy 132 kV cable refurbishment option and the medium to long term needs of the 330 kV supply from Sydney West.

**Contingent Project: QNI upgrade and Yass Wagga transmission line**

**Triggers:**

These projects need to be justified against a net benefit criterion as set out in the Regulatory Test.

**Contingent Project: Increased capacity to Newcastle-Sydney-Wollongong (N-S-W) corridor**

**Related projects included within the ex ante cap**

The determination of incremental expenditure based on augmentations of capacity to the N-S-W corridor should take account of the allowance that has already been made in the calculation of the ex ante allowance in respect of the following projects:

- Line up-rates: Liddell – Tomago; Wallerawang – Ingleburn;
- Line rearrangements on central coast (turn Vales Pt Newcastle line into Eraring);
- Line terminal up-rates: UTSS-Canberra No 1; UTSS – Yass No 2; LTSS – Yass No 3; LTSS – Canberra No 7; Marulan – Avon; Marulan – Dapto; Marulan – Yass Bayswater – Liddell No 33 and No 34; Vales Pt – Newcastle No 24; Munmorah – Tuggerah; and
- Capacitor Banks: Sydney West 330 kV 200 MVAR; Vales Pt 330 kV 2 x 200 MVAR; Canberra 132 kV 120 MVAR; Darlington Pt 132 kV 2 x 20 MVAR; Sydney region 330 kV 5 x 200 MVAR (2 x 2006/07, 2 x 2007/08, 1 x 2008/09); Regentville 80 MVAR.

**Contingent Project: QNI upgrade (Series compensation at Dumaresq) and Yass - Wagga transmission line**

**Related projects included within the ex ante cap:**

- QNI - 132 kV Phase angle regulator at Armidale
- Refurbishment of the 132 kV Yass-Wagga line (990)

Regard should also be had to the augmentations listed in the 'Augmentation of capacity to Newcastle-Sydney-Wollongong corridor' contingent project discussed above. Some of these projects also relate to maintaining the capability of the existing system, including facilitating the transfer of power from interconnectors. The projects which may be linked to maintaining the transfer capability from the VIC/Snowy interconnector would be:

- Line terminal up-rates: UTSS-Canberra No 1; UTSS – Yass No 2; LTSS – Yass No 3; LTSS – Canberra No 7; Marulan – Avon; Marulan – Dapto; Marulan – Yass.
- Capacitor Banks: Canberra 132 kV 120 MVAR; and Darlington Pt 132 kV 2 x 20 MVAR.

## **Appendix H Submissions on TransGrid's Revenue Cap application**

Bardak Group  
Benchmark Economics  
Delta Electricity  
ElectraNet  
Energy Action Group (EAG)  
EnergyAustralia (EA)  
Energy Markets Reform Forum (EMRF)  
Energy Retailers Association of Australia (ERAA)  
Energy Users Association of Australia (EUAA)  
Ergon Energy  
Joint Customer Groups Submission on behalf of:

- Australian Business Ltd
- Australian Consumers Association
- Energy Action Group
- Energy Users Association of Australia
- National Farmers' Federation

Macquarie Generation  
National Generators Forum  
Mr Robert Needham  
Powerlink  
SPI PowerNet  
Total Environment Centre Inc.  
Transend Networks  
TransGrid  
Tri Star Corp.  
TXU  
Victorian Energy Networks Corporation (VENCorp).