Decision

Tasmanian Transmission Network Revenue Cap 2004–2008/09

10 December 2003

File No:
C2001/1100

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Glossary

ACCC	Australian Competition and Consumer Commission
ACG	Allen Consulting Group
AR	Allowed Revenue
Aurora	Aurora Energy Pty Ltd
BPL	Basslink Pty Ltd
Capex	Capital Expenditure
CAPM	Capital Asset Pricing Model
code	National Electricity Code
CPI	Consumer Price Index
DRP	Draft Statement of Principles for the Regulation of Transmission Revenues
EAG	Energy Action Group
EBIT	Earnings Before Interest and Tax
EUAA	Energy Users Association of Australia
GHD	GHD Pty Ltd
GWh	Giga Watt hour
HEC	Hydro-Electric Corporation
IDC	Interest During Construction
kV	Kilovolt
MAR	Maximum Allowed Revenue
MEG	Major Employers Group
Meritec	Meritec Pty Ltd
MNSP	Market Network Service Provider
MRP	Market Risk Premium
MW	Mega Watt
NECA	National Electricity Code Administrator
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company
NOCS	Network Operation Control System
NPV	Net Present Value
ODRC	Depreciated Optimised Replacement Cost
Opex	Operating and Maintenance Expenditure
OPGW	Overhead Powerline Ground Wire
OTTER	Office of the Tasmanian Energy Regulator
PI	Performance Incentive
RAB	Regulatory Asset Base
RNPP	Reliability and Network Planning Panel
S&P	Standard and Poor's
SKM	Sinclair Knight Merz
SPS	System Protection Scheme
TCCI	Tasmanian Chamber of Commerce and Industry
TEC	Tasmanian Electricity Code
TNSP	Transmission Network Service Provider
TPA	Trade Practices Act 1974
Transend	Transend Networks Pty Ltd
TWEM	Tasmanian Wholesale Electricity Market
WACC	Weighted Average Cost of Capital

1 Summary

1.1 Introduction

1.1.1 Legal framework

Tasmania intends to join the National Electricity Market (NEM) in 2005.

The Australian and Tasmanian governments have agreed that the Australian Competition and Consumer Commission (ACCC) will regulate Transend Networks Pty Ltd's (Transend) revenue prior to Tasmania's entry into the NEM.

Chapter 6, part B of the National Electricity Code (code) specifies that the ACCC will regulate the revenues of Transmission Network Service Providers (TNSP) in the NEM. It sets out the objective, principles and form of economic regulation.

As the provisions of chapter 6, part B of the code will not apply until NEM-entry occurs, the ACCC will set a revenue cap for Transend in accordance with the Tasmanian Electricity Code (TEC). However, to ensure that the revenue cap will be consistent with the requirements of the code once Tasmania joins the NEM, the TEC has been amended to include provisions similar to chapter 6, part B of the code.

This means that for all practical purposes the ACCC will apply the same regulatory regime to Transend that it applies to TNSPs currently in the NEM. Once Tasmania enters the NEM the ACCC will regulate Transend's revenue under the code.

1.1.2 Process

Transend owns and operates the electricity transmission network in Tasmania. It commenced trading on 1 July 1998, following the disaggregation of the Hydro-Electric Corporation (HEC).

Transend submitted its application for a revenue cap on 14 March 2003. The ACCC engaged GHD Pty Ltd to review key elements of the application. GHD completed its report on 30 June 2003.

The ACCC released its draft decision on 26 September 2003 and held a public forum in Hobart on 17 October 2003. It has consulted with Transend, interested parties and relevant Tasmanian authorities in making this final decision.

The decision should be read in conjunction with other relevant material on the ACCC's website such as Transend's application, GHD's report, submissions from interested parties, draft decision and relevant correspondence.

The decision covers the (regulatory) period 1 January 2004 to 30 June 2009.

1.2 Opening asset base

1.2.1 Jurisdictional valuation

Clause 6.2.3(d)(4) of the TEC requires the ACCC to value sunk assets at the value determined by the Tasmanian Minister, provided it does not exceed deprival value.

The ACCC accepted the Treasurer's valuation of Transend's asset base as at 31 June 2001 of $522m, as the ACCC was not satisfied that the valuation exceeded the deprival value. Such an approach is consistent with the practice for valuing the regulatory asset base (RAB) adopted by the ACCC in its previous revenue cap decisions.

The ACCC notes that the Tasmanian Minister's valuation is significantly higher than previous valuations used by the Tasmanian Regulator.

The ACCC estimates that the revaluation results in an increase of approximately $7m in Transend's annual allowed revenue (AR), which will result in higher transmission charges without any benefit to customers. Also such an increase in revenue will translate directly to profits, as Transend has not incurred any additional expenses.

1.2.2 Comparison of asset base valuations

Table 1.1 Comparison of valuations 30 June 2001 ($m, 2000–01)

Valuation	$m
SKM (for OTTER 1999 Pricing Determination[1])	453
SKM (for Transend)	563
Meritec (for Tasmanian Treasury[2])	525
Transend's application[3]	522

1. In 1999 Sinclair Knight Merz (SKM), engaged by the Office of the Tasmanian Energy Regulator (OTTER), valued Transend's RAB as at 1 July 1998 at $333m. This amount, after adjusting for actual capital expenditure, depreciation and disposals, results in $410m as at 30 June 2001 (table 3.4). In 30 June 2001 dollars, this equates to $453m (table 3.5).
2. In 2002 SKM, engaged by Transend, revalued the RAB at $563m. However Meritec, engaged by Tasmanian Treasury, reviewed the valuation and recommended $525m. This valuation was adopted by the Tasmanian Government.
3. Meritec valuation less customer contributed assets of $3.3m.

The main reasons for the higher valuation over the Office of the Tasmanian Energy Regulator's (OTTER) valuation include:

- an increase in the easement valuation, mainly notional transaction costs incurred in acquiring easements (accounting for about half of the increase)
- revaluation and reinstatement of previously depreciated assets
- an increase in equipment unit replacement costs.

The ACCC is particularly concerned with the valuation of transaction costs to acquire easements which bear little resemblance to actual costs.

1.2.3 Comments by interested parties

Interested parties strongly objected to the revaluation of the RAB by the Tasmanian Government. They considered that such a large increase would result in greater revenue and profits for Transend without any improvement in service for customers.

1.2.4 ACCC assessment of opening asset base

As stated earlier, the code and TEC requires the ACCC to adopt the Minister's valuation of the RAB. In rolling forward the RAB, GHD found that an adjustment of $0.3m was required because of an error in indexing for inflation. The ACCC accepted this recommendation. Hence the asset base value as at 31 December 2003 is $604m as shown in table 1.2.

Table 1.2 RAB as at 31 December 2003 ($m, nominal)

Jurisdictional valuation 30 June 2001[1]		521.6
From 1 July 2001 to 31 Dec 2003:	Capital additions	120.3
	Disposals	(8.4)
	Depreciation	(29.9)
RAB as at 31 December 2003		603.6

1. Meritec valuation less customer contributed assets of $3.3m.

1.3 Capital expenditure

1.3.1 Application

Transend separated its capital expenditure (capex) into two categories in its application.

- A fixed program of $331m consisting of projects that Transend considers are almost certain to be carried out during the regulatory period. The program includes development, renewals and non-network expenditure.
- Variable projects with probabilities ranging from 10 to 80 per cent. Transend has asked that these projects be funded on a pass-through basis, as and when they occur. It estimated the total cost of these projects to be around $150m in its application. This amount, however, is indicative only as the actual capex rather than the estimate would be used to calculate the revenue under Transend's pass-through proposal. The expected (probability weighted) value of these projects is about $60m.

1.3.2 GHD's review

In determining the recommended maximum of $341m capex allowance, GHD:

- reduced variable capex to about $13m by excluding certain projects
- deferred some renewals work until the next regulatory period ($3m)
- removed an error relating to substation development costs ($2.5m)
- reduced non-network expenditure ($3m)
- reallocated some refurbishment to capex ($6.2m).

GHD found that Transend had not considered the trade-offs between costs and risks or involved its customers in rationalising the program. Therefore, it recommended that the ACCC should further reduce the capex of $341m considering non-technical factors. Table 1.3 compares Transend's application with GHD's recommended maximum.

Table 1.3 Capex allowance for the regulatory period ($m, 2002–03)

Category	Application	GHD's recommendation
Development	109.2	109.2
Renewals	194.9	189.3
Reallocation of refurbishment[1]	-	6.2
Non-network	26.7	23.6
Total fixed capex	**330.8**	**328.3**
Variable	pass-through[2]	12.6
Total	**330.8**	**340.9**

1. GHD recommended that $6.2m of refurbishment expenses be transferred from opex to capex (the ACCC agrees with this reclassification).
2. Transend's estimate of variable capex was $150m, but on a probabilistic basis the expected value is about $60m.

1.3.3 Comments by interested parties

Interested parties stated that:

- the capex allowance in the draft decision is significantly higher than Transend's past capex programs which it was unable to deliver
- there may not be any load growth in Tasmania
- they support the capex controls suggested by the ACCC (see 1.3.5).

Transend's main concerns with the draft decision were that the ACCC had:

- mistakenly reduced the capex allowance for projects that have already passed the regulatory test
- imposed an arbitrary reduction which is effectively much higher than the 10 per cent, by excluding some generation-related connection and shared network assets (Transend claims that the effective reduction is around 21 per cent).
- advocated clawback which (Transend claims) is contrary to incentive regulation.

1.3.4 ACCC assessment of capex

The ACCC considers that a capex allowance of $307m appropriately balances the interests of consumers and Transend for the following reasons.

- The allowed amount is more than 25 per cent higher than the historical average on a comparable basis (including generation connections). There is insufficient evidence to diverge too far from the historical average.
- Tasmania's load growth is minimal and Transend has not proposed any improvements in service quality.

- Although Transend may be able to complete the projects in a technical sense (as suggested by GHD), efficient delivery would be more challenging with increases in the work program with scarce resources—especially given that Transend has been unable to meet its (lower) capex forecasts in the past.

- Transend's customers strongly object to the size of the program, indicating that they do not consider that the proposed capex provides value for money.

- Transend's capital program is proportionately larger (relative to the RAB) than those allowed for both the South Australian and Victorian networks.

- The distribution company in Tasmania (Aurora) states that most outages occur in the distribution network. It points to the disparity in the size of capex programs between itself and Transend and argues that better outcomes could be achieved by reallocating capex in a more balanced manner.

In its submission on the draft decision Transend argued that the 10 per cent across-the-board reduction was arbitrary and incorrectly applied. The ACCC notes that there are several ways to rationalise the capex. Its focus was on estimating a figure and then checking it for reasonableness. Considering the above factors the ACCC is still satisfied that $307m represents the high-end of the likely estimates for capex.

1.3.5 Capex controls

The following controls are required given the size of the program, its large renewal component, minimal load growth, lack of proposed improvement in service quality and uncertainty in Transend's operating environment.

- Transend should be required to demonstrate that its renewal expenditures are economically justified and that there are no better alternatives. The jurisdictional regulator's interests in Transend's asset management could be expanded to allow for such a process.

- At the end of the regulatory period the ACCC will compare the actual capex with the allowance, both for amount and timing, and consider adjusting for any variance.

1.3.6 Changes from draft decision

There are no changes from the draft decision concerning capex allowance.

1.4 Operating and maintenance expenditure

1.4.1 Application

In estimating the operating and maintenance expenditure (opex) allowance, Transend chose not to consider its past opex. Instead it assessed the expenditure requirements of each of its business units and totalled the amounts (i.e. it undertook a bottom-up assessment). The resulting opex claim is about $193m over the regulatory period or on average about $35m per annum (see tables 1.5 and 1.4 respectively).

Currently the system controller and network operations function are co-located with, but ring-fenced from, Transend. Its costs (about $10m per annum) are charged directly to market participants. Some of these functions will be transferred to Transend upon

NEM-entry and the others will be undertaken by the National Electricty Market Management Company (NEMMCO). The ACCC has considered this change in scope in making comparisons.

1.4.2 GHD's review

GHD developed its own forecast of Transend's opex requirements, mainly because of the disconnect between Transend's forecast and its past opex. GHD also found that Transend could not substantiate how future cost efficiencies were built into its forecasts and that it had not considered alternative levels of service and risk.

GHD started with the opex in Transend's latest audited financial statements (2001-02), removed one-off expenses and arrived at a base opex amount of $18.5m. It then adjusted the base opex (in the following order) for:

- inflation to 2002–03
- an efficiency factor of 2 per cent per annum
- additional tasks, including NEM-entry and participation, increased maintenance and telecommunication costs.

GHD's recommended allowance is shown in table 1.5. Total opex for the regulatory period is $156m, about $37m less than the total amount sought by Transend. This averages about $28m per annum, peaking in 2005–06 at $31m because of NEM-entry, and then reducing to about $27m and stabilising at that level.

1.4.3 Comments by interested parties

Interested parties generally consider the opex proposed by Transend to be an ambit claim. They also consider that the reductions in ACCC's draft decision are inadequate.

Transend has several concerns with GHD's trend analysis and considers that the recommended reduction is unattainable without compromising service levels.

1.4.4 Transend's historical opex

Transend has asked for a major increase in opex compared to previous levels (as shown in table 1.4).

Over the last four years Transend's actual opex has averaged around $20m, which excludes costs relating to the system controller function. As stated earlier, once Transend enters the NEM it will absorb some of the functions, the incremental cost of which is estimated to be about $5m annually. Therefore, comparable historical opex is about $25m per annum.

GHD's recommendation of opex stabilising at $27m after NEM-entry therefore represents an 8 per cent increase on comparable historical opex.

Table 1.4 Transend's historical opex ($m, 2002–03)

Year	Allowance [1]	Actual	Forecast[2]
1999–00	19.3	18.9	
2000–01	19.1	19.4	
2001–02	18.7	20.8	
2002–03	18.7	22.7	
Transend proposed			35.0
GHD recommended			28.0

1. Opex allowances exclude avoidable costs associated with those parts of the system controller function that Transend will be required to perform in the future, which are estimated to be $5m per annum. This amount needs to be added to the opex allowances to make them comparable with Transend proposed and GHD's recommended opex forecasts.
2. Average of Transend's and GHD's forecast opex across the regulatory period, includes the above mentioned costs. Though the average of GHD's estimate is about $28m, this stabilises after NEM-entry at $27m, approximating Transend's most recent actual opex (i.e. $22.7m + $5m)

1.4.5 ACCC benchmarking of opex

In benchmarking Transend's opex against that of other TNSPs the ACCC has calculated a suite of ratios such as opex per unit of circuit length, opex as a proportion of asset base, opex per substation, opex per unit of electricity transported and opex as a proportion of system peak demand.

Given the differences among TNSPs, any one ratio is unlikely to reflect the difference in performance. Each ratio has its limitations.

However, the ACCC believes that some ratios provide a more useful insight into relative performances. The ACCC considers that opex as a proportion of asset base and opex per unit of circuit length, while having some limitations, are more useful than the other ratios. Figures 1.1 and 1.2 show these two ratios for TNSPs.

Figure 1.1 Opex per RAB

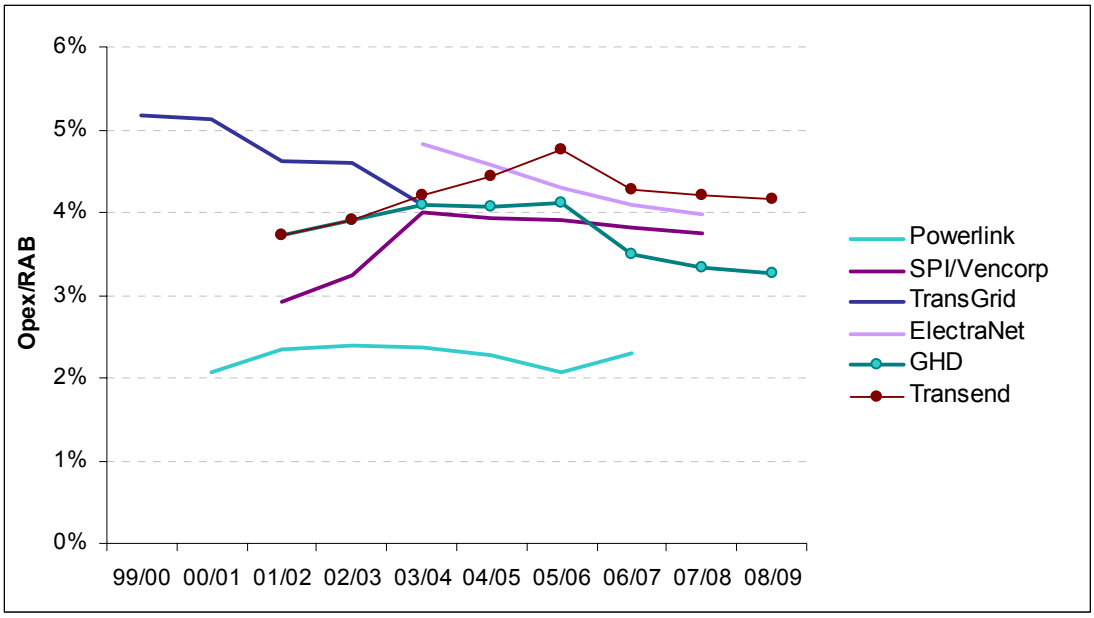
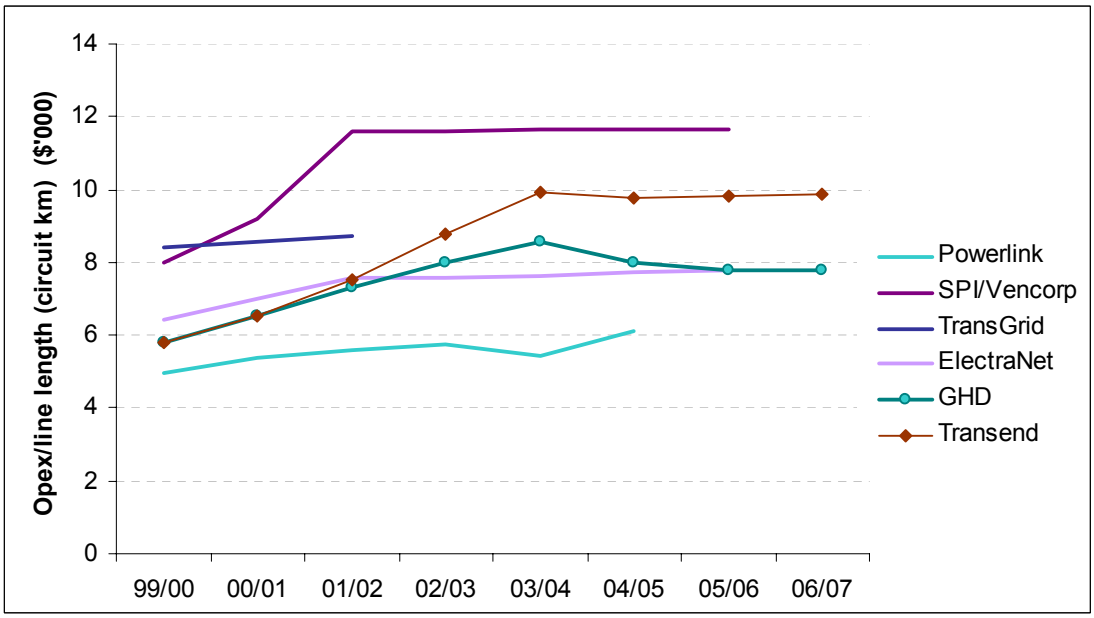


Figure 1.2 Opex per line (circuit) length



The ACCC is aware that there are legitimate reasons for differences between TNSPs such as operational and scale differences. Therefore, the fact that some of these ratios are higher or lower than others does not, of itself, suggest that Transend's efficiency is higher or lower than those of other TNSPs.

The ACCC does not use benchmarking to establish opex allowances, but rather as a guide to assess whether the allowance is reasonable. Figures 1.1 and 1.2 show that the opex allowance recommended by GHD appears to be appropriate.

1.4.6 ACCC assessment of opex

The ACCC does not use a cost-plus approach to determine opex. Rather, it focuses on efficient costs based on its consultant's expert advice, the application, submissions by

interested parties, historical opex levels, and its own analysis (including benchmarking).

The ACCC reviewed GHD's trend analysis and considers it to be appropriate as it:

- provides historical context (by using a base year, in this case 2001–02)—the choice of year is appropriate given that it is the most recent year where audited accounts are available and appropriate adjustments have been made to that year
- provides for scope increases from the base year by allowing costs for new activities such as NEM-entry and increased maintenance
- incorporates a reasonable efficiency factor of 2 per cent per annum, noting that the large renewals program should result in some opex efficiencies, firms in competitive markets seek continuous improvement, and that OTTER has applied a similar efficiency factor in the past.

The ACCC agrees with Transend that its operational environment will change during the forthcoming regulatory period, as Tasmania enters the NEM. However, it considers that Transend's core business will not change substantially.

Given the above, the ACCC considers that the increase recommended by GHD is appropriate. In fact a high level review of Transend's opex by the ACCC suggests that GHD's estimates are at the high end of the likely opex costs.

1.4.7 Changes from draft decision

The following changes will result in a net reduction of $2.38m from the draft decision over the regulatory period.

GHD's opex estimates (-$2.22m)

Costs relating to the transfer of system controller function were included in Transend's costs from 2004–05. As NEM-entry is expected to occur in May 2005, the costs should be included only from 2005–06. The impact of this is $2.2m reduction in opex.

Metering arrangements (+$0.6m)

Transend was unable forecast the opex costs of metering in its application as metering arrangements were not finalised at that time. Subsequently Transend advised that it would require $0.11m per annum to cover costs such as inspections, compliance tests and maintenance. The ACCC is satisfied with this and has included the costs in Transend's opex allowance (see table 1.5).

Under-recovery of returns relating to capex in 2003 (+$2.44m)

In 2002 the Tasmanian Government extended OTTER's 1999 price determination, maintaining the AR in real terms for an additional year (i.e. until 31 December 2003). To realise this decision, capital additions must equal depreciation for the calendar year 2003. However, Transend has advised that capex additions will exceed depreciation in 2003. It therefore sought an allowance of $2.44 million to be recovered in 2004 for the additional returns it should have earned on the overspend.

In its draft decision the ACCC did not allow for the under recovery, mainly because it was not clear that this is what the Tasmanian Government wanted. However, in November 2003 the Tasmanian Treasury wrote to the ACCC advising it was the Tasmanian Government's expectation that, consistent with the current Tasmanian regulatory approach, the revenue effects of any under or over recovery of capex in 2003 would form part of the revenue cap for 2004.

Based on the treasury's advice and discussions with OTTER the ACCC has now decided to include the under-recovery of $2.44m in the 2004 AR (table 1.5).

Equity raising costs (-$3.2m)

In its draft decision the ACCC allowed about $3.2m over the regulatory period to cover the costs associated with raising equity. However the ACCC now considers that these costs should not be allowed because Transend is not likely to incur any such expenses during the regulatory period and the ACCC provides a benchmark return on equity as calculated by the capital asset pricing model (CAPM).

Grid support (change in treatment)

In its draft decision the ACCC included a fixed opex allowance of $2m per annum for grid support. However, given that these costs are yet to be finalised, the uncertain nature of such costs, submissions from interested parties and GHD's recommendation, the ACCC has decided to allow this as a pass-through event provided these services are procured at efficient levels. In this context the ACCC understands that the Tasmanian Regulator has powers to investigate prices and undertake appropriate action if there are concerns about the market power of grid support providers.

The final impact of this change on AR will depend on the amount eventually paid by Transend to meet its grid support requirements.

Table 1.5 Opex allowance for the regulatory period ($m, 2002–03)

	Jan-Jun 2004	2004-05	2005-06	2006-07	2007-08	2008-09	Total
Application[1]	16.0	33.4	36.5	36.9	35.0	35.2	193.0
GHD forecast[2]	13.1	27.6	30.9	29.7	27.2	27.1	155.6
Debt raising costs[3]	0.18	0.39	0.42	0.43	0.46	0.46	2.3
Metering costs	0.06	0.11	0.11	0.11	0.11	0.11	0.6
Sub total	**13.3**	**28.1**	**31.4**	**30.2**	**27.8**	**27.7**	**158.5**
Under-recovery[4]	2.44	-	-	-	-	-	-
Total	**15.8**	**28.1**	**31.4**	**30.2**	**27.8**	**27.7**	**161.0**

1. Transend's opex forecast includes equity raising costs but not debt raising costs or costs associated with energy metering. Transend's debt raising costs were included in its WACC calculation.
2. GHD's forecast does not include equity raising, debt raising or the additional energy metering costs.
3. The ACCC estimates an average allowance of $0.42m per annum for debt raising costs.
4. Amount provided to compensate for under-recovery of revenue in 2003 because of capital overspend.

1.5 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 CAPM to estimate a fair rate of return on equity, which is then applied in the ACCC's post-tax revenue model.

Table 1.6 contains the parameters used to determine the weighted average cost of capital (WACC). It compares the parameters proposed by Transend in its application, the draft decision and the final decision.

The parameters have been calculated in accordance with the ACCC's Draft Statement of Principles for the Regulation of Transmission Revenues (DRP) and are consistent with its previous decisions. The parameters vary over time, according to market conditions. They have been calculated on the date of this decision.

Table 1.6 Comparison of WACC parameters

Parameter	Application	Draft decision	Final decision
Nominal risk-free interest rate (R_f)	5.24 %	5.43 %	5.86 %
Expected inflation rate (F)	1.95 %	2.21 %	2.32 %
Debt margin (over R_f)	1.45 %	0.80 %	0.91 %
Cost of debt $R_d = R_f$ + debt margin	6.69 %	6.23 %	6.77 %
Market risk premium (MRP)	6.00 %	6.00 %	6.00 %
Gearing ratio	60 %	60 %	60 %
Value of imputation credits (γ)	50 %	50 %	50 %
Asset beta (β_a)	0.45	0.40	0.40
Debt beta (β_d)	0.00	0.00	0.00
Equity beta (β_e)	1.12	1.00	1.00

Table 1.7 compares the WACC's proposed by Transend, the draft decision and the final decision. Apart from parameter changes because of timing, there have been no other changes from the draft decision. However, the first three parameters shown in table 1.6 have increased significantly since the draft decision. This has resulted in a substantial increase in the WACC (table 1.7) and the AR across the regulatory period (table 1.8).

Table 1.7 Comparison of the WACC

	Application (%)	Draft decision (%)	Final decision (%)
Nominal post-tax return on equity	11.96	11.41	11.84
Post-tax nominal WACC	-	6.63	7.00
Pre-tax real WACC	-	6.51	6.95
Nominal vanilla WACC	8.80	8.30	8.80

1.6 Total allowable revenue

The ACCC has determined a revenue allowance for Transend that increases from $100m in 2003–04 to $137m in 2008–09. As can be seen in table 1.8 the ACCC's decision includes the six month period 1 January 2004 to 30 June 2004. The revenue figure for 2003–04 was obtained by appropriately adjusting the six-month revenue amount of $50m.

Table 1.8 Transend's smoothed AR from Jan 2004 to 2008–09 ($m, nominal)

	Jan-Jun 04	2003-04[1]	2004-05	2005-06	2006-07	2007-08	2008-09
Final	**49.96**	**100.20**	**106.73**	**113.69**	**121.10**	**128.99**	**137.40**

1. 2003-04 included for comparison purposes only. The ACCC's revenue cap covers the period 1 January 2004 until 30 June 2009.

The decision is based on forecast inflation and applies a smoothing factor. Actual inflation figures will be substituted for the forecasts when they become known.

The maximum allowed revenue (MAR) will be determined by adding (or deducting) the service standards reward (or penalty) amount and pass-through amounts to the above AR. Table 1.9 summarises the key elements of the ACCC's decision.

Table 1.9 Allowable revenue and its components ($m)

	Application	Draft decision	Final decision
RAB at 31 December 2003	604	604	604
Capex pa[1] (avg)	71	56	56
Opex pa (avg)	35.0[2]	29.3[2]	28.3
Debt raising costs pa (avg)	0.4	0.4	0.4
Metering costs pa.	-	-	0.1
Grid support pa. [3]	Pass-thru	2.0	Pass-thru
Total opex pa.	35.4	31.7	28.8
Nominal vanilla WACC	8.80%	8.30%	8.80%
Allowable revenue (2004–05)[4]	**113**	**103**	**107**

1. Includes fixed and variable components on a probability weighted basis.
2. Includes equity raising costs.
3. Transend sought pass-through of grid support in its application and in its final decision the ACCC has allowed for pass-through of such costs.
4. Allowable revenue in first full year of revenue cap.

As shown in table 1.9 the reduction in opex since the draft decision has been more than offset by the substantial increase in WACC as a result of the change in parameters over which the ACCC has no control.

1.7 Changes in total revenue

This section illustrates the changes in Transend's revenue and its impact upon transmission charges. Adjustments and estimates have been made to make the revenues comparable. Therefore figures 1.3 to 1.5 are approximate and for illustrative purposes only.

Figure 1.3 Revenue comparison 2003–04 to 2008–09 ($m, nominal)

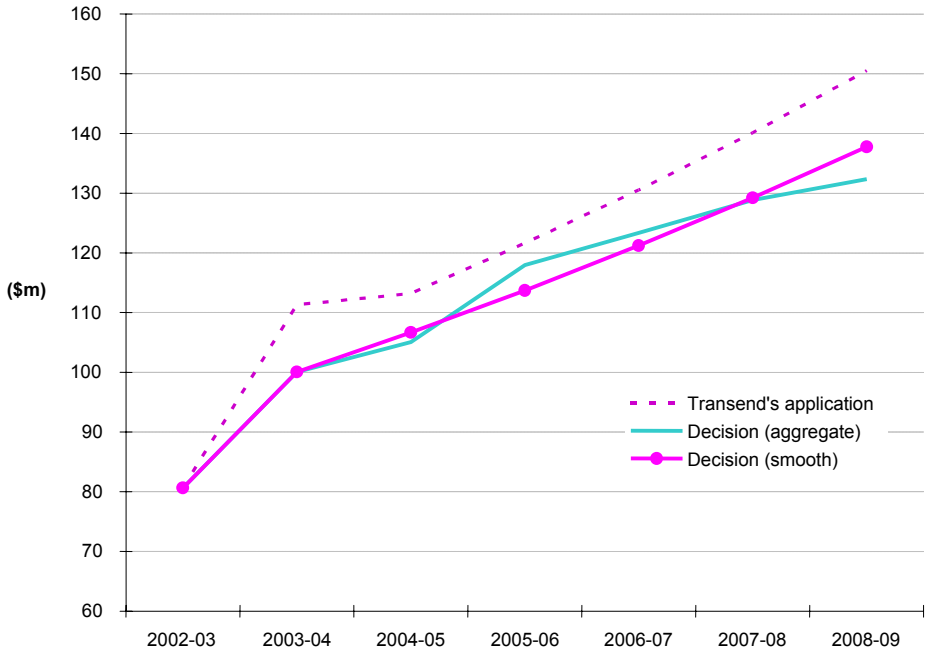
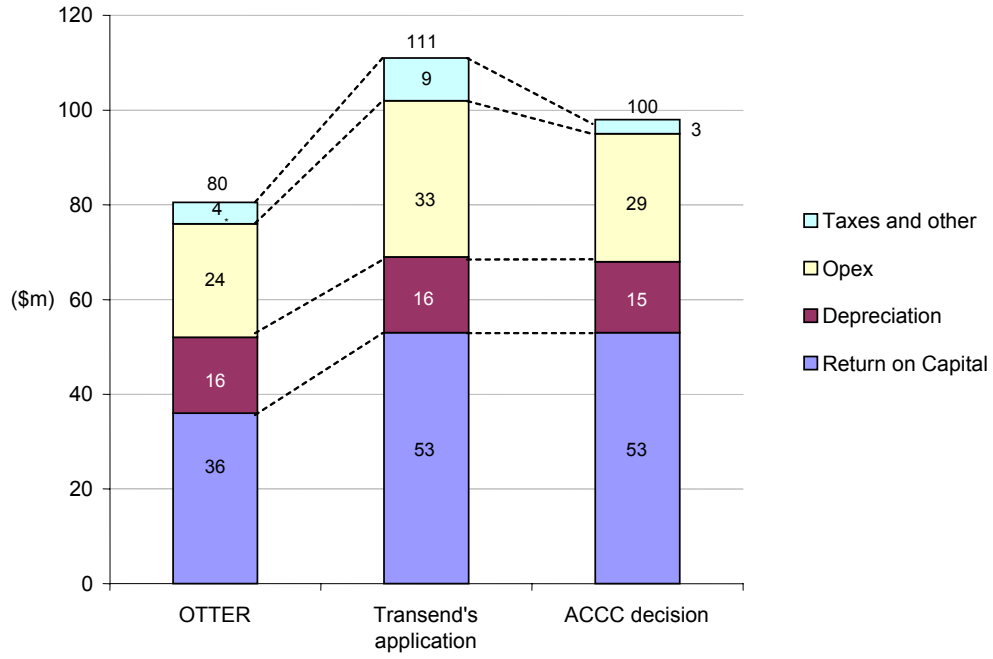


Figure 1.4 Comparison of building block components ($m, nominal)



Transend's AR is currently around $71m (2003 calendar year). To make Transend's 2003 revenue comparable with forecasts the incremental costs of the system controller function amounting to about $5m, taxes of $2m and $2.44m for revenue underrecovered in 2003 should be added (i.e. comparable 2003 calendar year revenue is around $80m).

Transend has asked for an AR of $111m in 2003–04. However, the ACCC's final decision for 2003–04 provides an AR of $100m (figure 1.4). This includes $2.44m of under-recovery in 2003.

The decision allows a significant increase in revenue (about 28 per cent) in the first year. The revaluation of the RAB is a major contributor to this steep increase. However, as stated earlier the ACCC has adopted the Minister's valuation. Another contributor is the compensation for the capex overspend in the previous regulatory period. In total these account for about half of the initial increase in revenue.

Subsequent increases in revenue over the regulatory period are significant, though not as steep (about a 7 per cent increase per annum in nominal terms over the period). This is mainly driven by the large capex program.

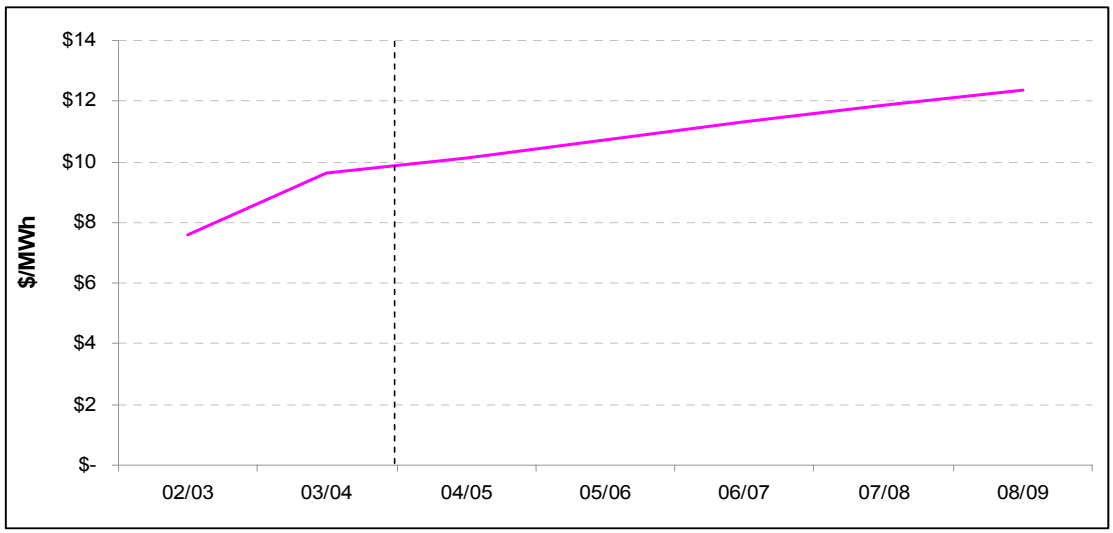
In summary Transend's revenues will increase substantially. Managing this cash flow will require significant engineering, finance and project management expertise.

1.7.1 Impact on transmission charges

Several forecasts indicate that load growth in Tasmania will be minimal over the regulatory period. Therefore increases in AR will translate to increases in transmission charges. The effect on individual customers will depend on the pricing mechanism.

The ACCC estimates that its decision will result, on average, in a 9 per cent per annum increase (in nominal terms) in transmission charges over the regulatory period. Figure 1.5 shows the resulting price path of this decision.

Figure 1.5 Illustrative price path 2003–04 to 2008–09 ($/MWh)



1.8 Service standards

1.8.1 The ACCC's performance incentive scheme

The code requires the ACCC to take into account service standards when setting revenue caps. The ACCC has developed a performance incentive (PI) scheme that reduces the incentive for TNSPs to achieve cost reductions at the expense of service levels.

The PI scheme is based on five performance indicators, of which three are currently operational. TNSPs' average performance during the previous three to five years usually becomes its target. However, such a target may be adjusted for factors affecting future performance (such as in Transend's case). TNSPs are rewarded for improvements over targets and penalised for deteriorations. The maximum penalty or reward is 1 per cent of the AR. Overall the scheme is designed to have an expected value of zero.

1.8.2 GHD's review

GHD considered the service indicators chosen by Transend to be appropriate and in accordance with the ACCC's draft service standards guidelines.[1] However, it concluded that the performance targets chosen by Transend did not appear to be challenging when compared with past performance. GHD recommends alternative targets be adopted, based on some allowance for reasonable improvements in performance as a result of current and planned capex and improved work practices.

1.8.3 ACCC assessment of service standards

The ACCC agrees with GHD that the service indicators proposed by Transend are appropriate. It also agrees that current and planned investment, as well as improved work practices, should result in a net improvement in Transend's service performance. Therefore, the ACCC accepts the alternate targets and weightings recommended by GHD.

[1] On 12 November 2003 the ACCC finalised its Service Standards Guidelines. A copy of the Guidelines can be obtained from the ACCC's website.

2 Introduction

2.1 Background

This document sets out the ACCC's decision on Transend's revenue cap application.

Transend owns and operates the electricity transmission network in Tasmania. OTTER is currently responsible for regulation of the electricity supply industry in Tasmania.

Basslink Pty Ltd (BPL) is constructing a direct current undersea electricity cable connecting Tasmania to the mainland. The Basslink project is expected to be completed by November 2005. Basslink will operate as a Market Network Service Provider (MNSP).

Tasmania will join the NEM six months before the completion of Basslink (currently planned to be May 2005). After this, as stipulated by the code, the ACCC will regulate Transend.

However, the Australian and the Tasmanian governments have agreed that the ACCC will begin to regulate Transend from 1 January 2004. As this is before Tasmania enters NEM, the provisions of the code do not apply. Hence regulation will be under the provisions of the TEC. The legislative and regulatory arrangements that enable this are outlined in appendix A.

Part B of chapter 6 of the code has been incorporated into the TEC to ensure that Transend's revenue cap will be consistent with the requirements of the code. Hence for all practical purposes the ACCC will apply the same regulatory regime to Transend as it applies to TNSPs in the NEM.

This revenue-cap covers transmission services defined by the code and the TEC and associated activities to be regulated by the ACCC, provided by Transend.

The Tasmanian electricity regulations use the word determination to describe the process by which the Tasmanian Regulator sets the revenue cap. However, Part VII of the TPA requires the ACCC to use the (same) word determination relating to applications of authorisations. Therefore to avoid confusion the ACCC has used the word decision in its previous revenue cap decisions. The ACCC prefers to be consistent with this past practice and has used the term decision in this report. But both decision and determiniation have the same meaning.

2.2 Code requirements

The code establishes a regulatory framework which:

- provides that the ACCC will determine the revenue caps to be applied to the non-contestable elements of participating TNSPs
- sets out how those regulated revenues will be translated into network charges.

Objectives and principles of the regulatory regime

The code establishes that:

1. the transmission revenue regulatory regime must achieve outcomes which:
   - (a) are efficient and cost effective
   - (b) are incentive based, including the sharing of efficiency gains between network users and owners as well as the provision of a reasonable rate of return (without monopoly rents) to network owners
   - (c) foster efficient investment in the transmission sector and upstream and downstream of it
   - (d) foster efficient operation, maintenance and use of network assets
   - (d) recognise pre-existing government policies on asset values, revenue paths and prices
   - (e) promote competition
   - (f) are reasonably accountable, transparent and consistent over time.
2. the regulation of aggregate revenue of transmission networks must:
   - (a) be consistent with the regulatory objectives (see 1 above)
   - (b) address monopoly pricing concerns, wherever possible, through the competitive supply of network services but otherwise through a revenue cap
   - (c) promote efficiency gains and a reasonable balance between network augmentations and supply and demand side options
   - (d) promote a reasonable rate of return to network owners on an efficient asset base where:
   - (i) the value of new assets is consistent with take-or-pay contracts or augmentation determinations
   - (ii) the value of existing assets are determined by jurisdictional regulators and must not exceed their deprival values
   - (iii) any asset revaluations undertaken by the ACCC are consistent with Council of Australian Government decisions.
3. the form of the economic regulation shall:
   - (a) be a revenue cap with a CPI-X incentive mechanism, or some other incentive based variant, for each network owner and/or service provider
   - (b) have a regulatory control period of not less than five years
   - (c) take into account expected demand growth, service standards, weighted average cost of capital, potential efficiency gains, a fair and reasonable risk adjusted return on efficient investment and ongoing commercial viability of the transmission industry
   - (d) only apply to those services the ACCC does not expect to be offered on a contestable basis.

Source: National Electricity Code, clauses 6.2.2 - 6.2.5.

In May 1999 the ACCC published its DRP[2], setting out how it proposes to regulate transmission network revenues. The ACCC is currently reviewing them and has released a discussion paper for public consultation.[3]

Transend's revenue cap has been determined using a building block approach. That is, various components (building blocks) of the revenue cap are assessed individually on an accrual basis and then combined. Discussion of the building blocks is contained in chapter 7.

2.3 Process issues

The ACCC will set a revenue cap for Transend from 1 January 2004 until 30 June 2009. A period of five and a half years has been chosen to align Transend's regulatory period with the Australian financial year (ending 30 June). This will simplify the reporting and forecasting processes outlined in the ACCC's Information Requirements Guidelines[4], thus minimising compliance costs.

The ACCC's subsequent decisions are likely to cover a five year period.

This decision does not extend to assets owned and operated by Aurora, which is the electricity distribution and retail company in Tasmania. Aurora will continue to be regulated by OTTER.

Revenue cap setting process

As part of the revenue cap setting process the ACCC:

- received an application from Transend on 14 March 2003
- engaged GHD to assess Transend's RAB roll-forward, capital and operational expenditure forecasts and proposed service standards
- invited interested parties to comment on the application and GHD's report
- consulted with Transend, other interested parties and relevant government agencies such as OTTER and the Tasmanian Treasury
- released its draft decision on 26 September 2003 and invited interested parties to comment on it
- further consulted with Transend, other interested parties and relevant government agencies
- at the request of Transend, held a public forum in Hobart on 17 October 2003.

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2 ACCC, Statement of Principles for the Regulation of Transmission Revenues – Draft, 27 May 1999.

3 ACCC, 2003 Review of Draft Statement of Principles for the Regulation of Transmission Revenues – Discussion Paper, 28 August 2003.

4 ACCC, Statement of Principles for the Regulation of Transmission Revenues - Information Requirements Guidelines, 5 June 2002.

A copy of Transend's application, GHD's report, the ACCC's draft decision and submissions from interested parties are available on the ACCC's website.[5]

2.4 Structure

The structure of this decision is shown in table 2.1.

Table 2.1 Report Structure

Chapter	Description
3	Establishing the regulated asset base at 31 December 2003
4	Estimating the capex allowance for the regulatory period
5	Estimating the opex allowance for the regulatory period
6	Calculating the weighted average cost of capital
7	Calculating the total allowable revenue
8	Establishing service standard incentives

2.5 Overview of Transend's network

History

Before 1998 the Hydro-Electric Corporation (HEC) of Tasmania was the sole provider of the entire electricity service (i.e. generation, transmission and distribution/retail) in Tasmania.

On 1 July 1998 the HEC was disaggregated into:

- Transend (for transmission)
- Aurora (for distribution and retail)
- Hydro Tasmania (for generation).

Transend's network

Transend transports electricity from 28 power stations to substations around Tasmania. It owns 3500 circuit kilometres of transmission lines covering 2300 route kilometres, 45 substations and 10 switching stations.

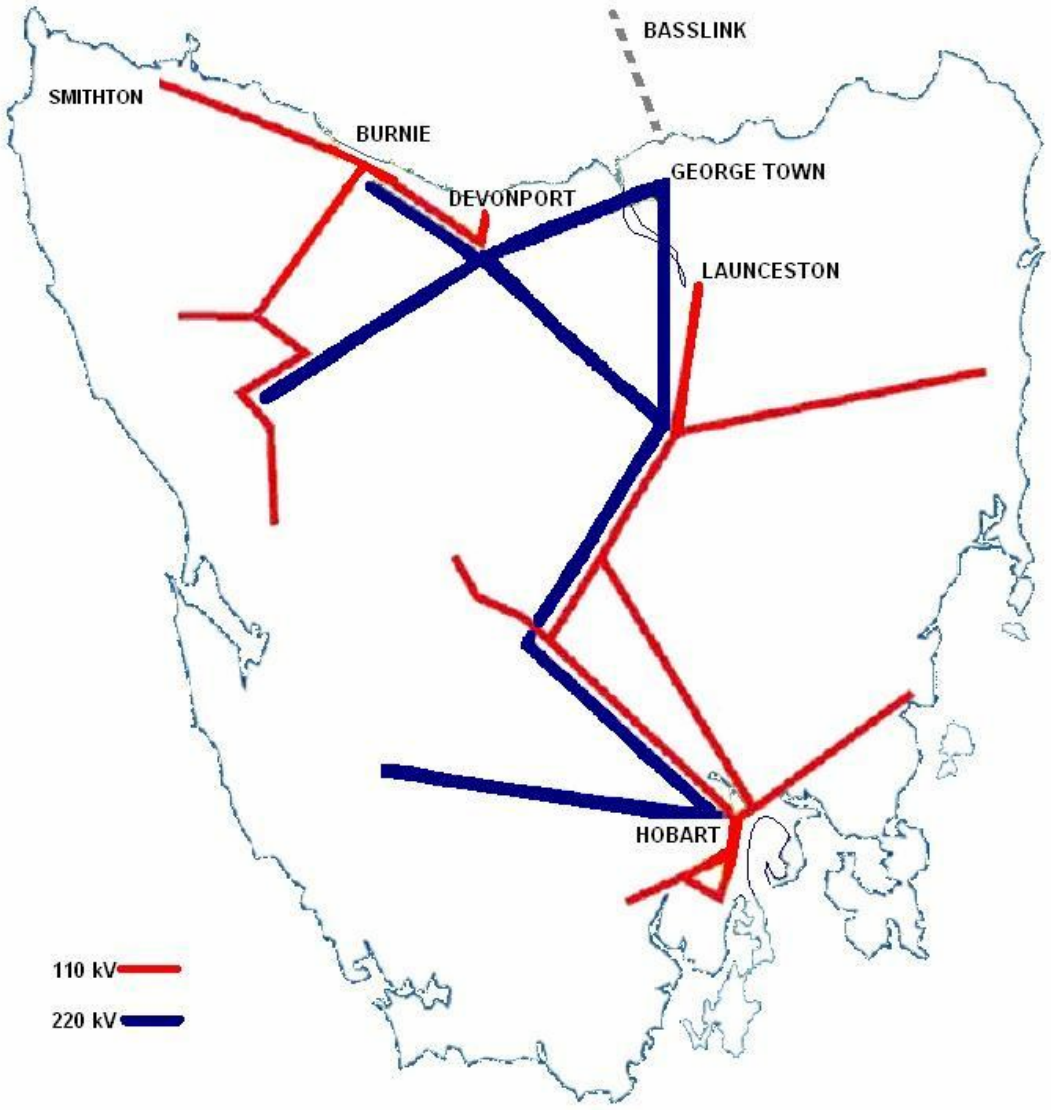
Tasmania has several features which affect the configuration and operation of Transend's network including:

- Hydrogeneration being the dominant form of generation (resulting in wide dispersion of generation, relatively small generator size, low generation load factor and seasonality of generator operations)
- a relatively small number of large electricity users (the top five electricity users in Tasmania consume about 60 per cent of the total load)
- small, highly dispersed population (Tasmania has a population of 472 ,000).

[5] www.accc.gov.au

Figure 2.1 contains a simplified map of Transend's network, showing the basic layout of the network and the main load centres.

Figure 2.1 Transend's network



3 Opening asset base

3.1 Background

The ACCC must determine the value of Transend's non-contestable transmission assets as at 1 January 2004 as a part of its decision.

OTTER is responsible for regulating Transend until 31 December 2003. It made Transend's last price determination in November 1999[6]. Its determination covered the period 1 January 2000 to 31 December 2002 and was subsequently extended for a further year.

For the purpose of the determination, OTTER valued Transend's RAB at $333m as at 1 July 1998. This was based on a valuation undertaken by Sinclair Knight Merz (SKM).

As part of its investigation OTTER forecast Transend's RAB as at 30 June 2001 to be $433m. OTTER's roll-forward of the 1 July 1998 valuation is shown in Table 3.1.

Table 3.1 OTTER's forecast RAB ($m, July 1998)

RAB at 1 July 1999	333
Add: Capital additions	151
Less: Depreciation	46
Less: Asset disposals	5
RAB at 30 June 2001	**433**

Transend was unable to spend the $151m allowed by OTTER. The actual amount it spent from 1 July 1998 to 30 June 2001 was $128m, as shown in Table 3.4.

3.2 Code requirements

In determining the opening RAB the ACCC is bound by clause 6.2.3(d)(4) of the TEC. This clause requires the ACCC to value Transend's sunk assets at a value determined by the Tasmanian Minister, provided the value does not exceed deprival value. 'Deprival value' is defined by the code as the lesser of economic value and depreciated optimised replacement cost (ODRC).

The ACCC has limited power to initiate an inquiry into a valuation determined by the Tasmanian Minister. The ACCC may seek to have the Minister's valuation verified independently through a process agreed to by the National Competition Council (NCC). The scope of any independent verification is limited to inquiring whether the Minister's valuation exceeds deprival value.

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6 OTTER, *Investigation into electricity supply industry pricing policies final report*, November 1999.

In the past the ACCC has stated that it would accept the jurisdictional valuation determined for the opening RAB. But when there was no such determination the ACCC had valued the RAB consistent with the RAB established in the participating jurisdiction, provided it did not exceed deprival value.

3.3 Jurisdictional valuation

In 2002 Transend engaged SKM to revalue its RAB as at 30 June 2001. It valued Transend's asset base at $563m.

Tasmanian Treasury then engaged Meritec Pty Ltd (Meritec) to review SKM's valuation. The Tasmanian Treasurer accepted Meritec's valuation of $524.9m. Under the TEC, this is the jurisdictional valuation for Transend. The jurisdictional valuation is summarised in Table 3.2 and a Tasmanian Treasury paper on the valuation is available on the ACCC's website.

Table 3.2 Jurisdictional valuation as at 30 June 2001 ($m, nominal)

	Replacement cost	Optimised replacement cost	Depreciated replacement cost	Optimised depreciated replacement cost
Substations	509	508	255	254
Transmission lines	485	460	221	209
Easement:				
Compensation costs	12	12	12	12
Acquisition costs	36	36	36	36
Other assets	24	24	14	14
Total	**1066**	**1040**	**537**	**525**[1]

1. This includes $3.3m of customer contributions, which results in the RAB value of $521.6m.

3.4 Transend's proposal

In its application Transend proposed a value of $603.8m at 31 December 2003. Its opening RAB is based on the jurisdictional valuation set at 30 June 2001, plus capital commissioned and less capital retired, depreciation and customer capital contributions. Table 3.3 shows how the RAB has been calculated.

Table 3.3 Transend's RAB roll-forward ($m, nominal)

	2001-02	2002-03	Jul-Dec 2003
Opening RAB (jurisdictional valuation)	521.6	542.2	581.7
Capital addition (net)	34.0	54.7	32.0
Depreciation	(13.4)	(15.2)	(9.9)
Closing RAB	**542.2**	**581.7**	**603.8**

3.5 GHD's review

GHD reviewed Transend's roll-forward of the jurisdictional valuation ($521.6m) to 31 December 2003 and recommended three amendments.

- During the six months to 31 December 2003, Transend used a Consumer Price Index (CPI) of 1.95 per cent to roll capex into the RAB but a CPI of 0.97 per cent to roll the RAB forward. GHD suggested 0.97 per cent for both. (The ACCC accepts this recommendation.)

- Acquisition costs for both easement and site should be amortised along with the related assets. Transend inflated the acquisition costs by the CPI to maintain the value in real terms but did not amortise them. These costs were not amortised in the jurisdictional valuation. (The ACCC does not accept this recommendation.)

- Transend provide to the ACCC actual, rather than forecast, capital works commissioned during 2002–03 when it became available, which it has done.

In its application Transend forecast $55m of capital works being commissioned during 2002–03. However, the actual capital commissioned shows that about $12m worth of projects have been delayed until the next financial year.

GHD's roll-forward of the jurisdictional valuation to 31 December 2003 was $598m.

3.6 Issues and interested party submissions

Interested parties raised similar issues on the draft decision regarding the RAB as they raised on Transend's application. These issues are, again, discussed below.

3.6.1 Jurisdictional valuation

Aurora, Tasmanian Chamber of Commerce and Industry (TCCI), Major Employers Group (MEG), Energy Users Association of Australia (EUAA)/ Energy Action Group (EAG) and Hydro Tasmania state that the jurisdictional valuation of $521.6m is too high. They note that OTTER's forecast RAB value for Transend was only $433m.

Aurora noted that the asset base calculated by OTTER included forecast capex, which Transend did not actually spend. Table 3.4 shows OTTER's forecast RAB, using the actual capex of $128m, rather than the $151m forecast.

Table 3.4 RAB from 1998–99 to 2000–01 ($m, July 1998)

	Amount
RAB as at 1 July 1998	333
Add: Capital additions (actual)	**128**
less: Depreciation	46
less: Disposals	5
RAB as at 1 July 2001	**410**[1]

1. Shown in July 2001 dollars in table 3.5.

The ACCC rolled forward OTTER's opening RAB to 1 July 2003. It accounted for actual net capex, depreciation and inflation. The result was a RAB of $502m as shown in Table 3.5. The ACCC also rolled forward the jurisdictional valuation to 1 July 2003, adjusting for actual net capex, depreciation and inflation. The result was a RAB of $570m as shown in Table 3.5.

The jurisdictional valuation is $68m (or 14 per cent) higher than OTTER's valuation.

Table 3.5 Asset base comparison ($m, July 2001)[1]

	Jurisdictional valuation	OTTER opening RAB plus actual capex
RAB as at 1 July 2001	522	453[2]
add: Net capital additions	**77**	**77**
less: Depreciation	28	28
RAB as at 1 July 2003	**570**	**502**

1 Totals may not add due to rounding.
2 Shown in July 1998 dollars ($410m) in Table 3.4.

Easements

One of the main contributors to the increase in the RAB is the value of easements. The valuation of Transend's easements are summarised in Table 3.6.

Table 3.6 Changes in easement valuation ($m, nominal)

	OTTER	**SKM 2001**	**Meritec 2001**
Easement compensation costs	-	12	12
Easement acquisition costs	-	58	36
Easements total	**17**	**70**	**48[1]**

1. Value adopted in the jurisdictional valuation.

Optimisation

As a part of its June 2001 revaluation, SKM marked down (optimised) some of Transend's assets to align with their depreciated optimised replacement costs. Meritec considered the results of SKM's optimisation process to be appropriate. Hence the results were adopted in the jurisdictional valuation. The details of which are shown in appendix B.

Reinstatement of fully depreciated assets

As part of the revaluation process, SKM re-valued and reinstated some assets that would otherwise have been fully depreciated.

GHD found that $34.8m worth of revalued assets would have reached the end of their accounting life if not for the jurisdictional valuation. That is, the valuation extended the useful life of these assets reflecting their estimated remaining life. GHD considers

that it is not appropriate to reinstate these assets when they reach the end of their new remaining life.

Change in equipment unit rates

SKM used current replacement costs in both valuations. That is, to estimate the value of one kilometre of a particular conductor, SKM used the replacement cost of that conductor at the time of valuation.

For example the unit rate for a 220 kilovolt (kV) single circuit (sulphur) conductor increased from $141 000 /km in 1998 to $171 000 /km in 2001.

3.7 ACCC consideration of the jurisdictional valuation

As stated in section 3.2, the ACCC is bound by clause 6.2.3(d)(4) of the TEC in determining the RAB.

This clause requires the ACCC to value Transend's sunk assets at a value determined by the Tasmanian Minister, provided the value does not exceed deprival value. Deprival value is defined in the code as the lesser of economic value and depreciated optimised replacement cost.

Theoretically, economic value depends on the cash-flows forgone if the asset was not used by the regulated business. The cash-flows, however, depend on the value of the asset. This circularity limits the usefulness of economic value in practice. Therefore the ACCC prefers to use ODRC. It has discussed this issue in the DRP.

As explained in the code, the deprival value gives the maximum value possible for the assets for the purpose of regulation.

On the basis of the information available to the ACCC, it is not satisfied that the Tasmanian Treasurer's valuation exceeds deprival value. Therefore, the ACCC must accept that valuation for the purposes of this decision.

However, the ACCC notes that the jurisdictional value is $68m higher than OTTER may have allowed. It estimates that the impact of the increase is about $7m per year to total revenue.

The ACCC wrote to the Tasmanian Treasury regarding its concerns about the revaluation. These are explained below.

Easements

The ACCC considers that easements should be valued at actual historical costs adjusted for inflation, consistent with the DRP. It does not accept that an estimate based on benchmarks is appropriate for these costs. The ACCC used this approach in its decision for the Victorian transmission network.

The ACCC did not allow easement acquisition costs, which were calculated using estimates, in both its Victorian[7] and South Australian[8] revenue cap decisions in 2002.

The ACCC estimates that the easement acquisition costs of $55m included in Transend's RAB at 1 January 2004 would generate about $4m revenue per annum, thereby accounting for a large proportion of the initial increase in Transend's revenue.

Reinstatement of fully depreciated assets

The ACCC understands that Transend never fully depreciates its transmission assets. Transend stops depreciating them when the assets reach a remaining life of five years.

These assets would continue to provide services. However under the ACCC's building block model, the 'return-of-capital' should not exceed the amount a TNSP actually paid for the asset.

Interest during construction

Customers should not be charged for a return of capital on assets that are not yet commissioned. However TNSPs would normally incur some interest during construction (IDC), which may add to the cost of the asset.

SKM included 6.8 per cent on the construction of lines and substations as IDC in its 2001 RAB valuation[9]. This was based on the construction of a single $10m project with a construction period of 18 months and a commissioning period of one month. The interest rate used was 8.5 per cent, which SKM assumed to reflect Transend's pre-tax nominal WACC.

The ACCC's concern is that the one project selected by SKM may not be representative of the IDC.

However, Meritec decided that the IDC estimated by SKM was appropriate. Hence the Tasmanian Treasury included it in the jurisdictional RAB.

3.8 Conclusion

On the basis of the information available to the ACCC, it is not satisfied that the Tasmanian Treasurer's valuation exceeds deprival value. Therefore, it must accept the jurisdictional valuation as at 30 June 2001.

The ACCC has adjusted this valuation for actual net capex rolled in, depreciation and inflation to calculate the RAB at 30 June 2003, which was $570m. Further adjustments were made using estimates for capex, depreciation and inflation for the six months to 31 December 2003, resulting in the (opening) RAB of $604m.

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7 ACCC, *Victorian Transmission Network Revenue Caps 2003-2008—Decision*, 11 December 2002.

8 ACCC, *South Australian Transmission Network Revenue Cap 2003-2007/08—Decision*, 11 December 2002.

9 Sinclair Knight Merz, *Transend Networks Pty Ltd asset valuation reference date 30 June 2001 report*, September 2002.

Table 3.7 shows the ACCC's roll-forward of Transend's asset base over the regulatory period.

Table 3.7 RAB roll-forward 2001–02 to 2008–09 ($m, nominal)[1]

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Opening asset base	522	542	570	627	695	731	804	828
Capital expenditure [2]	34	43	72	85	56	95	46	39
Depreciation [3]	13	15	15	17	20	22	23	23
Closing asset base	542	570	627	695	731	804	828	844

1. Totals do not add due to rounding.
2. Net of disposals.
3. Economic depreciation.

4 Capital expenditure

4.1 Introduction

This chapter explains the ACCC's considerations in determining Transend's capex allowance. It has assessed whether Transend has struck an appropriate balance between:

- alternatives to capex such as increases in opex, demand-side management and new generation
- appropriate trade-offs between costs and risks, taking into account customer preferences.

4.2 Code requirements

The ACCC's task in assessing Transend's capex is set out in the code. In particular, part B of chapter 6 of the code requires that:

- in 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 the expected demand growth and service standards
- the regulatory regime must seek to achieve efficiency in the use of existing infrastructure, efficient operating and maintenance practices and an efficient level of *investment*
- the regulatory regime must foster an efficient level of *investment* within the transmission sector and the upstream and downstream of it. [italics added].

Therefore, the ACCC needs to decide on the adequacy, efficiency and appropriateness of the capex proposed by Transend.

GHD reviewed Transend's proposed capex allowance, the results of which are summarised in section 4.4.

4.3 Transend's proposal

Transend has based its forecasts on an assessment of the causes (drivers) for each type of capex, a 'bottom-up' assessment process.

It has also developed a transmission system management plan integrating its capex and maintenance plans.

Transend has broadly classified its capex into development, renewal (replacement and refurbishment) and non-network.

4.3.1 Load, customer connection and generation forecasts

Transend claims that Tasmania will face major changes over the regulatory period as a result of entering the NEM, the introduction of reticulated gas and the development of wind farms.

Such changes make forecasting load growth and load flows more uncertain. For example, forecasts of timing and location of new generation are normally based on future expected load. In Tasmania, however, new fuel sources (gas/wind) or new technologies (wind turbines) may drive future generation—both of which are far more difficult to predict than load growth.

The System Controller's 2002 planning statement contains some guidance on the generation projects that are currently being considered.[10] Transend has worked with Aurora to identify future connections resulting from load growth, security requirements and customer needs.

Transend engaged SKM to prepare its capex proposal. SKM developed three growth scenarios for system load and maximum demand from 2001–02 to 2011–12, summarised in table 4.1. SKM relied on forecasts produced by the System Controller, Aurora and the Australian Bureau of Agricultural and Resource Economics.

Table 4.1 Total forecast load growth over 10 year period (2001–02 to 2011–12)

Growth scenario	System load (%)	Maximum demand (%)
Low	4.4	5.5
Medium	9.8	9.8
High	13.9	13.4

These results do not include the impact of Basslink's export and import capability on the transmission system.

Transend, together with SKM, developed 24 scenarios reflecting different combinations of load growth and generation. Each was assigned a weighting reflecting its probability of eventuating based on:

- load growth (high, medium or low)
- impact of local generation or loss of a major industrial load, in the Hobart area
- possible future wind generation (e.g. sites on the west, north-west and north-east coasts of Tasmania).

SKM then conducted a detailed study of load flow and used Transend's security criteria to identify the required transmission development projects.

4.3.2 Development capex

Transend defines development capex as expenditure on augmenting the network, typically being driven by system security criteria, general load growth, new customer connections, new generation projects and code compliance.

[10] System Controller, '*2002 Planning Statement for the Tasmanian Power System*, December 2002.

Transend's development projects are categorised as:

- *Fixed projects*—projects that are almost certain to proceed in the regulatory period.
- *Variable projects*—projects with a 10 to 80 per cent probability of proceeding, depending on growth and/or completion of certain projects by others (e.g. generation projects).

Transend proposes that its variable projects be included in the RAB on a pass-through basis, if and when they eventuate, as they are outside its control.

Fixed projects

Southern augmentation

This is a large project worth over $55m, which will augment the transmission system in the south of the state. It includes installing a 220 kV line from Liapootah to Lindisfarne.

The project was submitted to the Reliability and Network Planning Panel (RNPP)[11] in December 2002 and was endorsed on 30 January 2003. The main reason for the project is to secure the supply to the Hobart area and southern Tasmania by removing:

- the reliance and overload on the Chapel Street substation
- reliance on the availability of the Gordon Power Station
- the potential overload on the existing 110 kV circuits from Chapel Street and Creek Road substations to Risdon.

Transend considers that this project would cost-effectively meet the long-term load growth in southern Tasmania.

NEM-entry

A number of development projects are required for NEM-entry, including:

- installing code-compliant wholesale metering at Transend/Aurora interfaces
- installing quality-of-supply monitoring equipment to measure compliance with connection agreements and schedule 5.1 of the code
- installing back-up protection schemes to prevent the system collapsing in the event of non-credible contingencies
- replacing field transducers associated with the state estimator, to meet NEMMCO's requirement.

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[11] The RNPP was established under clause 12.8.1(a) of the TEC and is required to monitor, review and report on the performance and reliability of the power system. Development proposals are sent to the RNPP for recommendation, which OTTER uses in determining whether the development capex is justified.

Variable projects

Transend states that the list of projects submitted as variable capex was not exhaustive. Since SKM's analysis, which was completed in September 2002, it has received further inquiries for the connection of new generation. Also Aurora has stated that alternative sites may be needed for future load growth.

Transend proposes that any additional or amended projects should also be funded on a pass-through basis.

There are three categories of variable projects.

- *Load-related*—these projects will occur only with medium or high load growth, or in response to customers' connection requirements. The preliminary costing for these projects is approximately $30m.

- *Generation connection requirements*—these projects will take place only if new generation proposals eventuate. Connecting new generation will usually involve constructing assets that have both contestable and non-contestable components. The preliminary costing for the non-contestable component is about $20m.

- *Shared network costs as a result of new generation connections*—these projects may be required, depending on the size of new generation projects in specific regions. Preliminary costing for these projects is about $110m.

4.3.3 Renewal capex

This involves replacing, enhancing and refurbishing existing transmission assets. According to Transend the drivers of these projects include:

- compliance obligations under the relevant legislation and codes, including environmental and safety aspects
- condition of assets
- ensuring that assets are of an age and technology that continue to be supported by manufacturers and service providers
- addressing asset design issues.

Transend has assessed the condition of most of its equipment to identify whether it is approaching the end of its useful life and/or to predict failures. It states many of its assets need to be replaced or enhanced during the regulatory period and has developed a renewals program.

Transend has targeted the following for renewal: 220kV and 110 kV circuit breakers; supply transformers and network transformers; voltage transformers; post insulators; and transmission line foundations and conductors.

4.3.4 Non-network capex

Transend proposes an allowance for non-network capex of $26.7m. Its main non-network initiatives for the revenue period include the following.

- General information technology: improved plans for disaster recovery for critical business systems; continuing rationalisation of servers and separation of domains. Transend indicates that these initiatives will improve the efficiency of the business.

- Network operation and control system (NOCS): although expenditure for NOCS has already been substantial, Transend claims that to effectively manage the power system when Basslink and new generation projects are commissioned additional expenditure will be required to update NOCS.

- Asset management: Transend intends to further develop its asset management information system to link information about assets, maintenance, system performance, management of works, cost management, decision-support models, capital and operating works programs, and budgets. It considers that this will allow it to manage its assets more effectively and efficiently.

- Accommodation: the construction of a new office (currently Transend staff are located at two separate sites) is planned to be completed mid-2004.

4.3.5 Summary of the capex proposal

Transend claims that the basis for its large program is a combination of:

- development projects to meet growth

- renewal capex to maintain compliance and reliability

- replacement of assets that have become obsolete or have reached the end of their serviceable life.

Transend's proposed capex program is set out in table 4.2.

Table 4.2 Transend's capex proposal ($m, 2002-03)

	Jan-Jun 2004	2004-05	2005-06	2006-07	2007-08	2008-09	Total
Development	2.8	43.2	14.3	48.3	0.6	0.0	109.2
Refurbishment	7.4	6.8	8.7	8.1	4.9	2.1	38.1
Replacement	9.5	23.0	29.9	30.5	32.0	31.8	156.8
Non-network	7.0	6.9	5.5	1.5	2.3	3.5	26.7
Total fixed capex	**26.8**	**80.0**	**58.4**	**88.4**	**39.8**	**37.5**	**330.8**
Variable[1]	0	28.0	10.5	16.9	24.7	29.6	149.6
Total capex	**26.8**	**108.0**	**68.9**	**105.3**	**64.5**	**107.1**	**480.4**

1. Indicative numbers only as Transend seeks actual variable capex to be allowed as a pass-through. The values do not take into account the probability of the variable projects proceeding. If probability weighted, the expected value is about $60m over the regulatory period, resulting in a total program of around $390m.

4.4 GHD's review

4.4.1 Overall comments

As a part of its brief GHD analysed and commented on the appropriateness of Transend's capex program. It concluded that:

- the overall costs estimated by Transend were appropriate, based on an assessment of a sample of projects
- although the process for making business decisions within Transend was technically sound, it was lacking in areas such as risk-based assessment
- Transend has not considered providing alternative levels of service, in conjunction with stakeholders, to create a rational basis for deciding trade-offs between cost, timing and risk
- key stakeholders had limited understanding of how the proposed security and planning criteria would affect capital works
- Transend is capable of delivering its suggested capex forecast, based on recent performance.

On behalf of GHD, ACIL Tasman conducted an independent review of the load forecast used by Transend. It agreed with SKM's assumptions to determine the development plan.

4.4.2 Comparison with historical capex

GHD advised that information on pre-1998 expenditure was difficult to obtain, as the transmission assets were operated and maintained as part of the HEC. However, it found that:

- actual capex was about $43m per annum on average from 1998–99 to 2001-02 and renewals expenditure accounted for about half of the amount
- proposed fixed capex (in the application) for the regulatory period is around $60m per annum and renewals expenditure accounts for about 60 per cent of the amount
- therefore the proposed renewals expenditure is much higher than in the past—following a significant reduction in renewals in 2000–01 and 2001–02
- wide variations in total capex have occurred in the past and were expected to occur, with development capex being most volatile
- Transend had planned $55m and projected some $53m capex (in service) in 2002-03.

4.4.3 Development expenditure

Fixed

Transend has proposed 10 fixed development projects over the regulatory period. These are driven by load growth, customer development requirements, code compliance and/or security criteria.

GHD states that there are no capex projects for the connection of Basslink in the program. The necessary works to connect Basslink are subject to an agreement between Basslink's developer and Transend.

GHD notes that the southern augmentation project is the largest within the development program, costing about $55m. It found possible alternatives are uncertain. Because the ACCC has a claw back mechanism on capex, GHD considers that it is prudent to allow the whole expenditure.

GHD has assessed each of the fixed development projects, taking into account their status with the RNPP and OTTER. It believes that:

- the timing, cost, load forecasts used and scope of work were generally appropriate
- the reactive support program was justified technically and the cost estimates were reasonable
- the George Town and Sheffield projects appear to be technically appropriate but could be delayed by two years so that they are undertaken when capex was low
- the scope and estimated costs for NEM-entry projects were reasonable.

Variable

GHD agrees with the estimated cost of the variable capex projects. It notes, however, that none have been subjected to the regulatory test. The expected value of variable capex is about $60m.

GHD notes that Transend's variable capex proposal contains several projects relating to generation connection including wind, hydro, gas and wood-to-waste energy. It considers that the benefits of these projects are unclear and as they deliver specific benefits to individual companies they are unlikely to pass a regulatory test. Hence GHD removed the expenditure for generation connection.

GHD also removed the expenditure for the projects based on high load growth, as it considered that this scenario was unlikely to occur.

However, GHD considers that some of the variable projects proposed by Transend may occur and therefore recommends an allowance of about $13m.

4.4.4 Renewals

Transend indicates that most of its forecast renewal expenditure is to maintain present levels of reliability rather than to improve them. However, given time constraints GHD was not able to comment on this in detail. However, it noted that reliability was

rarely the only driver, others being obsolescence, technical and environmental compliance and growth.

Substation costs

Transend did not provide the documentation showing the drivers for items in the replacement program for 110kV circuit breakers. However, GHD considers that age, and not condition, has been adopted as the primary driver.

GHD considers that replacing 25 per cent of the circuit breakers (worth about $3m) could be deferred to the next regulatory period if a more comprehensive condition assessment was done.

GHD found an error relating to the substation development costs for Creek Road which would reduce capex in 2008–09 by $2.5m. Apart from this, GHD was satisfied with the substation development projects.

Transmission lines

The overhead powerline ground wire (OPGW) project accounts for a major portion of renewal expenditure ($36m). Transend states that it is needed because of the lack of earth wire coverage on 110kV and 220kV transmission lines to protect against lightning strikes and electrical stress.

However, the proposal provides for the installation of an optical fibre cable along the ground wires and this roughly doubles the project's cost.

Although the business case for the project was not complete at the time of its review, GHD considers that its timings and costs are technically appropriate.

Foundation refurbishment accounts for 13 per cent of total capex. This is a continuation of an existing program to replace all defective transmission tower foundations by 2008–09. GHD found that the costs and methods associated with this project were documented and reasonable.

GHD expects Transend to rapidly develop new approaches to renewals by implementing new technology, which would reduce renewals capex over the regulatory period. However, it found that it was not possible to determine the effect of this on costs and therefore made no reductions.

4.4.5 Non-network

GHD recommends that the ACCC allow $23.6m for non-network expenditure compared to the $26.7m proposed by Transend.

This allowance covers information technology systems (including the further development of Transend's asset management information system) and the construction of new office accommodation.

GHD disallowed the expenditure for standards and procedures and some contingency items as efficiencies generated from adopting them should more than offset their costs.

4.4.6 Overall conclusion

GHD considers that an appropriate rationalisation process could defer projects or provide lower cost/service solutions, possibly reducing the capex requirement for the regulatory period. It also notes that reliability of the projects has not been quantified.

GHD considers that:

- the values it has recommended should be considered a maximum as Transend has not followed an appropriate practice of cost-risk trade-off or budget rationalisation process involving its customers
- although Transend's proposed capex program is technically justified, the ACCC should reduce it based on non-technical factors.

4.4.7 GHD's recommended allowance

GHD's recommended capex allowance is shown in table 4.3.

Table 4.3 GHD's maximum capex forecast ($m, 2002–03)

	Jan-Jun 2004	2003-04	2004-05	2005-06	2006-07	2007-08	Total
Development	2.8	43.2	10.3	45.8	4.6	2.5	109.2
Renewal	16.9	29.9	38.6	38.6	35.8	29.5	189.3
Reallocation of refurbishment	0.6	1.1	1.2	1.1	1.1	1.1	6.2
Non-network	6.8	6.0	5.0	1.2	1.4	3.2	23.6
Total fixed capex	**27.1**	**80.2**	**55.1**	**86.7**	**42.9**	**36.3**	**328.3**
Variable	0.0	5.9	0.7	5.4	0.6	0.0	12.6
Total capex	**27.1**	**86.1**	**55.8**	**92.1**	**43.5**	**36.3**	**340.9**

4.5 Submissions in response to the draft decision

4.5.1 General comments

Transend has three main concerns with the capex allowance in the draft decision. It considers that the ACCC has:

- reduced the allowance for projects that have passed the regulatory test
- applied an arbitrary cut of effectively 21 per cent to GHD's recommended allowance
- advocated clawback contrary to incentive regulation.

Powerlink considers that the choice of a 10 per cent reduction in capex appears to be arbitrary, adding to regulatory uncertainty.

TEMCO considers that the Transend view on all developmental and renewal capital is too narrowly focused and relies on traditional and more expensive options rather than less costly options such as demand management or other innovative measures. It also considers that a minimal load growth assumption may in fact turn out to be optimistic.

Hydro Tasmania estimates that the ACCC's 10 per cent reduction in capex results in an average delay of up to six months for the program and that this would not seem to increase the risk profile of Transend or its customers significantly.

EUAA/EAG states that capex has been considerably underspent by Transend in the current regulatory period but that draft decision significantly increases Transend's capex allowance for the next regulatory period. It also questions why Transend requires significantly more replacement capex than Aurora when it has a network with a similar age profile.

MEG also states that in a competitive enterprise there are basic rules in relation to capex that it believes Transend is not applying. It therefore considers that the adjustment to the level of capex and the controls imposed by the ACCC have considerable merit.

4.5.2 Across-the-board reduction

Transend argues that the across-the-board reduction of 10 per cent applied by the ACCC results in an effective reduction of about 21 per cent. It states that:

- there is no basis for reducing the capex allowed for development projects by 10 per cent (equating to $9.6m) as most of them have passed the regulatory test and are almost certain to proceed
- GHD excluded connection and shared network assets relating to generation in estimating the capex allowance of $341m. These should either be included in the capex allowance or the recovery of such capex should be outside the revenue cap.

MEG sees no confusion on the ACCC's part in assessing its obligations under the code with regard to capex. It states that the ACCC has rightfully used the discretion granted to it by the code to balance the competing interests of various parties.

4.5.3 Treatment of capital underspends

Transend considers that the clawback of unspent capex suggested in the draft decision is inconsistent with the incentive based regulatory regime mandated by the code as it does not provide any incentive to deliver efficiency improvements. It claims that clawback is also inconsistent with the ACCC's recent statements during its DRP review process.

TEMCO supports the clawback provisions. It considers clawback to be the only measure to prevent Transend from increasing its revenue stream by not delivering the capex program. TEMCO considers that the capex allowed in the draft decision remains optimistic regarding deliverability and lacks rigor from a capital efficiency stand point.

MEG is concerned about the impact of any capex underspend, especially as the program is weighted towards the beginning of the regulatory period. It believes that revenue should be adjusted annually to reflect actual capex delivered to overcome this problem. However, MEG supports the proposed clawback mechanism as a second best solution. It considers that without clawback Transend would be free to use the capex allowance provided by consumers to operate and maintain the network.

4.5.4 Capex opex trade-off

TEMCO states that in the competitive market, companies compete for funds to meet capex on the basis that capex will increase profits, either through increased activity or more efficient operations. It believes that both elements are missing in Transend's proposal. TEMCO considers that the draft decision fails to replicate the pressures of a competitive environment.

EUAA/EAG question why Transend's opex and capex are both increasing in an operating environment where there is little load growth. They state that companies in the competitive market can only justify incurring capex if such investments reduce their opex.

4.5.5 Capex benchmarking

EUAA/EAG consider that capex allowed under the draft decision as a proportion of the asset base will increase to substantially higher levels than other TNSPs in the NEM. This increase is despite a substantial increase in its asset base by the decision of Tasmanian Treasury. They find this increase difficult to accept when Transend has an asset age profile similar to other TNSPs.

ElectraNet believes that capex cannot be sensibly benchmarked between networks or with historical levels of expenditure because it is lumpy.

4.5.6 Renewals program

Hydro Tasmania notes that a number of projects incorporated a significant element of up-rating, rather than just replacement. That is, some of the renewals capex will increase the capability of the network, even though it has not been subject to the regulatory test.

4.5.7 Alternative approach to capex

In its draft decision the ACCC put forward an alternative approach to determine the capex allowance. Under this approach capex would be differentiated depending on whether it would be paid for by an individual customer or shared among users generally. In broad terms, the ACCC would determine an allowance for shared assets, but allow a pass-through for the capex where parties agree to bear the costs themselves.

Transend is concerned that the detail of the ACCC's alternative capex approach has not been fully articulated or carefully thought through. It considers that the ACCC should avoid adopting the approach at this time. However, it believes that this could be a matter for review as part of DRP review process.

Powerlink supports the introduction of more light-handed mechanisms. But it considers that the approach requires further work before it could be applied. Powerlink is willing to participate in any further development of this concept.

Ergon Energy agrees with the approach in principle but considers that further consultation needs to be undertaken in a wider forum involving NEM jurisdictions, the National Electricity Code Administrator (NECA), the ACCC and market participants.

ElectraNet supports a more light-handed approach but questions how this would work in practice and whether the code would allow it. It considers that if the proposal is to be considered further that it should be done as part of the ACCC's review of its DRP.

Hydro Tasmania sees some merit in the approach but believes that there a number of operational aspects that would require action before it could be adopted. It considers that any approach adopted by the ACCC should allow genuine connection projects to proceed and should allow Transend to recover the associated revenues, while still complying with the code.

4.5.8 Ability to deliver the proposed program

Interested parties noted that Transend has been unable to spend its previous (smaller) capex allowances determined by OTTER. They, therefore, question Transend's ability to deliver the forecast (larger) program.

4.5.9 Price impacts

Interested parties are concerned about the price impact of the capex program. They argue that any capital investment that results in improved reliability and quality of supply must be balanced against what is affordable.

4.6 ACCC considerations

4.6.1 Across-the-board reduction

GHD considered that the capex program recommended by it, amounting to $341m, must be considered an unrationalised maximum and that the ACCC should reduce it considering non-technical measures.

The ACCC's current approach to capex is as follows.

- Under the light-handed approach the ACCC allows a maximum amount of capex. Put simply this is a sum of money sufficient to maintain the network efficiently. In determining this allowance the ACCC examines the entire suite of projects proposed by the TNSP taking into account its consultant's recommendation and comments by interested parties. In its last three revenue-cap decisions the ACCC used a probabilistic approach to determine the capex allowance.
- During the regulatory period, control over capex is exercised through the regulatory test (for development projects). Reliability augmentations undergo a less stringent process. Basically the approvals are granted on a project by project basis, or for smaller projects collectively through planning approvals.
- At present there is also an ex-post threat of optimisation, which is the last line of regulatory control.

All of the above three mechanisms are currently being reviewed as part of the ACCC's review of its DRP.

The ACCC considered several alternative methods to rationalise the maximum capex amount recommended by GHD. For example, each of the following alternatives result in a capex program of roughly $300m:

- reducing the large renewals program by 25 per cent
- excluding the overhead powerline ground wire project
- delaying the whole capex program by about six months.

Having considered these options, and given the subjective nature of each of them, the ACCC preferred to use a 10 per cent across-the-board reduction in its draft decision. Transend has focused on the percentage reduction rather than the resulting figure.

The focus of the ACCC was to arrive at a figure which, in accordance with the requirements of the code and the TEC, would provide sufficient money for Transend to deliver an efficient capex program. This involved balancing the interests of Transend and other interested parties. Such a rationalisation inevitably involves some subjectivity. Therefore the ACCC assessed the resulting amount for its reasonableness (see section 4.6.9).

The ACCC is satisfied with the amount of $307m. It considers that the reduction will force Transend to prioritise its capex program, seek efficiencies and achieve cost-risk trade-offs taking into consideration the needs of its consumers.

The ACCC notes that OTTER, in its previous determination, also reduced Transend's capex by 10 per cent.

4.6.2 Variable capex

As stated earlier, Transend's capex is categorised into development, renewals (replacement and refurbishment) and non-network. Development capex is further split into fixed (almost certain to proceed) and variable (probabilities of 10–80 per cent).

In its application Transend proposed that its fixed projects be included in the ACCC's calculations of AR but that its variable projects be funded, essentially, as a pass-through, as and when they occur.

The ACCC disagrees with Transend's approach for the following reasons.

- Pass-through of capex (which can be material) goes against the philosophy of a revenue cap, whereby the ACCC approves a fixed allowance over the regulatory period. Indeed, it would represent a move away from the ACCC's current incentive-based regime towards a cost-plus regime.
- It removes the incentive for TNSPs to plan ahead and estimate a complete set of projects over the regulatory period, which forces them to prioritise and optimise capex at the planning stage.
- A comprehensive plan of capex at the beginning of the regulatory period also gives interested parties valuable information, enabling them to comment effectively.
- It transfers additional risk from Transend to its customers, who could be exposed to increases in charges that they cannot anticipate.

- It would require an annual review of actual expenditure and adjustments to be made to the revenue cap, which goes against the principle of light-handed regulation.

- The code is quite restrictive in terms of pass-throughs, although such an arrangement could be accommodated under the TEC.

- It is inconsistent with the probabilistic approach [12], which the ACCC has used in its past three revenue cap decisions.

For the above reasons, the ACCC still prefers to use the probabilistic method to determine an appropriate capex allowance for Transend.

4.6.3 Generation connection assets

Transend has asked whether generation connection assets are included in the capex allowance. In its application most of such projects were included under variable capex.

According to the code, the revenue cap applies only to services that are not contestable. Non-contestable services, however, can be regulated under the revenue cap or under some other appropriate light-handed regulatory mechanism. It follows that generation connection assets that are contestable must be excluded from the asset base and from the capex allowance.

As stated section 4.6.1, under its light-handed approach to regulation, the ACCC approves a sum of money for capex. It is important to note that the revenue cap does not include the money to directly fund the proposed capex. Instead both return of and return on capex are included in Transend's revenue cap, enabling it to raise funds through transmission charges to meet the capex (if required).

Also, the ACCC does not specify the projects that Transend has to undertake (although to estimate the allowance it relies on the projects to a large extent). It is a matter for Transend to prioritise the projects, subject to RNPP and other planning requirements.

The ACCC considers the capex allowance of $307m should be adequate to cover non-contestable generation connection assets as:

- this amount is a substantial increase over historical capex levels which included generation connections, albeit such connections were small in the past

- Transend was unable to deliver a much smaller program in the past.

In this context the ACCC notes that Transend's request regarding generator related expenditure appears to reflect the principles of the alternative capex approach suggested by the ACCC in its draft decision. Transend did not support this approach.

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[12] The probabilistic approach uses expected values (cost of the project multiplied by probability of it proceeding within the regulatory period) to forecast capex requirements.

In the absence of a formalised process, the ACCC will develop this concept further as a part of the review of its regulatory principles.

4.6.4 Renewals program

Renewals expenditure is about 60 per cent of Transend's fixed capex program, equating to $195m over the regulatory period. Currently, the code does not explicitly require this to be subjected to the regulatory test to be included in the RAB.

GHD's report indicates that much of the renewals work involves some element of enhancement. The ACCC agrees. It also considers that the large increase in renewals expenditure could affect efficient delivery.

GHD considers that Transend has a strong technical culture but that its business decision making processes need to be improved in assessing risk and identifying the impact of deferring project implementation. The ACCC agrees and considers that Transend's customers would benefit from a renewals planning process where engineering requirements and risks have been balanced against customer value.

Given the size of the renewals program, the ACCC considers Transend should demonstrate that its renewal expenditures are economically justified and that there are no, more cost effective, alternatives. It considers that the jurisdictional regulator's interests in Transend's asset management could be expanded to include such a process.

4.6.5 Treatment of capital under-spends

The ACCC considers that there are several reasons why unspent capex cannot be regarded automatically as an efficient outcome.

- Capex is lumpy by nature. Generally, unlike opex, capex can be deferred. Therefore it is difficult to argue that all of unspent capex is an efficiency gain. On the contrary, it may well reflect the inability of a firm to deliver on its capex forecast, which could have resulted in inefficient outcomes.
- Firms usually trade-off capex for opex and vice versa. A genuine capex related efficiency can be assessed only after examining its effect on opex.
- Capex is non-recurrent. Therefore forecasting capex is much more difficult than forecasting opex (which is recurrent). In the event of a capex underspend it is difficult to separate the effect of forecasting error and actual reduction as a result of management induced efficiencies.

In addition to the general concerns mentioned above, the following concerns apply specifically to Transend.

- The capex allowance is the upper limit of the ACCC's estimate, as the ACCC considers that the risk of under investment far outweighs that of over investment. The ACCC cannot be confident that if Transend were to underspend, it is because of efficiencies rather than over-forecasting. This situation is exacerbated by Transend's claims that it is operating in an uncertain environment which adds to the complexity of the forecasts and reduces its reliability.

- Historically Transend has been unable to deliver its capital budgets. This was not an efficient outcome, rather a reflection of Transend's forecasting and planning processes.

This is not to say that efficiency mechanisms cannot apply to capex. They certainly can, but treating unspent capex as an efficiency gain or a saving is inappropriate. An appropriate mechanism must make the forecasts robust by using external benchmarks and audit checks and isolate efficiency gains by comparing actual projects with estimates (which could result in more intrusive regulation).

Taking into account all of the above, the ACCC will examine any variation in Transend's capital expenditure at the next revenue reset and make appropriate adjustments.

4.6.6 Capex-opex trade-off

Several interested parties indicated that in competitive markets, firms can only justify capex if it enables them to reduce opex, increase volume, increase prices, etc.

In a network business, the relationship between capex and opex is less clear. Some capex, especially new developments, may increase opex. Others, such as renewals, may decrease opex. Given the size of Transend's renewal capex (about 60 per cent of the total), the ACCC considers that Transend's capex is likely to result in reduced opex.

Hence the ACCC accepted GHD's recommendation that a 2 per cent per annum efficiency factor be applied. However, the overall increase in Transend's opex is a result of scope changes.

4.6.7 Capex benchmarking

ElectraNet submits that due to its lumpiness capex cannot be sensibly benchmarked.

Though capex is lumpy, the lumpiness is reduced when it is assessed over a long period (in this case five years plus).

The ACCC agrees with the EUAA/EAG that Transend's capex program as a proportion of its asset base will be the highest of those TNSPs in the NEM (table 4.4). It also agrees that Transend's network is not significantly older than a number of other TNSPs such as SPI PowerNet and ElectraNet.

Although acknowledging that it is far from a precise indicator, the ACCC considers that capex benchmarking provides an indication that the capex program contained in decision is at the upper limit of the reasonable range.

Table 4.4 Ratio of capex to opening asset base

TNSP	Capex program ($m)	Opening asset base ($m)	Ratio (%)	Average demand growth (%)[1]
Transend	307	604	50.8	1.6
ElectraNet	358	824	43.4	2.5
SPI PowerNet	379	1 836	20.6	2.6
Powerlink	1 041	2 277	45.7	3.5
TransGrid	882	1950	45.6	3.1
EnergyAustralia	54	457	11.8	3.1

1. NEMMCO, 2003 Statement of Opportunities, summer maximum demand growth (p. 5).

4.6.8 Alternative approach to capex

In its draft decision the ACCC flagged an alternative approach to treatment of capex with a view to addressing some of Transend's concerns. However, Transend and other interested parties claimed that more work has to be done before the approach could be adopted. The ACCC therefore will not use this approach in this decision. Rather it will try and develop it as a part of its review of the DRP.

4.6.9 Ability to deliver the proposed program

Transend's proposed capex program totals about $390m over the regulatory period (including the expected value of variable capex). This is more than $70m per annum on average, a substantial increase over $44m per annum, which was the average capex from 1998–99 to 2002–03 (figure 4.1).

However, historically, Transend has been unable to deliver its forecast capex program:

- between 1998–99 and 2002–03, it spent about 80 per cent of the amount allowed by OTTER
- in 2002–03 it rolled in $43m worth of capex, although it had planned for $53m.

Transend acknowledges that in the past its actual expenditure has been lower than that forecast. However, it claims that it has now addressed the planning, regulatory and resource issues and is confident of delivering its proposed capex program. In its report, GHD states that Transend is capable of delivering its recommended maximum capex allowance of $341m.

The ACCC shares the concerns of interested parties, which claim that, based on Transend's past experience it is unlikely to deliver its proposed capex program.

There are several possibilities which could result in sub-optimal outcomes.

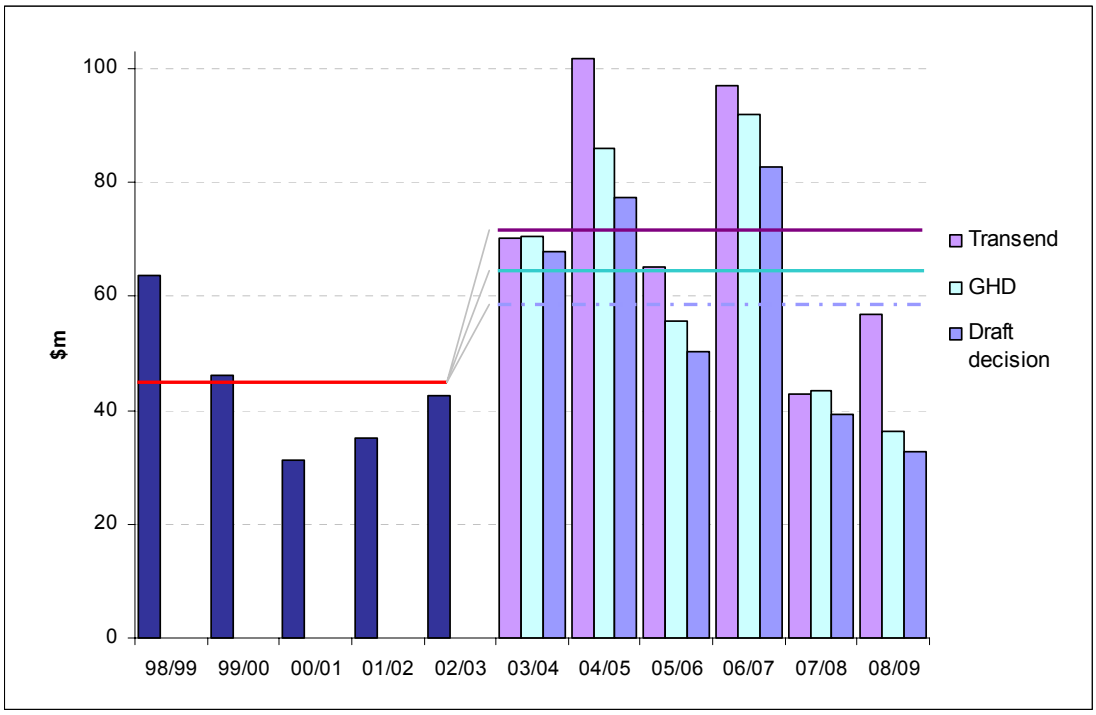
- Transend delivers the whole capex program, but the timing of individual projects is delayed to the latter part of the regulatory period.
- Transend is unable to deliver the entire capex program. The ACCC in previous decisions has expressed concern over the growing likelihood that TNSPs may be

unable to deliver their proposed capex programs. Currently a number of TNSPs and distribution network service providers (DNSPs) have begun or are planning major increases in capex. This is likely to increase competition for limited resources, particularly experienced service providers, major plant items and project management personnel. This issue is also evident in Tasmania, where Transend will need to compete for such resources with Basslink and new generation developments.

- Transend delivers the program, but in doing so pays a premium to obtain the necessary expertise and resources.

Figure 4.1 compares historic capex with that proposed by Transend, GHD and the draft decision.

Figure 4.1 Historic and forecast capex in-service ($m, 2002–03)



4.7 ACCC assessment of capex

In its application Transend proposed a fixed capex allowance of $331m and a variable component to be funded on a pass-through basis. This variable component had an indicative value of $150m or an expected value of $60m after weighting for probability of eventuating. Therefore, the total expected value of Transend's capex is about $390m over the regulatory period.

GHD suggested an unrationalised maximum of $341m and recommended that the ACCC reduce this amount taking into account non-technical considerations.

The ACCC considers that a secure and reliable transmission system is vital to an efficient electricity market. The Productivity Commission has argued that it is better to err on the side of over-investment in the event of regulatory uncertainty, as the costs of under-investment outweigh the costs of over-investment.

The ACCC acknowledges that Transend may require more investment than its historical levels for the following reasons.

- Before disaggregation the HEC managed generation, transmission and distribution. Its ability to balance these functions may have enabled it to achieve system security with a relatively low level of transmission investment compared to the three disaggregated entities (Transend, Hydro and Aurora).
- Currently the Tasmanian electricity transmission system is a self-contained system that serves Tasmanian consumers only, making the load and generation options more predictable. However, this will change when Tasmania enters the NEM. The transmission system will then have the additional function of facilitating electricity trade between Tasmania and the mainland.

Interested parties have pointed out that firms in competitive markets cannot pass on all of their forecast cost increases because markets determine prices putting a cap on costs. Therefore firms have to undergo a rationalisation process reducing their expectations of cost increases. This discipline has resulted in real cost decreases in many industries in the past few years.

GHD and interested parties considered that such rationalisation was lacking in regards to Transend's capex proposal. The ACCC agrees and in its draft decision accepted GHD's recommendation to reduce the capex allowance below (the maximum) of $341m taking into account non-technical factors.

The ACCC considers that a total capex allowance of $307m over the regulatory period, representing an average annual allowance of $56m, gives effect to GHD's recommendation (section 4.6.1 refers). The ACCC considers that this amount is adequate for the following reasons.

- The allowed amount is more than 25 per cent higher than Transend's average historical capital expenditure (table 4.5). While acknowledging that Transend's future may be different from the past, the ACCC considers that there is insufficient evidence to diverge too far from the historical average given:
    - negligible load growth has been forecast for Tasmania.
    - Transend has not been able to deliver its capex programs in the previous years, including the last financial year.
    - no improvements in service quality are proposed by Transend.

  A 25% increase, therefore, must be considered to be at the upper end of the range.

- There are limited resources in Australia for the delivery of capex programs. Although GHD's recommended maximum capex program is technically deliverable, effective cost control becomes difficult when programs expand rapidly.
- The ACCC's regulatory regime attempts to replicate a competitive market where firms have to earn revenues to cover capital costs. That is, firms have to convince customers to pay for the services generated by capex. However, most of Transend's customers object to the size of the capex program and have indicated that they are largely satisfied with their current level of service.

- GHD's unrationalised maximum capex allowance is proportionately larger than those programs allowed by the ACCC in its recent revenue cap decisions in Victoria and South Australia (table 4.4).
    - The ACCC accepts that TNSPs are different but South Australia and Victoria have higher load growth. South Australia also faces significant growth in peak load and, like Transend, may have to connect wind-farms to its network. The ACCC also notes that the other TNSP networks are only marginally younger than those of Transend.
    - Capex can be lumpy, however, such lumpiness is likely to be smoothed out when assessed over a regulatory period of over five years.
    - Nearly one year has passed since the Victorian and South Australian decisions. Information to date suggests that these TNSPs are managing within their capex allowances. Especially in the case of South Australia where the allowed amount was significantly lower than the amount requested in the application.
- The age profile of Aurora's assets is similar to those of Transend. Aurora claims that as most of the outages occur in the distribution network more efficient outcomes could be achieved by a more balanced allocation of capex between the transmission and distribution elements of the supply chain.

Taking into account all of the above, the ACCC is satisfied that a capex program of $307m figure is adequate. It believes that Transend should prioritise its capex to meet this amount. For example, it notes that Transend could achieve the targets by merely deferring the capex by less than a year.

Table 4.5 Historical and proposed capex in-service ($m, 2002–03)

Capex type	Historical[1]	Transend proposed	Decision
Development	13.4	30.7	20.0
Renewals	27.7	36.1	32.0
Non-network	2.6	4.2	4.0
Total	**43.7**	**71.0**	**56.0**

1. Average over five years from 1998–99 to 2002–03.

4.8 Conclusion

Therefore, based on Transend's application, GHD's findings, interested parties submissions and its own analysis, the ACCC considers that a capex program of around $307m over the regulatory period is sufficient for Transend to meet its obligations under both the code and TEC. Table 4.6 sets out the capex allowance approved by the ACCC for Transend.

Table 4.6 Transend's capex allowance ($m, 2002–03)

	Jan-Jun 2004	2004-05	2005-06	2006-07	2007-08	2008-09	Total
GHD Rec'd	27.1	86.1	55.8	92.1	43.5	36.3	340.9
10% reduction	2.7	8.6	5.6	9.2	4.4	3.6	34.1
Allowance	**24.4**	**77.5**	**50.2**	**82.9**	**39.1**	**32.7**	**306.8**

In making its decision the ACCC emphasises that:

- Transend must apply the regulatory test or abide by OTTER's planning requirements for each project to justify its inclusion in the RAB
- given the size of the renewals program, Transend should be required to demonstrate that its renewal expenditures are economically justified and that there are no other, more cost effective, alternatives. It considers that the jurisdictional regulator's interests in Transend's asset management could be expanded to include such a process.
- Transend must report its actual capex throughout the regulatory period. As a minimum it must comply with the ACCC's information requirements guidelines.

4.9 Assets subject to stranding risk

In a transmission business, asset stranding occurs when a transmission asset becomes redundant. If a TNSP can identify the asset in advance, the ACCC may compensate for the expiry of value by allowing accelerated depreciation.

4.9.1 Transend's submission

Transend claimed that it was difficult to forecast the assets that are likely to be stranded in the forthcoming regulatory period. In its application Transend flagged that certain assets may be stranded and subsequently provided a list. The ACCC was unable to place it on public record as it was confidential. Transend expects to be allowed to recover the remaining cost, if any of these assets become stranded during the forthcoming regulatory period.

4.9.2 ACCC consideration

Transend's stranding asset list is quite extensive. It contains more than 10 customer substations and lines with a total ODRC value of about $32m, and forecast capex projects with a total value of $35m. The ACCC expects that only a very small number of these assets will actually become stranded. However, it is concerned with the size of this claim.

The ACCC may consider compensating Transend for the value lost on existing assets after considering factors such as:

- whether the original investment and cost recovering arrangements were prudent at the time of investment
- whether the market can accommodate the price increases resulting from asset stranding—if not, whether Transend should share the costs with its customers.

The ACCC is very concerned about the forecast capex that has been included in the list of potential stranded assets. It doubts whether Transend would be acting prudently to incur capex when there is a risk of asset stranding.

5 Operating and maintenance expenditure

5.1 Introduction

In setting Transend's AR, the ACCC must assess Transend's capacity to achieve realistic efficiency gains in its proposed operational expenditure (opex). Because opex represents a large proportion of a network's variable costs, it is an important source of savings and efficiencies.

5.2 Code requirements

The ACCC's task in assessing Transend's opex is specified in the code. In particular, part B of chapter 6 of the code requires that:

- in 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
- the regulatory regime must seek to achieve efficiency in the use of existing infrastructure, *efficient operating and maintenance practices*, and an efficient level of investment. [Italics added.]

5.3 Transend's proposal

5.3.1 Key factors in determining opex

Transend considers that its 'bottom-up'[13] assessment of future costs provides better forecasts than relying on recent cost performance. It claims that this approach enabled it to examine the challenges it will face during the regulatory period, such as:

- preparing for NEM-entry
- participating in the NEM
- meeting future demand for Transend's services, including new connection inquiries from customers
- aligning asset management techniques with industry best practice
- improving service performance
- ensuring opex and capex are combined to minimise total life-cycle costs
- delivering efficiency gains, in terms of improved performance and increased output.

In forecasting its opex Transend states that it has factored in efficiency gains.

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[13] In developing its 'bottom-up' forecast Transend assessed the expenditure requirements of each of its business units and totalled the amounts.

5.3.2 Opex categories

Transend's application contains five major opex categories. Its forecasts are based on the assessment of key causes (drivers) for each category. Table 5.1 shows the categories and drivers. Costs relating to NEM-entry and system controller costs are common to several major categories.

Table 5.1 Opex drivers for Transend

Categories	Drivers
Connections and development	NEM-entry; transfer of the system controller function; Basslink connection; and new generation.
Network	NEM-entry; changing regulatory, community and market environments; alignment with industry best practice; driving existing assets harder; increasing service provider costs; implementing new asset and information management technologies; and improving service performance.
Transmission operations	Preparation for NEM-entry; transfer of the system controller function; additional responsibilities for local operations and system security competencies; and participation in the NEM.
Corporate	NEM-entry; transfer of system controller; market and regulatory systems; and insurance.
Other costs	Grid support; equity raising costs; and dismantling.

Connections and development

Transend states that the scope of work undertaken by the connections and development group has increased substantially since its last pricing determination with more connection inquiries, applications assessed and connection agreements managed. It also states that the process for network augmentation has changed, with more emphasis on public consultation and exploring non-network solutions.

Network group

Transend states that it has reviewed asset management strategies and asset condition from which it has developed several work plans. It believes that these reviews show a need to increase the group's expenditure.

Transmission operations

Transend states that the transfer of system controller functions and NEM-entry will lead to costs increasing in 2004–05 and 2005–06. However, the costs will then decrease in 2006–07 and stabilise when functions move from the operations group to NEMMCO.

Corporate

Transend seeks an increase in corporate costs because it will not be able to recharge overheads to the system controller from 2005–06 onwards, even though it will still incur these costs.

Other costs

Grid Support—Transend expects to start incurring grid support charges in the regulatory period. Previously, Hydro Tasmania provided these services at no cost. As these charges are uncertain, Transend proposes that they be funded on a pass-through basis.

Equity raising cost—in accordance with the ACCC's decisions for ElectraNet and SPI PowerNet, Transend has included an allowance for benchmark equity raising costs.

*Energy meteri*ng—Transend did not include the costs to cover energy metering activities in its application as it was not clear whether it would be responsible for these activities at that stage. Subsequently it has submitted these costs (section 5.7.3)

Dismantling—Transend has included costs associated with dismantling assets no longer in service.

5.3.3 Claim for carryover of opex efficiency gain

Transend considers that its current revenue determination, established by OTTER in 1999, significantly underestimated the scope of work required. As a result, its actual (total) opex for the period 1999–00 to 2002-03 has exceeded OTTER's allowance by $5.8m (table 5.4).

Transend claims that the additional tasks relate to increased regulatory compliance work and NEM-entry. It states that it initiated the Tasmanian Wholesale Electricity Market (TWEM)[14] and that OTTER did not anticipate the costs of this project in making the 1999 determination.

Transend's claims, considering the increased scope, that it has significantly improved its efficiency and cost performance compared to allowances provided in its 1999 determination.

It believes that in assessing its efficiency gain a cost allowance that fully recognises the actual scope of work should be considered. However, it accepts that such a theoretically correct approach would involve a degree of conjecture. As a compromise it seeks an efficiency bonus only on the TWEM costs incurred during its current regulatory period (and not on the additional non-TWEM scope increases).

Transend states that its TWEM costs have averaged around $0.5m a year over the current regulatory period. It proposes that its claimed efficiency bonus for TWEM costs be glide pathed (carried and shared) over the regulatory period allowing the full efficiency gain in the first year (2004–05) and reducing by 20 per cent in each subsequent year (until 2008-09). That is, the efficiency carryover would total $1.5m over the upcoming regulatory period.

[14] This project was created to manage issues associated with Tasmania's entry into the NEM.

5.3.4 Claim for under-recovery of revenue

OTTER's 1999 price determination for Transend[15] was originally planned to expire on 31 December 2002. However, in 2002 the Tasmanian Government amended its price control regulations to allow OTTER to extend the determination, in real terms, to 31 December 2003.

Transend claims that a crucial assumption in setting its revenue for 2003 was that the impact of capital additions and depreciation would offset each other. However, it states that additions have exceeded depreciation. Therefore, in its application Transend estimates that OTTER's 2003 AR understated its revenue requirement by $2.44m.

Transend has asked that this be compensated in the first six months of the regulatory period (i.e. January to June 2004).[16]

5.3.5 Benchmarking

Transend presents analysis conducted by Benchmark Economics which suggests that Transend's total costs, including opex, were low compared to its mainland peers. In comparing these costs Transend argues that it is essential to take account of factors that influence relative performance, such as economies of scale and network business conditions.

Transend states that to some extent the conclusions from Benchmark Economics contrasted with the International Transmission Operations and Maintenance Study which tended to show Transend as an average performer.

Transend notes that in its past decisions the ACCC has compared costs between TNSPs by using a range of measures. However, it considers these measures do not take into account economies of scale or business conditions.

Transend further notes the ACCC has argued that total opex to line length is a more useful ratio than some other ratios. It does not agree as it states that most of its expenditure is incurred in maintaining substations rather than lines.

5.3.6 Opex allowance proposed by Transend

Transend's proposed opex allowance is shown in table 5.2. It states that NEM-entry and asset management account for most of the cost increase and argues that its analysis of the key cost drivers justify the increase.

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15 OTTER, *Investigation into ESI pricing policies—Pricing Determination*, December 1999.

16 Transend, *Revenue Cap Application for the period 1 January 2004 to 30 June 2009*, March 2003 (pp 96-97).

Table 5.2 Transend's proposed opex allowance[1] ($m, 2002–03)

	Jan-Jun 2004	2004-05	2005-06	2006-07	2007-08	2008-09	Total
Connections and development	1.9	4.1	4.5	3.6	3.6	3.6	21.3
Network	9.5	19.6	19.7	19.9	19.7	20.0	108.4
Transmission operations	1.6	2.7	4.6	4.3	4.3	4.3	21.8
Corporate	2.7	4.7	6.3	6.7	6.9	6.6	33.9
Dismantling	-	1.9	1.0	1.9	-	-	4.8
Equity raising cost	0.3	0.6	0.6	0.6	0.6	0.6	3.3
Total opex	**16.0**	**33.4**	**36.5**	**36.9**	**35.0**	**35.2**	**193.0**

1. Additions are not exact due to rounding.

5.4 GHD's review

GHD reviewed Transend's proposed opex requirements. Its main findings and recommendation are outlined below.

5.4.1 Summary of GHD's findings

In reviewing Transend's opex GHD found that:

- opex costs would rise from $19m to $35m by the end of the regulatory period
- the increase in forecast opex is a result of primarily two factors: NEM-entry; and an increase in maintenance as a result of Transend's 'bottom up' review of the condition of all its transmission assets
- increases in costs will be incurred to provide system control functions and maintain system control backup
- the significant increase in opex proposed by Transend appears unwarranted, even after accounting for major changes to the scope of services
- information on how future efficiencies were built into opex forecasts were not included in the application and Transend found it difficult to quantify the effects
- there was limited evidence of comprehensive risk/cost/benefit analysis or risk-managed approach to investment decisions
- that Transend had not adequately considered alternative levels of service in order to provide a rational basis for deciding trade-offs between cost, timing and risk in conjunction with stakeholders and supported by risk based assessment.

GHD found that Transend had reallocated $6.8m from capex to opex based on changes to its capitalisation policy. It recommended that $6.2m of this amount should not be treated as opex but rather capex as it considered that this work would increase the efficiency and/or effective life of assets.

Because of the uncertainties involved in estimating grid support, GHD concluded that a pass-through allowance, subject to certain conditions, was appropriate.

GHD's report contains details of its assessment of each major opex category and is available on the ACCC's website.

5.4.2 Claim for carryover of opex efficiency gain

GHD considers that it is unnecessary to compensate Transend further for costs which should properly be claimed in the previous revenue period, if indeed they are justified.

It also notes that if an efficiency bonus were provided in addition to claimed opex, it would be difficult to assess the total allowance. Hence, it does not recommend an efficiency bonus be allowed.

5.4.3 Assessment of benchmarks

GHD states that benchmarking costs using a range of measures (such as opex per MW capacity or opex per network km) can be difficult as all businesses have their own unique operating environments.

GHD notes that in several reports opex benchmarks showed Transend as a lower to middle cost TNSP in Australia, during 1999–00 or 2001–02. However, if the opex figures from Transend's application are incorporated, its relative position compared to other TNSPs would worsen for the period to 2005–06 before stabilising in later years as one of the higher cost TNSPs.

5.4.4 Assessment of Transend's application

GHD considers that Transend's application provides only high level financial information with extensive narrative about future plans. It considers that interested stakeholders would find it difficult to conduct analysis and come to a judgement on the appropriateness of the application.

5.4.5 GHD's recommended opex allowance

GHD developed its own forecast of Transend's opex requirements based on analysis of Transend's past opex trend. It started with the opex incurred in the latest audited financial statements (2001–02) and excluded one-off expenses to arrive at a base opex of $18.5m. This amount was then adjusted for:

- inflation to 2002–03
- an efficiency dividend of 2 per cent per annum
- additional tasks including NEM-entry and participation, increased maintenance and telecommunication costs.

The result of the analysis is a recommended average annual opex of around $29m over the period.

Table 5.3 shows GHD's recommended opex allowance for the regulatory period.

Table 5.3 GHD's recommended opex allowance ($m, 2002–03)

	Jan-Jun 2004	2004-05	2005-06	2006-07	2007-08	2008-09	Total
GHD's proposal[1]	**13.1**	**29.8**	**30.9**	**29.7**	**27.2**	**27.1**	**157.8**

1. Excludes equity raising, debt raising and grid support costs.

5.5 Submissions on the draft decision

5.5.1 General

Transend considers that the draft decision imposes an unsustainable reduction in opex over a period which all parties note is very uncertain and that the opex allowance in the draft decision is about the same level as the 2002–03 actual expenses.

EUAA and EAG support the ACCC reducing the increase in Transend's opex. But they consider that the opex allowance in the draft decision still represents a substantial increase over historical levels.

Hydro Tasmania considers that the ACCC has set the opex allowance at a level which sufficiently recognises the challenges faced by Transend over the next five and a half years.

MEG believes it is inconceivable that the ACCC should allow Transend such a large increase in opex for little or no benefit to the users of the service. It states that a competitive firm consistently targets reductions in its expenditures and seeks that the allowance in the draft decision be significantly reduced.

5.5.2 Reliance on GHD's findings

Transend considers that the ACCC has relied solely on GHD's recommendations. It considers that GHD's narrative is inconsistent with its conclusions. Transend does not consider that the trend analysis used by GHD is soundly based and therefore should not be relied on by the ACCC in making its decision. It requests that the ACCC revisit the substance of GHD's report instead of relying exclusively on GHD's conclusions.

MEG states that the ACCC's acceptance of GHD's recommendation has resulted in a 50 per cent increase over the opex previously allowed by OTTER. It considers that in developing its opex forecast GHD used an inflated starting point and had allowed costs that were excessive or already included in the current opex base (e.g. vegetation clearance costs, NEM-entry costs and telecommunication costs).

5.5.3 Base year for assessment

MEG considers that using a single (usually the most recent) year's financial result as the starting point of any assessment is problematic because it provides an incentive to underspend in the early years and overspend in the latter ones. MEG prefers to use the average of all years in the previous regulatory period.

5.5.4 Guidance on information requirements

TEMCO considers that the ACCC should provide Transend with guidance on the type of information that it will require to specifically demonstrate efficient costs for future regulatory periods.

5.5.5 Opex efficiency factor

MEG considers the application of an annual efficiency factor is appropriate and in accordance with code requirements. It considers the 2 per cent efficiency factor goes some way to redressing the large increase in Transend's revenue.

Transend considers that the opex efficiency factor should be removed for the following reasons:

- GHD's concerns about efficiency have been addressed by its trend analysis
- its application is inconsistent with the ACCC's previous decisions
- it goes against the principle of incentive regulation.

ElectraNet considers that the application of an efficiency factor in the draft decision is heavy handed and inconsistent with the ACCC's stated position on incentives. It considers that its application imposes efficiency gains and prevents the TNSP from sharing in these gains.

5.5.6 System protection scheme

Transend and Hydro Tasmania seek clarification of the ACCC's draft decision suggesting a more light handed form of regulation regarding the costs associated with Basslink commissioning and the provision of a system protection scheme (SPS).

5.5.7 Grid support

Powerlink considers that the draft decision is unclear about the treatment of grid support which appears to be different from the ACCC's previous decisions. It submits that grid support should continue to be treated as a pass-through because of its uncertain nature.

Hydro Tasmania states that its negotiations with Transend regarding grid support costs are unlikely to be concluded before the final decision. It considers that an allowance would be required only at the next revenue reset and it could be paid for by avoided capex during the forthcoming regulatory period.

The MEG considers that the capex proposed in the draft decision is high. Therefore providing for a capex substitute by way of opex is inappropriate.

Given the uncertainty surrounding grid support, MEG considers that a fixed allowance should not be included. It also considers that there is no reason to include it as a pass-through. MEG states that an adjustment could be made at the next revenue reset considering the actual grid support payment and the capex avoided as a result.

5.5.8 Benchmarking

Transend believes that reliance on historic costs and simple benchmarks are not appropriate where operating conditions are changing markedly. It believes that its opex request is reasonable considering its small scale and difficult operating environment relative to other Australian TNSPs.

Transend also states that the ACCC has not benchmarked opex per generation capacity, despite hydro generation being a driver of the size and operating costs of the Tasmanian transmission network.

EUAA/EAG do not understand why Transend requires significantly more opex relative to its asset base than other Australian TNSPs when its network has a similar age profile and its load growth is minimal.

MEG notes that Transend's asset base is inflated because of revaluation and it has a large number of double circuit lines and small substations. Therefore, though the ACCC's benchmarking in the draft decision shows the opex to be reasonable the actual opex ratios are much higher.

5.5.9 Claim for under-recovery of revenue

Transend considers that the reduction in its capex allowance was an unintended consequence of the price determination extension. It states that it was not government policy to disallow this expenditure.

5.6 ACCC considerations

5.6.1 Incentive regulation

The ACCC prefers a light-handed incentive-based regulation. It uses the building block approach to determine a revenue cap, which allows TNSPs to earn a reasonable return when they are functioning efficiently. TNSPs could earn higher returns if they are operating more efficiently. The converse is also true.

It follows that the ACCC does not adopt a cost-plus approach to regulation. Therefore the details of actual costs are of secondary importance compared to efficient costs. If this were not the case, a more heavy handed and interventionist approach to the verification of costs would be necessary.

5.6.2 Historical opex

The amount of opex requested by Transend is significantly higher than its historical levels. Transend's actual opex has averaged around $20m over the last four years. This amount excludes system controller function costs which are currently about $10m a year. This function is ring-fenced from Transend and the amount is recovered separately.

The system controller's primary functions include the provision of ancillary services; power system operation and control; and regulatory compliance reporting. After Tasmania enters the NEM, ancillary services and some system operation functions will be undertaken by NEMMCO.

As stated earlier, Transend will absorb a part of the system controller functions, the avoidable cost of which is estimated to be about $5m per year by the ACCC.

Therefore, Transend's comparable historical opex is about $25m per year.

Consequently, GHD's recommendation of $29m per year on average throughout the regulatory period represents a 16 per cent increase over historical opex levels. Transend's costs stablise at $27m towards the end of the regulatory period representing an 8 per cent increase over historical levels.

Table 5.4 sets out Transend's opex: previously allowed by OTTER; actually incurred; and yearly average over the regulatory period proposed by Transend and recommended by GHD.

Table 5.4 Transend's historical opex ($m, 2002–03)

Year	Allowance [1]	Actual	Forecast[2]
1999–00	19.3	18.9	
2000–01	19.1	19.4	
2001–02	18.7	20.8	
2002–03	18.7	22.7	
Transend proposed			35.0
GHD recommended			29.0

1. Opex allowances exclude incremental costs associated with system controller functions that Transend will be required to perform after NEM-entry. Approximately $5m needs to be added to these allowances to make them comparable with Transend proposed and GHD recommended opex forecasts.
2. Average Transend and GHD forecast opex across the regulatory period, includes costs associated with system controller functions that Transend will be required to perform after NEM-entry.

5.6.3 Reliance on GHD's opex conclusions

Transend claims that the ACCC solely and uncritically relied on GHD's conclusions. It considers that GHD's conclusions are unreliable because they are inconsistent with the report's narrative and are based on a trend analysis that is unsound. Transend therefore requested the ACCC revisit the substance of GHD's report.

The ACCC disagrees that it solely and uncritically relied on GHD's conclusions. Consistent with its approach in previous revenue cap decisions, the ACCC's draft decision took into account Transend's application, GHD's expert advice, historical opex levels, submissions from interested parties and its own analysis (including benchmarking).

Since the release of the draft decision the ACCC has again reviewed GHD's findings and conclusions. The ACCC also asked GHD to further clarify its approach and placed the response on the ACCC website.

5.6.4 Inconsistency between GHD's conclusions and its report narrative

The ACCC sees no major inconsistency between GHD's narrative and its conclusion. More importantly, it considers that the GHD's conclusions are clear and unambiguous.

GHD explained the detailed process it undertook in analysing each opex cost category. Though its narrative generally suggested that Transend's forecast of individual cost components were justifiable, there were several qualifications flagging GHD's concerns. For example, early in the narrative GHD states that the proposed significant increase in opex appears unwarranted on the basis of current stable performance and low growth, even after accounting for major changes to the scope of services proposed by Transend.

At the end of the process GHD had sufficient doubts about Transend's opex forecast for it to develop its own alternative forecast.

The ACCC considers that GHD has clearly explained its reasons for undertaking its alternative trend analysis. It is satisfied that there is no inconsistency between GHD's findings and conclusions.

5.6.5 GHD's alternative opex forecast

Transend also claims that GHD's alternative opex analysis is not soundly based. In response to Transend's concerns the ACCC sought further clarification from GHD about the alternative opex forecast. GHD advised that it developed the alternative forecast because:

- there was a significant disconnect between Transend's opex forecast and the historical opex
- while a number of significant cost items could be considered to be justified, others showed costs trending upwards without adequate justification for the extent of the increases proposed (e.g. connection and development costs)
- there was inadequate supporting evidence and quantification of Transend's claim that a range of cost efficiencies were built into the forecast opex
- Transend used a detailed cost-plus approach without a comprehensive risk, cost-benefit or impact analysis being undertaken (e.g. in terms of delaying maintenance on some assets).

The ACCC has reviewed GHD's alternative trend forecast and considers that it is appropriate as it:

- provides historical context (by using a base year, in this case 2001–02)—the choice of the year is appropriate given that it is the most recent year where audited accounts are available and appropriate adjustments have been made to that year
- provides for scope increases from the base year by allowing the full costs for new activities such as NEM-entry and increased maintenance
- incorporates a reasonable efficiency factor, noting that the large development and renewals program should result in some opex efficiencies and that OTTER has applied a similar efficiency factor in the past.

The ACCC considers that GHD has adopted a structured and considered approach to developing its forecast of Transend's opex allowance.

The ACCC also points out that last year it used a similar opex trend approach in its revenue cap decision for the South Australian transmission network.

The ACCC itself analysed the opex by starting from a base figure of the average actual opex for the past three years and then adjusting it for scope changes, mainly those resulting from:

- NEM-entry (based on the amount allowed for Powerlink)
- acquiring a substantial part of the system controller function (about $5m avoidable costs beginning from 2005–06)
- vegetation management (at a reduced level than was allowed by GHD)
- one-off dismantling costs.

The resulting figure was significantly lower than that recommended by GHD—even after the very recent downward adjustment by GHD because of the timing of the transfer of the system controller function. However, the ACCC accepted the GHD recommendation as the upper boundary of the possible estimates.

5.6.6 Choice of base year

Transend and MEG both opposed GHD's choice of 2001–02 for opposite reasons.

- Transend argued that opex was low in 2001–02 and GHD should have chosen 2002–03 when opex was higher.
- MEG argued that choosing 2001–02 would advantage Transend, as it would have deferred expenses to later years of the current regulatory period. It suggests using an average over the current regulatory period would be more appropriate.

The ACCC agrees with GHD's choice of 2001–02 as the base year, as it reflects the most recent audited financial results (unlike the 2002–03 figures, which are unaudited). It also makes excluding one-off effects possible.

TNSPs may have a (perverse) incentive to increase their expenditure towards the latter years of the regulatory period if they expect such (back-ended) expenditure may result in increased allowances for the following period.

To some extent, however, GHD's choice of base year overcomes this distortion as it is not the last year of the previous regulatory period.

5.6.7 Opex to capex reclassification

In its application Transend treated expenses incurred in transformer overhauls and post insulator upgrades ($6.2m) as opex as it considered these expenses do not improve the performance, capacity or useful life of the asset.

GHD disagreed. It argued that such refurbishments would increase the efficiency or effective life of the assets and therefore recommended that the costs be capitalised.

The ACCC notes that Transend's treatment is based on its revised capitalisation policy. Under Transend's previous policy these expenses would have been capitalised.

The ACCC accepts GHD's recommendation as it agrees that these costs will either improve the capacity or useful life of the asset.

5.6.8 Application of opex efficiency factor

In its alternative trend analysis GHD applied an efficiency factor of 2 per cent per annum to its forecasts commencing in 2003–04. Transend disagreed with this for the reasons mentioned in section 5.5.5.

The ACCC accepts the annual efficiency factor recommended by GHD for the following reasons.

- Competition results in continuous improvement, as firms face pressure to continually improve their cost and service performance. The ACCC considers that Transend should not be an exception to this.
- Given the high level of renewal capex and substantial increases in opex over historical levels, Transend should be able to achieve the 2 per cent efficiency dividend on its base costs without much difficulty.
- OTTER applied a similar efficiency factor on a lower allowance in its past regulatory decisions for Transend.
- Opex allowance recommended by GHD compares satisfactorily against other TNSPs, as illustrated in the next section.

The ACCC has not applied an efficiency dividend in its previous decisions. However, each revenue cap decision is unique. The circumstances of Transend are very different to other TNSPs. For example, perhaps this is the first time an ACCC decision will result in real increases in transmission charges, let alone about 9 per cent on average each year over the regulatory period.

The efficiency dividend is applied to the base opex amount only and not to additional tasks which have been allowed at full cost. GHD notes in its report that some efficiencies could reduce such costs allowing for other unidentified tasks.

For the above reasons the ACCC is satisfied with the 2 per cent efficiency dividend recommended by GHD.

5.6.9 ACCC's benchmarking analysis

The ACCC is aware that several factors limit the usefulness of comparing opex of transmission companies. These include varying load profiles, load densities, asset age profiles, network designs, local regulatory requirements, topography, climate and accounting practices.

The ACCC understands that comparisons based on a single benchmark indicator are not very meaningful. Nonetheless, different indicators used in combination can help to assess whether a TNSP's opex is reasonable. Hence the ACCC undertook its own benchmarking using several different ratios to make a general assessment of GHD's opex forecast for Transend. Items such as financing costs and grid support were not included as they may obscure trends.

The ACCC benchmarked Transend against ElectraNet, Powerlink, SPI PowerNet/ VenCorp and TransGrid. The results of the ACCC's analysis are shown in table 5.5.

Table 5.5 Ratio analysis of Transend compared to other TNSPs

		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Opex/line length	GHD			7.30	8.00	8.58	7.98	7.79	7.76
(circuit $'000/km)	Transend	5.78	6.51	7.50	8.75	9.90	9.78	9.80	9.89
	ElectraNet	6.42	6.99	7.60	7.57	7.64	7.75	7.79	
	Powerlink	4.99	5.40	5.58	5.75	5.43	6.11		
	SPI/Vencorp	8.01	9.19	11.60	11.60	11.66	11.65	11.66	
	TransGrid	8.43	8.57	8.70					
Opex per	GHD			566	620	665	619	604	602
Substation ($'000)	Transend	448	505	581	678	767	758	760	767
	ElectraNet	526	574	623	621	627	636	639	
	Powerlink	657	711	735	758	716	805		
	SPI/Vencorp	1193	1368	1727	1727	1736	1734	1736	
	TransGrid	1291	1312	1333					
Opex/asset base	GHD			4.09	4.07	4.12	3.50	3.34	3.26
(%)	Transend	3.72	3.91	4.20	4.45	4.76	4.29	4.20	4.16
	ElectraNet	4.56	4.76	4.82	4.57	4.31	4.09	3.97	
	Powerlink	2.34	2.40	2.36	2.29	2.06	2.30		
	SPI/Vencorp	2.92	3.24	3.99	3.92	3.90	3.82	3.75	
	TransGrid	4.63	4.60	4.10					
Opex/MW peak	GHD			15.62	17.12	18.36	17.08	16.66	16.61
($'000/MW)	Transend	12.37	13.94	16.05	18.73	21.18	20.94	20.97	21.17
	ElectraNet	12.56	13.68	14.87	14.83	14.96	15.16	15.25	
	Powerlink	8.48	9.18	9.49	9.78	9.24	10.39		
	SPI/Vencorp	6.40	7.34	9.26	9.26	9.31	9.30	9.31	
	TransGrid	9.21	9.35	9.50					
Opex/GWh	GHD			2.47	2.71	2.90	2.70	2.64	2.63
($'000/GWh)	Transend	1.96	2.21	2.54	2.96	3.35	3.31	3.32	3.35
	ElectraNet	3.00	3.27	3.56	3.54	3.58	3.63	3.65	
	Powerlink	1.38	1.50	1.55	1.60	1.51	1.70		
	SPI/Vencorp	1.02	1.16	1.47	1.47	1.48	1.48	1.48	
	TransGrid	1.62	1.65	1.68					

Note: Refurbishments, financing and grid support have been excluded from Transend's, GHD's recommended, ElectraNet's and Powerlink's opex figures.

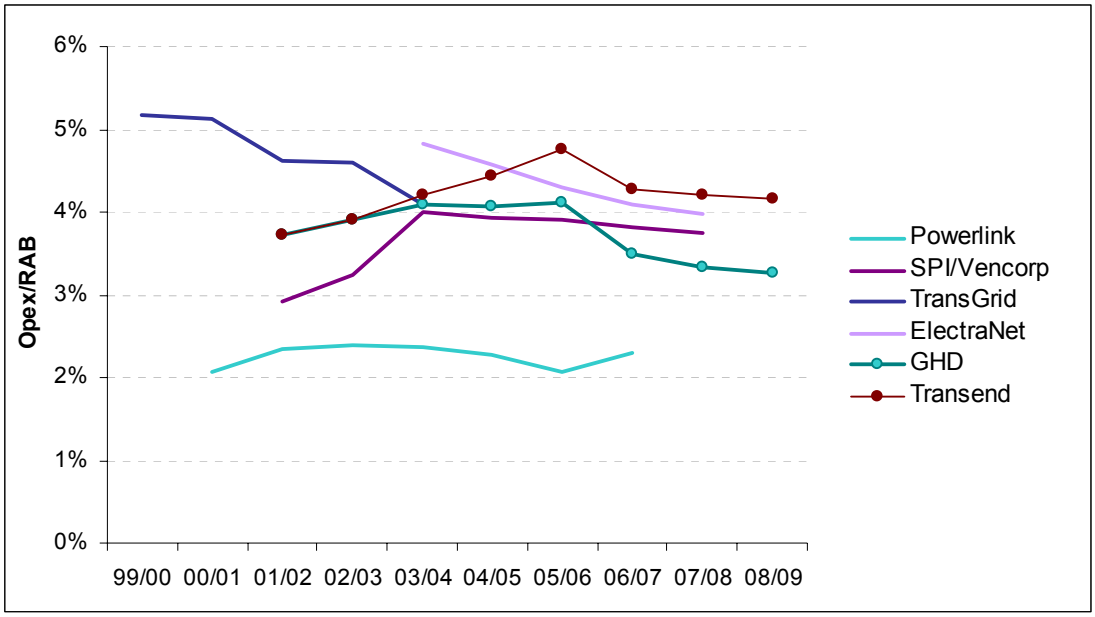
Source: ElectraNet opex figures from 11 December 2002 *South Australian Transmission Network Revenue Cap 2003-2007/08* ($real).
Powerlink opex figures from financial modelling ($real) used to develop final decision.
SPI/Vencorp opex figures from 11 December 2002 *Victorian Transmission Network Revenue Caps 2003-2008* ($real).
TransGrid opex figures from 25 January 2000 *NSW and ACT Transmission Network Revenue Caps 1999/00-2003/04* decision ($nominal).
Transend opex figures from application ($real).
GHD recommended opex figures from GHD's *Transend Regulatory Review* ($real).

Figures 5.1 to 5.5 compare the level of opex recommended by GHD with that of other TNSPs for the following ratios: opex per asset base; opex per line length (circuit kilometres); opex per substation; opex per Giga Watt hour (GWh); and opex per MW.

The ACCC considers that opex as a proportion of asset base and opex per unit of circuit length, while having some limitations, are more useful measures than the other ratios.

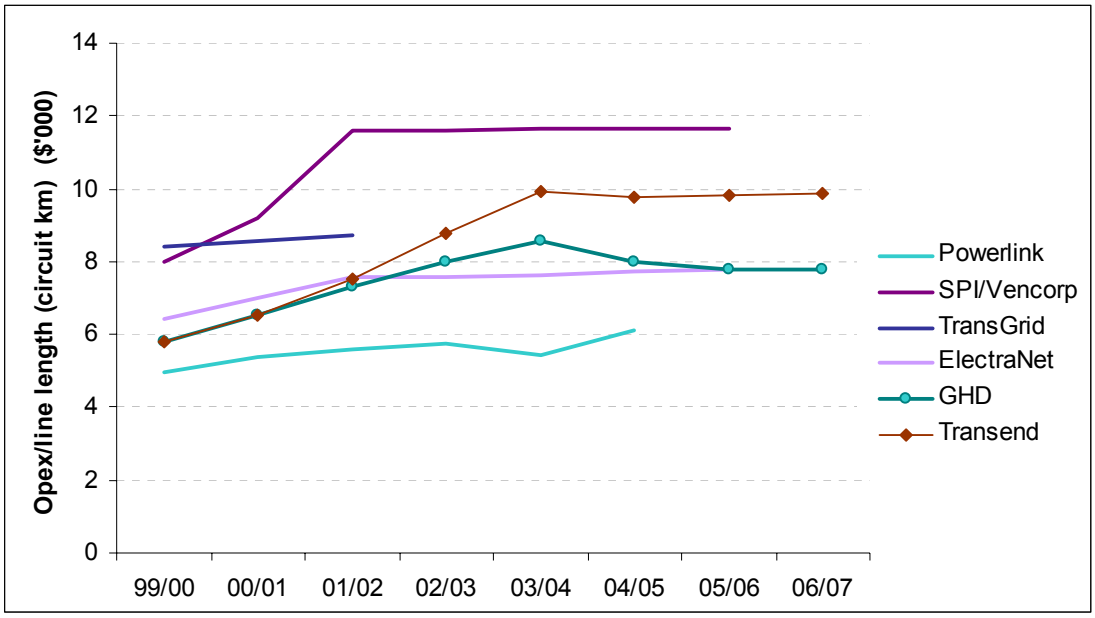
Figure 5.1 shows GHD's recommended opex as a percentage of its asset base over the regulatory period is reasonable compared with other TNSPs. The ACCC notes that the Tasmanian Treasuries' revaluation of Transend's asset base has resulted in a significantly higher asset base compared to OTTER's valuation. The increased RAB results in an improved ratio.

Figure 5.1 Comparison of TNSP's opex per asset base



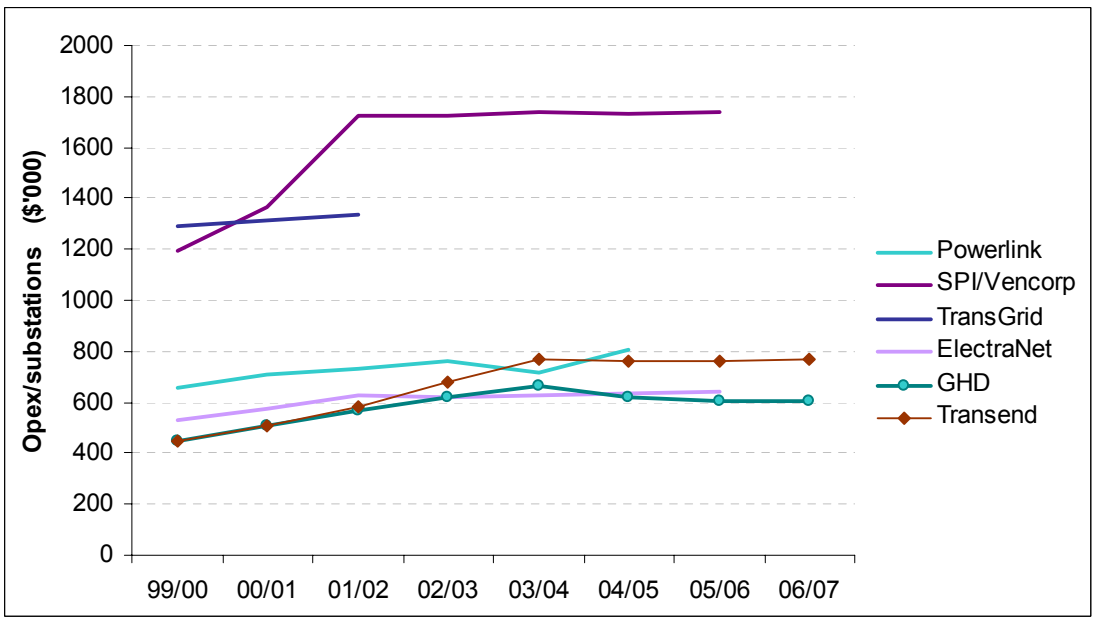
Figures 5.2 and 5.3 show that Transend's opex (as recommended by GHD) is about average compared to other TNSPs. But the relative position is trending upwards from previous years to 2005–06 and then stabilising. These results are consistent with similar assessments by GHD, Transend and interested parties.

Figure 5.2 Comparison of TNSPs opex per line length



The ACCC is mindful that the above opex per circuit length chart may show Transend in a better light than it actually is for the following reason. The ACCC, in its South Australian revenue cap decision, used opex per circuit length benchmark. Tasmania has a high proportion of double circuit lines—higher than many mainland TNSPs (except for SPI). Hence one may expect Transend to have a lower opex per circuit length ratio. But there may be other valid reasons which could make Transend's opex high. If opex per route length was used, it would show Transend's relative position in a worse light.

Figure 5.3 Comparison of TNSPs opex per substation



Transend believes that opex to substation is a more useful ratio because more of Transend's expenditure is for maintaining substations. However, the ACCC notes that Transend has quite a large number of small substations while TransGrid and SPI

PowerNet have a small number of large substations. This perhaps explains why Transend would show up well in the opex per substation ratio.

Figure 5.4 Comparison of TNSP's opex per GWh

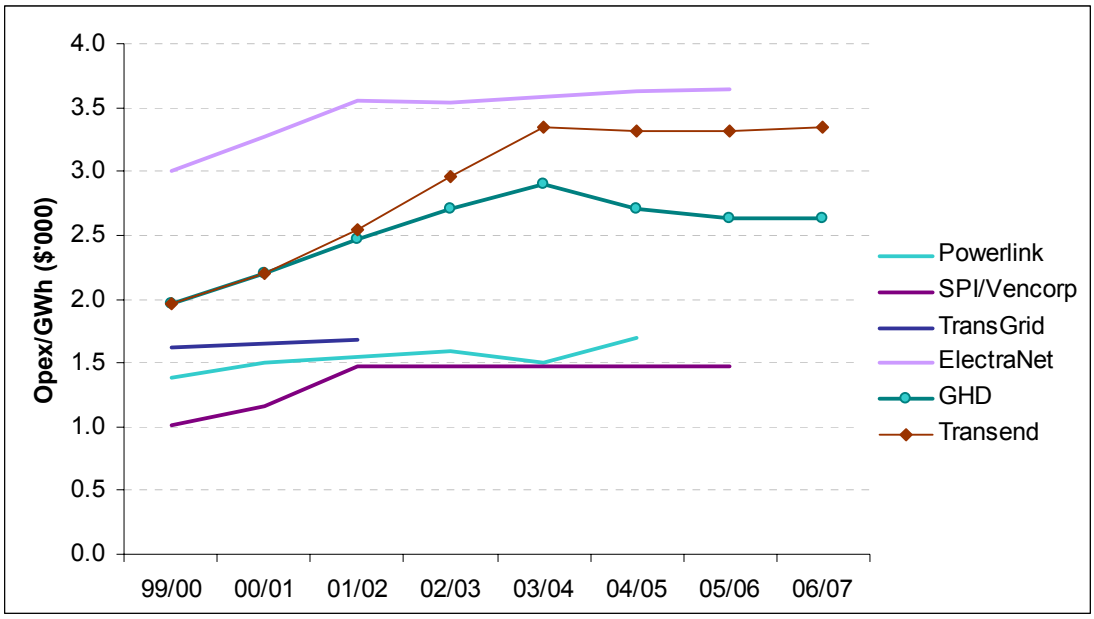
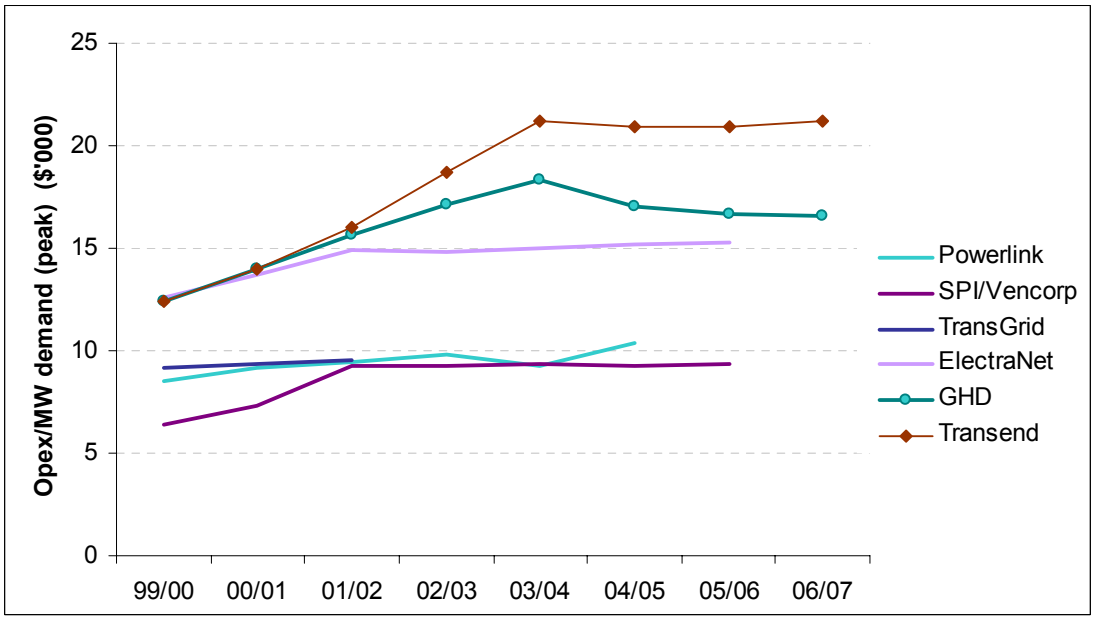


Figure 5.5 Comparison of TNSPs opex per MW



The ACCC recognises that differences in operating conditions and scale may explain why some ratios are higher or lower. As such, they can only provide a measure of reasonableness. Accordingly, the ACCC does not use benchmarking to establish opex allowances but rather as a guide to whether the allowance is within a reasonable range.

However, overall the ACCC considers that its benchmarking shows, particularly in relation to opex per asset base, opex per line length and opex per substation, that GHD's recommended opex allowance is reasonable.

In this context the ACCC notes MEG's claim that the ratios show Transend in a more favourable light than they should because of the inflated asset values, the presence of a high proportion of double circuit lines and a large number of small substations. As explained before, the ACCC accepts MEG's claim. However, the purpose of this analysis is to provide a reasonableness check on the final opex figure. The ACCC considers that though these factors appear to suggest that GHD's allowance is high it is still within reasonable bounds.

Transend preferred to use the ratio of opex to installed generation capacity. The ACCC notes that this ratio would show Transend in a favourable light. However, neither GHD nor other interested parties considered this ratio to be appropriate. The ACCC shares this view.

5.6.10 Guidance on information requirements

TEMCO considered that the ACCC should provide Transend with guidance on the type of information it will require to specifically demonstrate efficient costs for future regulatory periods. GHD also flagged the need for more prescriptive information requirements to be provided to TNSPs so that they are aware of the level of detailed justification required in their revenue cap applications.

The ACCC notes that this issue has been raised during its review of its DRP and will be considered further during this process.

5.6.11 Treatment of grid support

Transend requests that grid support be provided on a pass-through basis.

GHD recommends that because of the uncertainties involved with grid support it should be funded on a pass-through basis subject to certain conditions.

In its draft decision the ACCC included an opex allowance of $2m per annum to cover Transend's grid support payments.

As stated in section 5.5.7, interested parties do not support the inclusion of a fixed allowance for grid support because of the uncertainties involved.

- Powerlink states that fixed allowance may discourage grid support and favour capex because grid support costs are more volatile than capex. Powerlink considers grid support costs should continue to be treated on a pass-through basis provided they are material, reasonable and efficient.

- Hydro Tasmania and MEG argue that grid support should be allowed only at the next revenue reset after considering the actual payments and capex savings resulting from the grid support.

At the time of this decision Transend's grid support requirements, which may involve provision of extra support by Hydro Tasmania, had not progressed sufficiently to provide firm estimates of costs.

Therefore, given the uncertainties involved the ACCC has decided to allow for payments for grid support provided by any party on a pass-through basis in accordance with its pass-through rules (section 5.6.12 and appendix C). To access

these provisions Transend should publish its detailed requirements and enter into appropriate competitive procedures for procuring these services at efficient costs.

There may be concerns about the market power of the grid support providers. In such circumstances the ACCC understands that the Tasmanian Regulator has powers to investigate prices and to take appropriate action.

5.6.12 Pass-through rules

Although the ACCC is concerned about the muting effect that pass-throughs have on incentives, it recognises that certain events may be better addressed on this basis. As such the ACCC considers that it is reasonable to allow funding for certain events on a pass-through basis after a case by case appraisal. The ACCC also notes that the TEC allows for pass-throughs.

The ACCC has considered Transend's pass-through proposal in light of its recent SPI PowerNet and Murraylink decisions. Transend's proposed pass-through rules are similar to that put forward by Murraylink for its revenue cap decision.

Transend proposes a pass-through mechanism for five categories of events:

- insurance
- network support
- tax change
- service standards
- terrorism.

In its draft decision the ACCC considered the pass-through rules contained in Transend's application. It considered that they were generally consistent with its recent decisions and required only minor amendments.

Transend has subsequently provided the ACCC with a revised version of their pass-through rules. The ACCC considers that several amendments are required to these rules. The approved pass-through rules are contained in appendix C.

5.6.13 System protection scheme

Transend is currently working with Basslink Pty Ltd (BPL) to install a system protection scheme (SPS). It states that SPS will ensure the security of the Tasmanian power system in the event of a transmission failure relating to Basslink. Transend states that without the SPS its capex requirements would be much higher.

GHD considers that the operational costs associated with Basslink should be directly recoverable from BPL and therefore the costs associated with the SPS should be excluded from the revenue cap (that is, costs associated with Basslink commissioning, maintenance of the SPS and communications for the SPS).

In its draft decision the ACCC stated that it considers the costs associated with the SPS could be regulated in a more light-handed manner. In response to the draft decision both Transend and Hydro Tasmania have asked the ACCC to elaborate on the form of the light handed regulation.

The ACCC understands that the installation of the SPS will increase the capacity of Basslink to transfer power and that an alternative to the SPS is to augment the transmission network.

The ACCC prefers light-handed regulation of the SPS for the following reasons:

- BPL, as the proponent, is best placed to negotiate with Transend and agree on the costs for SPS (by including an allowance in the revenue cap the ACCC may prejudice such negotiations)
- as BPL is the proponent it could enter into an agreement with Transend specifying the costs and cost recovery methods for the SPS, using even-handed negotiations under clause 5.5A(g)(2) relating to negotiated use of system charges and the negotiating framework contained in clause 6.5.9
- the inclusion of an allowance in the revenue cap may result in a windfall gain or loss to Transend, as these costs are not determined yet.

The ACCC would treat the cost recovered as if it were outside the revenue cap, provided that the entire cost associated with the SPS is recovered from BPL without affecting other transmission customers under an appropriate even-handed negotiating framework. Such arrangements will be reviewed at the next reset.

The above arrangements would not affect the rights of the parties to seek dispute resolution under the code.

5.6.14 Claim for carryover of opex efficiency gain

Transend claims that it has delivered a substantially increased output (in terms of unanticipated scope increases) at a slightly increased cost. On this basis it believes that it deserves an efficiency bonus, glide pathed over the forthcoming regulatory period.

The ACCC's DRP[17] foreshadows that it will consider the use of an incentive mechanism where a TNSP is able to demonstrate management induced opex efficiencies.

The ACCC does not consider that an efficiency bonus is justified for the following reasons.

- Transend's scope of work may have increased. However, the ACCC considers that this could have been at the expense of some of Transend's usual work. For example, the ACCC understands that resources required for the TWEM project have been drawn from other areas within the business. Also Transend was unable to deliver its planned capex program. As such it is unclear whether or not the increase in scope was offset by a reduction in output in some normal activities (substitution effect). Hence it is difficult to establish whether management induced efficiency gains were actually achieved.

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[17] ACCC, *Draft* Statement of Principles for the Regulation of Transmission Revenues, 27 May 1999, pp. 93–95.

- The purpose of an efficiency incentive mechanism is to encourage a firm to reveal its actual efficient costs, resulting in cost reductions over time. In Transend's case its opex costs are increasing substantially from its current regulatory period to the forthcoming period. Hence the ACCC considers that the value of an efficiency mechanism is not clear until such time as Transend's opex costs stabilise.

The ACCC notes that it intends to examine incentive mechanisms more broadly as part of its current review of its regulatory principles. As part of this process the ACCC will seek interested parties' views on incentive mechanisms and the properties they should contain.

The ACCC will monitor annually Transend's opex, as per its Information Requirements Guidelines. Using this and other relevant information the ACCC will assess any claims for efficiency gains at Transend's next revenue reset.

5.6.15 Debt raising costs

As outlined in chapter 6, the ACCC will allow Transend debt raising costs over the regulatory period. This cost is calculated by applying benchmarks and gearing ratios to the asset base, and is treated as an operational expense. As indicated in table 5.7, over the regulatory period debt raising costs average about $0.42m per annum.

The practice of allowing for debt raising costs is relatively new. Therefore the ACCC will examine this approach in the light of new information in its future revenue cap decisions.

5.7 Adjustments to draft decision opex

5.7.1 Summary

In its draft decision the ACCC allowed an average opex amount of about $29m per annum across the regulatory period. The opex stabilises at about $27m towards the end of the regulatory period after NEM-entry is completed. This allowance was based on:

- GHD's alternative trend forecast (the ACCC believes that this forecast is appropriate as it provides historical context, allows for new activities and ensures that an appropriate efficiency factor is incorporated into the forecast)

- a comparable historical opex level of $25m, as such GHD's recommendation represents a significant increase over historical levels but includes several new activities that Transend will be required to deliver going forward.

- the ACCC's own benchmarking of opex which supports the conclusion that GHD's opex forecast is reasonable

- the ACCC's own review of Transend's opex costs which indicates that the amount recommended by GHD is the upper boundary of possible estimates.

The ACCC accepts that Transend's operational environment will change during the forthcoming regulatory period when Tasmania enters the NEM. However, it considers that Transend's core business will not change substantially.

The following table summarises the changes to total opex over the regulatory period, since the draft decision. The details are explained in the following paragraphs.

Table 5.6 Adjustments to the opex allowance in the draft decision

Costs	Reason for adjustment	Amount
System controller	Timing difference	-$2.22m
Metering arrangements	Costs which were flagged in the application have now been provided.	+$0.60m
Under-recovery of return on and of capex in 2003	Tasmanian treasury letter clarifying its intention.	+$2.44m
Equity raising costs	These costs are notional costs.	-$3.20m
Net change over the period		-$2.38m

As explained in section 5.6.12 the grid support costs were included as a $2m allowance in opex in the draft decision but will be provided as a pass-through item in the final decision. Though it will show as a deduction of $2m in total opex, it is not possible calculate the net effect on AR at this stage.

5.7.2 Timing of transfer of system controller

In reviewing the draft decision the ACCC noted that GHD had provided system controller costs from 2004–05 onwards whereas the transfer of functions will take place on NEM-entry (i.e. from May 2005).

After examining the matter GHD deferred the timing of this transfer by one year. That is the costs will be included in the allowance from 2005–06 (rather than 2004–05) onwards. As a result opex for 2004–05 is now $27.6m rather than $29.8m (that is, a reduction of $2.2m, see table 5.7).

5.7.3 Opex associated with metering

Transend flagged in its application that it would advise of the costs to cover energy metering activities as soon as they became available. It submitted these costs close to the draft decision date. The ACCC was unable to include them in the draft decision because of a lack of time to examine the costs.

Transend asked for $0.11m per annum for the opex associated with the metering interface between Transend and Aurora, to cover activities such as inspections, compliance tests and maintenance. The ACCC has reviewed these costs and considers that they are appropriate and therefore has included them in Transend's opex allowance (table 5.7).

5.7.4 Claim for under-recovery of revenue

In 1999 OTTER made a price determination for the electricity supply industry in Tasmania (including Transend) which was effective from 1 January 2000 to 31 December 2002.

In 2002 the Tasmanian Government extended the price determination, maintaining the AR in real terms for an additional year (i.e. until 31 December 2003). To realise this decision, capital additions must equal depreciation for the calendar year 2003 (i.e. the net worth of the asset base should be maintained).

However, Transend has advised that capex additions will exceed depreciation in 2003. These additions are now included in the RAB. Both the return of, and return on, capital on such additions were included in the AR in the draft decision from 1 January 2004 onwards.

In its application Transend sought an additional allowance of $2.44 million to be recovered in 2004. This amount relates to the difference between the returns (both of and on capital) that Transend would have received from its actual capex and the amount that was allowed by the extension in 2003.

In its draft decision the ACCC did not allow for the under recovery in 2004, mainly because it was not clear whether the Tasmanian Government wanted this.

Since then the Tasmanian Treasury has had discussions with the ACCC, stating that the Tasmanian Government intended that Transend would be able to recover this amount in 2004. The ACCC explained that the consequence of this would be a further increase in transmission prices. However, on 18 November 2003 the Tasmanian Treasury wrote to the ACCC confirming its position.

The revenue cap is determined under the TEC until NEM-entry. During that period the ACCC is effectively making a revenue cap decision on behalf of the Tasmanian Regulator. Therefore the ACCC sought his advice.

The Tasmanian Regulator has advised that it has been his practice to make adjustments to correct for differences between the forecast and actual capex in the following year (ex-post unders and overs adjustments). He also confirmed that this approach was adopted in his 1999 pricing determination and that, within the period, there had been downward adjustments in Transend's allowance to compensate Tasmanian customers for under-spends in some years. He suggested that the ACCC should compensate Transend for the overspend consistent with past practice.

The ACCC also notes that in its previous revenue cap decisions it has usually accepted the decisions of previous (state) regulators.

Given the above the ACCC has now decided to include the under-recovery of $2.44m in the 2004 AR, treating it as a separate item in the first six month period of the revenue cap (table 5.7).

5.7.5 Equity raising costs

In its draft decision the ACCC provided an allowance of $3.2m over the regulatory period to cover costs associated with raising equity.

In its first two revenue-cap decisions, concerning Queensland and NSW/ACT transmission networks, the ACCC did not provide for equity raising costs.

In the last two decisions, concerning Victoria and South Australia, the ACCC provided an allowance for equity raising costs. In these decisions the ACCC stated that it would review this matter in future decisions.

The ACCCnow considers that equity raising costs should not be allowed for Transend because:

- it is unlikely that Transend would incur equity raising costs during the regulatory period, therefore any provision will have to be notional
- return on equity is a benchmark return calculated by using the CAPM.

5.8 Conclusion

The ACCC considers that an average annual figure of about $29m stabilising at $27m is appropriate for Transend (table 5.7). Grid support is not included as a fixed allowance but will be treated on a pass-through basis.

Table 5.7 Transend's opex allowance ($m, 2002–03)

	Jan-Jun 2004	2004-05	2005-06	2006-07	2007-08	2008-09	Total
Transend's proposal[1]	16.0	33.4	36.5	36.9	35.0	35.2	193.0
GHD's proposal[2]	13.1	27.6	30.9	29.7	27.2	27.1	155.6
Debt raising cost	0.18	0.39	0.42	0.43	0.46	0.46	2.3
Energy metering	0.06	0.11	0.11	0.11	0.11	0.11	0.6
Sub-total	**13.3**	**28.1**	**31.4**	**30.2**	**27.8**	**27.7**	**158.8**
Under-recovery[3]	2.44	-	-	-	-	-	2.44
Total	**15.8**	**28.2**	**31.4**	**30.2**	**27.8**	**27.7**	**161.0**

1. Transend's opex forecasts included equity raising costs but not debt raising or grid support costs. Its debt raising cost forecasts were included in its WACC calculation.
2. GHD's forecast does not include energy metering, equity raising costs or debt raising costs.
3. Amount provided to compensate for under-recovery of revenue in 2003 due to capital overspend.

6 Cost of capital

6.1 Introduction

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 consider the weighted average cost of capital (WACC) of the transmission network.

The ACCC therefore uses the risk adjusted rate of return required by investors in commercial enterprises facing similar business risks to establish the WACC.

Electricity transmission is a highly capital intensive industry where return on capital generally accounts for about half of the revenue allowed. 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 will be unable to earn sufficient returns to the owner, reducing the incentive to reinvest in the business.
- Conversely, if the return on equity is too high, networks will have a strong incentive to overcapitalise, creating inefficient investment.
- AR translates into prices for users. Eventually a higher AR would mean higher prices. The weighted average cost of capital

In the DRP[18] the ACCC outlines its view on the appropriate return on equity to be achieved and how it is to be used for deriving the AR. This is summarised in statement 6.3:

> The ACCC will apply the nominal post-tax return on equity as a benchmark. The revenues will be calculated on the basis of the cash-flows associated with the regulatory accounts necessary to deliver this return after taking into account liabilities and the assessed value of franking credits based on existing tax provisions and foreshadowed tax changes due to occur during the regulatory period.

For this decision the ACCC has removed the parameters relating to business income tax from the WACC formula (referred to as 'vanilla WACC') and applied it to post-tax cash flows (i.e. cash flows adjusted for tax and franking credits).

$$WACC = r_e (E/V) + r_d (D/V)$$

where:

r_e	=	required rate of return on equity
r_d	=	cost of debt
E	=	market value of equity
D	=	market value of debt
V	=	market value of equity plus debt.

[18] ACCC, Draft Statement of Principles for the Regulation of Transmission Revenues, 27 May 1999, p. 84.

Transend has adopted the ACCC's post-tax approach to setting the WACC, using nominal after tax cash flows in its application.

6.2 The capital asset pricing model

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 of the code)

Various methods can be applied to estimate return on equity (r_e), as outlined under schedule 6.1(2.2.2) of the code, for example, price to earning ratio, dividend growth model and arbitrage pricing theory. However, the code indicates that the 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
- market's own volatility
- 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)—the return of the market as a whole less the risk free rate
- β_e = the relative systematic risk of the individual company's equity (equity beta)

The CAPM expresses the rate of return as the post-tax nominal return on equity.

However, businesses are funded by both equity and debt. Therefore by including the cost of debt as well we can derive the overall return on capital employed. This is known as the WACC (see section 6.2).

6.3 Estimate of the risk-free interest rate

The yield on government bonds is considered to be risk-free, because governments can honour all interest and debt repayments.

6.3.1 Sampling period

All information used for deriving the rate of return using the CAPM (the CAPM parameters) should be as up-to-date as possible. Financial markets continually determine parameters such as interest rates and inflationary expectations. Statement 6.7 of the DRP states:

> The risk free rate will be normally based on a 40 trading day moving average covering the eight weeks prior to the reset date unless there is evidence to suggest that the current rate of the day represents a transition to a new level which is expected to be maintained.

Transend proposed a 10-day averaging period to estimate the risk-free rate.

ACCC's considerations

The ACCC understands the limitations of using either an 'on the day' rate or an 'historical average' to calculate the risk free rate.

The CAPM specifies the use of ex-ante returns, which is best estimated by using the on-the-day rate, and theoretically the on-the-day rate is more appropriate.

However, this rate reflects short-term fluctuations that may differ from the long-term trend. Averaging the rates over some time before the regulatory period starts can reduce such volatility. Several regulators use an average rate as the risk-free rate.

In the DRP the ACCC suggested a 40-day moving average and used it in earlier revenue cap decisions. However, the ACCC used a 10-day averaging period in its Victorian[19] and South Australian[20] decisions last year.

The ACCC therefore accepts Transend's proposal to use a 10-day moving average.

Submissions on the draft decision

Transend states that its financing risks can be minimised if it knows the exact 10 days of averaging in advance. It hereby requests the ACCC to determine the 10-day averaging period in advance. To do so, this date has to be independent of the date of the final decision.

The ACCC notes Transend's request to determine the averaging period independent of the final decision date. As explained in the DRP, the ACCC's normal approach is to calculate the risk free rate, based on the sampling period from the final decision. It does not see any reason for changing this position.

6.3.2 Selection of the bond rate

Submissions by interested parties

Transend states that:

- a number of arguments support the use of a 10-year bond rate as a proxy for the risk-free rate and, importantly, it should be set on a basis consistent with other variables in the CAPM notably the MRP
- the Lally report[21] assumes that the interest rate risk is the only one facing the business and does not account for cost uncertainty and regulatory risk

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19 ACCC, *Victorian Transmission Network Revenue Caps 2003–2008 - Decision*, December 2002.

20 ACCC, *South Australian Transmission Network Revenue Cap 2003–2007/08 - Decision*, December 2002.

- regulators should err on the side of caution in estimating the WACC to ensure that investment continues,[22] hence they should use the (usually slightly higher) 10-year bond rates.

The MEG considers that the ACCC's previous approach, using a bond (for bond rate), the term of which matches the regulatory period, is sensible. MEG also claims that Transend prefers a longer bond rate only because it is usually higher.

ACCC's considerations

The risk-free interest rate is a component of the WACC and is estimated by using the yield on Commonwealth securities. The WACC is calculated at the beginning of each revenue reset and is applied throughout the regulatory period. Therefore the term of the bond rate should match the length of the regulatory period. In the case of Transend it is five and a half years. Some finance experts support this view.

Other experts believe that bond rates with terms matching the life of the assets should be used. The effective lives for most transmission assets far exceed 10 years, so these experts suggest that 10-year bond yields should be used in the calculation as it represents the most liquid bond with the maturity comparable to the life of the assets.

Australian state regulators use a 10-year bond rate, and the code also appears to support this view.[23]

In the DRP the ACCC stated that yields on bonds matching the regulatory period should be used in the CAPM model. It applied this approach in its previous revenue cap decisions regarding Queensland, Victoria and South Australia because:

- the regulatory framework seeks to provide an efficient return on capital
- the regulatory asset value is supported by the expected cash flows during the regulatory period.

Associate Professor Martin Lally advised that the ACCC's approach in establishing the risk-free rate is theoretically correct and appropriate in practice, given the financial framework used.[24] That is, the five-year bond rate is appropriate if the regulatory period is also five years.[25]

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21 Lally, *Determining the risk free rate for regulated companies*, a paper for the ACCC, July 2002.

22 Further discussion by Transend and NECG about the appropriate risk-free rate to use can be found in appendix 7 of its revenue cap application.

23 Code, schedule 6.1.

24 Associate Professor Martin Lally is an academic staff member of the School of Economics and Finance, Victoria University of Wellington.

25 Lally, *Determining the risk free rate for regulated companies*, a paper for the ACCC, July 2002.

Several interested parties criticised Lally's assumptions. In response, the ACCC engaged Professor Kevin Davis[26] to examine these criticisms.[27]

In his report Davis considered that long-term interest rates will, on average, exceed short-term interest rates for reasons other than expectations of future increases in interest rates. Therefore, the use of the longer term interest rate as a proxy for the risk-free rate will lead to higher regulatory cash flows than if the short-term rate were used.[28]

Davis demonstrated that using the interest rate on bonds with maturity periods equalling the regulatory period, to derive the required return for the regulated asset, generates expected cash flows which are fairly priced in net present value terms. Furthermore, using a maturity period which exceeds the regulatory period provides excess returns for the regulated asset if there is a positive term premium in the yield curve, unrelated to interest rate expectations.

The ACCC has discussed this matter in detail in the DRP and its previous revenue cap decisions. After considering both arguments it prefers, on balance, to use a term matching the regulatory period. However, the ACCC accepts that this is a matter in which experts can have different views.

Maturity dates on the 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.

At the time of this decision, using the nominal five and a half year, 10-day moving average for Commonwealth Government bond rates results in a risk free rate of 5.86 per cent.

6.4 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 and the cost of debt, which can be estimated by the:

- difference between the nominal and indexed bond yields or
- Commonwealth Treasury's inflation forecasts (based on its modelling).

Proposed statement 6.11 of the DRP states:

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[26] Professor Kevin Davis is Commonwealth Bank Group Chair of Finance, Department of Finance, The University of Melbourne.

[27] Davis, *Report on risk-free interest fate and equity and debt beta determination in the WACC*. Report for ACCC, May 2003

[28] Ibid.

> The forecast inflation rate will be deduced from the difference in the nominal bond rate and inflation indexed bond rates, and will be deduced for the term corresponding to the duration of the regulatory period. Alternatively, official inflation forecasts may be used.

For this decision the ACCC forecasts inflation of 2.32 per cent per annum based on the difference between the nominal and indexed bond yields.

6.5 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.

Statement 6.10 of the DRP states:

> The ACCC will estimate the cost of debt for a firm conforming to the financial structures implied by the regulatory accounts in consultation with relevant finance agencies.

6.5.1 Submissions by interested parties

Transend considers that a credit rating of BBB+ would be fair given that gearing is assumed to be 60 per cent. Therefore it asked for a cost of debt of 132 basis points above the nominal risk-free rate.

Hydro Tasmania argues that Transend's estimate of the cost of debt is particularly high and results in a WACC higher than that given for other TNSPs in recent decisions.

The EUAA and EAG state that the debt margins provided in recent decisions were not consistent. They seek a consistent and reasoned approach.

6.5.2 Submissions on the draft decision

Transend provided a table consisting of what it regards as comparable companies (including gas) for determining the average credit rating. This table excludesgovernment owned entities because Transend believes that including them may bias the assessment of the average credit rating.

Powerlink also raised similar concerns regarding government owned entities in the ACCC's sample of firms.

6.5.3 ACCC's considerations

Asset backing influences the credit rating of an entity. That is, the greater the debt to asset/equity ratio, the greater the risk and, therefore, the debt margin (other things being equal).

In considering an appropriate debt margin for an entity, the ACCC adopts industry-wide benchmarking, offering an incentive to minimise inefficient debt financing. This is consistent with the DRP.

When calculating the debt margin the ACCC considers the appropriate benchmark credit rating of the TNSP and the (market) debt margin associated with that rating.

The ACCC prefers to use a benchmark rather than an actual credit rating, as credit-worthiness is partly under managerial control.

Transend's application provided a sample of firms, including three with gearing of 60 per cent or higher and credit ratings of BBB or BBB+:

- ElectraNet (75 per cent, BBB+)
- Envestra (80 per cent, BBB)
- GasNet (67 per cent, BBB+)).

However, similar firms have gearing well below 60 per cent but have (similar) credit ratings of BBB or BBB+:

- Origin (29 per cent, BBB+)
- AlintaGas (49 per cent, BBB)

Table 6.1 sets out the long-term credit rating for 10 Australian electricity network companies that have been assigned a credit rating by Standard and Poor's. The ACCC considers relevant Australian electricity transmission and distribution companies should be used as the basis for a benchmark. The ACCC notes that there could be a wide range of factors relating to why the average credit rating for gas companies (some listed above) may be different to electricity companies.[29]

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[29] Standard and Poor's, *Energy Australia & New Zealand*, November 2001, p. 14.

In assessing the creditworthiness of Australian gas companies, Standard and Poor's would consider a number of key issues. They relate specifically to regulatory risk, counter party risk, and overall volume demand for gas.

Table 6.1 Credit ratings of electricity companies

Company	Long-term rating	Actual gearing (%)
Ergon Energy	AA+	46.9
Country Energy	AA	66.7
EnergyAustralia	AA	52.5
Integral Energy	AA	55.8
SPI PowerNet	A+	82.4
CitiPower Trust	A-	65.4
ETSA Utilities	A-	62.4
Powercor Australia	A-	42.9
United Energy	A-	41.9
ElectraNet	BBB+	74.9

Source: Standard and Poor's, *Australian Report Card Utilities*, April 2003

The table shows that the average credit rating of these entities is about A and their average gearing is about 59 per cent, which is close to the benchmark of 60 per cent.

In its sampling of the average credit rating for the electricity industry the ACCC has included both private and government owned entities. The ACCC considers that by simply choosing stand-alone private companies, it would provide too small a sample to obtain an appropriate average credit rating for the electricity industry. The ACCC notes that Transend, being a fully government owned entity, is not in the sample because it does not have a publicly available credit rating from Standard and Poor's.

The ACCC also notes the concerns from Transend and Powerlink that including government owned companies in the sample may bias the credit rating upwards. However, the ACCC considers that government/parent ownership is but only one factor which may affect a credit rating and would not create a significant bias to the sample.

Standard and Poor's has stated that the A rated entities are generally stable network or transmission businesses.[30]

Accordingly, the ACCC on balance considers that an A credit rating represents an appropriate proxy for the benchmark electricity network company.

Having established a proxy credit rating, a benchmark 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 margin applied by the ACCC in its previous decisions (EUAA and EAG raised this issue).

[30] Standard and Poor's, *Australian and New Zealand Electric and Gas Utilities Ripe for Rationalization*, May 2002.

Consistent with the ACCC's approach to estimating the debt margin in its recent Victorian and South Australian revenue cap decisions, the current 10-day moving average benchmark spread over the government bond yields, for A rated corporate bonds with a maturity of five and a half years, is 91 basis points[31]. Combined with the nominal risk-free rate of 5.86 per cent, it suggests a nominal cost of debt figure of 6.77 per cent for use in the WACC estimate.

6.6 Debt and equity raising costs

Debt and equity raising costs

To raise debt a company has to pay debt financing costs on top of the debt margin. Such costs are likely to vary between each debt issue, depending on the borrower, lender and market conditions.

According to a consultancy undertaken by Macquarie Bank on behalf of the ACCC, TNSPs often incur advisory fees, agency fees, arrangement fees, credit rating costs and syndication expenses.[32] In addition, TNSPs may also face other costs, such as dealer swap margins, to transfer from floating to a fixed rate facility.

Equity raising costs

Entities incur costs when raising equity. These include payments for services such as financial structuring, marketing, preparing and distributing information, and undertaking presentations to prospective investors and underwriting.[33]

6.6.1 Submissions by interested parties

Transend noted that recent regulatory decisions provided an allowance for equity raising costs. It argued for 12.5 basis points, applying the same assumptions about the debt issue used in the ACCC's GasNet decision.

The MEG points out that Transend is claiming equity raising costs of $0.6m per annum, despite obtaining its assets debt free and without having to raise equity.

6.6.2 Submissions on the draft decision

Powerlink believes that debt raising costs are an intrinsic part of the debt margin (and the WACC methodology) and should continue to be recovered through the return on capital allowance.

6.6.3 ACCC's consideration of debt raising costs

The ACCC considers that TNSPs should be given an allowance for debt raising costs, based on a benchmark for current market costs.

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31 Interpolated from CBASpectrum website: www.cbaspectrum.com

32 Macquarie Bank, *Issues for debt and equity providers in assessing greenfields gas pipelines*, report for the ACCC, May 2002, pp. 16, 21.

33 Ibid, p. 10.

Some commercial banks indicated that debt raised on capital markets is likely to incur 8–12.5 basis points of the amount as fees as well as the debt margin.

Consistent with its recent Victorian and South Australian decisions, the ACCC considers an allowance of 10.5 basis points per year for debt raising costs as a reasonable benchmark for a TNSP.

In past decisions the ACCC added the debt raising costs to the debt margin, to form a part of the return on capital. The ACCC notes Powerlink's comment for it to maintain this approach. However, the ACCC considers it is more appropriate to provide the debt raising costs as an allowance as a part of opex (see section 5.7.9 of chapter 5) because it is an identified cost category. This approach does not change the revenue allowance, i.e. it is revenue neutral. It is also more transparent and is consistent with the ACCC's approach of providing equity raising cost in the opex allowance.

The allowance for debt raising is about $0.42m per year on average over the regulatory period. This is based on an opening RAB of $604m and the assumed benchmark gearing ratio of 60:40.

6.6.4 ACCC's consideration of equity raising costs

The ACCC has not allowed any equity raising costs as part of this decision. The ACCC's treatment of equity raising costs is discussed in section 5.7.5.

6.7 Market risk premium

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:

$$MRP = r_m - r_f$$

Proposed statement 6.8 of the DRP states:

> The ACCC will adopt what it perceives to be the accepted value of the market risk premium available at the time of the regulatory decision.

Under a classical taxation system, conventional thinking suggests a value for the MRP of around 6 per cent.

Multiplying WACC by the RAB to determine the return on capital for a regulated business is a forward-looking concept. 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 to estimate the MRP.

6.7.1 Submissions by interested parties

Transend argues that the historical MRP range favoured by finance professionals is 6 per cent to 8 per cent. It states that evidence suggested a figure at the high end of the range. Transend further argues that evidence suggesting a short-term decline did not provide valid support for policy setting.

Transend believes it is important to estimate MRP on a basis consistent with the bond yield used to set the risk-free rate which is 10-year bond yield. It stated that as the ACCC uses a five-year rate, MRP should be adjusted to compensate for the difference between the five and 10-year bond yields. However, Transend recognised the ACCC's precedent and used a MRP of 6per cent in the application.

Conversely, the EUAA and EAG cite international comparisons, pointing out that UK regulators have used an MRP of 3.5 per cent. They also claim that it is logically inconsistent to look backwards for the MRP but forward for other CAPM parameters.

Similarly, MEG highlights the UK experience and points to increasing evidence that the 6 per cent MRP used in the ACCC's previous decisions is too high. It considers that a range of 3 to 4 per cent is more appropriate.

6.7.2 ACCC's considerations

The ACCC's assessment of the MRP, although based on more traditional views, still remains between 5 per cent and 7 per cent. The ACCC has chosen the mid-point of this range i.e. 6 per cent.

This is consistent with the Lally study for the ACCC, which recommended an MRP of 6 per cent.[34]

Several parties have commented that MRP is calculated by deducting long-term risk free rates (typically 10-year government bond rates) from historical returns on a market portfolio. Therefore, they claimed that 10-year bond rates should be used.

However, Davis has argued against this position.[35] In particular, he notes that although historical estimates of the MRP have been calculated as a historical average of the actual market return over some risk-free rate, namely the 10-year government bond, this does not require that the same maturity bond then be used to estimate returns of shorter maturity.

The ACCC accepts that UK regulators have used an MRP of about 3.5 per cent. However, it is satisfied that the MRP in Australia will be different because:

- despite global markets, a perception of segmented stock markets still exists and investors may require a higher premium to invest in the Australian market
- a domestic CAPM version is used in estimating the required cost of equity
- the UK adopts a 'real' CAPM, therefore direct comparisons are not as straight forward.

A number of surveys support the ACCC's MRP estimate. For example, the Jardine Fleming capital markets survey on professional market practitioners' MRP

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34 Lally, *The Cost of Capital under Dividend Imputation*, June 2002, p. 34.

35 Davis, *Report on Risk Free Interest Rate and Equity and Debt Beta Determination in the WACC*, Report for ACCC, May 2003.

expectations found the MRP to be about 5.87 per cent on average.[36] The survey also found the expected future MRP is about 1 per cent below this figure. However, the ACCC considers that these reduced expectations reflect substantial uncertainty and are not persuasive enough to revise its estimate.

6.8 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 (γ) has a major effect on the WACC and there is little doubt that franking credits have value:

> 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 (schedule 6.1(5.2) of the code)

6.8.1 Submissions by interested parties

Transend asked the ACCC to continue to use 0.5 for γ. It claims that a zero value is consistent with the marginal shareholder being an international investor but acknowledges that a γ of 0.5 (or below) is well established in Australian regulatory decisions. Transend also believes that it is too early to assess the impact of recent changes to capital gains tax and the full flow-through of imputation credits.

6.8.2 ACCC's considerations

The γ incorporates dividend payouts carrying imputation credits and the proportion of credits that could be used. Australian academics and practitioners do not agree about adjusting the rate of use of imputation credits.

Given that the value of γ lies between zero and one, the ACCC prefers to maintain its position on γ of 0.5.

6.9 Gearing

The ACCC must use a benchmark gearing, rather than the 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.

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[36] Jardine Fleming Capital Partners Ltd, *The Equity Risk Premium-An Australian Perspective*, September 2001.

6.9.1 Submissions by interested parties

Transend states that it has little debt and hence a low gearing. However, it used the ACCC's benchmark gearing of 60 per cent in its application. Transend argues that other variables in the WACC must be consistent with this benchmark gearing.

6.9.2 ACCC's considerations

A firm's capital structure (expressed as gearing) is unlikely to affect its WACC according to the Modigliani and Miller theory. This theory, however, is based on specific assumptions. In reality the theory is only true within reasonable boundaries. At extremes the capital structure of a company could affect its WACC because higher gearing could result in greater risks for both debt and equity holders.

Typically regulators have assumed a gearing of 60 per cent (table 6.3) to calculate the WACC. This WACC should still apply within reasonable range of actual gearing, say of 40 per cent to 70 per cent (see above paragraph).

Table 6.3 Gearing levels adopted in regulatory decisions

Entity	Industry	Debt/debt+equity
ACCC (2002)	Electricity transmission	60%
QCA(2001)	Electricity distribution	60%
ESC (2000)	Electricity distribution	60%
IPART (1999)	Electricity distribution	60%
OTTER (1999)	Electricity distribution	50–70%
IPART (1999)	Gas distribution	60%
ACCC/ESC (1998)	Gas transmission	60%

Transend is very lowly geared. Its latest financial statements show a gearing of 3 per cent.

The ACCC's regulatory regime is both light-handed and incentive-based. It sets the benchmarks allowing regulated entities to operate freely. They gain by performing better than the benchmarks and vice-versa. Accordingly, in the DRP the ACCC stated that it would not be using the actual gearing of a TNSP, but an appropriate benchmark instead.

A survey conducted by Standard and Poor's suggests that gearing ratios for transmission and distribution businesses should be between 65 per cent and 55 per cent.[37]

Therefore, the ACCC has decided to adopt a gearing of 60 per cent.

[37] Standard and Poor's, *Rating Methodology for Global Power Companies*, 1999.

6.10 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 one indicates that the stock has a low systematic risk relative to the market (the market portfolio beta being equal to one). Conversely an equity beta of more than one indicates the stock has a higher risk compared 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, and the company's return is compared to the market return. Market return is calculated in the same way, i.e. by adding the dividends and changes in values of all the companies listed in the stock exchange.

Calculating equity betas for unlisted firms is more complicated, as their returns cannot be calculated directly. Therefore, 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 very few similar stocks are listed.

The equity beta of a firm may also depend on its capital structure. 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—that is as if the firm were to have no debt (100 per cent equity)—they arrive at the 'asset' or 'unlevered' 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[38]:

$$\beta e = \beta a + (\beta a - \beta d)\left[1 - \left(\frac{rd}{1+rd}\right)(1-\gamma)Te\right]\frac{D}{E}$$

The debt beta captures the systematic risk of debt, just like equity beta capturing the systematic risk of equity. The debt beta is used to de/re-lever 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.

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38 ACCC, *DRP*, pp. 79–81.

6.10.1 Submissions by interested parties

Transend questions whether current market observations for listed utility firms in Australia are relevant when determining a beta value for a regulated firm such as Transend, given the volatility of beta values. It argues that regulatory precedent and consideration of international beta values suggest a range of 0.4 to 0.5 is appropriate for Transend's asset beta. Therefore Transend has used an asset beta of 0.45 given factors suggesting high systematic risk and its size relative to other transmission companies. The 0.45 asset beta equates to an equity beta of 1.12.[39]

The MEG notes that the regulated utilities are now listed in the 'utilities' sector on the Australian Stock Exchange and believes that there is a strong case for the equity beta of this sector to be significantly below 1.0 and probably closer to the range of 0.4 to 0.5.

MEG also notes that the Allen Consulting Group's (ACG) report concentrates on gas transportation; however, MEG claims that electricity transport is more revenue stable than gas. This is because the revenue of gas companies can vary depending on the volume of gas transported, whereas electricity companies are given a fixed revenue cap, which effectively eliminates volume risk.

The EUAA states that Transend has included data showing beta of comparable companies to be one or below in its application, but then recommends using values substantially higher than one, claiming differences affecting its business. The EUAA further states that overseas regulators do not accept that any regulated energy company faces more risk than the sharemarket as a whole.

6.10.2 Submissions on the draft decision

Both EUAA and MEG consider that the ACCC should place more weight on market data when estimating an equity beta for TNSPs. Transend states that it is incorrect to directly compare the equity beta of TNSP with 60 per cent gearing with the market portfolio which has a much lower level of gearing on average. It argues that adjusting the market beta for gearing would show a figure of around 1.6.

6.10.3 ACCC's considerations

Betas

Equity beta

The ACCC has used an equity beta of 1.0 in its previous revenue cap decisions, suggesting that TNSPs face the same volatility as the market. However, there is a view that gas and electricity transmission businesses are less risky as their earnings are more stable than the market portfolio—suggesting an equity beta of less than 1.0.

The ACCC notes Transend's claim that it is not appropriate to compare a TNSP's equity beta with the market portfolio because of gearing differences. By definition,

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[39] Further discussion by Transend and NECG about beta can be found in its revenue cap application, appendix 7.

the market portfolio beta has a value of 1.0 (and does not require any gearing assumption).[40]

The literature concerning the determinants of beta is extensive and points out that the following factors should be considered:

- the nature of a firm's output
- duration of its contracts
- regulation
- monopoly power
- operating leverage
- real options
- industry size
- capital structure.

Standard practice for estimating an equity beta of unlisted firms is based on estimating the betas of other comparable listed firms. However, it is generally difficult to match firms on the full range of underlying factors, therefore adjustments are usually required. Among these adjustments it is only those involving gearing that receives much attention. This focus reflects the lack of theoretical models (on other factors) or general acceptance of them.

Consequently, it is typical to use comparable firms in a similar line of business so that the systematic risk of the underlying assets could be regarded similar. Following the selection of comparable firms, gearing is assumed to be a remaining factor for adjustment (see table 6.5 which provides a list of proxy betas based on the de/re-levering of equity betas from comparable firms).

Asset beta

The asset beta is only relevant within the de-relevering/ 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

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[40] The definition of the portfolio beta (β_i) represents the risk of the portfolio relative to the market and is described as:

$\beta_i = cov_{im}/\sigma_m^2$

where: cov_{im} = the covariance between the return of portfolio i and the return of the market portfolio

σ_m^2 = variance of portfolio m

As the covariance of a portfolio with itself is equal to its variance then:

$cov_{mm} = \sigma_m^2$

Combining these two equations, the beta of the market is one:

$\beta_m = \sigma_m^2/ \sigma_m^2$

$= 1$

observable equity beta. The ACCC has taken a consistent approach of using past regulatory decisions to determine an estimate of the asset beta. Table 6.4 lists the asset betas for recent regulatory decisions. From this information the ACCC considers that an appropriate range for electricity asset betas is between 0.3–0.5. Accordingly, the ACCC proposes to maintain the asset beta at 0.4 for the purpose of this decision which corresponds to an equity beta of 1.0 for the WACC calculation.

Table 6.4 Recent regulatory decisions on asset betas for electricity industry

Decision	Network type	Asset beta
ESC, price determination	Distribution	0.40
ACCC, Snowy Mountains	Transmission	0.40
ACCC, NSW and ACT	Transmission	0.35-0.50
ACCC, Queensland	Transmission	0.40
IPART, NSW	Distribution	0.35-0.50
QCA, price determination	Distribution	0.45

Debt beta

The ACCC has used a debt beta of zero in its previous electricity revenue cap decisions, considering the debt beta is difficult to estimate. Given that the risk of debt is primarily related to default risk, the ACCC considers that the systematic risk of debt is low. Therefore it believes that a relatively low debt beta is appropriate and treated it as a residual parameter. A report prepared by ACG for the ACCC suggested that an appropriate range for the debt beta would be between zero and 0.15.[41]

Nonetheless, if the value of debt beta used between the de-levering and re-levering process is consistent, then the effect on the equity beta is generally negligible.

Consistent with previous practice and Transend's application, the ACCC considers that in this draft decision an appropriate value for the debt beta is zero, in the de/re-levering process. A debt beta of zero coupled with an asset beta of 0.4, in accordance with the Monkhouse formula, provides a re-levered equity beta of 1.0.

Estimating equity beta from market data

The ACG report, based exclusively on market evidence,[42] suggested an equity beta of just under 0.7 for Australian gas transmission companies. ACG also examined the data for comparable businesses in the USA, Canada and UK, which suggested lower betas. Therefore, ACG concluded that the Australian estimate was not understated.

ACG recommended that Australian regulators retain a conservative approach to beta estimation with an equity beta estimate of one. However, ACG noted that:

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41 Allen Consulting Group, *Empirical evidence on proxy beta values for regulated gas transmission activities*, final report for the ACCC, July 2002, pp. 28–29.

42 Ibid, p. 46.

> 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.[43]

The ACCC notes the sample betas calculated in Transend's application. The ACCC also derived betas from comparable Australian firms, using data from the Australian Graduate School of Management (AGSM) for March and June 2003.

To derive equity betas, the ACCC first started with unadjusted betas of a small sample of (comparable) companies. It de-levered and then re-levered the equity beta, assuming the debt beta to be zero and using Standard and Poor's (corresponding) gearing levels.[44] The resulting estimates, shown in table 6.5, suggest that the ACCC has been generous in its previous decisions.

Table 6.5 Sample betas

		March 2003 AGSM data			June 2003 AGSM data		
Company	**Gear. level**	**Unadjusted β_e**	**Delevered β_a**	**Relevered β_e**	**Unadjusted β_e**	**Delevered β_a**	**Relevered β_e**
Australian Pipeline Trust	66.60	0.77[1]	0.27	0.67	0.39	0.13	0.33
Envestra	79.90	0.34	0.06	0.16	0.39	0.08	0.20
Alintagas	49.20	0.20	0.09	0.24	0.29	0.15	0.37
Australian Gas Light	52.20	0.06	0.03	0.07	-0.010	-0.005	-0.012
United Energy	41.90	0.08	0.04	0.10	-0.030	-0.017	-0.044
Average	**57.96**	**0.29**	**0.10**	**0.25**	**0.21**	**0.07**	**0.17**

[1] Note: The March 2003 unadjusted β_e for Australian Pipeline Trust is the 'thin-trading' (Scholes–Williams) estimate because the test statistic provided by AGSM suggested this form of bias may be significant.

The ACCC notes consumer groups have stated that a lower equity beta, based on market data, should be adopted. It considers that it may be premature to rely on market data exclusively when determining the equity beta.[45] Therefore, on balance, the ACCC considers that an equity beta of one, while biased in favour of the service provider is appropriate for Transend.

The ACCC is currently considering the merits of relying more on market data to estimate beta for TNSPs. Thus future decisions may incorporate equity betas which reflect market information more accurately.

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43 Ibid, p. 43.

44 Standard & Poor's, *Australia & New Zealand CreditStats,* June 2003.

45 The number of listed firms considered to be comparable for benchmarking a TNSP's proxy beta is limited in the Australian stock exchange.

Size effect and CAPM

The ACCC acknowledges that debate in finance theory explores the possibility that the predictions of CAPM are not consistent with observed returns and anomalies such as the January effect and the size effect. The evidence suggesting that small firms tend to realise higher rates of return than those predicted by CAPM is linked to the January effect in the empirical literature. The empirical literature also predicates that this anomoly is explained by tax-loss selling, as the financial year ends in December in the US and therefore explains the phenomenon.

Even if the evidence of the size effect was conclusive, the ACCC notes that while Transend is smaller than other TNSPs in the NEM, it is not small compared to companies in the Australian economy generally. For example, in terms of revenue, Transend ranks about 1340 out of the top 5000 companies in Australia.[46] Similarly, it is not small in terms of assets either.

The ACCC would prefer to continue to use the standard domestic version of CAPM in its regulatory decisions. This is because the model explains the asset returns by using the asset's correlation with the market portfolio in a simple way—it is easy to use, and it provides a 'fair and reasonable' rate of return for a regulated entity.

Therefore, the ACCC does not consider that Transend should be compensated for size effect when applying the CAPM framework.

Conclusion

Transend's proposed equity beta of 1.12 suggests that it has a higher risk than the market portfolio. In past electricity decisions the ACCC has consistently applied an equity beta of 1.0. The ACCC does not propose to compensate Transend for other risks (e.g. small company size) claimed in its application.

Therefore, for the purposes of this decision, the ACCC will adopt an asset beta of 0.4 and a debt beta of zero, which equates to an equity beta of approximately one. However, in future, the ACCC may rely more on market data to determine a (proxy) equity beta for TNSPs.

6.11 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 concessions that lessen or defer tax liabilities. In any year, the assessable income for tax can be quite different from the accounting income of the business.

The inflation rate also substantially affects the effective tax rate, because of timing effects and because taxes are calculated on nominal income.

In its early decisions the ACCC applied the statutory company tax rate of 30 per cent. This was because it was difficult to determine a satisfactorily accurate long-term tax

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46 *The Business Who's Who of Australia*, Dun and Bradstreet Marketing Pty Ltd.

rate as part of the pre-tax real framework being used at the time. However, effective tax-rate for electricity utilities has been less than the statutory tax rate in the past because of their capital-intensive nature.[47]

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.

6.11.1 ACCC's considerations

Based on the ACCC's approach to modelling the effective tax rate, the ACCC has derived an effective tax rate of 21.49 per cent.

6.12 Other issues

6.12.1 Submissions on the draft decision

Hydro Tasmania endorses the approach the ACCC has undertaken in determining the WACC for the draft decision.

Powerlink states that the 'WACC margin' (being calculated as a margin over the risk free rate) has been decreasing with each revenue cap decision. It argues that this is lowering the margin below the level at which one would find it attractive to make discretionary investments (i.e. interconnectors, alleviation of intra-regional constraints). ElectraNet also made similar comments regarding the WACC margin.

ElectraNet and Transend state that the recent overseas blackouts serve as a reminder of the need to encourage investment in transmission networks. They argue that these events provide an example of the high costs associated with under-investment in infrastructure.

6.12.2 ACCC's considerations

The ACCC considers Powerlink's analysis of a decreasing regulatory WACC margin based on static comparison is not meaningful because:

- a number of parameters make up the WACC
- of these parameters, most have not changed from previous decisions (i.e. equity beta, MRP, gearing)
- the parameters which have changed (i.e. risk free rate, debt margin) are related to market conditions (that is, market fluctuations dictate whether it increases or decreases). These changes reflect the changes in rate of return required by similar investments.

The ACCC notes that comments have focused on investment issues as the cause of power blackouts in the United States of America and Europe. However, there is no

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[47] According to IPART 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, p. 9).

evidence to support this claim. According to reports from the North American Reliability Council, a failure to contain problems with three transmission lines in northern Ohio was the likely trigger of the blackout. Difficulities with coordinating system management in North America also appear to have played a major role in the blackout.[48]

In the United Kingdom, Ofgem has found that the London power cuts were not the result of insufficient investment. Ofgem reports that the power cuts were the result of an isolated incident on the national grid caused by the failure of new protection equipment which had not been properly installed.[49]

The ACCC further notes that several interested parties have often mentioned that the regulated rate of return is not deterring investments in electricity networks. Available data shows unprecendented investment in transmission facilities in Australia including large capex proposals accompanying revenue cap applications. Over $3 billion of capex has been approved by the ACCC in its revenue cap decisions. This represents about 40 per cent of the value of existing facilities.

6.13 Conclusion

The ACCC has considered the values that should be assigned to Transend's cost of capital, given the nature of its business and current financial circumstances. The parameter values used for the final decision are shown in table 6.6.

[48] The blackouts in the USA highlighted problems with the segregated management of its grid. There are multiple system operators, with no single entity having 'whole of system' management role.

[49] Ofgem press release, *Power cuts not the result of low levels of investment*, September 2003.

Table 6.6 Comparison of cost of capital parameters

Parameter	Final decision	Draft decision	Transend's proposal
Nominal risk-free interest rate (r_f)	5.86 %	5.43 %	5.24 %
Expected inflation rate (f)	2.32 %	2.21 %	1.95 %
Debt margin (over r_f)	0.91%	0.80%	1.445 %
Cost of debt $r_d = r_f$ + debt margin	6.77 %	6.23 %	6.69 %
Market risk premium (r_m-r_f)	6.00 %	6.00 %	6.00 %
Debt funding (D/V)	60 %	60 %	60 %
Value of imputation credits γ	50 %	50 %	50 %
Asset beta β_a	0.40	0.40	0.45
Debt beta β_d	0.00	0.00	0.00
Equity beta βe	1.00	1.00	1.12
Nominal post-tax return on equity	11.84 %	11.41 %	11.96 %
Post-tax nominal WACC	7.00 %	6.63 %	-
Pre-tax real WACC	6.95 %	6.51 %	-
Nominal vanilla WACC	8.80 %	8.30 %	8.80 %

7 Total allowable revenue

7.1 Introduction

The main components of Transend's revenue cap were discussed in detail in the proceeding chapters. This chapter explains the ACCC's calculation of Transend's allowable revenue (AR) from 1 January 2004 to 30 June 2009.

The ACCC's role as regulator of transmission revenues is limited to determining a TNSP's maximum allowable 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. Detail on how the financial incentive component is calculated is in chapter 8.

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.

7.2 The accrual building block approach

The building block formula, below, is used to calculate the AR in the first year (in Transend's case the first half year). The MAR is equivalent to the AR for the first year:

AR = return on capital + return of capital + opex + tax

= (WACC * WDV) + D + opex + tax

where:
- AR = allowed revenue
- WACC = post-tax nominal weighted average cost of capital
- WDV = written down (depreciated) value of the asset base
- D = depreciation
- opex = operating and maintenance expenditure
- tax = expected business income tax payable

Each subsequent year's AR is calculated as follows:

$AR_t = AR_{t-1} \times (1 + CPI) \times (1 - X)$

where:
- AR = allowed revenue
- t = time period/financial year
- CPI = actual CPI
- X = smoothing factor

The following is used to calculate the MAR for each year, if a pass-through is approved, the amount approved will be included in the MAR.

$\mathbf{MAR_t}$ = **(allowed revenue) ± (financial incentive) ± (pass-through)**

$$= \left(\mathrm{AR}_t\right) \pm \left(\frac{(\mathrm{AR}_{t-1} + \mathrm{A}R_{\mathrm{t\text{-}2}})}{2} \times S_{ct}\right) \pm \text{(pass-through)}$$

where:	MAR	=	maximum allowed revenue
	AR	=	allowed revenue
	S	=	service standards factor (appendix F)
	t	=	regulatory period (appendix E)
	ct	=	calendar year (appendix E)

7.3 Transend's proposal

In its application Transend asked for a smoothed revenue of $111m in 2003–04, increasing to $151m in 2008–09. In 2003, Transend's comparable AR is around $80m.

Transend claims that a substantial revenue increase is required because of:

- an increase in its base revenue requirement—as its previous revenue decisions were based on a lower asset value and under-estimated opex
- additional opex requirements because of increases in scope, including the transfer of the system controller
- increases associated with NEM-entry
- compensation for revenue shortfall in 2003 and an opex efficiency gain
- increased forecast capex.

Transend states that the proposed program will enable it to meet future challenges, providing substantial benefits to its customers, to the NEM and to Tasmania as a whole.

7.4 ACCC assessment of building blocks

7.4.1 Opening asset base

To establish the appropriate return on capital, the ACCC modelled Transend's asset base (over the life of the regulatory period) and WACC (estimated on the basis of the most recent market financial information).

As explained in chapter 3, the ACCC has determined the value of Transend's asset base as at 31 December 2003 to be $604m.

7.4.2 Capital expenditure

As explained in chapter 4, the ACCC considers that a capex allowance of $306.8m (in real terms) over the regulatory period is sufficient for Transend.

7.4.3 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 7.1.

7.4.4 Operating and maintenance expenses

As explained in chapter 5, the ACCC has included an opex allowance of about $29m per annum (in real terms) on average over the regulatory period (including debt raising costs of $0.42m per annum and metering costs of $0.11m per annum). Transend's approved opex peaks at around $31m in 2004-05 before declining and stabilising at around $28m later in the regulatory period.

The ACCC has also provided for an amount of $2.44m to compensate for the return of and return on capital overspend in calendar year 2003 in the first six month period of the revenue cap.

Grid support costs have been provided for on a pass-through basis.

7.4.5 Weighted average cost of capital

The ACCC's estimate of Transend's WACC is explained in chapter 6.

The ACCC has considered the nature of Transend's business and its current financial circumstances in establishing the WACC. It notes that, although there is a well recognised theoretical model for establishing WACC, there is less than full agreement on the precise magnitude of the various financial parameters used.

The ACCC has applied a post-tax nominal return on equity of 11.84 per cent, which equates to a nominal vanilla WACC of 8.80 per cent (table 6.6).

7.4.6 Estimated taxes payable

Tax estimates relate to the network's regulated activities only. The ACCC anticipates that Transend would be paying income tax during the regulatory period, based on Transend'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 Transend's actual gearing. The ACCC's estimates of Transend's tax payments are as shown in table 7.1.

7.4.7 Changes from the draft decision

The WACC has increased from 8.30 per cent to 8.80 per cent since the draft decision. A part of this increase has been offset by the small reduction in opex.

7.5 Conclusion

The ACCC proposes an unsmoothed revenue allowance that increases from $100m in 2003-04 to $132m 2008–09, as shown in table 7.1.

Table 7.1 Transend's unsmoothed AR, 2003-04 to 2008–09 ($m, nominal)

	Jan-June 2004	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Return on capital	24.99	50.13	55.15	61.04	64.22	70.59	72.60
Return of capital	7.58	15.2	17.67	19.93	22.22	22.90	23.43
Operating expenses	16.09	32.28	29.38	33.63	33.12	31.02	31.62
Estimated taxes payable	2.57	5.16	5.88	6.72	7.31	8.25	8.72
Value of franking credits	(1.29)	(2.58)	(2.94)	(3.36)	(3.66)	(4.12)	(4.36)
Unadjusted revenue allowance	**49.96**	**100.20**	**105.14**	**117.96**	**123.22**	**128.63**	**132.01**

The ACCC has determined a smoothed revenue allowance for Transend that increases from $100m in 2003–04 to $137m in 2008–09, as shown in table 7.2.

The decision is based on forecast inflation (2.32 per cent per annum) and applies a smoothing factor (- 4.16 per cent). Transend must adjust the opening revenue figures annually by actual inflation (the eight weighted capital city CPI).

Transend's AR is currently around $71m (2003 calendar year). However, to make Transend's 2003 revenue comparable with forecasts the incremental costs of the system controller function ($5m), taxes ($2m) and revenue underrecovered in 2003 ($2.44m) need to be added. When these are added Transend's comparable 2003 calendar year revenue is around $80m.

Table 7.2 Transend's smoothed AR, 2003–04 to 2008–09 ($m, nominal)

	Jan-Jun 04	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Final	**49.96**	**100.20**	**106.73**	**113.69**	**121.10**	**128.99**	**137.40**

The final MAR will be determined by adding (or deducting) to the AR the service standards incentive (or penalty) and any allowed pass-through amounts.

This revenue-cap covers transmission services defined by the code and the TEC and associated activities to be regulated by the ACCC, provided by Transend.

The revenue increase over the regulatory period consists of:

- an initial increase of about 28 per cent in the first year (mainly as a result of increases in the asset base, capex and an under-recovery in 2003)
- a subsequent increase of around 7 per cent per annum on average during the remainder of the regulatory period (mainly as a result of the large capex program).

Figure 7.1 compares the revenue proposed by Transend in its application with that allowed by this decision (both smoothed and unsmoothed).

Figure 7.1 Revenue comparison 2003–04 to 2008–09 ($m, nominal)

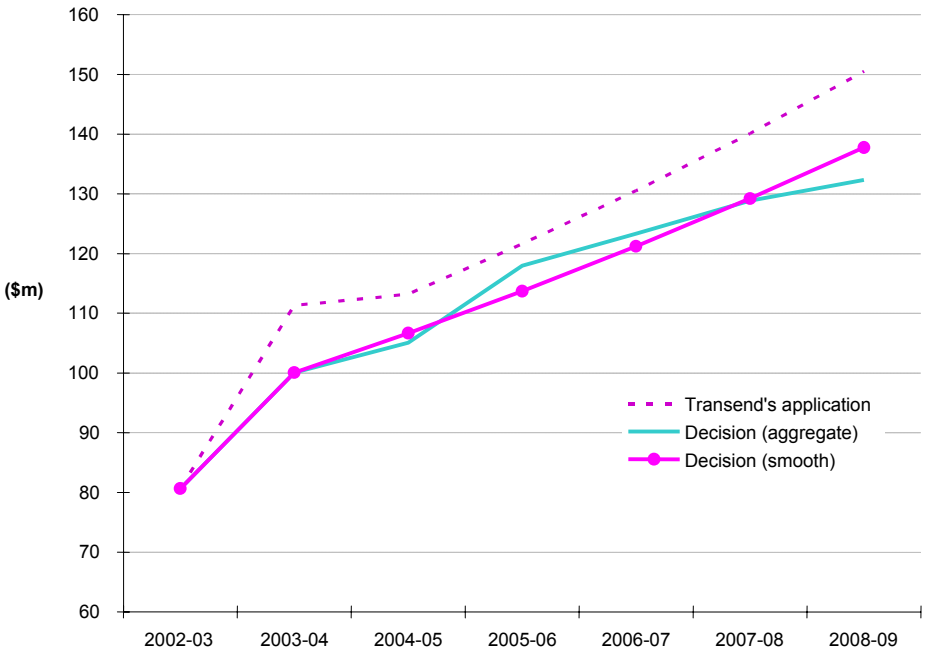
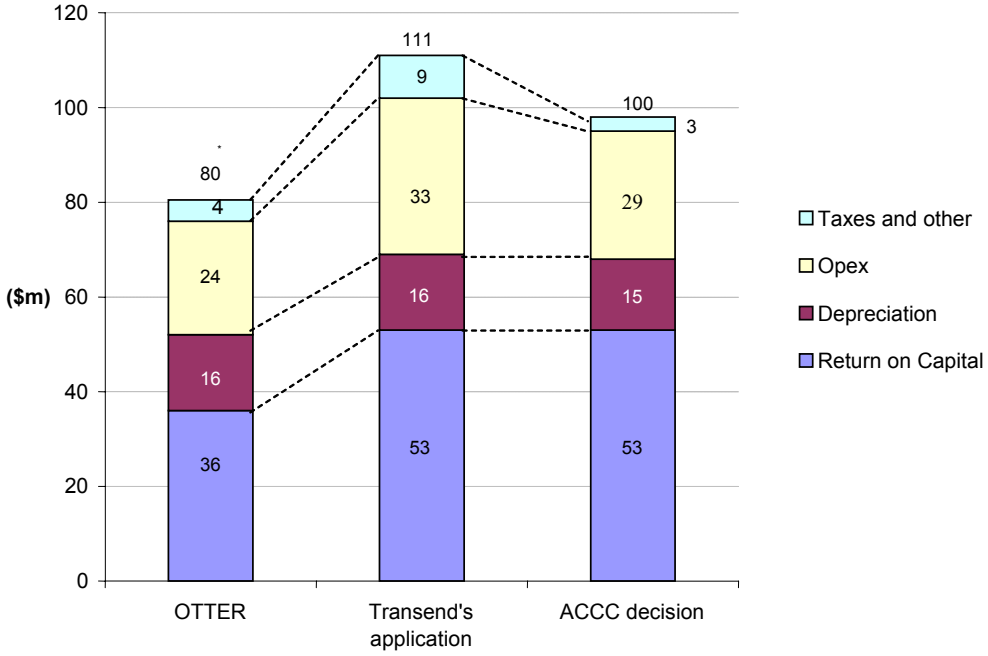


Figure 7.2 compares Transend's current revenue allowance for calendar year 2003, its proposed revenue allowance for 2003–04 and the revenue allowed by this final decision in 2003–04. The figure is for illustrative purposes only.

Figure 7.2 Building block comparison of revenues ($m, nominal)



The ACCC believes that the total revenue it has allowed will substantially improve the financial standing of Transend's business. Appendix D contains the ACCC's examination of Transend's likely credit rating under the revenue cap.

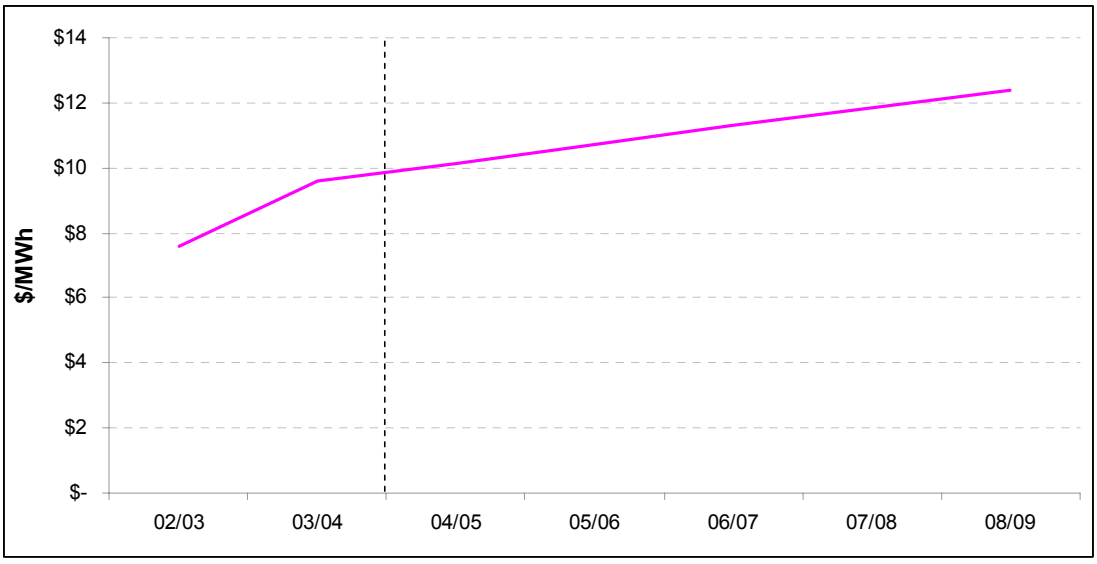
Impact on transmission charges

Several forecasts for Tasmania indicate that load growth will be minimal over the regulatory period. For example, NEMMCO's Statement of Opportunities[50] estimates that the winter maximum demand for Tasmania is projected to increase over a 9 year period (commencing 2003-04) by an average 1.5 per cent each year.[51] Therefore increases in AR will translate to increases in transmission charges. However, the impact on individual customers will depend on the pricing mechanism.

The ACCC estimates that its decision will result, on average, in a 9 per cent per annum increase (in nominal terms) in transmission charges over the regulatory period. Transmission charges represent approximately 10 per cent of end user electricity charges.

Figure 7.3 shows the resulting price path of this decision over the regulatory period.

Figure 7.3 Illustrative price path 2003–04 to 2008–09 ($/MWh)



[50] NEMMCO, '*Statement of Opportunities for the National Electricity Market*, 31 July 2003, 2-24.

[51] Based on a probability of exceedence of 10 per cent and a medium growth forecast.

8 Service standards

8.1 Introduction

The code does not permit TNSPs to increase their revenues above the MAR set by the ACCC. Therefore, the only way that TNSPs can increase their profits (on regulated activities) is by reducing costs. Such cost reductions could result in a decline in service quality which can impose much larger costs on other market participants.

On 12 November 2003 the ACCC released its service standards guidelines[52]. This performance incentive (PI) scheme aims to reduce the incentive for TNSPs to achieve cost reductions at the expense of other participants. It is based on five performance indicators, of which three are currently operational. The 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.

TNSPs are rewarded for improvements over performance targets and penalised for deteriorations. The maximum reward or penalty is 1 per cent of the annual revenue. Overall the scheme is designed to have an expected value of zero.

The ACCC's guidelines are based on a consultancy report produced by SKM[53]. In its report SKM recommended performance standards (or targets) for Transend over the forthcoming regulatory period based on historical data provided by Transend. These targets are shown in Table 8.1.

Table 8.1 SKM's recommendation

Measure	Unit	Weight	Target
Circuit availability (transmission lines)	%	0.25	99.05
Circuit availability (transformers)	%	0.15	99.05
Loss of supply event frequency index > 0.1 min	No	0.20	15
Loss of supply event frequency index > 2.0 min	No	0.40	2

8.2 Transend's application

In its application Transend states that its PI scheme should be based on several years of past performance data. Transend advised the ACCC that it does not have performance information before 1998 and that this should be taken into account in setting its targets. However, OTTER's July 2003 submission to the ACCC showed Transend's performance since 1996.

Transend engaged TransGrid to assess which indicators should be applied to it. Following this assessment Transend considers that its PI scheme should be based on

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52 ACCC, *Statement of Principles for the Regulation of Transmission Revenues, Service Standards Guidelines – Decision*, 12 November 2003.

53 SKM, *Transmission Network Service Providers—Service Standards*, March 2003.

circuit availability and loss of supply frequency measures. It believes that circuit availability measures will be of particular interest to the wholesale generation market and that the measure will increase in importance following NEM-entry. Transend also considers that loss of supply event frequency measures are important to end users and retailers.

Transend does not propose to use the other performance measures recommended by SKM. It gives a higher weighting to loss of supply measures, as it considers that customers place more value on those measures then on circuit availability measures. Transend's proposed performance targets are shown in table 8.2.

Table 8.2 Transend's proposed performance targets

Measure	Unit	Weight	Performance for maximum penalty	Lower deadband	Upper deadband	Performance for maximum bonus
Circuit availability (transmission lines)	%	0.25	98.8	99	99.1	99.3
Circuit availability (transformers)	%	0.15	98.8	99	99.1	99.5
Loss of supply frequency (> 0.1 minute)	No.	0.20	20	16	14	10
Loss of supply frequency (> 2.0 minute)	No.	0.40	5	3	2	0

8.3 GHD's review

8.3.1 Selection of performance measures

GHD agrees with the performance measures proposed by Transend as they are consistent with those contained in the ACCC's service standards guidelines. GHD considers that the outage duration measure may not be appropriate for Transend because of the occurrence of a small number of significant events in recent years.

8.3.2 Analysis of historical performance

In assessing Transend's proposal, GHD applied Transend's proposed PI scheme to Transend's historical data for 1998–99 to 2001–02. The ACCC extended this analysis by including the rewards or penalties that would result under Transend's proposal for 2002–03. The results, shown in Table 8.3, indicate that the number of rewards would exceed the number of penalties.

Table 8.3 Rewards and penalties historically (Transend's targets)

Measure	1998-99	1999-00	2000-01	2001-02	2002-03
Circuit availability (transmission lines)	Reward	Reward	Penalty	Reward	Penalty
Circuit availability (transformers)	Penalty	Penalty	Reward	Reward	Reward
Loss of supply frequency (> 0.1 minute)	Reward	Indifferent	Indifferent	Indifferent	Indifferent
Loss of supply frequency (> 2.0 minute)	Reward	Penalty	Indifferent	Reward	Reward

8.3.3 Alternative performance incentive scheme

GHD found that the targets chosen by Transend did not appear to be particularly challenging when compared with past performance. It recommended that alternative targets be adopted, based on some allowance for reasonable improvements in performance because of current and planned capex, and improved work practices (for example the performance of in-service maintenance).

GHD also notes that the majority of past outages were planned and therefore have less impact on the market than unplanned outages.

Table 8.4 contains GHD's recommended performance targets. The targets that differ from those proposed by Transend are in bold.

Table 8.4 GHD's recommended performance targets

Measure	Unit	Weight	Performance for maximum penalty	Lower deadband	Upper deadband	Performance for maximum bonus
Circuit availability (transmission lines)	%	0.25	**98.9**	**99.1**	**99.2**	**99.4**
Circuit availability (transformers)	%	0.15	98.8	99	99.1	99.5
Loss of supply frequency (> 0.1 minute)	No	0.20	20	16	**13**	**9**
Loss of supply frequency (> 2.0 minute)	No	0.40	5	3	2	0

Table 8.5 shows where a penalty or reward would have resulted if GHD's PI scheme had been adopted for the period 1998–99 to 2002–03. These rewards and penalties are more evenly matched than those resulting from Transend's proposed targets (table 8.3).

Table 8.5 Rewards and penalties historically (GHD's targets)

Measure	1988-89	1999-00	2000-01	2001-02	2002-03
Circuit availability (transmission lines)	Indifferent	Indifferent	Penalty	Indifferent	Penalty
Circuit availability (transformers)	Penalty	Penalty	Reward	Reward	Reward
Loss of supply frequency (> 0.1 minute)	Indifferent	Indifferent	Indifferent	Indifferent	Indifferent
Loss of supply frequency (> 2.0 minute)	Reward	Penalty	Indifferent	Reward	Reward

8.4 ACCC considerations

8.4.1 Stretched targets to reflect improved service levels

In its draft decision the ACCC applied the stretched performance targets recommended by GHD. This was supported by many interested parties, who argued that such a large capital renewal program should result in improved service delivery.

However, Transend believes that in the draft decision the ACCC did not properly consider the impact of future capital expenditure on performance. It believes performance will fall because of the outages required by the capital program.

The ACCC agrees that outages are needed for the proposed capital works to be undertaken. However, Transend has spent large amounts on capital works over the past few years which should go some way to improving Transend's current and future performance.

Hence the ACCC has applied the stretched performance targets in this decision on the following basis:

- Transend did not quantify the improvement in performance as a result of the capital invested over the past few years
- GHD's recommendation was to provide more challenging targets, noting that although outages required for capital works may affect short term performance, in the long term, performance should improve.

It is expected that the large increase in revenue, effectively funded by customers, should result in a better standard of quality for customers.

Revenue neutral outcomes

Table 8.5 indicates which measures, and in what years, Transend would have received financial rewards and penalties were GHD's scheme implemented. Transend was concerned that GHD's scheme would not result in a 'revenue neutral' outcome based on past performance from 1998–99 to 2001–02.

However, the ACCC reviewed GHD's and Transend's proposals against Transend's performance from 1998–99 to 2002–03. It found that GHD's proposal would have resulted in an average penalty of 0.0275% (x AR) per annum. Transend's proposal would have resulted in an average reward of 0.065% (x AR) per annum.

This shows that GHD's recommended scheme is more likely to be revenue neutral than Transend's proposed scheme. Further, as the ACCC expects some improvement in performance resulting from past and future capital expenditure, this is likely to cause GHD's scheme to be even closer to being revenue neutral.

8.4.2 Reporting period

Transend stated that it would be more convenient for it to report its performance on a financial year basis, to be aligned with its other reporting requirements.

The ACCC's service standards guidelines require TNSPs to report performance on a calendar year basis. It took this approach in response to other TNSPs who sought to minimise the delay between the performance results and the financial incentive.

By reporting on a calendar year basis the incentive can be incorporated into the revenue cap for the following financial year, after a common lag. If TNSPs were to report on a financial year basis, incentives could only be incorporated after a 12 month lag.

The ACCC intends to review the performance results of each TNSP annually. It believes having all TNSPs report their performance on a calendar year basis would increase the effectiveness of the review process. Hence it requires Transend to report its performance on a calendar year basis, in line with other TNSPs.

8.4.3 Possible additional performance measures

Interested parties raised various issues in relation to the performance measures proposed in the draft decision. Some suggested new measures and others suggested new definitions. These issues are discussed below.

Connection point performance

In submissions to the draft decision a few interested parties requested that they and Transend be granted the ability to negotiate higher (or lower) levels of service at their connection points for increased (or decreased) connection charges.

The ACCC notes that TNSPs in the NEM already do this and that such negotiations are best left to the TNSP and its customers. Where the customer is paying for a higher level of service Transend should not receive a financial reward through the PI scheme. Conversely, when a customer receives a discount for a lower level of service Transend should not be penalised.

Intra-regional constraints

Several interested parties claimed that a performance measure for intra-regional constraints was required. Transend states that it does not object to collecting data on intra-regional constraints, but it claims that such information would be costly to collect.

The ACCC considers that Transend should already have a system to analyse intra-regional constraints for network operation and planning purposes. While the ACCC does not have the appropriate information to set targets against this measure at this stage, the ACCC requires Transend to report against this measure over the regulatory period, as defined by the service standards guidelines.

This information will help the ACCC assess whether or not an intra-regional constraints measure can be implemented in Tasmania in future revenue cap decisions.

Average outage duration

Interested parties noted that Transend has not included the average outage duration measure, and cited Transend's argument that a small number of significant outages distort the measure. Interested parties considered that Transend should focus on reducing such outages.

The ACCC accepts GHD's advice that the measure may not be appropriate for inclusion at this stage. It requires Transend to report against this measure, as defined by the service standards guidelines, over the course of the regulatory period.

This information will assist the ACCC in considering whether to introduce average outage duration as a performance measure in its next revenue cap for Transend.

Exclusions

Transend restated its belief that certain events should be excluded from its performance measurement to ensure that perverse penalties are not encouraged. For example, Transend believes that opening a circuit to maintain system security should be excluded from the availability and loss of supply frequency index.

The ACCC considers that opening a circuit would not necessarily make it unavailable for service or create a loss of supply. However, there are circumstances when an open circuit would be unavailable for service and/or result in a loss of supply.

This issue was also raised during the development of the service standards guidelines, specifically in relation to the force majeure exclusions. Neither the ACCC nor the TNSPs were able to define all possible events that should be excluded. Regardless, any attempt to define these exclusions could lead to uncertainty and ambiguity.

Therefore the ACCC has not adopted Transend's list of excluded events. It considers that better outcomes will be reached by an annual review of exclusions. The ACCC requires Transend to report its raw performance data and its proposed exclusions separately.

Force majeure

The ACCC's force majeure definition from its service standards guidelines will be applied to Transend's revenue cap. Transend is required to report all performance data, identifying any event that it considers should be excluded based on force majeure provisions. The ACCC will consider excluding events that are exceptional and isolated if they are covered by force majeure provisions and service standards guidelines.

8.5 Conclusion

The ACCC agrees with GHD's assessment that the performance measures proposed by Transend are appropriate. However, to aid in the development of a more robust PI scheme, the ACCC requires Transend to report on average outage duration and intra-regional constraints outcomes over the regulatory period. The measures are defined in the ACCC's service standards guidelines[54].

The ACCC notes that the inter-regional constraints measure is not relevant to Transend as it does not own or operate a regulated interconnector.

The ACCC also agrees with GHD and interested parties that past, current and planned investment, as well as improved work practices, should result in a net improvement to Transend's service performance over the regulatory period. On this basis, it accepts the targets and weightings recommened by GHD (Table 8.4).

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[54] ACCC, Statement of Principles for the Regulation of Transmission Revenues, Service Standards Guidelines – Decision, 12 November 2003.

The ACCC also flags its intention to develop performance measures that more closely align with those time periods that are more important to transmission customers. For example, future information needs of the ACCC may include such measures as:

- constraints during times that out-of-merit order generation dispatch occurs
- availability and loss of supply during peak times
- availability and loss of supply on the 10–40 highest demand days during the year
- availability of critical circuits in peak times/days.

Interested parties agree that the ACCC's service standards guidelines provide a practical starting point for the further development of the PI scheme. It is recognised that the scheme will require continued improvements over the long-term to improve its overall effectiveness.

Appendix A Overview of regulatory arrangements

Introduction

This attachment explains the regulatory arrangements underpinning the ACCC's revenue cap setting process for Transend.

OTTER is the state body currently responsible for regulating the entire electricity supply industry in Tasmania. Tasmania intends to join the NEM in 2005. Upon NEM-entry the ACCC will assume responsibility for regulation of the Tasmanian Transmission Network Service Provider, Transend.

However, as Transend's current price determination ends on 31 December 2003 the Tasmanian Government has asked the ACCC to set a revenue cap for Transend to apply from 1 January 2004. As it is not part of the NEM, the code does not yet apply.

Over the past two years the ACCC has consulted with Tasmanian Treasury, Commonwealth Treasury, OTTER and Transend about the necessary steps required for the ACCC to take over responsibility for regulation of Transend's revenues both before and after Tasmania's entry into the NEM.

Agreement made between the Australian and Tasmanian governments

To enable the ACCC to set a revenue cap for Transend before Tasmania's entry into the NEM it was necessary for the Australian and Tasmanian governments to enter into an agreement to that effect.

Section 44ZZM of the *Trade Practices Act 1974* provides that the ACCC may perform functions and exercise powers under state legislation that establish an access regime with the agreement of that state and the Commonwealth. The Australian and Tasmania governments have made such an agreement. To give effect to this agreement a number of amendments have been made to the following Tasmanian regulatory instruments.

- *Electricity Supply Industry Act 1995*

  The Electricity Supply Industry Act defines the Tasmanian Regulator's functions, roles, powers in relation to electricity supply businesses in Tasmania. It also gives OTTER powers under the electricity supply industry price control regulation and the Tasmanian electricity code (TEC). Amendments have been made to the Electricity Supply Industry Act to provide that the State Minister may specify that the ACCC will perform the functions of the regulator in relation to transmission revenues in Tasmania.

- *Electricity Supply Industry (Price Control) Regulations 2003*

  The Electricity Supply Industry (Price Control) Regulations 2003 provide the process that the regulator must follow to regulate transmission and distribution businesses. This includes administrative issues such as freedom of information, declaration of service to be regulated, matters to be considered, etc.

The regulation has been amended to provide different processes for the regulation of transmission and distribution businesses. This amendment has been made so that the ACCC may adopt the approach it has used for regulation under the code.

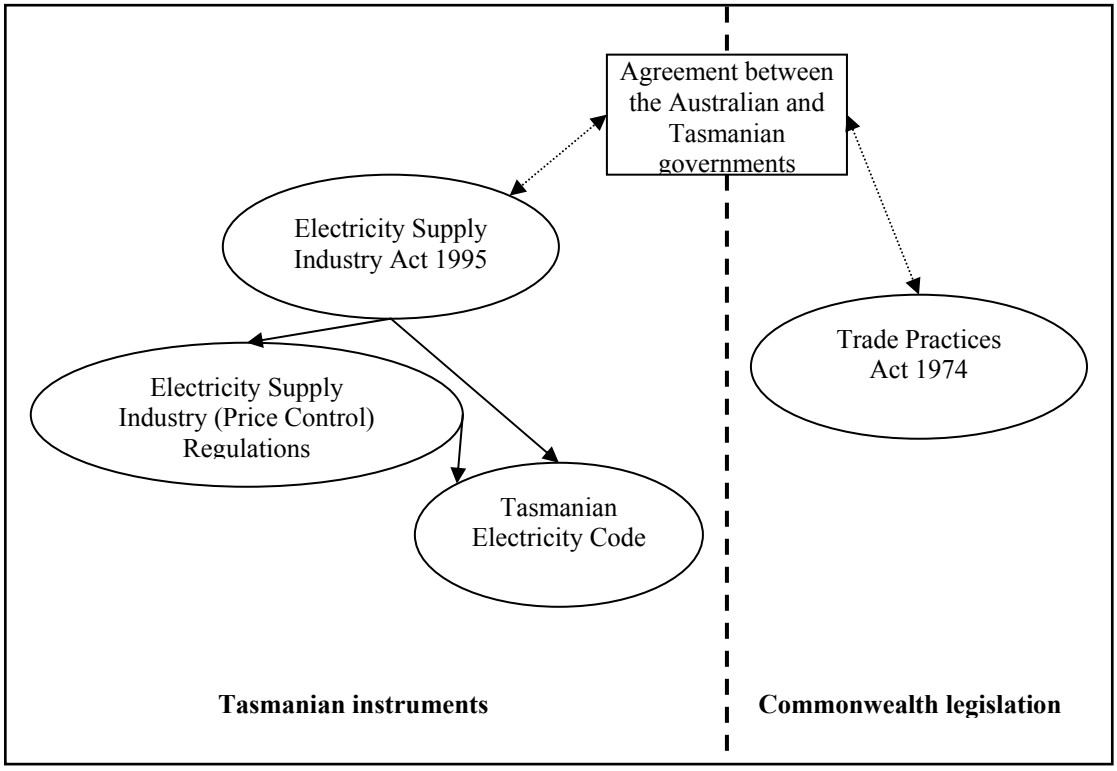
- *Tasmanian Electricity Code*

  The TEC is an adaptation of the code and it largely reflects the provisions of the code. OTTER has amended the TEC to reflect, more closely, part B of chapter 6 of the code (i.e. the provision that prescribes how the ACCC shall decide revenue caps).

Pre-NEM regulation

Given the powers and functions that the Australian Government has agreed to, the ACCC will decide a revenue cap for Transend to apply from 1 January 2004 to 30 June 2009. These powers and functions will be specifically prescribed in the Electricity Supply Industry Act, the regulation and the TEC. Effectively, the ACCC will make this decision and OTTER will enforce the decision until NEM-entry occurs. Figure 1 shows the relationship between the Tasmanian regulatory framework and the TPA before Tasmania's entry into the NEM.

Figure 1 Regulation of transmission revenues in Tasmania (Before NEM-entry)



NEM-entry

Tasmania plans to enter the NEM in mid-2005, approximately six months before Basslink is commissioned.

The ACCC has accepted an access undertaking from Basslink, in which it undertakes to comply with the code upon NEM-entry.

To provide for NEM-entry the Tasmania authorities will need to legislate National Electricity Law to mirror the South Australian Act, which gives power to the code. Tasmanian electricity businesses will also have to register as NEM participants with NEMMCO and, in the case of network service providers, submit an access undertaking to the ACCC.

In November 2001 the ACCC granted authorisation to Tasmanian derogations, which will form part of the code when Tasmania joins the NEM.

The derogations provide that any decision made by the ACCC before Tasmania's NEM-entry can be deemed to be a valid decision made under the code (e.g. revenue cap decisions). However, the ACCC imposed a condition of authorisation (C5.15) to enable:

> … the ACCC to re-open or disallow such a decision if it would be materially different to a decision made in accordance with Chapter 6 Part B of the Code, and to specify a revised date, no later than the start of the National Electricity Market in Tasmania, for the purposes of clause 6.2.3(d)(4)(iii) of the Code

NEM regulation

Upon NEM-entry:

- Tasmania would be required to abide by the code, including its derogations
- the ACCC would officially become the regulator of transmission in Tasmania
- the ACCC's pre-NEM decision would be deemed to be a valid NEM decision under the code.

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Appendix B Results of SKM's optimisation

Transmission Lines ($000 July 2001)

Line		Line Description	Optimised description	Reduction	
No.	Location			R C	D R C
400	Waddamana to Lindisfarne	86km of SC (paralleled) and SC 19/.083	86km of SC Tern	938	260
402	Waddamana to Bridgewater Junction	86.1km of SC (paralleled) of 19/.092	86.1km of SC Goat	1 415	118
409	Waddamana to Parknook	39.7km of SC 19/.083	Part of line 410	4 278	1 306
410	Waddamana to Palmerston	36.3km of SC19/.083	36.3km of DC 19/.083		
417	Tarraleah to New Norfolk (east)	23km of SC 19/.092	11.5km of DC 19/.092	890	222
418	Tarraleah to New Norfolk (west)	23km of SC 19/.092	11.5km of DC 19/.092	832	208
425	Waddamana to Tungatinah (north)	33.7km of SC 19/.116	33.7km of DC 19/.116	3 255	814
426	Waddamana to Tungatinah (south)	33.7km of SC 19/.116	Part of line 425		
427	Lake Echo Spur (east)	1.2km of SC 19/.083	1.2km of DC 19/.083	288	72
428	Lake Echo Spur (west)	1.2km of SC 19/.083	Part of line 427		
436	Knights Road to Kermandie	20.2km of DC (one circuit strung) Hyena	20.2km of SC Hyena	187	66
462	New Norfolk to Chapel Street Junction	15.6km of DC 19/.092 (two circuits in parallel)	15.5km of SC Goat	361	90
463	New Norfolk to Creek Road	3.1km of 19/.116 (two circuits in parallel)	3.1km of SC Goat	116	29
468	Electrona to Knights Road	15.6km of DC (one circuit strung) 7/.097	15.6km of SC 7/.097	153	38
469	Electrona Spur	12.5km of DC (one circuit strung) 7/.097 Cu	12.5km of SC 7/.097	111	28
500	Liapootah to Chapel Street	63.4km of SC Goat	31.7km of DC Goat	3 097	1 032
523	Farrell to John Butters	39.1km of DC Sulphur 11.4km of SC Sulphur	39.1km of DC Tern 11.4km of SC Tern	1 855 316	1 577 268
524	Tribute Spur	11.4km of SC Sulphur	11.4km of SC Goat	434	383
527	Liapootah to Palmerston No.2	77.2km of DC (one circuit strung) Sulphur	30km SC Sulphur and 33.7km of DC (one circuit strung) (1)	4 363	4 219
	TOTAL			22 890	10 729

1. RC – Replacement Cost.
2. DRC – Depreciated Replacement Cost.

Substations/ transformers ($000 July 2001)

Transformer	Description	Optimised description	Reduction	
			R C	D R C
Palmerston 220/110kV - load 56MVA		Replace 1 x 150/200MVA with 1 x 90/150MVA	290	245
Bridgewater 110/22-11kV - firm capacity 42MVA - load 24MVA	2 x 21/35MVA	2 x 10/20MVA	360	200
New Norfolk 110/22-11kV - firm capacity 38MVA - load 21MVA	2 x 19/31.5MVA	2 x 10/20MVA	280	200
Queenstown 110/22kV - load 5.7MVA		Replace 1 x 17/22.5MVA with 1 x 10/20MVA	200	49
TOTAL			1 130	693

Appendix C Pass-through rules

Cost pass-through

Under the code the ACCC is required to administer an incentive-based form of regulation. Incentives are created for managers to pursue ongoing efficiency gains through controlling their expenditures. However, some costs are essentially uncontrollable by nature and therefore cannot properly be subject to the same incentive measures.

Cost pass-throughs provide a mechanism for dealing with this problem. As an alternative to receiving an allowance in its cash flows, a TNSP may transfer the financial impact of the event to parties that are better placed to handle these costs.

The ACCC envisages that the range of potential pass-through events will be limited. It seeks to achieve a balance between the interests of TNSPs and customers, with no windfall gains or losses accruing to TNSPs as a result of events beyond their control.

Characteristics of a pass-through event

The ACCC considers that a pass-through event must have the following characteristics:

- The event should be identified in advance with its scope precisely defined – this enables the following tests to be applied and is considered necessary for good, transparent regulation. A high degree of certainty is provided where the ACCC and the TNSP agree up front on the events to be covered by pass-through arrangements
- The event must be beyond the control of the TNSP – these are exogenous, unpredictable events, the cost of which cannot be built into the TNSP's expenditure forecasts, requiring an alternative mechanism to deal with them
- The financial impact of the event must be material – these are the types of events that may occur infrequently but can have a significant financial impact on the business. Setting a materiality threshold limits the applications a TNSP can make, for the purposes of administrative efficiency
- The event affects the TNSP, and not the market generally – systematic or market risk should be addressed in the WACC parameters
- The financial impact of the event is better borne by parties other than the TNSP – by its nature, a pass-through transfers the risk to other parties. This will only be appropriate where the TNSP cannot reasonably be expected to bear the risk itself, for example, in the case of uncontrollable events that may affect the commercial viability of the business.

The following pass-through rules generally satisfy the above criteria but also take into account recent precedent. The ACCC foreshadows that, following adequate review, the criteria may be more rigorously applied in future determinations.

General operation of the pass through mechanism

The ACCC considers the following matters are important features of an efficient and equitable pass through mechanism:

- The ACCC reserves the right to initiate pass-through reviews at its discretion.
- The pass-through mechanism should accommodate both positive and negative amounts in the interests of both TNSPs and customers.
- A 40 business day assessment period to allow full assessment of pass-through event applications, including public consultation where appropriate, to be undertaken by the ACCC. The ACCC at its discretion, may also extend this period to adequately assess pass-through proposals.
- The provision by the TNSP of detailed documentary evidence in support of any pass-through application. Sufficient detailed information must be provided which substantiates that the aggregate costs facing the TNSP have increased or decreased as a consequence of the claimed pass-through event. This information should also be placed in the public domain, subject to confidentiality.
- The TNSP must satisfy the ACCC that it has acted prudently. It should show that it has not, through any imprudent act or omission, caused or aggravated the pass-through event.
- A TNSP must annually (at least 50 business days prior to the start of the financial year) provide the ACCC with a copy of insurance premium invoices, irrespective of whether a pass-through event application has been submitted in that year.

Pass-through rules

1.0 REGULATED PASS THROUGH

1.1 Rules form part of revenue cap

These Pass-Through Rules form part of the revenue cap set by the ACCC to apply to Transend for the regulatory control period commencing on 1 January 2004. Any *Pass Through Amount* approved under these Pass-Through Rules forms part of the revenue cap.

1.2 Pass-Through Events

Each of the following is a Pass-Through Event:

(a) a *Change in Taxes Event*

(b) a *Service Standards Event*

(c) a *Network Support Event*

(d) a *Terrorism Event*

(e) an *Insurance Event*.

1.3 Entitlement to Pass-Through

If a *Pass-Through Event* occurs, Transend may be entitled or may be required to amend its revenue cap to pass-through the financial effect of the *Pass-Through Event* in accordance with the procedures set out in these Pass-Through Rules.

1.4 Form of Pass Through Amount

A *Pass Through Amount* will reasonably reflect the factors in clause 3.5 and be expressed as an increase or decrease in the amount of the revenue cap.

2.0 ANNUAL INSURANCE INFORMATION

2.1 Transend to provide annual insurance information

Transend will provide the ACCC with a copy of insurance premium invoices at least 50 business days before the start of each financial year.

3.0 PROCEDURE

3.1 Initiation of Pass-Through

(a) If the ACCC believes that Transend is or will be entitled or required to pass-through the financial effect of a *Pass-Through Event*, it may instruct Transend to give a *Notice of Proposed Pass-Through* to the ACCC in relation to a *Pass-Through Event* specified by the ACCC.

(b) If the ACCC instructs Transend to give a *Notice of Proposed Pass-Through* to the ACCC in relation to a *Pass-Through Event* specified by the ACCC, Transend will do so in accordance with clause 3.2.

(c) If Transend believes it is or will be entitled or required to pass-through the financial effect of a *Pass-Through Event*, then it may 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) the estimated financial effects of the *Pass Through Event* on the provision of revenue capped transmission services; and

(d) the *Pass Through Amount* in respect of the relevant *Pass Through Event* and the date from and the period over which the *Pass Through Amount* should apply.

3.3 Supporting information

Transend must provide the ACCC with such information and documentation as the ACCC reasonably requires to enable it to determine whether, and to

what extent, Transend's revenue cap should be varied as a result of the *Pass Through Event*.

3.4 Determination by the ACCC

(a) The ACCC will, within the *Assessment Period*, determine whether the *Pass Through Event* specified in the *Notice of Proposed Pass Through* did occur (or will occur).

(b) If the ACCC determines that the *Pass Through Event* did occur (or will occur), the ACCC will determine:

  (i) the *Pass Through Amount* (if any) in respect of the relevant *Pass Through Event*; and

  (ii) the date from, and period over which, the *Pass Through Amount* may be applied, and notify Transend in writing of the ACCC's decision.

(c) If the ACCC does not give notice to Transend under clause 3.4(b)(ii) within the *Assessment Period*, then the ACCC is taken to have notified Transend of its determination that the *Pass Through Amount* and form of the *Pass Through Amount* are as specified in the *Notice of Proposed Pass Through* given by Transend under clause 3.2.

3.5 Relevant Factors

In making a determination under clause 3.4, the ACCC must seek to ensure that the impact on Transend associated with a *Pass Through Event* is financially neutral taking into account the following factors:

(i) the materiality of the requested *Pass Through Amount* relative to allowed revenue;

(ii) the prudency of Transend's decisions and actions (i.e. whether Transend has through any imprudent act or omission, caused or aggravated the *Pass Through Event*);

(iii) the time cost of money;

(iv) in relation to a *Change in Taxes Event*:

  (a) the amount of any increase or decrease in another tax, rate, duty, charge, levy or other like or analogous impost intended to offset in whole or in part the relevant *Change in Tax Event* and the manner in which and the period over which that increase or decrease occurs; and

  (b) the amount included in the operating expenses or other cost inputs of Transend's revenue cap;

(v) any direct or indirect costs, including all reasonable project feasibility and management costs associated with a *Network Support Event*;

(vi) in relation to a *Terrorism Event*, any loss, damage, cost or expense of any nature directly or indirectly caused by, resulting from or in connection with:

(a) the *Terrorism Event*; or

(b) any action taken in controlling, preventing, suppressing or in any way relating to the *Terrorism Event*;

(vii) in relation to an *Insurance Event* the amount of any loss, damage, cost or expense of any nature directly or indirectly caused by, resulting from or in connection with the *Insurance Event;*

(viii) in relation to a *Service Standards Event*, the financial effect on Transend associated with any increased or decreased costs or risks (including in the nature, scope or asymmetry of risks) resulting from the *Service Standards Event*.

4.0 INFORMATION DISCLOSURE

4.1 Information disclosure

Information disclosure shall be governed by the relevant clauses of the National Electricity Code (code), that is, clauses 6.2.5 and 6.2.6.

5.0 DEFINITIONS

The terms in these Pass-Through Rules have the same meaning as in Chapter 10 of the code.

5.1 Additional Definitions

ACCC means the Australian Competition and Consumer Commission.

Applicable Law means any legislation, delegated legislation (including regulations), codes, licences or guidelines relating to the provision of one or more revenue capped transmission service, and includes National Electricity Code and the National Electricity Law.

Assessment Period means 40 business days from the date the ACCC receives from Transend a *Notice of Proposed Pass Through* or a period not longer than 80 business days determined by the ACCC at its discretion.

Authority means any government or regulatory department, body, instrumentality, minister, agency or other authority or any body which is the successor to the administrative responsibilities to that department, body, instrumentality, minister agency or authority, and includes the Office of the Tasmanian Energy Regulator, NECA, NEMMCO and the ACCC or their successor organisations.

Changes in Taxes Event means:

(i) a change in the way or rate at which a Relevant Tax is calculated (including a change in the application or official interpretation of Relevant Tax); or

(ii) 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:

(iii) occurs after the date of the *Determination*; and

(iv) results in a change in the amount Transend is required to pay or is taken to pay (whether directly, under any contract or as part of the operating expenses or other cost inputs of Transend's revenue cap) by way of Relevant Taxes.

Determination means the determination of the ACCC setting the revenue cap for Transend in relation to the regulatory period commencing on 1 January 2004.

NECA means National Electricity Code Administrator Limited (ACN 073 942 775).

NEMMCO means National Electricity Market Management Company Limited (ACN 071 010 327).

Network (Grid) Support Event occurs when:

(a) Transend 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 National Electricity 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 on Transend in respect of the operation of the transmission system in Tasmania.

Notice of Proposed Pass Through means a notice described in clause 3.2 of these Pass-Through Rules.

Insurance means the most cost effective insurance available whether under a policy or a cover note or other similar arrangement:

(a) for risks of the sort for which Transend was covered at the date of the *Determination*;

(b) for amounts not less than amounts underwritten in favour of Transend at the date of the *Determination*.

Insurance Event means where one or more of the following circumstances occurs (but only if Transend is able to demonstrate that it took all reasonable precautions and was in no way negligent):

(a) where *Insurance* becomes unavailable to Transend;

(b) where *Insurance* becomes unavailable to Transend at reasonable commercial rates;

(c) where *Insurance* becomes unavailable to Transend on terms which are at least as favourable to Transend as those generally available at the date of the *Determination*;

(d) where the cost of *Insurance* (including, without limitation, premiums and deductibles) in respect of any risk becomes materially higher or lower than the cost of *Insurance* at the date of the *Determination* ($950,000 per annum expressed in 2002-03 prices).

Pass Through Amount means a variation to Transend's revenue cap as a result of a *Pass Through Event* determined in accordance with these Pass-Through Rules.

Relevant Tax means any tax, rate, duty, charge, levy or other like or analogous impost that is:

(a) paid, to be paid, or taken to be paid by Transend in connection with the provision of transmission services; or

(b) included in the operating expenses or other cost inputs of Transend's revenue cap;

but excludes:

(c) income tax (or State equivalent tax) or capital gains tax;

(d) penalties and interest for late payment relating to any tax, rate duty, charge, levy or other like or analogous impost;

(e) fees and charges 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 or other like or analogous impost which replaces the taxes or charges referred to in (c) to (f).

Service Standards Event means a decision made by any *Authority* or any introduction of or amendment to an *Applicable Law* after the date of the *Determination* that:

(a) has the effect of:

(i) imposing or varying minimum standards on Transend relating to revenue capped transmission services that are different to the minimum standards applicable to Transend in respect of revenue capped transmission services at the date of the *Determination*;

(ii) altering the nature or scope of services that comprise the revenue capped transmission services;

(iii) substantially varying the manner in which Transend is required to undertake any activity forming part of revenue capped transmission services from the date of the *Determination*; or

(iv) increasing or decreasing Transend's risk in providing the revenue capped transmission services, and

(b) results in Transend incurring (or being likely to incur) materially higher or lower costs in providing revenue capped transmission services than would have occurred 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.

Transend means Transend Networks Pty Limited (ACN 082 586 892).

5.2 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 Rules) includes any variation or replacement of it;

(b) (**clauses, annexures and schedules**) a clause, annexure or schedule is a reference to a clause in or annexure or schedule to these 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 vica versa;

(e) (**person**) the word 'person' includes 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.

5.3 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 D 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 the TNSPs revenue requirement is "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 1 provides the same financial indicators based on Transend's AR.

Table 1 assumes a business profile of above average[55], which results in a minimum credit rating of 'A'. Hence the ACCC believes that its revenue cap for Transend will not adversely affect either the ongoing financial viability or Transend's ability to access capital markets. Other reasons for this include:

- The ACCC understands that Transend, as a government owned business, sources finance through State government arrangements
- The ACCC is satisfied that, by setting an appropriate WACC, it has already addressed Transend's ability to obtain credit. In determining Transend's WACC, the ACCC benchmark Transend's gearing at 60 per cent and sets the debt margin based on a benchmark credit rating of 'A'.

[55] The ACCC considers Transend's business profile lies between excellent and above average, given the likely stability of its earnings and the lack of competitors for its services.

Table 1 Financial indicators

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
EBIT to Revenues (%)	67.79	72.47	70.42	72.65	75.95	76.99
EBITD to Revenues (%)	82.98	89.02	87.95	91.00	93.71	94.04
EBIT to Funds Employed (%)	11.92	12.34	11.54	12.05	12.21	12.82
EBIT to regulated assets (%)	11.92	12.34	11.54	12.05	12.21	12.82
Pre-tax interest cover (times)	2.93	3.04	2.84	2.97	3.01	3.16
Funds Flow Net Interest Cover (times)	3.59	3.73	3.55	3.72	3.71	3.85
S&P Rating	AA (AA)	AA (AA)	AA (AA)	AA (AA)	AA (AA)	AA (AA)
Funds Flow Net Debt Pay Back (years)	6.24	5.91	6.40	5.98	6.02	5.69
S&P Rating	A (A)	A (A)	A (A)	A (AA)	A (A)	A (AA)
Internal Financing Ratio (%)	80.94	82.14	129.59	88.35	204.41	266.21
S&P Rating	AA (AA)	AA (AA)	AAA (AAA)	AA (AA)	AAA (AAA)	AAA (AAA)
Gearing	0.60	0.60	0.60	0.60	0.60	0.60
Payout Ratio	0.00	0.00	0.00	0.00	0.00	0.00

Note: Financial indicators 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)

Note also that credit ratings shown above assume an above average business profile, ratings shown in brackets assume an excellent business profile.

Table 2 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 avg	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 avg	X	4.25	3.50	3.00	X	4.0	5.5	7.0	X	100	100	75
Vulnerable	X	X	4.00	3.50	X	X	4.0	6.0	X	X	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 E Calculating the financial incentive

Incorporating the penalty or reward into the MAR

The ACCC requires each TNSP to report annually on its service standards indicators. Accordingly, Transend must report the actual performance for the indicators defined in appendix G.

Table 1 Timing of financial incentives

Allowed revenue [1] (Financial year) (t)	Financial incentive [2] (Calendar year) (ct)
1 January 2004 - 30 June 2004	-
1 July 2004 - 30 June 2005	-
1 July 2005 - 30 June 2006	1 January 2004 - 31 December 2004
1 July 2006 - 30 June 2007	1 January 2005 - 31 December 2005
1 July 2007 - 30 June 2008	1 January 2006 - 31 December 2006
1 July 2008 - 30 June 2009	1 January 2007 - 31 December 2007

1. The allowed revenue for regulatory period t is based on the financial year listed.
2. The financial incentive for regulatory period t is based the calendar year listed.

The MAR is calculated as follows:

$$\mathbf{MAR_t} = \textbf{(allowed revenue)} \pm \textbf{(financial incentive)} \pm \textbf{(pass-through)}$$

$$= \left(\mathrm{AR}_t\right) \pm \left(\frac{(\mathrm{AR}_{t-1} + \mathrm{AR}_{\mathrm{t\text{-}2}})}{2} \times S_{ct}\right) \pm \text{(pass-through)}$$

Where:

MAR = maximum allowed revenue

AR = allowed revenue

S = service standards factor (appendix F)

t = regulatory period in (table 1)

ct = calendar year (table 1)

This calculation does not allow the effect of 'S' to be compounded into future periods. That is, each annual service standards reward or penalty will only affect revenues in one year. Further, the calculation of the financial incentive uses the allowed revenue for the period in which performance is measured. That is, the revenue for the calendar year in which service standards are measured is the time weighted average of the relevant AR for the overlapping regulatory year.

Appendix F shows how 'S' is calculated.

Appendix F Calculating the service standards factor

Calculating the service standards factor

When calculating 'S', the performance for each calendar year must be used.

The following equations should be used to calculate 'S'.

Where $S = S_1 + S_2 + S_3 + S_4$

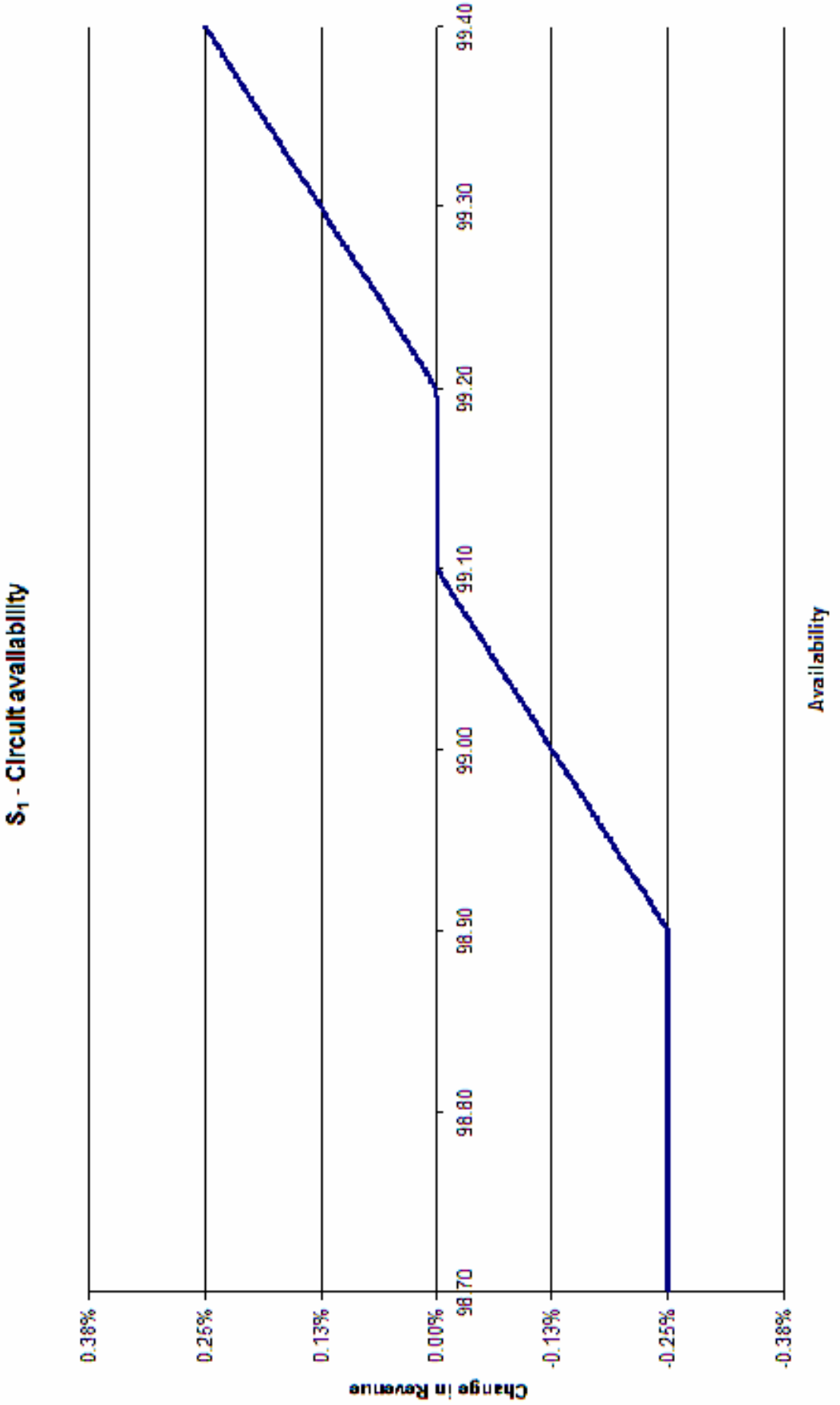
Transmission circuit availaibility											
S_1	**=**	**Gradient**	**x**	**Performance**	**+**	**Intercept**	**Where:**				
S_1	=	0.0025							Availability	>	99.4
S_1	=	0.0125	x	Availability	-	1.24000	99.2	<	Availability	≤	99.4
S_1	=	0.0000					99.1	≤	Availability	≤	99.2
S_1	=	0.0125	x	Availability	-	1.23875	98.9	≤	Availability	<	99.1
S_1	=	-0.0025							Availability	<	98.9

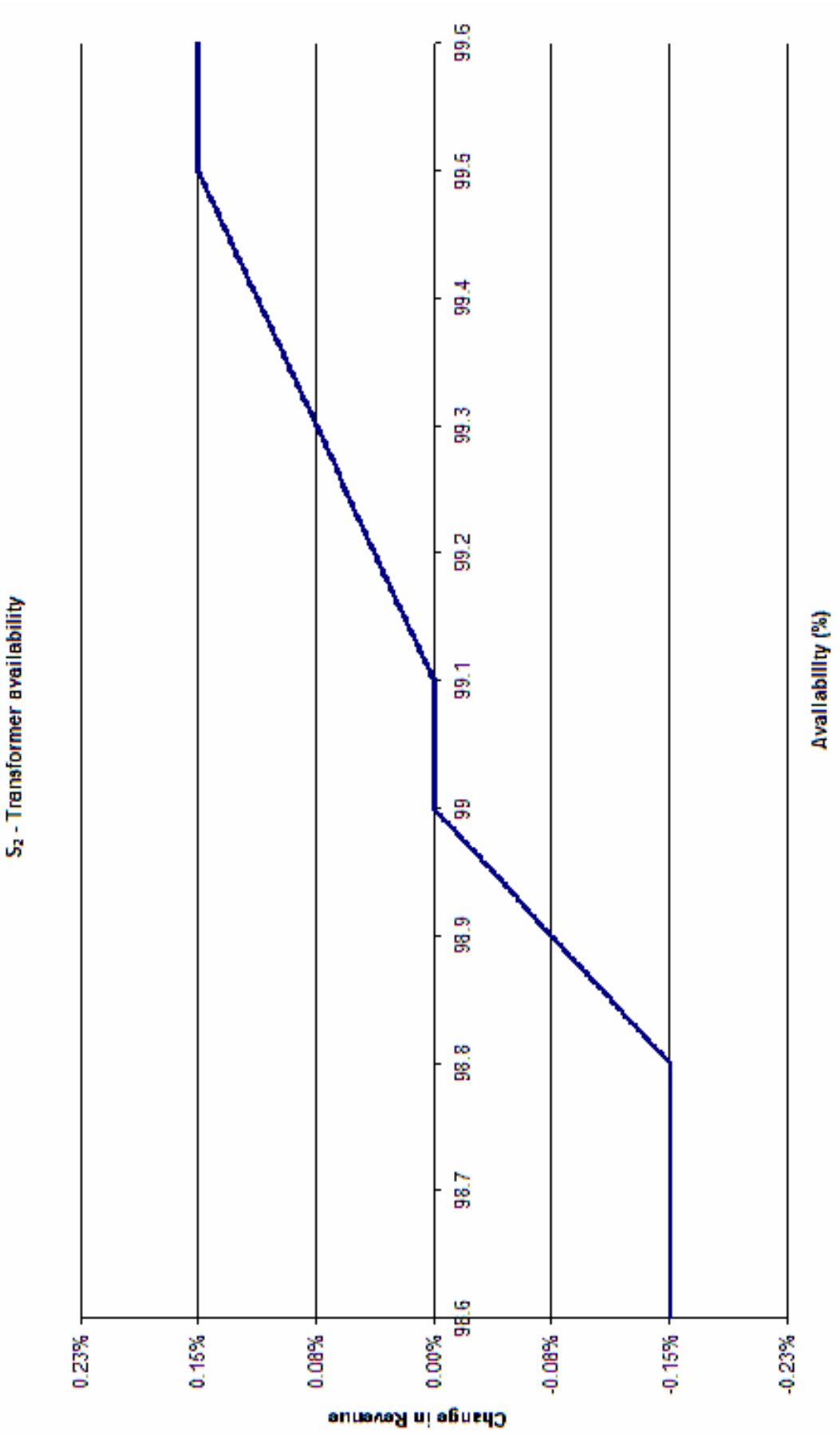
Transformer availability											
S_2	**=**	**Gradient**	**x**	**Performance**	**+**	**Intercept**	**Where:**				
S_2	=	0.00150							Availability	>	99.5
S_2	=	0.00375	x	Availability	-	0.371625	99.1	<	Availability	≤	99.5
S_2	=	0.00000					99.0	≤	Availability	≤	99.1
S_2	=	0.00750	x	Availability	-	0.742500	98.8	≤	Availability	<	99.0
S_2	=	-0.00150							Availability	<	98.8

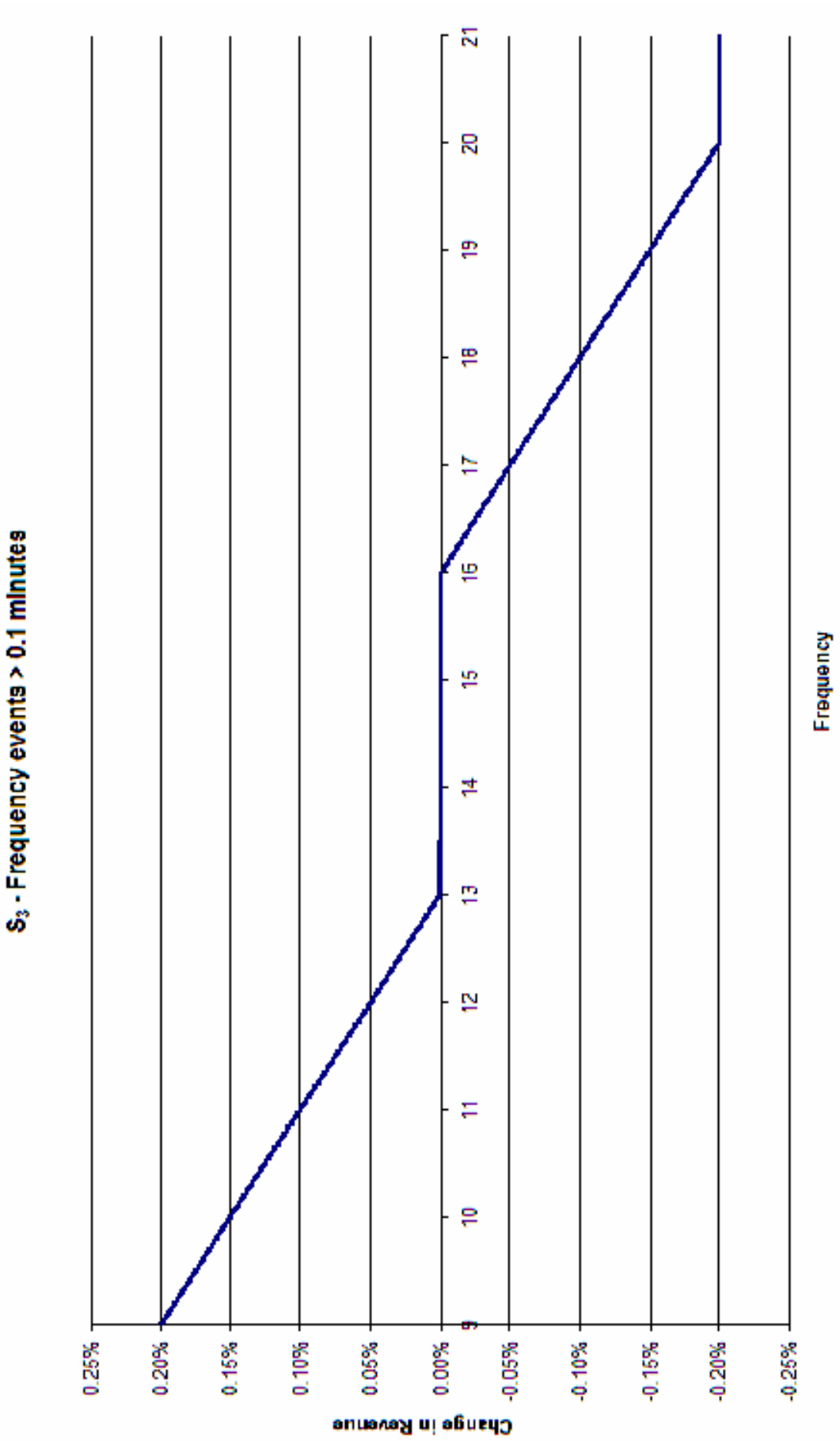
Frequency of loss of supply for events > 0.1 minutes											
S_3	**=**	**Gradient**	**x**	**Performance**	**+**	**Intercept**	**Where:**				
S_3	=	0.0020							Frequency	=	9
S_3	=	-0.0005	x	Frequency	+	0.0065	9	<	Frequency	<	13
S_3	=	0.0000					13	≤	Frequency	≤	16
S_3	=	-0.0005	x	Frequency	+	0.0080	16	<	Frequency	<	20
S_3	=	-0.0020							Frequency	=	20

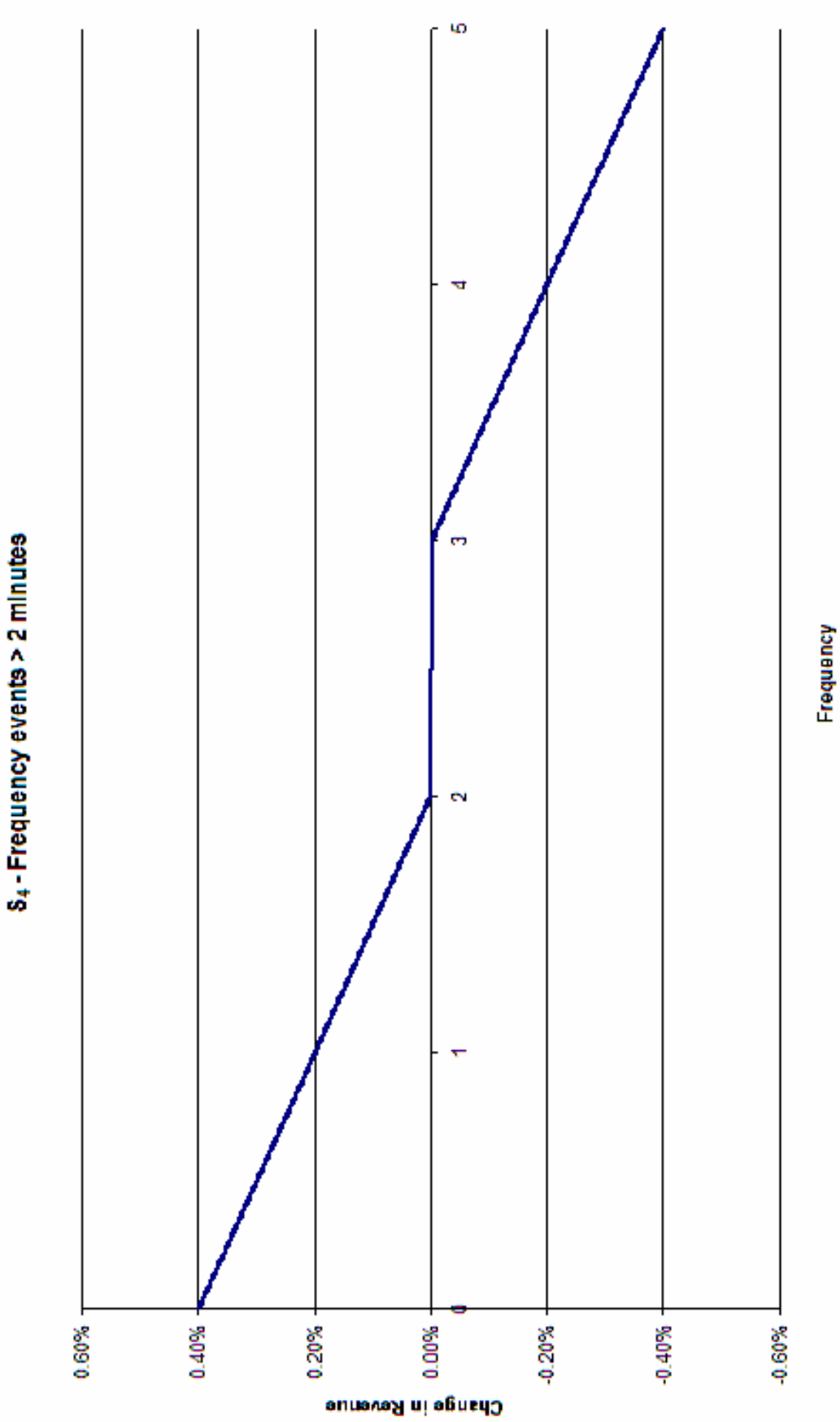
Frequency of loss of supply for events > 2 minutes											
S_4	**=**	**Gradient**	**x**	**Performance**	**+**	**Intercept**	**Where:**				
S_4	=	0.0040							Frequency	=	0
S_4	=	-0.0020	x	Frequency	+	0.004	0	<	Frequency	<	2
S_4	=	0.0000					2	≤	Frequency	≤	3
S_4	=	-0.0020	x	Frequency	+	0.006	3	<	Frequency	<	5
S_4	=	-0.0040							Frequency	=	5

Note: These equations are displayed graphically on the following pages.


S1 - Circuit availability
0.38%
0.25%
0.13%
0.00%
-0.13%
-0.25%
-0.38%
Change in Revenue
98.70
98.80
98.90
99.00
99.10
99.20
99.30
99.40
Availability


S2 - Transformer availability
Change in Revenue
0.23%
0.15%
0.08%
0.00%
-0.08%
-0.15%
-0.23%
98.6
98.7
98.8
98.9
99
99.1
99.2
99.3
99.4
99.5
99.6
Availability (%)


S3 - Frequency events > 0.1 minutes
Change in Revenue
0.25%
0.20%
0.15%
0.10%
0.05%
0.00%
-0.05%
-0.10%
-0.15%
-0.20%
-0.25%
9
10
11
12
13
14
15
15
16
17
18
19
20
21
Frequency


S_4 - Frequency events > 2 minutes
Change in Revenue
0.60%
0.40%
0.20%
0.00%
-0.20%
-0.40%
-0.60%
0
1
2
3
4
5
Frequency

Appendix G Performance measure definitions

Measure 1	**Transmission circuit availability**
Sub-measures	▪ Circuit availability ▪ Transformer availability
Unit of measure	Percentage of total possible hours available
Source of data	Transend
Definition/formula	Formula: $\left(\frac{\text{No. hours per annum circuits are available}}{\text{Total possible no. of defined circuit hours}}\right)\times 100$ Definition: The actual circuit hours available for defined, divided by the total possible defined circuit hours available
Exclusions (to be reported annually)	▪ Exclude unregulated transmission assets ▪ Exclude dedicated connection assets that supply a customer who has negotiated a higher (or lower) level of service required by the code, Where that customer has agreed to the cost (or discount) for that higher (or lower) level of service. ▪ Exclude from 'circuit unavailability' any outages shown to be caused by a fault or other event on a '3rd party system' e.g. intertrip signal, generator outage, customer installation (Transend to provide list) ▪ Excluded force majeure events
Inclusions	▪ 'Circuits' includes overhead lines, underground cables, power transformers, phase shifting transformers, static var compensators, capacitor banks, and any other primary transmission equipment essential for the successful operation of the transmission system (Transend to provide lists) ▪ Circuit 'unavailability' to include outages from all causes including planned, forced and emergency events, including extreme events

Measure 2	**Loss of supply event frequency index**
Sub-measures	▪ Frequency of events where loss of supply exceeds 0.1 minutes ▪ Frequency of events where loss of supply exceeds 2 minutes
Unit of measure	Number of events per annum
Source of data	Transend
Definition/formula	▪ Frequency of events where loss of supply exceeds 0.1 minutes ▪ Frequency of events where loss of supply exceeds 2 minutes
Exclusions	▪ Exclude unregulated transmission assets ▪ Exclude dedicated connection assets that supply a customer who has negotiated a higher (or lower) level of service required by the code, Where that customer has agreed to the cost (or discount) for that higher (or lower) level of service. ▪ Exclude any outages shown to be caused by a fault or other event on a 'third party system' (e.g. intertrip signal, generator outage, customer installation) ▪ Planned outages ▪ Excluded force majeure events
Inclusions	▪ All unplanned outages exceeding the specified impact (that is, 0.1 minutes and 2 minutes) ▪ Includes outages on all parts of the regulated transmission system ▪ Includes extreme events

Force majeure

For the purpose of applying the service standards PI scheme, 'force majeure events' means any event, act or circumstance or combination of events, acts and circumstances which (despite the observance of good electricity industry practice) is beyond the reasonable control of the party affected by any such event, which may include, without limitation, the following:

- fire, lightning, explosion, flood, earthquake, storm, cyclone, action of the elements, riots, civil commotion, malicious damage, natural disaster, sabotage, act of a public enemy, act of God, war (declared or undeclared), blockage, revolution, radioactive contamination, toxic or dangerous chemical contamination or force of nature

- action or inaction by a court, government agency (including denial, refusal or failure to grant any authorisation, despite timely best endeavour to obtain same)

- strikes, lockouts, industrial and/or labour disputes and/or difficulties, work bans, blockades or picketing

- acts or omissions (other than a failure to pay money) of a party other than the TNSP which party either is connected to or uses the high voltage grid or is directly connected to or uses a system for the supply of electricity which in turn is connected to the high voltage grid

- where those acts or omissions affect the ability of the TNSP to perform its obligations under the service standard by virtue of that direct or indirect connection to or use of the high voltage grid.

In determining what force majeure events should be 'Excluded force majeure events' the ACCC will consider the following:

- Was the event unforeseeable and its impact extraordinary, uncontrollable and not manageable?

- Does the event occur frequently? If so how did the impact of the particular event differ?

- Could the TNSP, in practice, have prevented the impact (not necessarily the event itself)?

- Could the TNSP have effectively reduced the impact of the event by adopting better practices?

Appendix H Submissions received

In response to the ACCC's call for submissions on Transend's application, GHD's report and the ACCC's draft decision submissions were received from:

- Transend Networks
- Aurora Energy
- Major Employers Group
- Hydro Tasmania
- Senator Bob Brown
- Tasmanian Chamber of Commerce and Industry
- Energy Users Association of Australia and Energy Action Group (combined submission)
- Office of the Tasmanian Energy Regulator
- Headberry and Partners
- Powerlink
- ElectraNet SA
- TransGrid
- Tasmanian Treasury
- TEMCO
- Ergon Energy
- Mr David Asten