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Richard Fletcher
Regulatory Strategy Manager
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27 August 2010

Dear Richard

Tranpower's Economic Value Reporting Framework

Introduction

This letter has been prepared to accompany Transpower's Cross Submission to the Commerce Commission dated 25 August 2010. It has been prepared in accordance with the Code of Conduct for expert witnesses contained in the High Court Rules.

Scope of this Letter

Our report Development and Application of EV Methodology to Revenue Setting – February 2006 ("the 2006 Report") reviewed the development and application of Transpower's economic value framework for determining its revenue requirement. A copy of this report is attached as Appendix B.

We commented on the evolution of the economic value framework in the 2006 Report, how it had been applied and the outcomes for customers and shareholders up to the date of the report. Our review focused particularly on the principles that underpinned the framework and how these provided a basis for self regulation by Transpower.

The purpose of this letter is to expand on the 2006 report for the period to 2009 and to provide additional analysis with respect to the HVAC and HVDC components of the economic value results. The additional data for HVAC and HVDC has been collated for the years ending 30 June 2003 to 2009 from economic value statements and supporting documents that were part of our annual compilation review of Transpower's economic value accounts.

Changes to the Economic Value Financial Statements

There has been significant change to the reporting of Transpower's economic value results since 2006. In 2007 Transpower agreed to an Administrative Settlement with the Commerce Commission. The affect of this, among other things, was a change to a number of the economic value reporting policies and inputs that were part of the framework for the economic value statements.

The changes included:

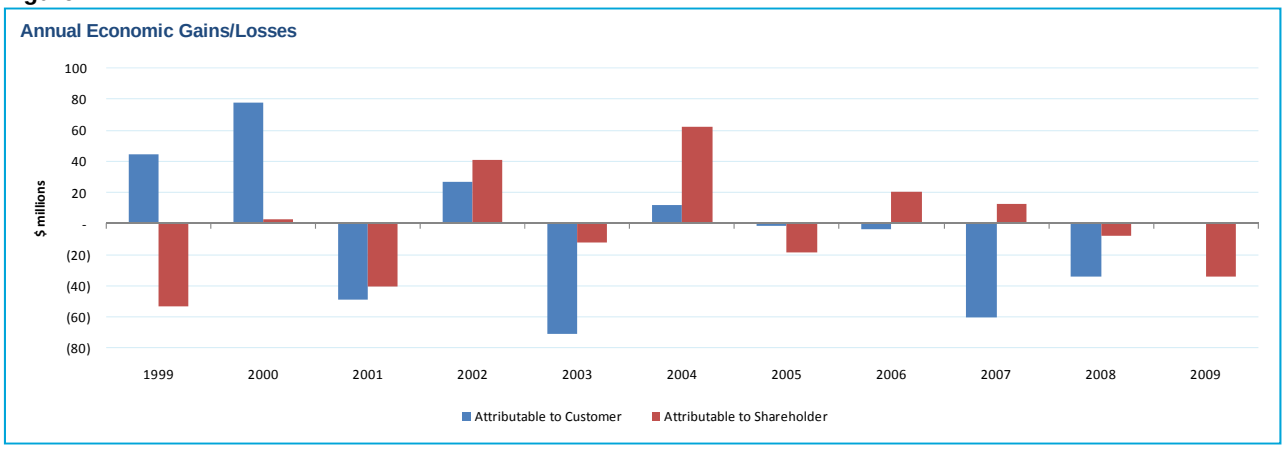
- A transition to historical cost accounting for assets from Optimised Deprival Value (ODV). This necessitated the creation of $112 million of "Pseudo Assets" which represented the difference between ODV values and historical cost values at 30 June 2006. The pseudo assets are depreciated for between 4 and 10 years.
- The economic value statements were prepared for Transpower's transmission business showing separate results for the HVAC and HVDC parts of the business. Prior to this change, the statements provided a total Transpower result only.
- The Weighted Average Cost of Capital (WACC) for the calculation of the economic value results was set by the Commerce Commission.
- A cap on operating expenses was set by the Commerce Commission for the combined HVAC and HVDC parts of the business. Any positive or negative variations to the cap were to be to the account of the shareholder and not the customers.
- Calculation of interest on the outstanding economic customer accounts using WACC rather than the cost of equity.

Also in 2007, Transpower elected to change the allocation method for determining the level of some of the HVDC operating costs. The adopted method was based on an avoidable cost allocation methodology (ACAM) that posted all directly attributable costs to the HVDC account and a small amount of indirect cost that would be avoided if the HVDC did not exist. This new method replaced a less well defined method that did not fully identify and allocate the directly attributable costs of the HVDC.

Economic Value Financial Statements – HVAC and HVDC combined

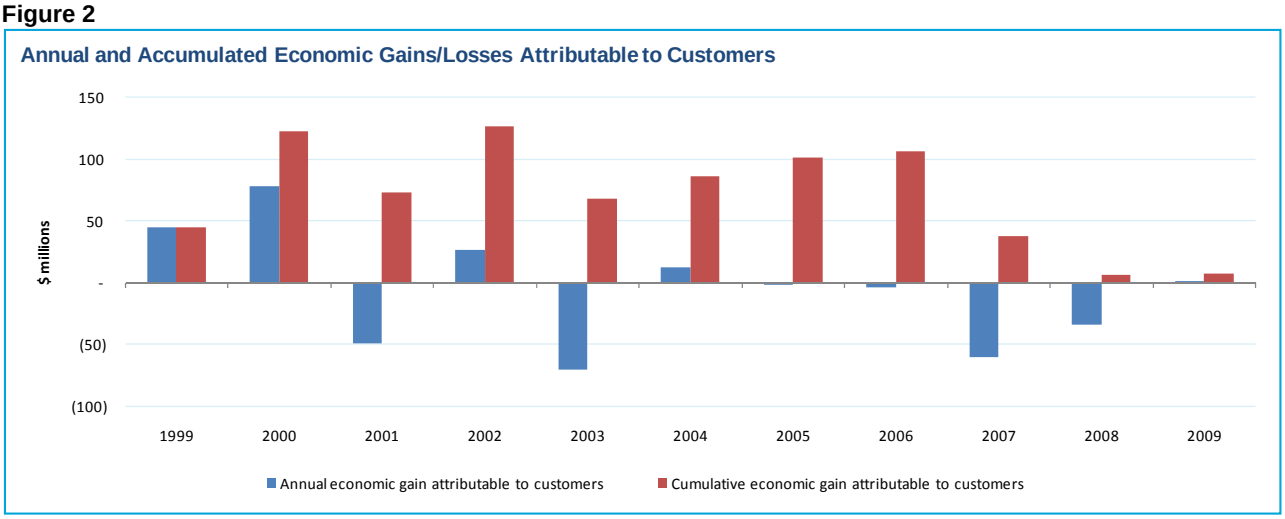
The following figures present the annual economic gains and losses from 1999 to 2009 for the total transmission business[1], extracted from Transpower's economic value financial statements.

Figure 1



[1] This excludes gains and losses from Transpower's non-monopoly operations.

Figure 2



As noted in the 2006 report, the customer account was re-set to zero in 1999. As shown in Figure 2, from 2005 to 2008 the customer account has consistently returned a negative annual result, with a return to a small positive result in 2009. The loss in 2007 arose primarily from variances between actual and forecast results in revenue and tax, off-set by variances against forecast results in pass-through costs. The significant net negative EV adjustment carried forward from the 2006/07 revenue requirement also contributed to the loss.

In 2008, the net variances against forecast results were small and positive, and these were offset by the large negative EV adjustment carried forward from the 2007/08 revenue requirement.

Economic Value Financial Statements – HVAC and HVDC

We have obtained data separately for the HVAC and HVDC economic value statements from 2003 to 2009. As noted above, since 2007 the economic value statements have disclosed both the AC and DC parts of the business. Prior to then, the statements only reported the economic value results for the total Transpower Group. However, the supporting work-files to the statements provided an analysis of the HVAC and HVDC results and we have used this information to populate the following figures.

Figure 3

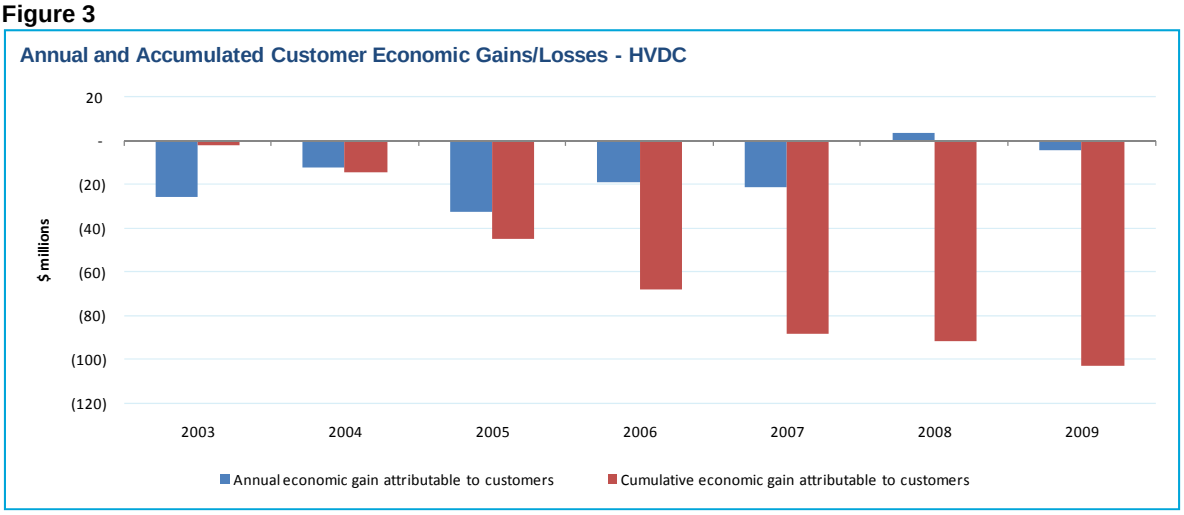
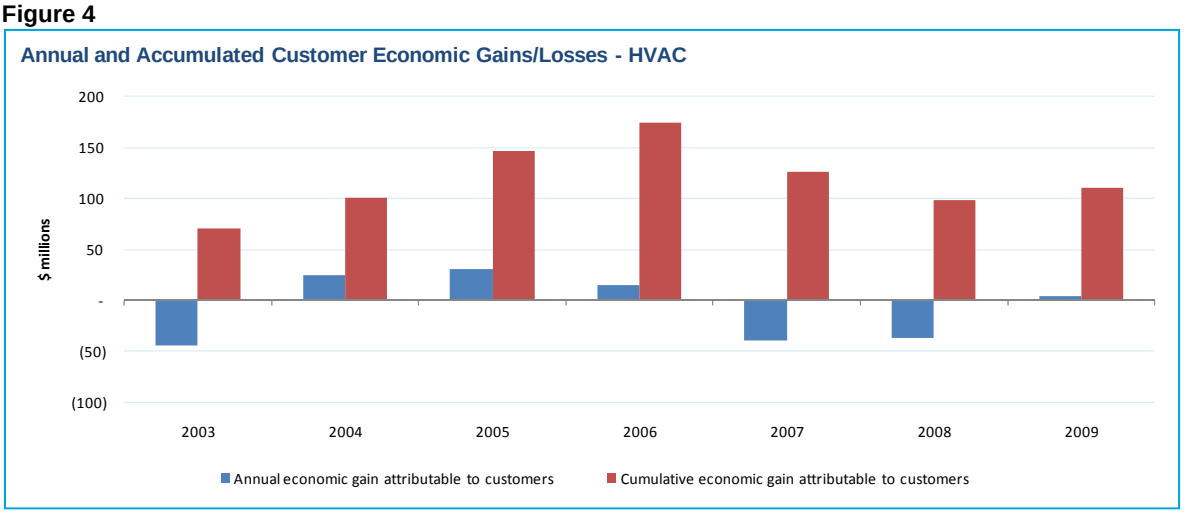


Figure 4



Figures 3 and 4 demonstrate that there is no correlation between the economic value results for HVAC and HVDC.

In 2003 the customer balance for HVDC was -$2.3 million (i.e. Transpower had under-recovered its costs by $2.3 million). From 2003 to 2007 there have been consistent economic value losses for the HVDC business. Since 2008 there have been only small net gains and losses as variances against forecasts for revenues and costs have netted off against each other and against the annual EV adjustment. In 2009, the Operating Cost variance included the impact of Instantaneous Reserve costs being higher than forecast, although this was almost all off-set by other variances against forecasts and the EV adjustment.

The net impact is that the HVDC balance has reached -$103 million as at 30 June 2009. This represents the total amount under-recovered from HVDC customers by Transpower since the customer balance was re-set in 1999.

The mechanism to recover this balance allows for a recovery through the revenue setting process of the minimum of either 1/3 of the outstanding customer balance or 10% of the forecast revenue. The 10% cap has been reached in recent years, effectively extending the time over which the customer balance might otherwise be expected to be recovered.

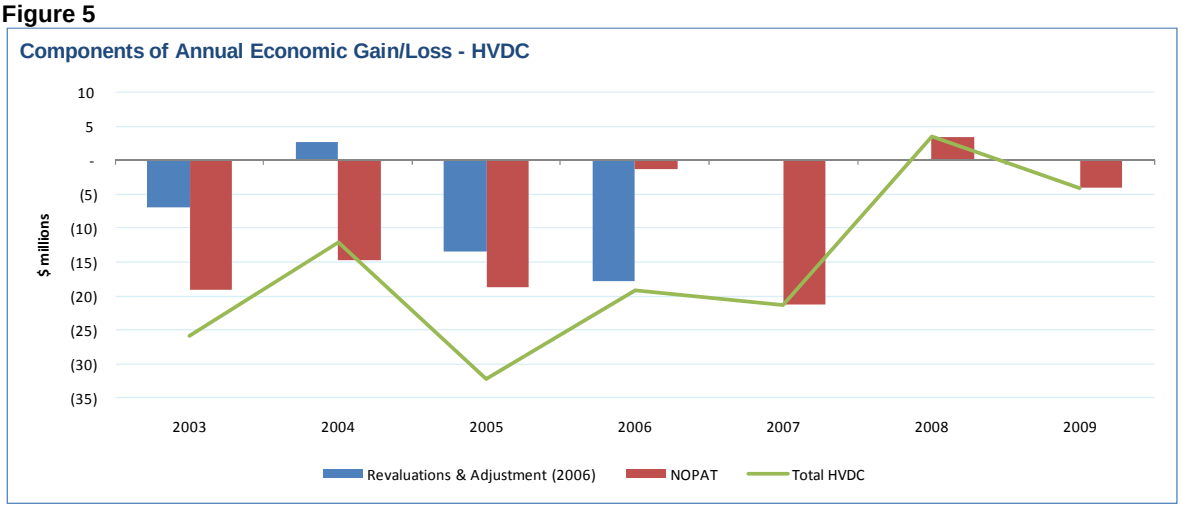
As shown in Figure 4, the annual HVAC economic value gains and losses have fluctuated since 2003. Beginning with an opening balance in 2003 of $70 million (Transpower had over-recovered its costs from customers) the customer account balance has climbed to a high of $174 million in 2006, reducing to $110 million in 2009. The customer account losses in 2007 and 2008 were heavily impacted by the rebating of the opening customer account balances in these years. While a similar level of rebate was applied in 2009, this was fully off-set by positive variances against forecasts in both revenue and operating costs.

Components of Annual Economic Gains/Losses

From 2003 to 2006 the impact of revaluations of the ODV asset base was included in the customer's annual economic gain or loss. Only revaluations applicable to customers were included in the customer account, all other revaluations being to the account of the shareholder. From the adoption of the Administrative Settlement in 2007 and the reversion to using the book value of assets for regulatory accounting, no further revaluations have been included in the annual economic results.

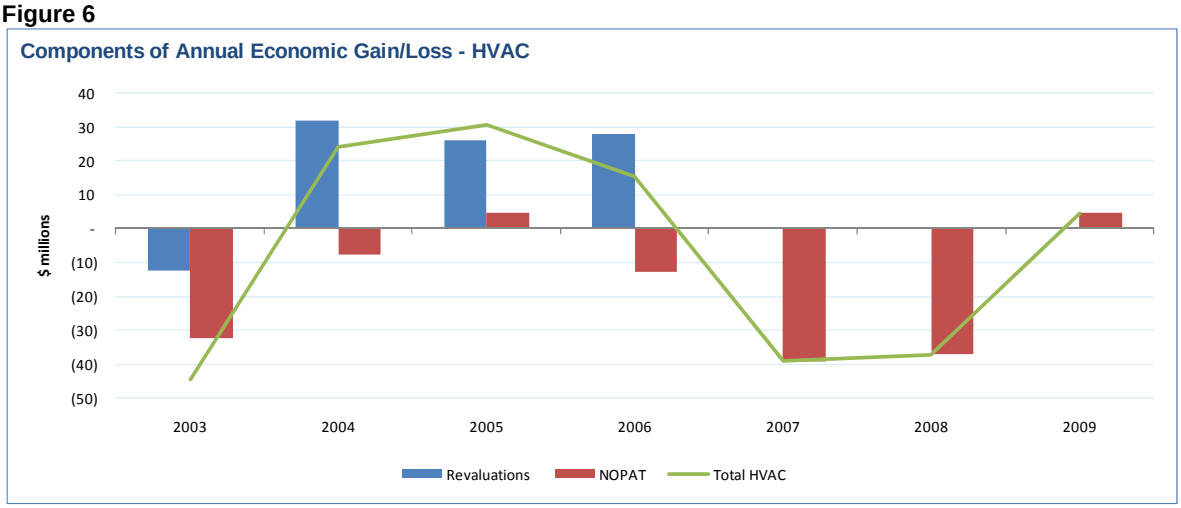
Figures 5 and 6 show the components of the annual gains and losses for HVDC and HVAC customers from 2003 to 2009.

Figure 5



The adjustment referred to in Figure 5 relates to a commercial decision by the Transpower Board to reduce the charge to HVDC customers by $8.6 million in 2006. This amount became a shareholder charge.

Figure 6



Current Balance of Customer Accounts

The total customer balances include the historical impacts of revaluations, annual economic value gains and losses and interest on the opening balance (at the cost of equity prior to 2007 and at WACC from 2007 to 2009). In addition, in 2007 an adjustment was made to the AC account to re-classify amounts previously reported as shareholder benefits. This related to a specific charge at Comalco and comprised an adjustment for the periods from 1998 to 2006 of $20.3 million.

Figures 7 and 8 show the 2009 customer balances and the respective components since 2003. We note that for both the AC and DC accounts, the opening balances in 2003 include a combination of revaluations and economic gains and losses.

Figure 7

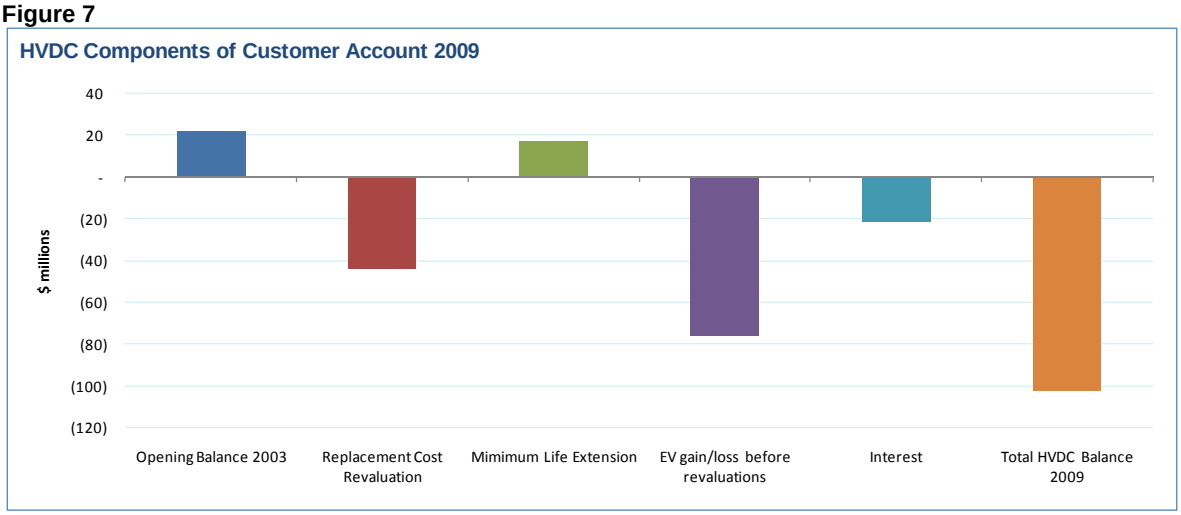
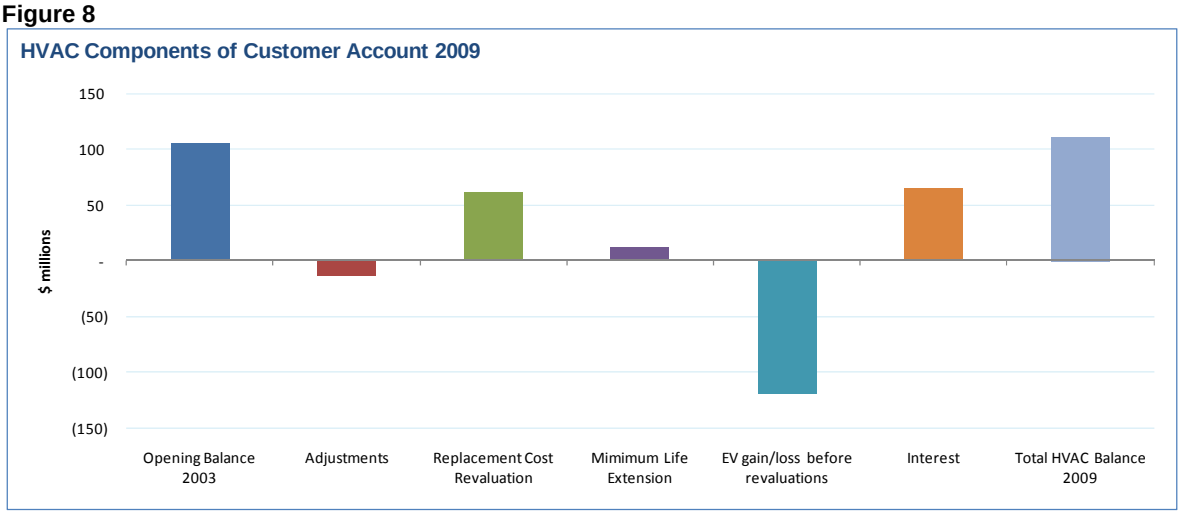


Figure 8



The total revaluation amount comprises both the Replacement Cost Revaluation and the Minimum Life Extension amounts. The treatment of revaluation reserves as Income or Expenses provides an economically neutral outcome in that an upwards revaluation (credited to the customer account) is offset by higher depreciation and WACC charges on the assets in later years (and vice versa).

Compliance Reviews

Since the beginning of Transpower's economic value reporting in 1996 we have performed an annual compliance review of the economic value statements. This has not involved providing an opinion on the economic results themselves. Rather, our review has focused on confirming that the economic results are consistent with Transpower's economic value principles. Since 2007 we have also reviewed the statements for consistency with the Administrative Settlement that was agreed with the Commerce Commission.

In each year from 1996 to 2009 we have found that in all material respects the economic value statements have been prepared on a basis consistent with Transpower's economic value reporting policies and, since 2007, they have also been consistent with the Administrative Settlement.

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General

Please do not hesitate to contact us if you have any questions or require further information.

Yours sincerely
PricewaterhouseCoopers

Bruce Wattie

Bruce Wattie
Partner

Appendix A Important Notice

This Report has been prepared solely for the purposes stated herein and should not be relied upon for any other purpose.

To the fullest extent permitted by law, PwC accepts no duty of care to any third party in connection with the provision of this Report and/or any related information or explanation (together, the "Information"). Accordingly, regardless of the form of action, whether in contract, tort (including without limitation, negligence) or otherwise, and to the extent permitted by applicable law, PwC accepts no liability of any kind to any third party and disclaims all responsibility for the consequences of any third party acting or refraining to act in reliance on the Information.

We have not independently verified the accuracy of information provided to us. We express no opinion on the reliability, accuracy, or completeness of the information provided to us and upon which we have relied.

The statements and opinions expressed herein have been made in good faith, and on the basis that all information relied upon is true and accurate in all material respects, and not misleading by reason of omission or otherwise.

The statements and opinions expressed in this report are based on information available as at the date of the report.

We reserve the right, but will be under no obligation, to review or amend our Report, if any additional information, which was in existence on the date of this report was not brought to our attention, or subsequently comes to light.

This report is issued pursuant to the terms and conditions set out in our engagement letter and the Terms of Business attached thereto.

In addition the following should be noted:

- Certain numbers included in tables throughout this report have been rounded and therefore may not add exactly.

Unless otherwise stated all amounts are stated in New Zealand dollars.

Appendix B 2006 Report

Overleaf

PRICEWATERHOUSECOOPERS

Transpower New Zealand Limited

Development and Application of EV Methodology to Revenue Setting

February 2006

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Andrew Harvey-Green
Valuation Manager
Transpower New Zealand Limited
PO Box 1021
Wellington

27 February 2006

Dear Andrew

Please find enclosed our paper on Transpower's economic value financial performance and its revenue requirement calculation. If you have any questions or require any further information, please do not hesitate to contact us.

Yours sincerely

Bruce Wattie

Bruce Wattie
Partner

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Glossary of Terms

ECNZ	Electricity Corporation of New Zealand
EV	Economic Value
NOPAT	Net Operating Profit After Tax
ODV	Optimised Deprival Value
ROI	Return on Investment
SOE	State Owned Enterprise
Transpower or the Company	Transpower New Zealand Limited
WACC	Weighted Average Cost of Capital

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Table of Contents

1 Summary Comments

1.1 Transpower has applied a process to self regulate its revenue requirement since its establishment as a separate SOE. The principles underpinning the process were established prior to Transpower's separation from ECNZ and have been applied ever since.

1.2 The basis on which the principles have been applied has evolved over time. The evolution has been by way of refinements rather than any wholesale change in the approach.

1.3 The principles being applied are sound. Transpower seeks to recover only sufficient revenue to finance its operating costs, including tax, and provide its lenders and its shareholder with a return of and a return on the capital they have provided to finance the operating assets. This is subject to the proviso that Transpower will only seek to recover a return of and on the capital required to finance operating assets needed to provide an efficient level of service to customers, given desired quality standards. In this context there may be debates about the inputs to the revenue requirement process, but the principles underpinning the calculation are less debatable.

1.4 Transpower measures its compliance with the principles through its economic value statements. Any under or over recovery of revenue from customers relative to its financial objectives are accumulated and recovered from or returned to customers over time. In this way, balance is maintained between customers and the shareholder. Importantly, the self regulatory process applied by Transpower has ensured that over time it cannot generate profits for its shareholder over its cost of capital. Earnings may be above cost of capital in any year but the system is self correcting in that these economic value gains are returned to customers.

1.5 The accumulated economic value balance at 30 June 2005 was positive, implying that there are gains to be returned to customers. This balance needs to be considered in the context of two important factors. The first provides an historical context to the current balance. The second is about understanding the drivers of the balance.

1.6 During the three years ended 30 June 1997, Transpower had under-recovered revenue relative to its cost of capital. The accumulated balance of the economic value account was negative. In 1998 a substantial economic loss was recorded, largely as a consequence of a reduction in the ODV. The accumulated balance at 30 June 1998 was nearly $700 million negative.

1.7 Transpower's directors decided not to seek to recover the negative balance and effectively wrote it off as of 1 July 1998. Had the balance not been written off, the accumulated economic value at 30 June 2005 would have been over negative $1 billion dollars. The shareholder would have been entitled to recover this from customers, all other things being equal.

1.8 Subsequent to 1998, the key driver of the accumulated economic value balance has been the annual movement (revaluation) in the ODV. The component of the annual revaluation attributable to customers has been positive in each year. This has been partially offset by the economic value losses before revaluations in five of the last seven years. These losses in part reflect the rebates Transpower is giving in response to the positive accumulated economic value balance (after the 1998 negative balance write-off).

1.9 The rebates to customers provide an immediate case benefit. The revaluations do not provide an immediate cash benefit to shareholders – the cash will accrue to shareholders only over the life of the assets, which in Transpower's cash is a long time.

1.10 Any review of Transpower's pricing must take into account the self regulating mechanisms it has employed to manage its revenue requirement and how this has been used to balance the interests of customers and shareholders over time. The mechanism has been used in recognition of the fact that Transpower is the owner of sole supply assets and that it has a responsibility to derive revenue without generating monopoly profits. A review must also recognise the balance that is being struck between customers and the shareholder and that historical decisions and transactions cannot be ignored in setting future prices.

2 Introduction

Scope

2.1 In accordance with our terms of reference, we have reviewed the development and application of Transpower's economic value framework for determining its revenue requirement. We comment on the evolution of the framework, how it is applied and the outcomes for customers and shareholders.

2.2 Our review focuses particularly on the principles that underpin the framework and how these have provided a basis for self regulation by Transpower.

Our Involvement with the EV Framework

2.3 PricewaterhouseCoopers and one of its predecessor firms, Coopers & Lybrand, has had a long involvement with Transpower and the independent review of its economic value framework. We undertook a review of the development of the framework prior to separation of Transpower from ECNZ. In our role as auditor of Transpower, and subsequently to relinquishing that role, we have undertaken compliance reviews of the annual economic value financial statements prepared by Transpower since 1996.

Financial Years

2.4 References to years in this paper are to financial years ended 30 June unless stated otherwise.

Important Notice

2.5 In preparing this report, we have relied upon, and assumed the accuracy and completeness of, all information available to us from public sources and furnished to us by Transpower. We have evaluated that information through analysis, inquiry and review but have not sought to verify the accuracy or completeness of any such information. It should not be construed that we have conducted an audit for the purpose of preparing this paper of the specific information we have relied upon.

2.6 This report has been prepared solely for use by Transpower and may not be copied or distributed to third parties without our prior written consent, other than as part of its submission to the Commerce Commission in response to the Commission's intention to declare control of Transpower. We will not accept responsibility to any party unless specifically stated to the contrary by us in writing. We will accept no responsibility for any reliance that may be placed on our report should it be used for any purpose other than that for which it is prepared.

2.7 Our report has been prepared with care and diligence and the statements and opinions in the report are given in good faith and in the belief on reasonable grounds that such statements and opinions are not false or misleading. No responsibility arising in any way for errors or omissions (including responsibility to any person for negligence) is assumed by us or any of our partners or employees for the preparation of the report to the extent that such errors or omissions result from our reasonable reliance on information provided by others or assumptions disclosed in the report or assumptions reasonably taken as implicit.

2.8 We reserve the right, but are under no obligation, to revise or amend our report if any additional information (particularly as regards the assumptions we have relied upon)

which exists on the date of our report, but was not drawn to our attention during its preparation, subsequently comes to light.

3 Background

Development of the EV Framework

3.1 Separation of Transpower from ECNZ as of 1 July 1994 required Transpower to establish a revenue stream independent of ECNZ. Prior to separation, retail distributors purchased delivered energy from ECNZ, paying one bundled price for transmission services and energy. On separation it was necessary to unbundle the charges so that ECNZ could charge for energy and Transpower could charge for transmission.

3.2 The development of the basis on which Transpower should set its revenue and its prices commenced some considerable time before separation. The report "Valuation of Trans Power New Zealand Limited, Report to Trans Power Establishment Board, Stage 1: Report on Valuation Methodology", dated December 1990 included a description of how asset values should be incorporated into a calculation of transmission prices. Section 7.1 of the report, Calculation of the Required Price Level, stated that:

> *"It is assumed here that the price level is to be set from Trans Power's book values, calculated using the Deprival Value methodology, and based on a rate of return target. Provided the book values are established and maintained over time on a Deprival basis, and provided the target rate of return and price calculation are appropriately derived, then this is an entirely acceptable way of determining an efficient ongoing price level for Trans Power. That is, there is an internally-consistent accounting framework for determining the transmission price levels that would hold in a competitive or contestable market.*
>
> *The required revenue level can be expressed as the sum of*
>
> - *Operating expenses, such as maintenance, operations and administration*
> - *A depreciation charge*
> - *The expected tax liability*
> - *Capital servicing costs*
>
> *Capital servicing costs broadly include the interest cost of debt and shareholder returns on equity."*

3.3 This approach was also briefly described in the Trans Power Establishment Board ("TPEB") report "The Separation of Trans Power, A Report to the Minister for State-Owned Enterprises", dated September 1991. Section 8.2 The Costs of Transmission, stated:

> *"In the absence of a market determined price, Trans Power will set the price of transmission on a cost plus basis.*
>
> *There are three main components of transmission costs: costs incurred in operating the system, costs relating to existing assets and the cost of new investments.*
>
> *... The bulk of Trans Power's costs relate to the existing transmission assets and are largely sunk (i.e., do not vary with use of the system). The costs to be recovered are depreciation, finance and routine maintenance. Trans Power will*

set prices to earn a fair, risk adjusted rate of return over the remaining life of its assets."

3.4 The specific details for calculating Transpower's revenue requirement and prices evolved over time. In March 1993 a paper was prepared by Transpower that outlined the financial model developed to assist it determine its aggregate revenue requirement. Underpinning the financial model was a principal objective that Transpower should "operate as a sustainable business while … providing an efficient, reliable and secure national grid at least cost … earning a commercial rate of return having regard to the risk of the business."

3.5 Notwithstanding the principle of earning a commercial rate of return and the robustness of the financial model, following separation the Company's approach to determining its revenue was initially rather more eclectic. It quickly evolved into a process where annual revenue was set drawing on a range of inputs rather than relying solely on a mechanical application of the financial model. Revenue setting was a function of the "mechanical" process of calculating the longer term revenue requirement through the financial model overlaid with judgement about an appropriate and acceptable level of revenue achievable in any one year.

3.6 In 1999, the approach changed to focus more on the revenue requirement methodology and setting revenue in accordance with the revenue requirement calculation with minimal judgmental deviation. The approach to calculating the revenue requirement and allocating derived revenue to individual customers was formalised in the document "Pricing for Grid Connection Services from 1 April 2001" published by Transpower in December 2000.

3.7 The remainder of this paper deals with the revenue requirement calculation and the measurement of economic value gains and losses. It does not address the allocation of the revenue requirement to individual customers.

Revenue Requirement Principles

3.8 The principles underpinning the determination of Transpower's revenue requirement have been broadly consistent since its establishment. The core principals are:

- Transmission prices should replicate, as far as practical, the structure and level of prices that would apply if there was a truly competitive market for transmission services (i.e. the outcome if transmission did not have natural monopoly characteristics).

- Transpower's shareholder is entitled to recover the sunk cost invested in the transmission system, where the sunk cost is based on the value of an optimally configured set of modern equivalent assets.

3.9 In theory, equilibrium is reached in a competitive market when marginal costs and marginal revenues are equated. That is, the point where the value placed on services by consumers equals the cost of providing those services. Costs in this context include the opportunity cost of capital, where capital is valued relative to the cost of replicating the service potential of the existing assets in the most efficient manner.

3.10 In a competitive market, businesses are free to pursue strategies which will provide the greatest increase in value for a given level of risk. However, freedom of entry and exit to a competitive market will ultimately restrain the level of value gain that can be

achieved. If producers attempt to price services above the cost of production, and so generate returns above cost of capital, new entrants will be attracted to the market and they will be able to gain market share by pricing below the incumbent producers. Eventually prices will be forced down to the point where they equate to the cost of production and the providers of capital will receive no more or no less than a risk adjusted rate of return on capital invested.

3.11 Similarly, if consumers are unwilling to pay a price for services which reflects the full cost of production, producers will earn sub-optimal rates of return and will not be able to attract capital to maintain their operating capability.

3.12 Transpower's revenue requirement assumes that to provide customers with economically efficient price signals and avoid monopoly pricing, its services should be priced as if it were operating in competitive equilibrium. That is, it should not be earning super profits but its services will be priced to maintain its operating capability. This means setting the revenue requirement at a level to generate sufficient cash to just cover all costs of production (which includes cost of capital). There are a number of implicit assumptions in this approach:

- The optimised replacement cost of Transpower's assets, taking into account their age and remaining life, represents the cost of replicating their service potential in the most efficient manner. That is, it is the most cost effective means of meeting customer requirements, both in terms of capacity and quality of service.

- The assets are operated in an efficient manner and operating costs are as low as practically can be achieved given obligations to customers. Cost minimisation can not be viewed in isolation but should be coupled with objectives about the quality and security of supply.

- Transpower is able to generate sufficient revenue over time to fund efficient operating costs and provide investors with a return on their capital and return of their capital[1] over the life of the assets. This is consistent with a competitive market scenario where over time prices must provide sufficient revenue to cover all costs, including cost of capital, to ensure that businesses can secure capital to finance operating assets.

3.13 The key principle is that transmission prices should replicate, as far as practical, the structure and level of prices that would apply if there was a truly competitive market for transmission services. Revenue should be set at a level to generate sufficient cash to just cover all costs of production, including cost of capital.

3.14 This principle implies that over time, Transpower should generate sufficient cash to provide both debt and equity providers with returns equal to cost of capital. Returns in excess of cost of capital suggest that revenue and prices exceed those which would apply in competitive equilibrium. Returns below cost of capital mean investors are not being adequately compensated for the risks they bear in relation to the capital they have provided to the Company.

3.15 Generating returns equal to cost of capital means that shareholder value is being maintained, but not increased or decreased. It follows therefore, that monitoring

[1] In reality, capital is reinvested in the business to maintain its operating capability on a perpetual basis.

shareholder value is important to ensuring that an appropriate balance is struck between the requirements of customers (for lowest possible transmission charges given capacity and quality requirements) and the requirement of shareholders for a risk adjusted return on capital invested in the business.

4 Economic Value Reporting

4.1 Transpower adopted an economic value approach to measuring its financial performance not long after its establishment as a separate SOE. This enabled actual performance to be measured and compared to the ex ante projected performance used to set the revenue requirement and facilitated the balancing of the interests of customers and shareholders. Economic value reporting has made transparent the gap, if any, between Transpower's actual earnings in any year and the amount it should earn to balance the interests of customers and shareholders. The calculations are embodied in economic value financial statements that were first published in 1996.

4.2 Set out in Appendix A is a high level representation of the economic value calculation that underpins the economic value financial statements.

4.3 The economic value financial statements measure the historical financial performance of Transpower consistent with the principles outlined in the previous section. It quantifies net operating profit after tax (actual economic earnings) and compares this to the economic earnings that Transpower should earn to just meet the rate of return requirements of the providers of capital (debt and equity) – the capital charge. As noted above, actual earnings above or below the capital charge implies revenue has been over recovered or under recovered from customers.

4.4 The development of the economic value framework by Transpower was a form of self regulation, at a time when the lines business sector was subject to a light handed regulatory framework only. In this regard Transpower's principle-based approach to setting its revenue and measuring economic gains and losses set it apart from most other lines businesses, which, while complying with the regulatory disclosure requirements, did not adopt Transpower's approach of self-regulation to eliminate the risk of monopoly pricing. The economic value reporting framework allowed Transpower to report the results of its self regulatory framework. While customers could debate the inputs to the framework, the principles underpinning the framework were, and still are, sound.

4.5 The robustness of the framework has stood the test of time. Transpower's revenue requirement is based on the principles and approach first enunciated in the early 1990's. The economic value financial statements are produced on a basis broadly consistent with the approach used when they were first adopted. Interestingly, the approach adopted by the Commission in quantifying the factual and counter factual in its analysis of Unison Networks Limited for the purpose of determining the benefits of control[2] is not inconsistent with the revenue requirement and economic value principles applied by Transpower.

4.6 While the principles and the broad thrust of the approach have remained largely unaltered, the detailed application has been refined over time. The application of the principles has not been viewed as static and refinements have been made over the years. Two key changes were the creation of the shareholder and customer accounts and the development of the policy for dealing with economic gains and losses.

4.7 The initial application of the economic value principles assumed that the entire economic gain or loss was attributable to customers. More often than not, the major contributor to a gain or loss was the annual asset revaluation. Analysis of the drivers of

[2] The Commerce Commission, 9 September 2005, "Regulation of Electricity Lines Businesses, Targeted Control Regime, Intention to Declare Control, Unison Network Limited".

the revaluations identified that certain components should be attributed to customers and that any economic gain or loss related to these components should be passed back to or recovered from customers. Conversely, there are components of the revaluations that should not impact on customers.

4.8 An example of this is optimisation adjustments that impact the ODV and the revaluation in any year. The optimisation process removes from the ODV surplus assets. Optimisation adjustments occurring in any year will impact on the closing ODV and therefore affect the annual movement in ODV.

4.9 An optimisation adjustment that results in an asset being removed from the ODV or being written down will, in effect, result in a reduction in total economic earnings for the year. It would be inappropriate to try and recover the reduction in earnings from customers given that the point of the optimisation is to remove surplus assets. Therefore the optimisation impact on the annual economic gain or loss is not a cost or benefit to customers – the shareholder bears the cost or benefit of ODV write-downs or write-ups resulting from optimisation[3].

4.10 In the early period of application of the economic value framework, there was no specific approach to recovering economic losses from or returning economic gains to customers. The approach to setting the revenue at the time involved consideration of a range of influencing factors and a systematic basis for recovering or returning the economic loss of gain was not considered to be particularly relevant.

4.11 Since 1999, the revenue setting has been systemised based on the published methodology. This has included a robust approach to returning economic gains (or losses) to customers.

The Economic Gain and Loss Results

4.12 Through the application of the economic value self regulatory approach, it has not been feasible for Transpower to generate economic gains for its shareholder at the expense of customers; the self regulatory framework is self correcting. That is, economic value gains or losses are quantified, accumulated and "fed back" into the revenue requirement to adjust future prices.

ROI

4.13 The economic gains and losses generated by Transpower since its establishment to 2005 can be viewed by comparing a calculation of annual return on investment ("the ROI") to WACC. This approach explicitly measures actual performance against the expected performance benchmark – the cost of capital required by the providers of debt and equity capital.

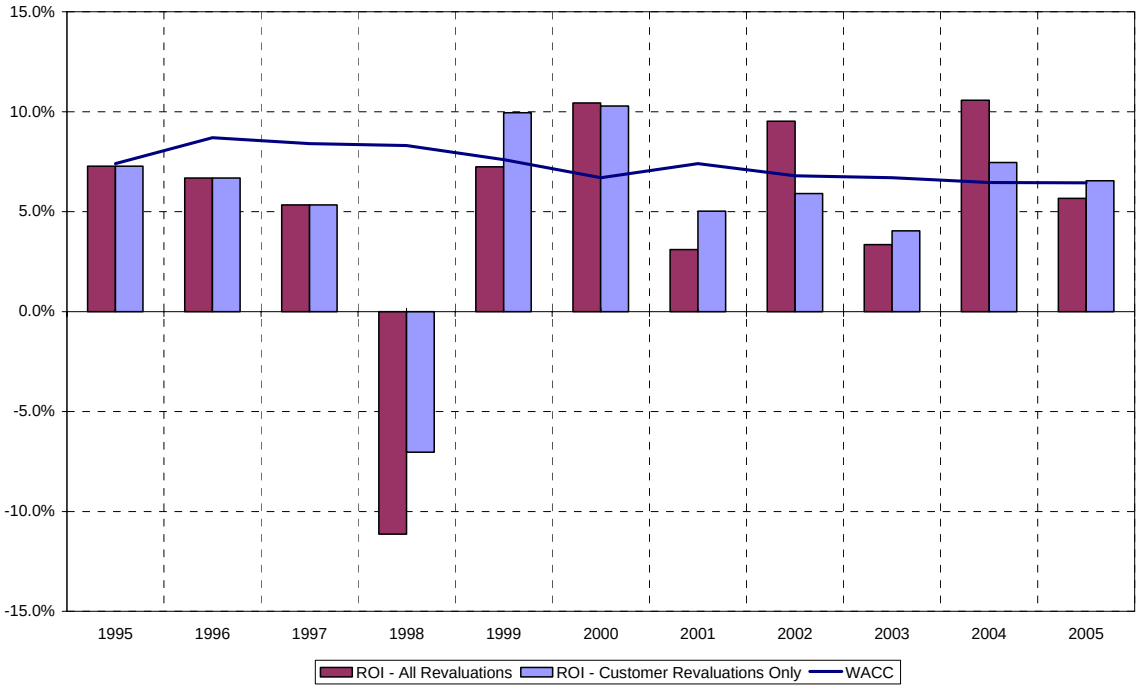
4.14 Two variants of Transpower's ROI and its WACC are presented in Figure 1:

- ROI including the entire annual revaluation (i.e. earnings including the entire revaluation).

[3] In Dr Lally's report to the commission on WACC for lines businesses, (Lally, M. 8 September 2005, "The Weighted Average Cost of Capital for Electricity Lines Businesses") he suggests the potential for downward revaluation due to assets being optimised out of the ODV could warrant an upward adjustment to the WACC to provide ex ante compensation.

- ROI including only the component of the revaluation attributable to customers.

Figure 1: ROI and WACC



4.15 During the period 1995 to 1997, Transpower produced an actual ROI less than WACC. This implies customers benefited at the expense of shareholders. It was during this time that revenue was based on an assessment of acceptable year-on-year price changes rather than a strict application of the financial model.

4.16 In 1998, a significant review was undertaken of the ODV. The review resulted in a large downward adjustment to the ODV.

4.17 Accounting for the reduction in the ODV in the economic value framework meant that the accumulated economic value balance, which was already significantly negative, increased to negative $696 million. In accordance with the revenue requirement principles, Transpower would have been entitled to recover the negative balance, plus interest on the outstanding balance, from customers. To do otherwise would provide customers with a benefit at the expense of shareholders.

4.18 Notwithstanding the revenue requirement principles, Transpower's Board of Directors did not seek to recover the accumulated economic value loss from customers and the economic value "account" was, effectively, reset to zero at 1 July 1998[4]. This meant that shareholders gave up the right to recover the accumulated economic value loss that existed at 30 June 1998 after the ODV write down.

4.19 If the accumulated economic value loss had not been reset to zero at 1 July 1998 and the balance had been carried forward, the accumulated economic value balance at 30

[4] The Directors did not seek to recover either the loss resulting from the ODV write-down or the accumulated economic value losses that had built up over the previous three years.

June 2005 would have been over negative $1 billion[5], all other things being equal. A negative balance in the economic value account represents funds that Transpower would be entitled to recover from customers.

4.20 Subsequent to 1998, the revenue has been set more strictly in line with the revenue requirement calculation, economic gains and losses attributable to customers and shareholders have been separated and a process implemented to rebate economic gains to customers. The relevant ROI measure since 1998 includes customer revaluations only and excludes shareholder gains and losses. Figure 1 indicates that the ROI since 1998 has been quite variable, being above WACC in the early years but then tracking below WACC in a number of years. As we show below, the variability has been mostly caused by the annual movement in ODV.

4.21 While ROI is a useful measure to benchmark annual operating earnings relative to WACC, it has some weaknesses. In particular it does not show the dollar quantification of the variance between actual and expected performance and the cumulative difference.

4.22 The economic value approach is founded on the principle of ensuring that the NPV of investments should be zero and that, within this constraint, losses might be offset, in NPV terms, by gains. It follows that economic gains and losses should not be viewed solely as a single period result. Gains in one year may be offset by losses in subsequent years and vice versa. Future pricing takes into account current cumulative economic gains or losses not just the latest annual result.

4.23 In addition, the ROI does not fully account for the process Transpower undertakes to allocate the annual economic gain or loss between shareholders and customers. The annual ODV revaluation, which is accounted for in Figure 1, is the major component of the allocation but there are other items that impact the allocation. A fuller picture of the economic gains and losses in any year and the allocation between shareholders and customers is provided by Transpower's economic value statements.

Economic Value Statements

4.24 Figure 2 and Figure 3 present the following information extracted from Transpower's annual economic value financial statements:

- The total annual economic gain or loss, split between customers and shareholders since 1998.
- The annual and cumulative economic gain or loss allocated to customers since Transpower's establishment as an SOE.

[5] This includes the $696 million negative balance at 30 June 1998, all annual economic gains and losses since 30 June 1998 and interest on the outstanding balance each year.

Figure 2: Annual Economic Gains/Loss

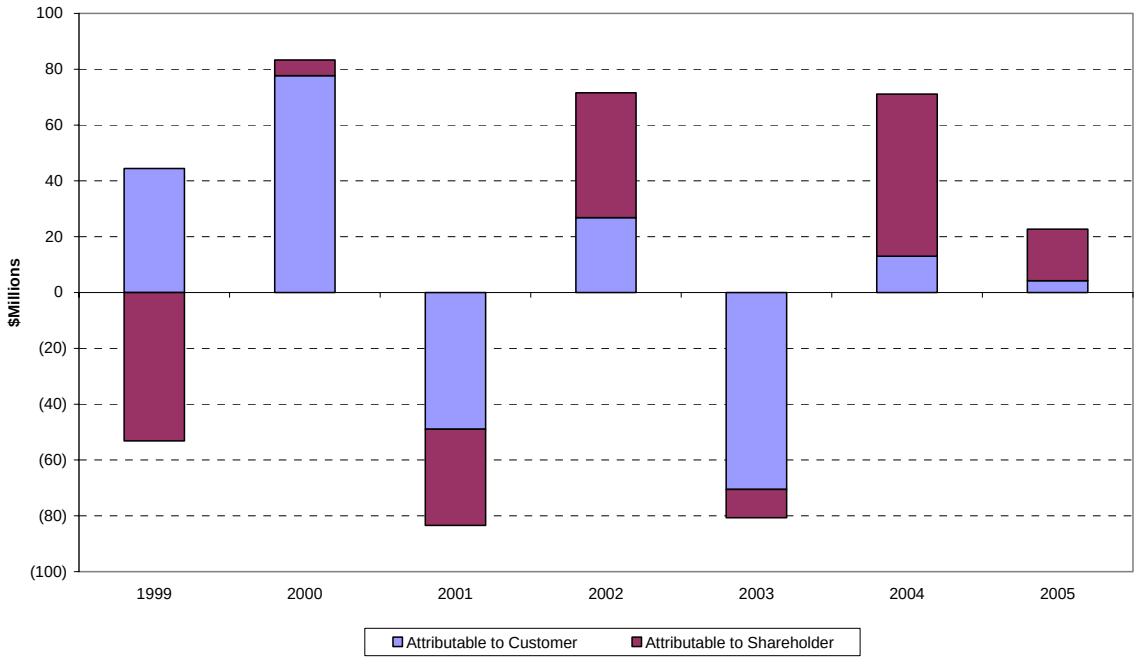
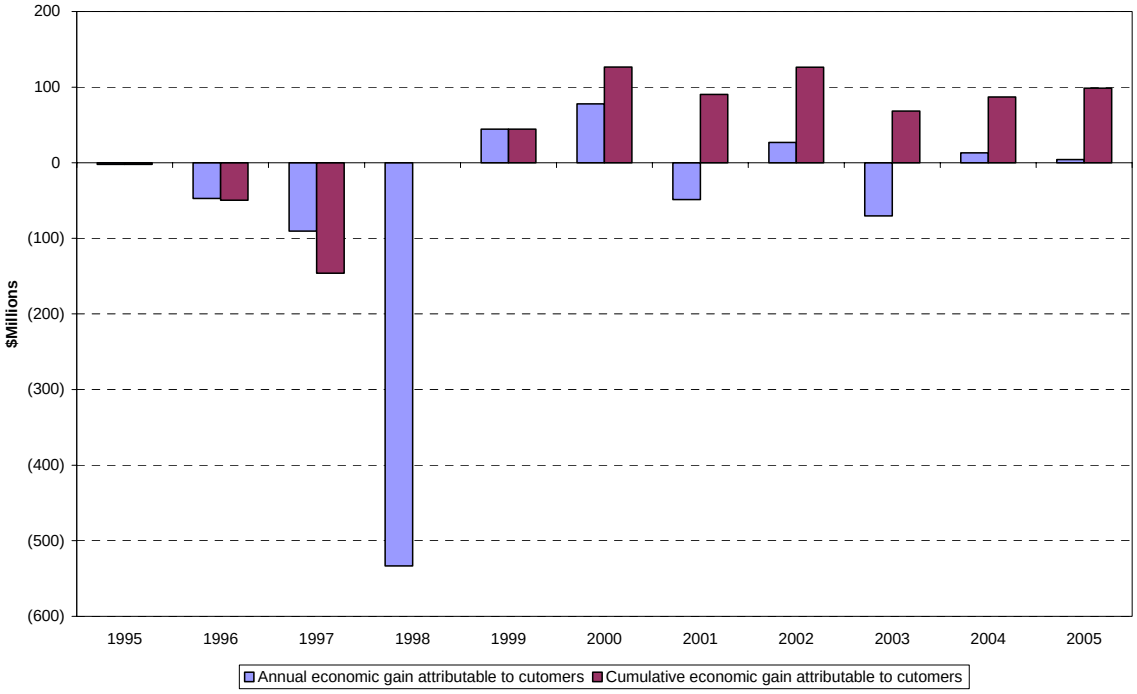


Figure 3: Annual and Accumulated Economic Gains/Losses Attributable to Customers



4.25 The analysis demonstrates two important features of the economic value balance

- The annual economic value gain or loss, both the total and the customer gains or losses, has been variable. The variability has been accentuated in recent years.

- The cumulative balance of the economic value gains or losses has been positive since 1999. This recognises the operating earnings above the cost of capital that are to be returned to customers.

4.26 Figure 3 indicates that accumulated economic value gains and losses attributable to customers was positive at 30 June 2005. This balance should be returned to customers to maintain the balance between shareholders and customers. Transpower has been has been providing economic value rebates to customers since 2000. In the six years to 30 June 2005 a total of almost $158 million has been returned to customers through reductions in the annual revenue requirement.

4.27 There are two principal contributors to the accumulated economic value balance: net operating profit after tax (NOPAT), that is the surplus of revenue received from customers over operating costs, and the annual movement in ODV. The following two figures analyse the contribution of these two factors to the economic value balance:

- Figure 4 shows a breakdown of the annual economic gains and losses from 1999 to 2005 between NOPAT and revaluations.

- Figure 5 shows the components of the accumulated economic value balance at 30 June 2005. This includes a breakdown of the NOPAT balance to show the economic value rebates (post tax) returned to customers.

Figure 4: Components of the Annual Economic Gain/Loss

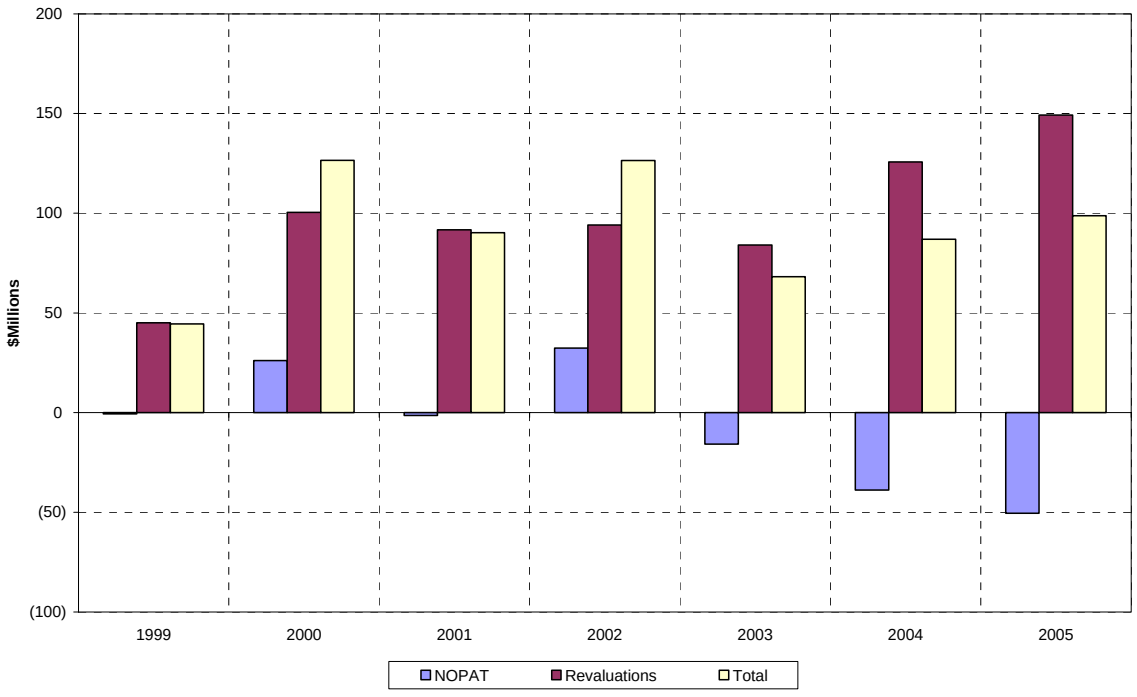
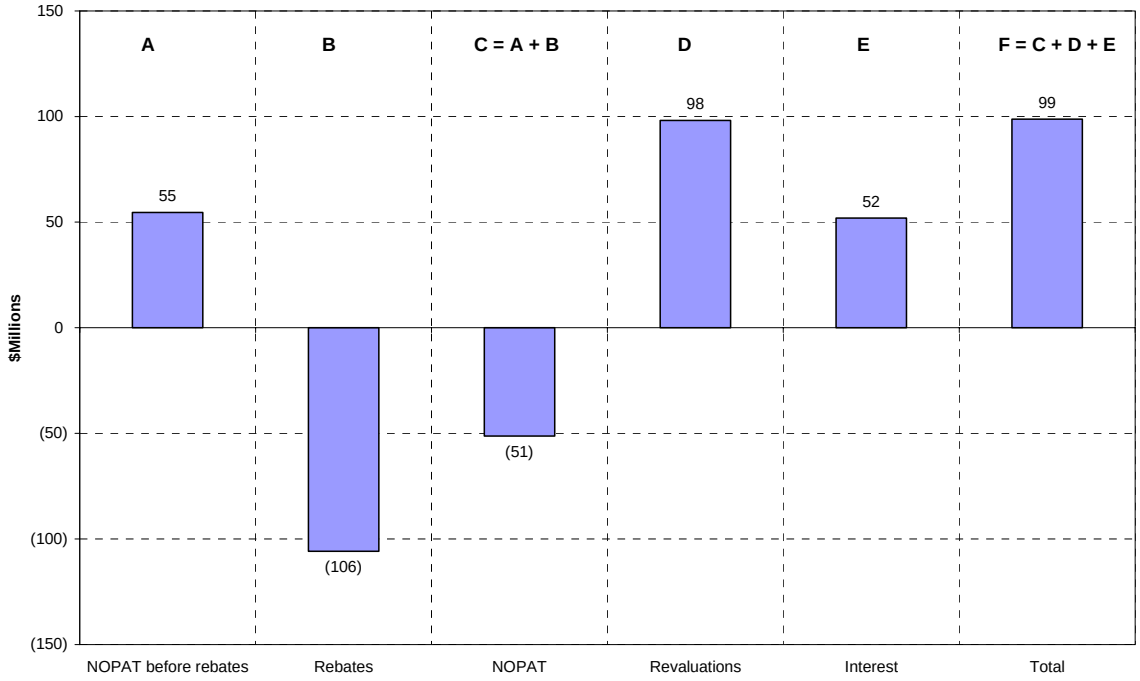


Figure 5: Components of EVA balance at 30 June 2005



4.28 Figure 4 shows that the contribution of NOPAT, net of rebates, has fluctuated over time but in recent years it has been negative. This is consistent with reducing the positive accumulated economic value balance.

4.29 On the other hand, revaluations over this period has been positive and that in all but two years, revaluations have been the cause of economic gains – revaluations have more than offset the under recoveries at the NOPAT level. This is reinforced by Figure 5, which shows that the cumulative effect of revaluations accounts for almost all of the accumulated economic value balance.

4.30 The analysis makes explicit the rebates that Transpower has been making to customers in response to the positive economic value balance. This results in a mismatch in the timing of cash flows between customers and the shareholder.

4.31 Revaluations, which have been the primary driver of the positive economic value balance, do not provide an immediate cash flow to the shareholder. On the other hand, the rebates Transpower has been making to manage down the economic value balance do provide an immediate cash benefit to customers. Customers have been receiving cash rebates in response to non-cash revaluations.

4.32 The revaluations will result in cash benefits to the shareholder over the life of the revalued assets, which will be some considerable time. As stated earlier, the economic value approach has impounded in it the NPV equals zero principle and that the shareholder should over time, recover in cash the amount it is forgoing today by making the rebates to customers. However, this assumes the revenue requirement principles and process are maintained. Any future adjustments to the way the process operates must take into account the historical and current balance between customers and the shareholder. To do otherwise would raise a number of issues relating to factors such as:

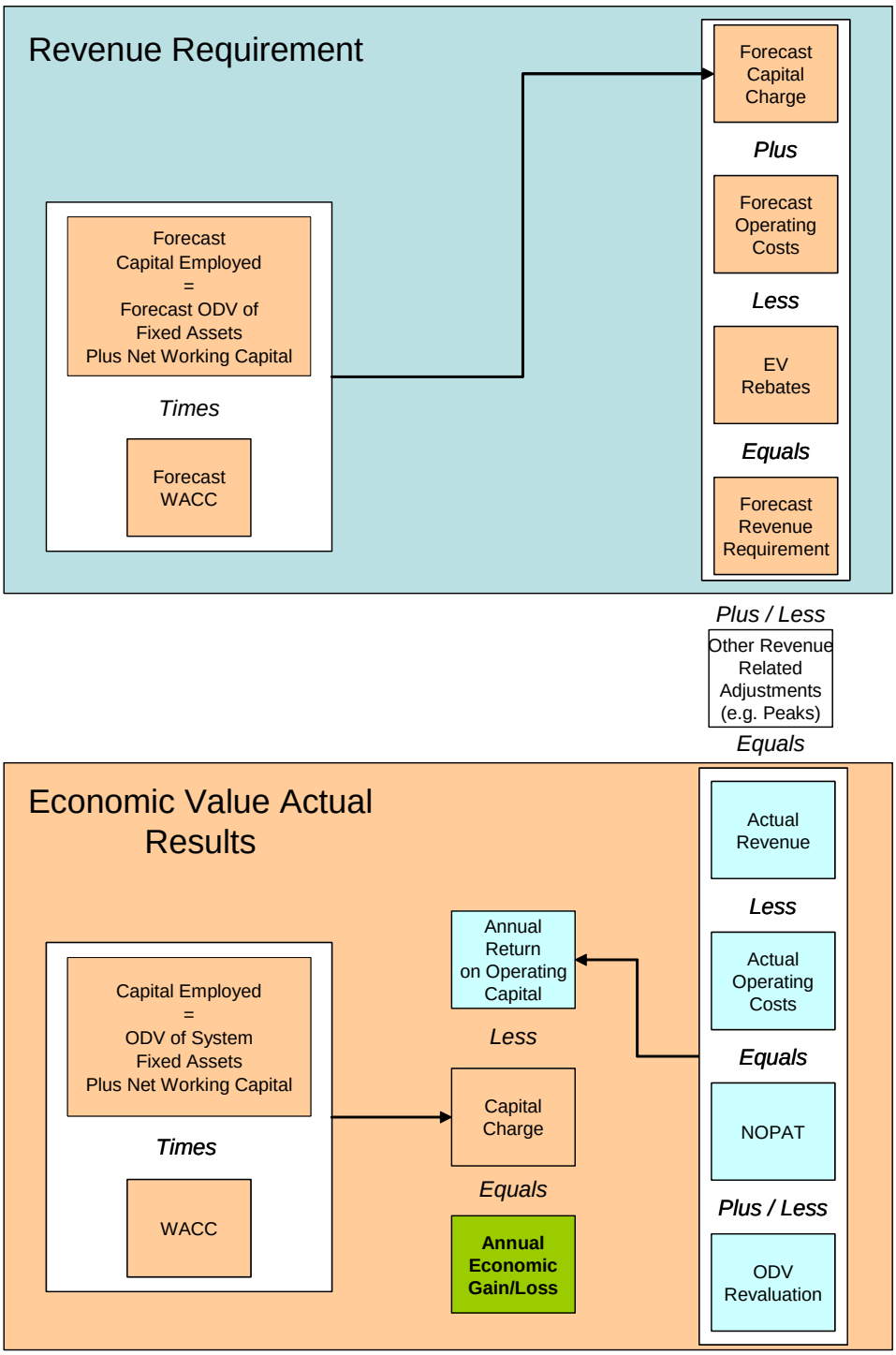
- Intertemporal equity for customers.

- The risks facing Transpower's providers of capital.
- The cost of Transpower's debt finance.

Appendix A: Economic Value Calculations

Transpower's revenue requirement and economic value framework is represented in the following diagram.

Figure 6: Economic Value Calculation



Key components of the calculation include:

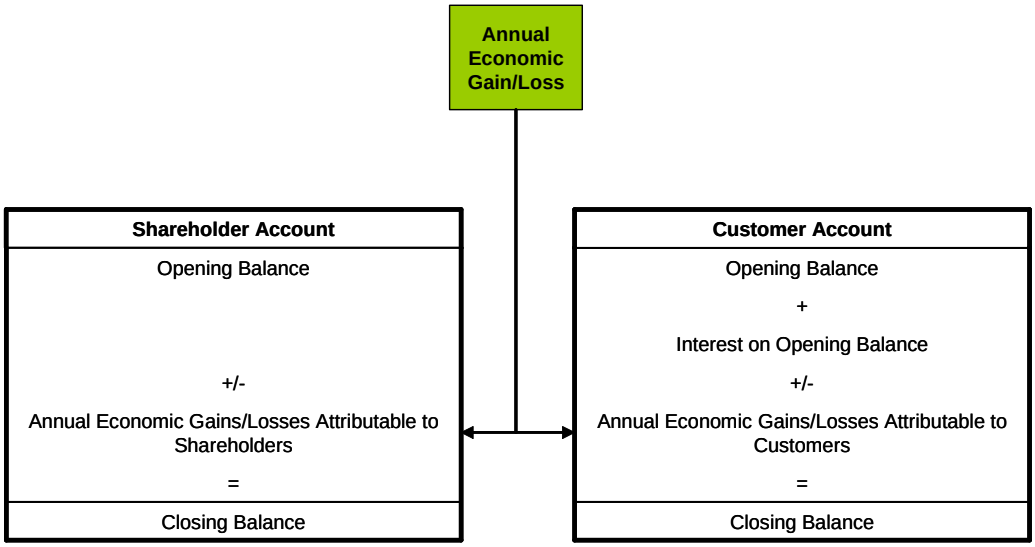
- Capital employed, which is calculated as the average of opening and closing ODV of fixed assets plus working capital.
- Operating costs, which include depreciation and tax.
- The annual return on operating capital, which is the earnings generated from employing the operating assets to provided revenue generating services to customers. The return includes the annual asset revaluation, which is a non-cash gain or loss for shareholders.
- The capital charge, which is the rate of return that investors require on the capital they have invested in the Company. The capital is used to finance the operating assets.

In the case of the revenue requirement, the calculations relate to future periods and all of the balances are, effectively, forecasts.

If the annual return on operating capital exceeds the capital charge then the Company has generated an economic gain. An economic loss arises when the capital charge exceeds the annual return on operating capital.

The annual economic gain or loss is allocated between customers and the shareholder:

Figure 7: Economic Value Allocation



Amounts allocated to customers will be returned to/recovered from customers through the economic value rebate mechanism. Allocations to the shareholder are, effectively, available for distribution to shareholder.

Table 1 to Table 5 present a simple numerical example of the revenue requirement and economic value calculations.

The revenue requirement is calculated first in Table 1. The numbers in the revenue requirement would all be forecasts. The economic value rebate is referenced from Table 3 and is stated on a pre tax basis.

Table 1

Revenue Requirement (All Forecast Numbers)	**Key**	**Year 1**	**Year 2**	**Year 3**
Opening fixed assets + working capital	a	1,000	1,200	1,250
Plus transfer from Works Under Construction		290	155	195
Less depreciation		(100)	(110)	(120)
Plus movement in working capital		10	5	(10)
Closing fixed assets + working capital	b	1,200	1,250	1,315
Average	c = average (a + b)	1,100	1,225	1,283
WACC	d	7.0%	7.0%	7.0%
Capital charge	e = c x d	77	86	90
Add tax	f = e/(1-33%) x 33%	38	42	44
Add operating costs (including depreciation)	g	300	305	310
	h = sum(e,f,g)	415	433	444
EV rebates	i = y/(1-33%)	(2)	(9)	3
Revenue requirement	j	412	424	447

The calculation of the actual economic value for each year is presented in Table 2. The capital charge (item "s") is calculated in Table 4. Item "q", represents expenditure on assets that is not capitalised but is written off, such as expenditure undertaken on assets by Transpower that is subsequently not "approved" by the Electricity Commission.

Table 2

Economic Value Actual Results	**Key**	**Year 1**	**Year 2**	**Year 3**
Revenue	k	404	407	456
Less operating costs (including depreciation)	l	(258)	(272)	(276)
Net operating profit before tax	m	146	135	180
Tax	n = m x 33%	(48)	(44)	(59)
Net operating profit after tax	o	98	90	121
Asset revaluation	p = ac	25	(30)	30
Assets written off	q = ai	(30)	0	(50)
Total return on operating capital	r	93	60	100
Capital charge	s = ag	79	87	90
Economic value gain / (loss)	t	14	(27)	10

For the purpose of this example it has been assumed that the annual economic value is all attributable to the customer. The economic value rebates have been calculated as one third of the closing balance of the previous year customer account.

Table 3

Customer Account	**Key**	**Year 0**	**Year 1**	**Year 2**	**Year 3**
Opening balance	u		5	19	(7)
Interest	v = interest rate times x		0	1	(0)
Economic value	w = t		14	(27)	10
Closing	x	5	19	(7)	3
EV rebate	y = x/3	2	6	(2)	1

The calculation of the capital base for the purpose of calculating the capital charge is demonstrated in Table 4. This includes transfers of commissioned assets from the works under construction account (Table 5).

Table 4

Calculation of Actual Capital Charge	Key	Year 1	Year 2	Year 3
Opening fixed assets + working capital	z	1,000	1,200	1,188
Plus transfer from Works Under Construction	aa = ah	293	83	175
Plus current year revaluation		25	(30)	30
Less depreciation		(95)	(100)	(110)
Plus movement in working capital		2	5	(3)
Closing fixed assets + working capital	ab	1,200	1,188	1,249
Less revaluation	ac	(25)	30	(30)
	ad	1,175	1,218	1,220
Average	ae = average(z,ad)	1,088	1,209	1,204
WACC	af	7.3%	7.2%	7.5%
Capital charge	ag = ae x af	79	87	90

For the purpose of this example, it is assumed that an asset being constructed (works under construction) is not included in fixed assets for the purpose of calculating the capital charge until the asset is commissioned. Cost of capital is capitalised into the cost of the asset (capitalised interest) up until its transfer from works under construction to fixed assets. Transpower is considering the alternative approach of capitalising expenditure into fixed assets as it is incurred rather than when the asset is commissioned. Both approaches have the same net present value impact on revenue but will have different cash flow impacts.

Table 5

Actual Works Under Construction	Key	Year 1	Year 2	Year 3
Opening balance		100	134	261
Capitalised interest		7	10	20
Expenditure incurred		350	200	250
Assets transferred to Fixed Assets	ah	(293)	(83)	(175)
Assets written off	ai	(30)	0	(50)
Closing Balance		134	261	306