NETWORKS PRICING:
2004 REGULATORY RESET

FINAL DETERMINATION

FEBRUARY 2004

Level 9, 38 Cavenagh Street Darwin NT 0800

GPO Box 915, Darwin NT 0801

utilities.commission@nt.gov.au

www.utilicom.nt.gov.au

Table of Contents

CHAPTER

1

EXECUTIVE SUMMARY

1.1 The Commission's determination of each of the parameters necessary to give practical effect to its decision to apply a tariff basket form of price cap regulation in the second regulatory control period (the five years commencing 1 July 2004) is as follows:

X_1 factor	1¾%
X_2 factor	¼%
Z factor	4.4%
S factor	5% in 2006-07 and each year thereafter; and, at Power and Water's option, either Z+5% in 2004-05 and 5% in 2005-06 or Z% in 2004-05 and 10% in 2005-06

1.2 The **X_1 factor** implies that the weighted average of network access tariffs (*after* the Z factor adjustment) should annually *decrease* by **1¾ percentage points** in real terms (i.e., relative to the corresponding percentage movement in the CPI) even were Power and Water already an efficient network service provider. Power and Water's network revenue will also increase in proportion to its sales of network access services. This X_1 value of 1¾% is towards the lower end of a range of estimates by regulators elsewhere as to the annual movement in an efficient network service provider's costs relative to annual movements in the costs of providers of goods and services generally. The Commission has chosen a value at the lower end of the range in light of the smaller size and dispersed nature of Power and Water's network activities. A positive X_1 value reflects the capital intensive nature of such networks businesses relative to all other businesses in the economy.

1.3 The **X_2 factor** implies that, in addition to annually decreasing by 1¾ percentage points in real terms, Power and Water's weighted average network access tariffs should additionally *decrease* by **one-quarter of a percentage point** per annum relative to the CPI given the scope existing for efficiencies to be achieved within Power and Water's network operations relative to an already-efficient network service provider. The Commission considers that the 10% excess in per unit operating and maintenance ("O&M") costs which it attributes to management (not government) policies and practices should be capable of elimination over a 10 year period, i.e., by 1% per annum. Although O&M costs are approximately one-third of the total cost of providing network access services, the Commission has decided that a reasonable annual 'stretch factor' for incorporation into network access tariffs is ¼%.

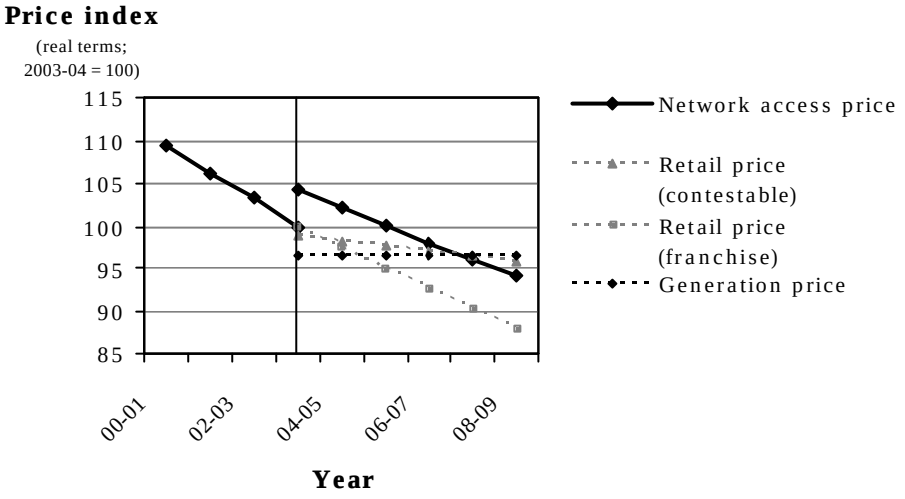
1.4 Together, the sum of these two X factors (of 2%) is less than the weighted average of the equivalent combined X factor that applied during the four years of the first regulatory control period (3½%).

1.5 The **Z factor** implies that the weighted average of network access tariffs (*inclusive* of streetlighting access tariffs) at the end of the first regulatory control period is **4.4%** *below* a full cost recovery level. Before moving to a tariff basket form of regulation, current tariffs therefore need to be *increased* by this amount on a weighted average basis.

1.6 The bulk of the increase in network tariffs implied by this Z factor is explained by a 25% increase in O&M expenses – due in turn to both an under-allocation of overheads and other costs in the 2000 Determination as well as a sharp overall increase in O&M spending over the last three years.

1.7 Also playing a role is an asset reclassification from Power and Water's generation business to its networks business, being a change which the Commission agrees is appropriate to correct a previous misclassification. As a consequence, the Commission expects the step-up in network access tariffs will be accompanied by reductions in the generation component of retail tariffs paid by end-use customers, thereby moderating the effect on retail tariffs as a result. The general effect of these parameter values is illustrated in Chart 1, which shows tariff movements relative to CPI movements.

Chart 1



Note: A downward sloping line indicates that the relevant tariff is expected to fall relative to the CPI (i.e., the chart shows relative movements in tariffs over time, not relative tariff levels). For simplicity, network access tariffs are assumed to account for 30% of the total retail price of electricity, with generation accounting for all the rest. Also, generation tariffs are assumed to be maintained in line with the CPI. An ongoing annual inflation rate of 2.5% is also assumed. Retail tariffs (franchise) are assumed to be held constant in nominal terms reflecting Government policy. The retail price refers to the total price paid by customers on average under the assumed illustrative conditions.

1.8 The up-front increase in network access tariffs is under *one-half* of the increase implied were the Commission instead to incorporate the cost data supplied by Power and Water without adjustment and to continue unchanged its June 2000 methodology for determining capital costs. This cutback reflects the following approaches and judgments now adopted by the Commission:

- compared with its 2000 Determination, the Commission has decided on a substantial reduction in the allowance for working capital, to bring this allowance into line with treatments adopted by other regulators in Australia;
- the Commission has decided to exclude corrections on account of yet-to-be-verified errors in Power and Water's asset register, relying instead on currently verified asset values; and
- with Power and Water's network O&M costs being assessed by an independent consultant in 2002 as 20% above electricity industry best practice even in the Northern Territory context, the Commission has decided to attribute one-half of such inefficiencies to government policies continuing to constrain the board and management from adopting operating policies and practices available to

electricity networks businesses elsewhere in Australia, the cost of which should be borne by taxpayers rather than network users or end users of electricity.

1.9 The Commission does not consider that such a paring back of the Z factor will adversely affect Power and Water's financial viability. Rather, the Government as shareholder – instead of network users and end-use customers – is being asked to bear the cost of certain past and present policy decisions.

1.10 Nevertheless, to accommodate the possibility that its subsequent investigations might establish that the value of Power and Water's network assets has been under- or over-estimated in the current reset, the Commission has established the following "**asset valuation off-ramp**" to its Final Determination to be triggered if the Commission is satisfied prior to 31 March 2005 that the valuation of the initial asset base at 30 June 2000 and/or the asset amounts rolled-forward during the first regulatory control period underlying this Determination involved a "material error". For this purpose, a "material error" will be one that involves an error in the Z factor that is at least equivalent to one year's allowed price increase (i.e., CPI-X_1-X_2). If the error is less than this amount or the investigations are not concluded to the Commission's satisfaction by 31 March 2005, the matter will be deferred until all factors can be taken into consideration at the time of the next regulatory reset. If a material error is established, that error will be automatically corrected depending on the size of the required correction, but without any retrospectivity. If the correction of any material error involves an adjustment equal or less in value than the determined Z factor value of 4.4%, an additional Z-like adjustment will be applied to the weighted average of approved tariffs in 2004-05 when determining the regulatory constraint to apply to weighted average tariffs in 2005-06. If the correction of any material error involves an adjustment greater in value than the determined Z factor value of 4.4%, the additional Z-like adjustment to be applied to the weighted average of approved tariffs in 2004-05 when determining the regulatory constraint to apply to weighted average tariffs in 2005 06 will be limited to 4.4% and the remainder of the correction will be phased in equally over the remaining four years of the second regulatory control period via necessary Z-like adjustments.

1.11 Finally, the **S factor** sets a constraint on the annual *increase* in each individual network user's weighted average network access tariff. Generally (and the accommodation of the Z factor increase aside), the Commission has decided to use a **5%** side-constraint on annual increases in an individual's network access tariff. Because of the Z factor's impact in 2004-05 and the difficulty Power and Water might experience in developing alternative tariffs structures in time for implementation in 2004-05, the Commission has decided that the S factor to apply to network access tariffs in 2004-05 and 2005-06 will be, at Power and Water's option, ***either*** Z+5% in 2004-05 and 5% in 2005-06 ***or*** Z% in 2004-05 and 10% in 2005-06. The cumulative effect upon end-use customers is the same under either option. In addition, if the asset valuation off-ramp results in additional Z-like adjustments taking place during the second regulatory control period, the S factor will be adjusted accordingly.

CHAPTER

2

BACKGROUND

Requirements of the Code

2.1 Prices paid by network users for the conveyance of electricity through prescribed electricity networks in the Northern Territory are regulated under the Electricity Networks (Third Party Access) Code ("the Code")[1] which is a schedule to the *Electricity Networks (Third Party Access) Act 2000* ("the Act").

2.2 Granting third-party access to an electricity network involves an unbundling of electricity supply into:

- *generation* services (relating to the production of electricity);
- *retail* services (relating to the sale of electricity to end-use customers); and
- *network* services (relating to the transportation of electricity from generators to end-use customers).

2.3 The network service provider occupies a strategic position in the electricity system, since a generator or retailer can only supply electricity to its customers if it can transport this electricity via the network. For effective competition in upstream and downstream markets with a transportation requirement, all parties – irrespective of their affiliation with the network service provider – must have access to the network.

2.4 Part 3 of the Code specifies the price regulation framework to be observed by the Commission and by the network service provider when setting the prices to be paid by network users for the conveyance of electricity through the electricity network. The Commission has been undertaking such regulation using a price regulation methodology that has been constant during the first regulatory control period ending on 30 June 2004.[2]

2.5 While the Code set out in some detail the determinations that were required to be made by the Commission in the first regulatory control period (the period from the commencement of the Code on 1 April 2000 to 30 June 2004), with respect to the second regulatory control period (the period from 1 July 2004 to 30 June 2009), clause 66(3) of the Code provides that:

> *"The revenue or price caps that are to apply during the second and subsequent regulatory control periods are to be determined by the regulator in a manner that:*
>
> *(a) in the regulator's opinion, most effectively achieves the desired outcomes set out in clause 63; and*
>
> *(b) is consistent with generally accepted regulatory practice at the time."*

[1] The Code can be viewed on the legislation page of the Commission's website (www.utilicom.nt.gov.au).

[2] A regulatory control period is defined in clause 3 of the Code as the period between major price reviews (or 'resets') during which time the price regulation methodology used in setting prices is held constant.

2.6 In the lead-up to the commencement of the second regulatory control period (the five-year period commencing 1 July 2004), the Code has therefore required the Commission as regulator – in consultation with interested parties – to review the price regulation methodology used in the first regulatory control period. The Commission has been referring to this review as the "2004 Regulatory Reset".

Processes to date

2.7 The 2004 Regulatory Reset has had two stages:

- in stage 1, the methods used to regulate prices were reviewed and, where appropriate, changed; and
- in stage 2, new price controls for the second regulatory control period were implemented using the revised methods from stage 1.

2.8 Stage 1 of the reset was initiated by an Issues Paper published in July 2003, followed by the publication of a Draft Decision on price regulation methodology issues in September 2003.

2.9 Following its consideration of submissions received in response to both the Issues Paper and the Draft Decision, the Commission's final decision on the methodology to be adopted for the regulation of network access prices in the second regulatory control period was published in November 2003.

2.10 Stage 2 of the reset involved the Commission giving consideration to how most appropriately to determine the parameters involved in implementing its methodology decision. A Draft Determination was published in January 2004.

Purpose of this Paper

2.11 This paper presents the Commission's Final Determination for the 2004 Regulatory Reset.

2.12 The Commission has finalised its determination in the light of both submissions received and checks undertaken of the accuracy and completeness of the data underlying the Draft Determination.

2.13 Section 22(2) of the *Utilities Commission Act 2000* requires that a final determination is to include a summary of the information on which the determination is based and a statement of the reasons for making the determination. This paper therefore also provides an indication of the reasoning underlying the Commission's Final Determination.

Structure of this Paper

2.14 Chapter 3 details the Commission's final methodology decision, and identifies the parameters to be determined in order to give practical effect to that decision.

2.15 Chapters 4, 5 and 6 set out the Commission's considerations and calculations underlying its Final Determination of each set of the parameters necessary to give practical effect to its decision to apply a tariff basket form of price cap regulation.[3]

[3] As explained in the next chapter, these are the X_1 and X_2 factors (in chapter 4), the Z factor (in chapter 5) and the S factor (in chapter 6).

Timetable

2.16 The timetable for the remainder of the 2004 Regulatory Reset is as follows:

Target	Event
mid-March 2004	Power and Water to submit a Draft Pricing Principles Statement and a Draft Capital Contribution Principles Statement
	Power and Water to submit proposed tariff schedules for 2004-05 to the Commission for approval
end-March 2004	Publication of the Commission's approval of Draft Pricing Principles Statement and Draft Capital Contribution Principles Statement
	Publication of the Commission's approval of the tariff schedules for 2004-05

CHAPTER

3

FORM OF PRICE REGULATION

Methodology for the second regulatory control period

3.1 Price regulation methodology involves the practical and technical detail for the administration of price regulation over which the Commission as regulator has a degree of discretion.

3.2 In its November 2003 final methodology decision ("Form of Regulation Decision"), the Commission decided to adopt a ***price cap*** form of regulation based upon a ***tariff basket*** in the second regulatory control period (rather than continue with the revenue cap approach used in the first regulatory control period). Hence, the Commission's price regulation will be based on a calculation of each year's weighted average network access tariffs.

3.3 Fundamentally, in the second regulatory control period, the Commission's decision was, for the regulated networks combined:

- to allow the weighted average of network access tariffs to be escalated year by year (i.e., years 1 through 5) during the second regulatory control period using a CPI-X price path that is based on relative efficiency improvements that are reasonably expected to be achieved rather than on forecasts of the network service provider's own costs; and
- additionally, with respect to 2003-04 ("year 0") only, to allow a once-off cost-based 'base year' adjustment of the weighted average of network access tariffs at the end of the first regulatory control period reflecting an updated building blocks analysis of the most recently available actual data.

3.4 The following section sets out the Commission's final determination regarding the form of price regulation in the second regulatory control period.

Final determination regarding the price control methodology

Escalation arrangements

3.5 During the second regulatory control period, the network service provider must annually develop tariff schedules that conform with the following constraint on weighted average tariffs (denoted as P):

$$P_t = \left[P_{t-1} * \left({}^{CPI_{t-1}} / _{CPI_{t-2}} \right) * (1 - (X_1 + X_2)) \right] \quad \text{... (1)}$$

where:

the t-based subscripts denote a particular financial year, with t denoting the forthcoming year, t-1 the current year and t-2 the previous year;

and:

CPI = a 100 based index, being the all capital cities headline CPI index published by the Australian Bureau of Statistics ("ABS");

X_1 = the factor determined by the Commission which reflects the difference between annual movements in consumer prices on average and in electricity network access prices on average in Australia; and

X_2 = the factor determined by the Commission which reflects the difference between annual movements in electricity network access prices applied on average by comparable best practice network service providers in other jurisdictions in Australia and by the network service provider in the Northern Territory.

3.6 In applying equation (1), the CPI_{t-1} term is to be measured by reference to the most recently published four quarter average index at the time. The CPI_{t-2} term in equation (1) involves the published four quarter index value in the corresponding period in the previous year.

Measuring the weighted average tariff index

3.7 The network service provider is to calculate the index representing the weighted average of individual network access tariffs for each forthcoming year "t", as follows:

$$P_t = P_{t-1} * \left[S_{i=1...n}[p^i_t * q^i_{t-2}] / S_{i=1...n}[p^i_{t-1} * q^i_{t-2}] \right] \quad \text{... (2)}$$

where:

P_{t-1} = the index value, set a year earlier, of the weighted average of individual network access tariffs approved for the current year;

p^i = the proposed or approved price (or price component) for an individual network access tariff item as the case may be; and

q^i = the quantity weight associated with the price (or price component) for the individual network access tariff item;

and:

the "i" superscript denotes an individual network access tariff item, or a component of an individual network access tariff item where a multi-part tariff is involved; and

the "S" symbol denotes the summation of all relevant values across all individual network access tariff items, or components of such items.

Base period adjustment

3.8 Where the forthcoming year is 2005-06 or any subsequent year of the second regulatory control period, P_{t-1} in equations (1) and (2) are the index value, set a year earlier, of the weighted average of individual network access tariffs approved for the current year, calculated as follows:

$$P_{t-1} = P_{t-2} * \left[S_{i=1...n}[p^i_{t-1} * q^i_{t-3}] / S_{i=1...n}[p^i_{t-2} * q^i_{t-3}] \right] \quad \text{... (3)}$$

3.9 Where the forthcoming year is 2004-05, however, a *revised* weighted average of network access tariffs for the current year (2003-04 in that case) ($P"_{03\text{-}04}$) must be calculated as follows:

$$P"_{03\text{-}04} = P_{03\text{-}04} * (1 + Z) \quad \text{... (4)}$$

where:

P_{0304} = the weighted average of approved individual network access tariffs applying in 2003-04 (based on the first regulatory control period revenue cap) expressed in index number form and as calculated by the Commission as follows:

$$= 100 * \left[S_{i=1...n}[p^i_{0102} * q^i_{0001}] / S_{i=1...n}[p^i_{0001} * q^i_{0001}] \right] * \left[S_{i=1...n}[p^i_{0203} * q^i_{0001}] / S_{i=1...n}[p^i_{0102} * q^i_{0001}] \right] * \left[S_{i=1...n}[p^i_{0304} * q^i_{0102}] / S_{i=1...n}[p^i_{0203} * q^i_{0102}] \right] \quad \text{... (5)}$$

where:

p^i = the price components of the approved network access tariffs in the year indicated by the subscript (which, for the 2000-01 year, includes an allowance for the DKTL tariff);

q^i = the quantity weight associated with each price component in the year indicated by the subscript; and

the four-digit numeric subscripts refer to the applicable financial year, namely 0001 to 2000-01, 0102 to 2001-02, 0203 to 2002-03, and 0304 to 2003-04; and

Z = the factor determined by the Commission which indicates the extent to which the weighted average of network access tariffs applying in the first regulatory control period requires adjustment in order to form an appropriate basis for network access tariffs in the second regulatory control period.

Individual network access tariffs

3.10 Finally, the Commission will approve the annual schedule of individual network access tariffs submitted by the network service provider each year within the second regulatory control period, unless:

- the weighted average of tariffs included in the schedule, expressed in index number form, does not comply with the constraint in equation (1); or
- in conjunction with the submission of the schedule of annual network access tariffs for approval, the network service provider fails to submit to the Commission a statement of reasons for any modifications proposed to the structure of network access tariffs that is consistent with the approved Pricing Principles Statement and capable of publication (with the Commission intervening only if it considers the proposed change in structure to be inconsistent with the approved Pricing Principles Statement); or
- the resultant impact on the weighted average tariff *for each individual end-use customer* does not comply with a CPI+S side constraint, where S is the factor applying to a particular year or years determined by the Commission.

Factors to be determined

3.11 The Form of Regulation Decision has required the Commission to determine values for each of the X_1, X_2, Z and S factors.

3.12 In determining these factors, account has been taken of the following:

- a single weighted average network price was required combining the regulated networks (Darwin/Katherine, Tennant Creek and Alice Springs);
- the tariff basket only includes network access tariffs, and not capital contributions; and
- the Darwin to Katherine Transmission Line (DKTL) and streetlighting tariffs have been included in the regulated tariff basket in the second regulatory control period, so that the Z factor has been determined on a basis inclusive of the associated costs and revenues.[4]

FINAL DETERMINATION

That the form of price regulation during the second regulatory control period be as set out in paragraphs 3.5 to 3.10 above.

[4] A consequential amendment to the Excluded Services Determination to this effect is included at Attachment A.

CHAPTER

4

YEAR-BY-YEAR ESCALATION: THE X_1 AND X_2 FACTORS

The X_1 factor

Background

4.1 The Form of Regulation Decision defined the X_1 factor as a factor determined prior to commencement of the second regulatory control period which reflects the difference between annual movements:

- in consumer prices on average; and
- in the electricity network access prices of comparable *best practice* (i.e., efficient) network service providers in other jurisdictions.

4.2 Regulators elsewhere determine X values in a variety of ways, many of them complex in concept and costly to measure.

4.3 Given the small nature of the Northern Territory jurisdiction, the Commission decided in the Form of Regulation Decision to derive the X_1 factor by piggy-backing on the estimates derived and used by larger regulators. This is a valid approach as the parameter being measured is not NT-specific, but relates to characteristics evident in other jurisdictions.

Commission's draft analysis and conclusions

4.4 The Commission used the following sources to scope the range of values for the X_1 factor:

- X factors applied by the Victorian regulator in its *2001 Electricity Distribution Price Review* (2001-2005);
- the implied X factors in the Queensland regulator's *2001 Regulation of Electricity Distribution Final Determination* (2001-2005);
- X factors applied by Ofgem to UK distributors from 2000-2004;
- TFP estimates for the NZ electricity distribution sector for 1996-2003 prepared by the NZ Commerce Commission; and
- X factors employed by the Dutch regulator DTe in setting price caps for electricity distribution and transmission for the period 2004-2006.

4.5 The Commission has also been influenced by the arguments put forward by Meyrick & Associates in its advice to the NZ Commerce Commission in September 2003.[5]

4.6 The relevant data are summarised in the following table, where the P_0 value refers to a year 1 price adjustment:

Regulator:	P_0	Year 2 onwards	Trend efficiency component
Victorian[(a)]	18%	1%	2.1%
Queensland[(b)]	0.5%	0.5%	1.8-2.8%
Ofgem 2000[(c)]	20%+	3%	3%
New Zealand[(d)]	n.a.	n.a.	2.6-3.2%
Dutch[(e)]	7.2%	7.2%	3%

(a) ORG, *2001 Electricity Distribution Price Review*, May 2000. Tables 9 and 10, pp21-22.

(b) QCA, Regulation of Electricity Distribution, Final Determination, May 2001, pp 126-134

(c) Ofgem, Distribution Price Control Review, Final Proposals, December 1999.

(d) Commerce Commission, Regulation of Electricity Lines Businesses, Targeted Control Regime, Draft Decisions, Resetting the Price Path Thresholds, 5 September 2003, pp 35-38.

(e) DTe, Methodebesluit Tenne T, 23-09-2003, 101155, Methodebesluit, regionale netbeheerders elektricteit, 15-09-2003, 100947.

4.7 The Commission also noted that, more recently:

- the ACT regulator (November 2003) has proposed an X factor (combining X_1 and X_2) of 5.4%; and
- the NSW regulator (January 2004) has proposed X factors (again combining X_1 and X_2) for the network service providers it regulates ranging from 1.1% for Integral Energy to 6.5% in the first year and 2.5% in each year thereafter for Country Energy.

4.8 With regard to the X values in the above table, the following points were made:

- The Victorian regulator applied a large P_0 of 18% (averaged across the network service providers using revenue weights) and a trend X factor for later years of 1.0%. The weighted average contribution of expenditure reductions to the 2001 X factors, combined with the trend X factors applied from year 2 onwards gives a weighted average trend efficiency factor of 2.1%. This overall average efficiency improvement of 2.1% represents a long term average, which the regulator elected to front-load for other reasons. The Victorian data therefore provides a possible range of trend efficiency X factors of between 1.0 and 2.1%.
- The Queensland regulator used consultants to analyse trends in efficiency and identify best practice O&M efficiency levels in Australia and internationally. While the implied efficiency X factor in the draft determination was 2.8%, the final determination reduced the implied efficiency X factor to 1.8%. The Queensland data therefore provides a possible range of 1.8 to 2.8% for trend efficiency X factors.
- In the UK, the energy regulator applied large P_0 adjustments to the distribution businesses combined with a later period X factor of 3.0%. In a similar manner

[5] "Regulation of Electricity Lines Businesses: Resetting the Price Path Threshold – Comparative Option" (available on the NZCC website), especially pages 4-9 and 66-67.

to the case in Victoria, this may be interpreted as the regulator considering 3.0% to represent an appropriate long term trend rate of improvement and the P_0 adjustment a short term gap closure.

- The New Zealand regulator has adopted an approach to X factors comparable to the Commission's, by splitting X into two components representing trend industry efficiency and business-specific factors. Trend industry efficiency was estimated using total factor productivity ("TFP") analysis. Trend TFP for the electricity distribution sector of 3.2% has been identified. After adjusting for productivity and input price differences relative to the economy as a whole, the regulator has proposed using a trend efficiency X factor of 2.6%.
- In the Netherlands, a similar approach has also been applied by the regulator. In setting an overall X factor for distribution and transmission, the regulator has incorporated a trend industry efficiency component of 3.0%.

4.9 From these data, it appears that European regulators have been prepared to set trend efficiency factors that are approximately 0.5% *above* those employed by regulators in New Zealand and 1.0% above those employed by regulators in Australia. Scale effects may be at work in this regard.

4.10 On balance, the Commission considered that a trend efficiency factor in the range of 1½% to 3% was appropriate for the purposes of setting the price cap for network charges in the Northern Territory. The upper limit is comparable with trend efficiency identified in the relatively small New Zealand sector, and with the Queensland analysis. At the lower limit, additional weight would be placed on the small scale of the Northern Territory network, and the possible limiting effect that this may have on the opportunities for future efficiencies.

4.11 In the Draft Determination, the Commission considered that a factor of 2% represented a reasonable balance.

4.12 The Commission noted that, for Power and Water's networks business, the weighted average X factor applying across the regions to average revenue in the first regulatory control period was in the order of 3½%. This included a large 'stretch' (or X_2) factor, which the Commission estimated to have been around 1½% (based on eliminating 20% excess in per unit O&M costs over a three year period combined with O&M costs being approximately 30% of the total cost of providing network access services). Hence, the Commission saw its choice of an X_1 factor of 2% in the second regulatory control period as being consistent with the value in use in the first regulatory control period.

4.13 Accordingly, the Draft Determination regarding the X_1 factor was that the X_1 factor for application each year during the second regulatory control period be 2%.

Views in submissions

4.14 While Power and Water acknowledged that it should be provided with incentives to achieve efficiencies and that customers should gain benefit from those efficiencies, it did not agree with the Draft Determination that the X_1 factor be 2%.

4.15 Two separate lines of argument are discernable in Power and Water's submission. One line of argument is, in effect, that the X_1 factor should be 0%. Power and Water argued that:

> *"...the efficiencies inherent in this factor have been achieved by the Z and X_2 factors applied in the Draft Determination.*
>
> *The X_1 factor is intended to reflect the 'movement towards' best practice in industry cost structures over the second regulatory period. This implies that the industry cost structure will decline to best practice efficient levels over the period, and that Power and Water's underlying costs will need to reduce accordingly to reflect best practice.*

Power and Water submits that the Commission has dealt adequately with the required efficiencies for each cost component as part of its methodology, over and above what could be achieved by industry, as follows:

- *Efficient return on and of capital over the regulatory period would be implemented by the Commission in setting an efficient WACC, efficient useful lives and by imposing an 'optimised' asset value for the second regulatory period. Power and Water considers that no further 'movement towards best practice' is required once this has been undertaken, and therefore movements towards best practice in asset related costs should be removed from the X_1 factor. This is discussed in more detail below;*
- *Efficient operations and maintenance costs were established with reference to the Meyrick Report, and would be applied by the Commission through involved two separate steps. Firstly, it would impose a 10% reduction in the operations and maintenance allowance in the 2002 03 base year, to account for "one half of the 20% inefficiencies observed by Meyrick", and secondly it would impose a 0.3% X_2 factor for each year of the second regulatory period to account for "one half of the 20% inefficiencies observed by Meyrick" . These factors therefore account both for an up-front reduction in operations and maintenance costs, and for a movement towards best practice. Further methods of accounting for movements towards best practice in operations and maintenance costs should therefore not be required."*

4.16 Power and Water's second line of argument is about the robustness of the 2% estimate of the X_1 factor. Power and Water expressed its concern about:

"...the extent to which the X_1 factor double-counts the efficiency measures already provided for by the Z and X_2 factor. This was a key concern raised by Power and Water previously, when it noted:

> *It will be necessary for the Commission to ascertain the extent to which its benchmarks of X factors include efficiency gains comparable to those already included in the Commission's Z factor. The Commission's Draft Methodology Decision seems neither to foreshadow how it will do this, nor how it will make appropriate trade offs in NPV terms between the Z and X factors to ensure that Power and Water's network business does not suffer from an unnecessary cash flow shock." (Power and Water, Response to Draft Methodology Report, p19.)*

Commission's final decision

4.17 In the Commission's methodology, the X_2 factor addresses the rate at which the closure of any *existing* efficiency gap between Power and Water's O&M costs and best Australian practice is reflected in prices. In contrast, the purpose of the X_1 factor is to capture the expected *future* rate of improvement in the best practice standard for total cost efficiency.

4.18 Power and Water's first line of argument therefore involves a fundamental misunderstanding of the nature of the X_1 factor. This is evident in its incorrect assertion that:

"The X_1 factor is intended to reflect the 'movement towards' best practice in industry cost structures over the second regulatory period."

4.19 To the contrary, the X_1 factor is intended to reflect the difference between annual movements:

- in consumer prices on average; and
- in the electricity network access prices of comparable *best practice* (i.e., efficient) network service providers in other jurisdictions.

4.20 The Commission takes the view, which it considers to be widely accepted, that efficiency for an individual firm and for an industry in general can reasonably be expected to improve over time. Efficiency and productivity levels are not static. Unit O&M costs reduce over time due to organisational efficiencies, improvements in technology and other factors. Unit capital costs decline due to technological progress and, particularly for capital intensive industries, increases in scale and the effect of scale economies as output increases.

4.21 In fact, there is a good deal of economic literature which demonstrates that, in this sense, the X_1 factor is the sum of differences between the electricity network industry's and the economy's productivity growth rates and between the electricity network industry's and the economy's input price growth rates.

4.22 In principle at least, Power and Water's second line of argument has some validity. The Commission's approach to selecting a value for the X_1 factor has been a survey of current X factors applied by regulators in Australia, New Zealand and Europe. Many estimates of X factors in fact combine the X_1 and X_2 factors. The Commission was well aware of this, and was careful in its Draft Determination wherever possible to separate out the influence of "gap-closing" and isolate the longer term underlying rates of efficiency improvement that regulators are expecting across the industry.

4.23 However, as it is clearly not possible to be precise about the relative weights that should be ascribed to gap-closing and trend expectations, the Commission took a conservative view in setting the value of X_1 in the Draft Determination.

4.24 In addition, in recognition of the role of statistical errors in the underlying cost studies as well as to place the value chosen for the X_1 factor clearly at the lower end of the observed range of relevant X values (in recognition of the smaller size and dispersed nature of Power and Water's network activities), the Commission has decided to reduce the final determined value of the X_1 factor from 2% to 1¾%. This increases the probability of Power and Water's networks business being adequately compensated for prudent investment and efficient operations.

4.25 Accordingly, the Commission's final determination regarding the X_1 factor is as follows:

FINAL DETERMINATION

That the X_1 factor for application each year during the second regulatory control period be 1¾%.

The X_2 factor

Background

4.26 The Form of Regulation Decision defined the X_2 factor as a factor determined prior to commencement of the second regulatory control period which reflects the difference between annual movements:

- in electricity network access prices applied on average by comparable best practice network service providers in other jurisdictions in Australia; and
- by the network service provider in the Northern Territory, on the basis that any remaining O&M inefficiencies reasonably assessed to be within the control of management are eliminated by the end of the third regulatory control period.

4.27 In 2002, the Commission agreed to the engagement by Power and Water of independent consultants (Meyrick & Associates (hereafter "Meyrick")) to evaluate operating performance of Power and Water's networks business (hereafter referred to as "Power Networks") against other relevant electricity networks businesses in Australia.

4.28 Meyrick's general conclusion was as follows:

> *"After allowing for differences in functional coverage and factors beyond management control, [Power Networks'] current unit O&M costs would have to be reduced by around 20 per cent to reach best practice. Ten years appears to be a reasonable timeframe for removing the performance gap implying a reduction in the current unit O&M cost of two per cent per annum." (Report (confidential), p.vi.)*

Commission's draft analysis and conclusions

4.29 The value for the X_2 factor is Northern Territory specific.

4.30 Much of the 20% in inefficiencies observed by Meyrick against best practice in the Northern Territory context can be attributable in one way or another to the Government as shareholder. In the Commission's judgment, no more than one-half of the 20% inefficiencies observed by Meyrick can be attributed to the board and management.

4.31 The Commission therefore considered that one-half of the 20% inefficiencies observed by Meyrick against best practice in the Northern Territory context should be the basis for determining an appropriate annual 'stretch factor'.

4.32 Compared with the 2000 Determination which involved a three year phase-in period for the elimination of such inefficiencies, on this occasion the Commission prefers to opt for a more practical phase-in period of 10 years.

4.33 Eliminating the 10% excess in per unit O&M costs over a 10 year period averages out at 1% per annum. As O&M costs are approximately 30% of the total cost of providing network access services, the Commission considers a reasonable annual stretch factor for incorporation into Power Networks' tariffs to be 0.3% per annum.

4.34 Accordingly, the Draft Determination regarding the X_2 factor was that the X_2 factor for application each year during the second regulatory control period be 0.3%.

4.35 In the Draft Determination, the balance of the 20% efficiency gap was allocated to the base year price adjustment, or Z factor, which is considered further in chapter 5.

Views in submission

4.36 In its submission, Power and Water disagreed with the Commission's proposal, in its calculation of the value of the Z factor, to reduce the allowance for O&M expenditure in the 2002-03 base year by 10%. Power and Water argued instead that:

> *"...the actual, unadjusted 2002-03 operational expenditure be used in the base year, and that the X_2 factor be increased from 0.3% to 0.6%. This would allow operational cost efficiencies to be achieved by Power and Water Networks over the time period recommended by the Meyrick Report, and in line with other recent regulatory decisions in other jurisdictions."*

4.37 Power and Water also indirectly addressed this issue on the basis that it:

> *"...faces two principal constraints to achieving efficiencies in the short term, namely;*
>
> - *its relatively fixed number of staff, which contribute to a significant proportion of total operational costs; and*
> - *its obligation to maintain payments to debt holders. The estimated shortfall in revenue therefore increases pressure on other cost components, as debt must be repaid.*
>
> *...The only area in which Power and Water can reduce costs will be its budgeted (non-personnel) operations and maintenance expenditure and capital expenditure/refurbishment. Power and Water submits that cost reductions in these areas would be unfavourable because:*
>
> - *reductions in (non-personnel) operations and maintenance costs will directly impact on the standards of service and the reliability of supply in regulated areas. Reductions in cyclical and specific maintenance lead directly to increased outages and asset degradation, and in turn negatively impact on service standards; and*
> - *reductions in capital expenditure impact directly on Power and Water's ability to meet system security upgrades and safety requirements. Undertaking these works from capital reserves, as has been suggested by the Commission, leads to deficits in funds available to replace assets at the end of useful lives."*

Commission's final decision

4.38 The Draft Determination did not involve an expectation that Power Networks could or should cut its O&M costs overnight.

4.39 Under CPI-X incentive regulation, service providers that meet the industry standard for efficiency have the opportunity to earn a full commercial rate of return. If they better this standard, they have the opportunity to retain the additional returns for a known period of time. At the next reset, the regulator must decide what proportion of these excess returns should be provided to customers (in the form of lower prices), and what proportion should be retained by the service provider (and for how long) as an additional incentive for continued out-performance.

4.40 Where the service provider is below the industry standard for efficiency, a key question for the regulator is whether it is reasonable to expect customers to pay prices that include a full commercial return for the (inefficient) service provider. The answer will depend on a number of factors, including the size of the efficiency gap, its possible causes and the degree of cost flexibility that the service provider could reasonably be expected to achieve.

4.41 While the Commission does not expect Power Networks to reduce its O&M costs by 10% in one year, neither does it consider reasonable a situation in which customers are required to wait 10 years until prices adjust to efficient levels of O&M cost, while at the same time Power Networks continues to receive a full commercial return. By allocating half of the efficiency gap to the Z factor, the Commission is sharing the cost of inefficiency between Power Networks, whose return is lowered, and customers, who will continue to pay prices above efficient cost levels for up to 10 years.

4.42 Power and Water did not directly address the Commission's contention that at least one-half of the 20% in inefficiencies observed by Meyrick against best practice in the Northern Territory context can be attributable in one way or another to the Government as shareholder. The effect of the Commission's front-ending of the efficiency adjustment would be to see the Government as shareholder bearing this proportion of costs in the form of a lower rate of return rather than end-use customers in the form of higher prices.

4.43 The Commission has nevertheless decided to lower its final determination of the X_2 factor from 0.3% to ¼%, in recognition of the role that statistical errors may play in the underlying cost studies. This slight reduction in the X_2 factor increases the probability that Power Networks will be adequately compensated for prudent investment and efficient operations.

4.44 Accordingly, the Commission's final determination regarding the X_2 factor is as follows:

FINAL DETERMINATION

That the X_2 factor for application each year during the second regulatory control period be ¼%.

CHAPTER

5

BASE PERIOD ADJUSTMENT: THE Z FACTOR

Background

5.1 Before applying the tariff basket form of price cap, the Form of Regulation Decision requires a re-examination of the current costs of Power Networks to ensure that the opening weighted average tariff used at least recovers the *forward-looking and efficient costs* of supply of regulated network access services.

5.2 The required cost-based adjustment to opening tariffs is measured by the ***Z factor***. This factor is the percentage adjustment determined by the Commission prior to commencement of the second regulatory control period indicating the extent to which the weighted average of network access tariffs actually applying in 2003-04 (the year prior to the first year in the second regulatory control period) needs to be changed in order to form an appropriate basis for network access tariffs in the second regulatory control period.

5.3 The Commission considers that the Z factor is most appropriately measured as follows:

$$Z = (A - B) / B \quad \text{... (6)}$$

where:

A is an updated estimate of the total cost (in $ millions) in 2003-04 of supplying the network access services whose tariffs are to be included in the tariff basket in 2004-05; and

B is an updated estimate of the total revenue (in $ millions) in 2003-04 derived from the existing tariffs applying to the network access services to be included in the tariff basket in 2004-05.

Updating total costs of supply in 2003-04

5.4 The first value required to estimate the Z factor is an updated estimate of the total cost (in $millions) in 2003-04 of supplying the network access services whose tariffs are to be included in the tariff basket in 2004-05.

Building blocks approach

5.5 The Commission has again used the building blocks approach to derive an updated estimate of the network service provider's efficient costs. The building blocks formula can be expressed as follows:

(CAPITAL* WACC) + DEP + O&M ... **(7)**

where:

CAPITAL represents an efficient level of capital employed by the network service provider (expressed in $ millions);

WACC represents the network service provider's risk-adjusted weighted-average cost of capital (expressed as a percentage);

DEP represents depreciation expenses on capital employed (expressed in $ millions); and

O&M represents efficient operating and maintenance costs (expressed in $ millions).

5.6 The Commission used the building blocks approach in its 2000 Determination.

5.7 The Form of Regulation Decision requires the building blocks analysis to be undertaken with respect to the 2002-03 year, being the most recently available actual data. In order to obtain a Z factor to be applied to 2003-04 tariffs, a separate methodology is therefore required to escalate the efficient costs estimates derived from 2002-03 data by one year to 2003-04.

2000 Methodology

5.8 For its 2000 Determination, the Commission applied the building blocks approach using methodologies outlined in both:

- *Revenue Determinations: April to June 2000*, published in March 2000; and
- *Revenue Determinations: 2000-01 to 2002-03*, published in June 2000.

Both these paper are available for viewing on the Commission's website. The methodologies outlined in these reports together are hereafter referred to as the "2000 Methodology".

5.9 Set out later in this chapter are all variations to the 2000 Methodology considered or implemented by the Commission other than certain technical modifications due to the application to historical rather than forecast data.[6] With these technical exceptions and unless otherwise stated, the methodology underlying this Determination is as contained in the 2000 Methodology.

---

[6] For example, where the calculation of the revenue requirement for each year is a forward-looking exercise, it is necessary to estimate each of the components of the asset base. The 2000 Methodology calculated the value for average capital in accordance with the following formula:

$$ASSETS = (DORC - CAPCON) + 0.5*(CAPEX - CONNEW - DECOM)*(1 + ?PI)^{-½}$$

As no forecast rolling forward of the regulated capital base is required with respect to 2002-03, the Commission is able to calculate the average level of capital employed in that year by simply using the following:

$$ASSETS = [(DORC - CAPCON)_{1\ July\ 2002} + [DORC - CAPCON]_{30\ June\ 2003}] / 2$$

where:

DORC = the depreciated optimised replacement cost of the network's fixed assets; and

CAPCON = the capital contributions received net of any amount amortised, to the extent that the resultant assets constructed have increased the gross DORC.

Power Networks' 2004 data

5.10 In response to a series of requests over the November 2003 to January 2004 period, Power Networks, as the network service provider, provided to the Commission a range of data required to implement the building blocks approach with respect to the 2002-03 year. In some instances, the Commission found it necessary to interpret or extrapolate the data provided in order to complete this Determination. In that regard, the Commission has used its best endeavours to preserve the integrity of the original data. [Any adjustments the Commission has undertaken to reflect its own preferences have been undertaken separately, and labeled according.] The complete data set provided by Power Networks (or estimates that the Commission considers to be fully consistent with partial information provided by Power Networks) is hereafter referred to as "Power Networks' 2004 data".

5.11 Set out later in this chapter are the considerations underlying all variations to Power Networks' 2004 data implemented by the Commission as part of this Determination. Unless otherwise stated, the data used for this Determination is Power Networks' 2004 data.

Variations to the 2000 Methodology

(1) Treatment of working capital

Issue

Should an allowance for working capital be included in the regulated capital base and, if so, to what extent?

Background

5.12 Working capital is that capital which a business maintains in liquid financial assets to ensure that it can cover any short-term mismatches in cashflow.

5.13 In the 2000 Determination, the Commission measured the working capital employed in the regulated networks business by estimating the average monthly difference between current liabilities and current assets in the previous financial year for Power and Water as a whole and then allocating that amount in proportion to the networks business' relative share of Power and Water's total operating costs.

5.14 However, in applying the WACC to determine the rate of return on the regulated capital base (a real-terms WACC was used), the Commission calculated the potential (not actual) interest income on cash balances, using the income based upon Northern Territory Treasury Corporation's average cash rate over 1998-99 and then subtracted this potential annual interest income on the cash balances involved from the return on capital based upon full allowance for working capital to allow explicitly for these earnings (and so as to not double count income).

Commission's draft analysis and conclusions

5.15 Neither the Victorian regulator nor the ACCC provide for working capital. Nor does the UK energy regulator. Generally, these regulators are persuaded that applying the building blocks approach to average asset values with respect to a year may overstate the cost of *financing* capital expenditure, thereby more than offsetting the cost of *financing* operating expenditure.

5.16 Nevertheless, the New South Wales and Queensland regulators continue to include an allowance for working capital.

5.17 Those regulators that do include working capital have moved away from the balance sheet concept of working capital relied upon by the Commission in its 2000 Methodology.

5.18 A direct estimate of debtors and creditors could be made, with creditors proxied by O&M costs at an assumed lag and debtors proxied by efficient costs based on the building blocks analysis at an assumed lag. However, such an approach overlooks that fact that around 70% of revenue received by network service providers reflects capital-related costs. Furthermore, all of Power Networks' income is from its associated retailer. Network users and end-use customers need to share in the economies of scope associated with retention of Power and Water's vertically-integrated structure.

5.19 The allowance for working capital needs to relate only to the cost of *financing* operating expenditure. The calculation needs to reflect benchmark assumptions about the timing of cash flow in order not to compensate for imprudent or inefficient activities.

5.20 Such an approach is consistent with that being considered by the South Australian (SA) regulator, involving assumptions about the extent to which revenue is received with a lag and about the extent to which operating expenditure is incurred after an activity has been performed (a lead). The SA regulator's formula is:

$$WC = \left((C - D) / 365 \right) * O\&M \quad \text{... (8)}$$

where:

C = the number of days lag; and

D = the number of days lead.

5.21 The SA regulator proposes to use a net lag of 39 days which comprises an unbilled consumption lag of 45 days (i.e., half of the standard three month meter reading cycle) and average lag between meter reading and bill payment of 28 days and an expense lead of 34 days. The net lag of 39 days implies a required stock of financial assets of around 10.7% of operating expenditure. Using data for 2002-03 from the 2000 Determination (and adding relevant DKTL and streetlighting O&M) and applying this formulation to Power Networks' annual O&M – as measured for that determination – would amount to around $2.5 million. This compares with the $8 million figure included in the 2000 Determination for the regulated networks at the time (excluding the DKTL and streetlighting).

5.22 In the Draft Determination, the Commission proposed to retain an allowance for working capital despite the force of arguments of some that any overstatement of the cost of financing capital expenditure caused by applying the building blocks approach to average asset values with respect to a year may more than offsets the cost of financing operating expenditure.

5.23 Allowing for working capital is common in the US, and continues to be the practice of several jurisdictional regulators in Australia. The Commission was mindful of the need for regulatory consistency, and that it allowed for working capital in its previous determination.

5.24 Nevertheless, the Commission acknowledged trends in regulatory practice, and clear indications that its previous allowance was too generous. At the very least, the formulation used in the 2000 Methodology did not see network users and end-use customers sharing in the economies of scope associated with retention of Power and Water's vertically-integrated structure.

5.25 The Commission's draft decision was to adopt the SA regulator's formula and benchmark of a net lag of 39 days.

5.26 The appropriate allowance in the revenue requirement is a nominal return on that amount, compared with the use of a real return with respect to capital employed in plant and equipment.

Views in submission

5.27 While Power and Water acknowledged that it should be provided with incentives to achieve efficiencies and that customers should gain benefit from those efficiencies, it did not agree with the Commission's proposed methodology for estimating working capital balances.

5.28 Power and Water argued that:

> *"While the method chosen by the Commission has regulatory precedent, it is not as accurate as the method previously submitted by Power and Water to the Commission. Power and Water's method is consistent with both a first principles analysis of what causes working capital to arise within a business and with well established accounting principles.*

5.29 Power and Water suggests that its "formula method" of determining allocators specific to each component of working capital would be more accurate and less arbitrary than the global allocator associated with the Commission's draft conclusion.

5.30 Power and Water also argued that the Commission's preference should not be relevant where:

> *"...the Commission has a choice between two alternative methods of calculating working capital balances, where both methods have precedent, are justifiable and are reasonable methods of estimating working capital for businesses. Power and Water submits that the recent Australian Competition Tribunal decision in relation to GasNet is relevant on this issue. Section 29 of that Decision states that:*
>
> > *'Where there are no conflicts or tensions in the application of Reference Tariff principles, and where the Access Arrangement submitted by the Service Provider falls between the range of choice reasonably open and consistent with Reference Tariff principles, it is beyond the power of the Relevant Regulator not to approve the proposed AA simply because it prefers a different AA which it believes would better achieve the Relevant Regulator's understanding of the statutory objectives of the Law. (Australian Competition Tribunal, Application by GasNet Australia (Operations) [2003] ACompt 6.)' "*

5.31 Finally, Power and Water argues that:

> *"... the Commission must make allowance for the value of inventories if this methodology is to be administered in a manner consistent with other regulatory decisions. This is because:*
>
> - *Inventory is an essential element of network service provision and is required for maintenance and replacement of small network capital items. They are therefore worthy of inclusion in the networks asset base;*
> - *Costs associated with storage and transfer of inventory are considerable. As at 30 June 2003, Power and Water Networks held $2.015 million worth of inventories; and*
> - *There is precedent for the inclusion of inventory in working capital. The recent decision by IPART, and past decisions by the QCA, accepted the need for inventory to be included.*
>
> *Allowing for the value of inventories would increase Power and Water Networks estimated working capital to approximately $5 million or 1.1% of the regulated asset base."*

Commission's final decision

5.32 The accuracy of alternative methods of calculating working capital is not as clear cut as Power and Water would suggest. While the method submitted by Power and Water may be consistent with accounting principles, it does not provide a basis for establishing the *efficient and forward looking* level of such capital. That is the direct purpose of the SA regulator's methodology.

5.33 The Commission also has greater scope under the Code to determine the basis for calculating regulatory methodologies than is currently available to regulators under the National Gas Code. Hence, the Australian Competition Tribunal's finding cited by Power and Water does not establish an applicable precedent.

5.34 As to the matter of inventories, the Commission accepts the view that capital is tied up in such assets. However, as with works in progress, such capital is best recognised once the associated asset comes in service. At that stage, the initial capital (along with capitalised interest) is rolled into the regulated capital base. Moreover, if the capital employed in stocks of inventories were instead recognised in the way sought by Power and Water, there would be an incentive to hold stocks in excess of efficient levels.

5.35 For these reasons, the Commission has decided not to vary its draft decision.

(2) Modifications to WACC formula

Issue

Should changes be made to any part of the formula or any parameter value used in calculating the WACC in the 2000 Methodology?

Background

5.36 Schedule 8 of the Code required the WACC applying in the first regulatory control period to be applied in a real-terms pre-tax form. Regulatory practice in Australia currently involves the use of the WACC expressed in a nominal post-tax form.

5.37 Among other things, schedule 8 defines the pre-tax cost of debt (R_d) as:

$$R_d = R_f + DRP$$

where:

R_f = risk-free rate of return on capital; and

DRP = debt risk premium.

The Commission used a 100 basis points value for the debt risk premium in the 2000 Determination. Regulatory practice now sees a debt risk premium of at least 120 basis points as well as recognition in some instances of debt issuance costs.

Commission's draft analysis and conclusions

5.38 Had a revenue cap form of price regulation methodology continued, the Commission accepted that arguments would have been finely balanced between the pre-tax real and post-tax nominal formulations of the WACC. While private sector practice is more akin to the post-tax nominal form, where the network service provider is government owned (as in the Northern Territory) the benefits of changing to this form may be relative small especially in relation to the implementation costs involved.

5.39 As to debt costs, the Commission considered it appropriate to be guided by recent practice in other jurisdictions.

5.40 The Commission's draft decision was to continue with the pre-tax real form of the WACC. As the WACC is only being used for one year, the costs involving in changing over to the post-tax nominal form would overwhelm any benefits of doing so.

5.41 As to the debt cost parameters, the draft decision was to include an allowance for debt issuance costs of 12.5 basis points and to raise the debt risk premium to 120 basis points, reflecting recent changes to generally accepted regulatory practice in other jurisdictions.

Views in submission

5.42 Neither Power and Water nor NT Treasury commented on this issue in their submissions.

Commission's final decision

5.43 As no issues were raised regarding the draft decision on the WACC, the Commission has chosen not to depart from that decision

5.44 The WACC calculation underlying the Final Determination is detailed in Appendix B. While changed parameters push the WACC up a little in their own right, movements in the risk-free rate since 2000 see the WACC fall in real terms from 7.94% to 7.42%.

(3) Allowance for future capital expenditure

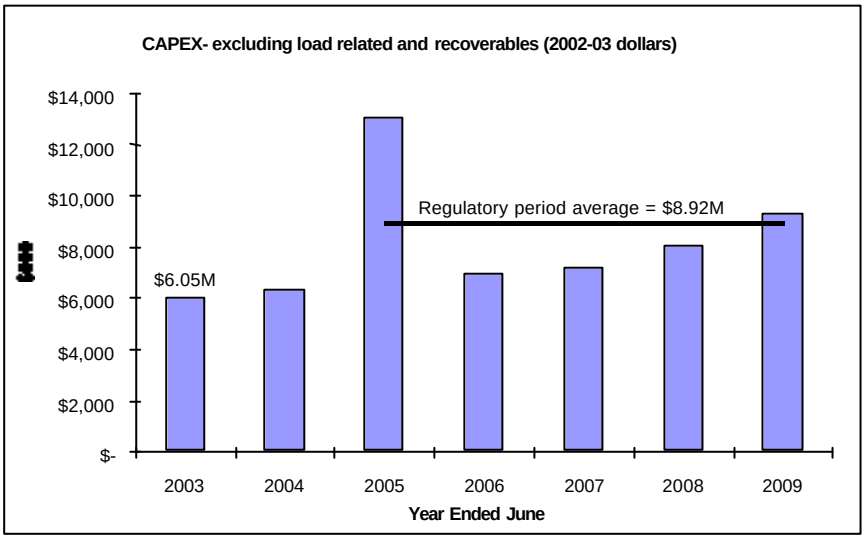
Issue

Should the Commission's methodology somehow be extended to ensure that the regulated asset base reflects normalised levels expected during the second regulatory control period?

Background

5.45 Early in the 2004 Regulatory Reset process, the Commission was advised that Power Networks had analysed its capital expenditure requirements, net of customer contributions, for the seven years to 30 June 2009, and had separately identified capital expenditure, such as that necessary to improve system security, which does not comprise system augmentation, or otherwise facilitate load growth. Chart 2 discloses the results of Power Network's analysis.

Chart 2



5.46 According to Power Networks, Chart 2 shows that:

- 2002-03 non-load related capital expenditure is $6.05 million;
- average capital expenditure for the five years to 30 June 2009 is $8.92 million; and
- 2004-05 capital expenditure is higher than the average due to the installation of a number of zone substations in that year.

5.47 Power Networks has advocated that the Commission's methodology should somehow be extended to increase the regulated asset base to reflect levels expected during the second regulatory control period. Power Networks expressed concern that system security could be at risk were the base year not adjusted to facilitate this expenditure.

Commission's draft analysis and conclusions

5.48 The Commission acknowledged that, while capital expenditure on assets associated with system augmentation or otherwise to facilitate load growth must of necessity be funded from the associated growth in network revenue (otherwise the investment would not satisfy commercial criteria), capital expenditure associated with asset replacement or improving system security needs to be funded either from existing tariffs and charges or from borrowings capable of being serviced out of the future revenue stream generated from existing customers.

5.49 While Power Networks may have established that its capital spending levels on replacement and system security were expected to be higher in the second regulatory control period than in 2002-03, the Commission considered that the extent to which this justified an additional component to the building blocks methodology had not been established because of uncertainties about:

- whether all the capital expenditure involved will materialise; or
- whether such a rise is just a reflection of the normal asset replacement cycle, and that past periods of low spending have seen tariffs effectively providing for future capital spending (with Power and Water's balance sheet being reasonably liquid).

5.50 Existing tariffs (through the return of capital component) result in high levels of retained earnings from which to fund capital spending on the current system. Currently annual depreciation expense is well in excess of twice the average capital expenditure on replacement and improving system security.

5.51 The Commission's draft decision was to make no allowance for future capital spending increases at this time. The Commission stated that it had yet to be convinced that the funding generated from either existing tariffs or the future revenue stream generated from existing customers is insufficient, thereby requiring tariff increases.

5.52 Also, the Commission expressed the view that the issue could be addressed further prior to the next regulatory reset, by which time a clearer picture would have emerged as to Power Networks' ability to fund such spending based on existing tariffs.

Views in submission

5.53 Power and Water opposed the Commission's proposed method of treating capital expenditure in the determination of the Z factor. Power and Water reiterated its request for an adjustment to the 2002-03 base year to provide for forecast system security capital expenditure.

5.54 In its submission, Power and Water argued that the Draft Determination:

> *"...restricts Power and Water's ability to fund asset replacement over the longer term. This is because depreciation allowances provide funds necessary to replace assets at the end of their useful lives. The Draft Determination allows for around $23 million in depreciation costs for the 2002-03 base year. Power and Water estimate that around $25 million in depreciation costs would be required for the 2002-03 base year. The Draft Determination therefore under-provides for depreciation by around $15 million over the second regulatory period. This will reduce funds available for reinvestment."*

5.55 Moreover, Power and Water argued that:

> *"Section 68 of the Code requires the Commission to take into account "the provision of a return on efficient capital expenditure undertaken by the network provider in order to maintain network capacity that is commensurate with the commercial and regulatory risks involved".*
>
> *Power and Water has demonstrated to the Commission, and the Commission has accepted, that Power and Water's capital expenditure on replacement and system security are expected to be higher in the second regulatory period in comparison to that in*

2002 03. Despite this, the Commission has not provided for an increase in the amount of allowable capital expenditure …

Power and Water submits that it has used the most reliable capital expenditure forecasts possible, in forecasting future capital expenditure over the second regulatory period. Estimates for 2004-05 to 2006-07 were sourced from Power and Water's capital works and forward works budgets. Power and Water Networks system planning and engineering managers, on the basis of reasonable load growth expectations, developed and approved capital expenditure forecast for 2007-08 and 2008-09. These are therefore Power and Water's best estimates of system security requirements for the second regulatory period.

Power and Water also feel that the Commission has not adequately considered whether the capital expenditure forecasts provided are reasonable in light of desired levels of service standards and system security."

Commission's final decision

5.56 The Commission considers that the arguments advanced by Power and Water in this area are based on an *operating* capital maintenance, rather than a financial capital maintenance, view of pricing.

5.57 Financial capital maintenance involves pricing aimed at maintaining the financial value of the business or asset. Operating (physical) capital maintenance involves maintaining the physical capability of the business or asset.

5.58 The main distinguishing feature of the two is the meaning of depreciation. Under financial capital maintenance, depreciation is just the return of the original cost of the investment. In contrast, under operating capital maintenance, depreciation is a provision sufficient to fund replacement of the existing assets when they expire.

5.59 Financial capital maintenance is more consistent with the objectives of setting regulated prices. This is because the relevant objective for encouraging investment is to protect the *financial value* of the regulated asset base rather than protecting some measure of physical capability.

5.60 Nevertheless, the Commission does acknowledge that there can be a role for increasing prices as network capacity constraints kick in, both for the price signals that would send and in order to finance augmentation of the network to overcome such constraints. This does not, however, appear to have been Power and Water's line of argument. It is an issue, nonetheless, that the Commission expects to focus on prior to the 2009 reset, at which time too there will be a clearer picture as to the level and pattern of replacement capital expenditure.

5.61 In the meantime, the Commission is satisfied that its low-end choices of values for the X_1 and X_2 factors will ensure that sufficient internally-generated funds are available to finance necessary replacement capital expenditure during the second regulatory control period. Moreover, the Commission considers that the issues raised by Power and Water are better addressed in the first instance through the adoption of more appropriate pricing structures on Power Networks' part. Under the Form of Regulation Decision, Power Network has the opportunity to move its pricing structure closer to its underlying cost structures. To the extent that it has difficulties funding future capital spending increases, this is more likely to reflect either that the capital spending is not commercial in terms of existing tariffs (and so either should not be undertaken or should instead involve an up-front capital contribution) or that Power Networks' existing tariff structure is insufficiently reflective of the structure of the costs of providing network services (and so should be modified over time as permitted under price cap regulation).

5.62 On these various grounds, the Commission has decided not to depart from its draft decision.

(4) Escalating the 2002-03 revenue requirement to 2003-04

Issue

How should the results of the building block analysis for 2002-03 be escalated into relevant values for 2003-04?

Background

5.63 The Commission's past application of the building blocks approach has been on a forward-looking (i.e., forecast) multi-year basis, whereas the Form of Regulation Decision requires the building blocks approach to be applied (directly) only against known data (i.e., for 2002-03, the most recent completed year). As the Z factor is intended to adjust the weighted average of 2003-04 network access tariffs, to be up-to-date for this purpose the Z factor must be based – directly or indirectly – on an assessment of costs in 2003-04.

Commission's draft analysis and conclusions

5.64 The approach to escalating costs most consistent with the Form of Regulation Decision involves a CPI-X adjustment of unit costs, implying the following formulation:

$$R^*_{0304} = R^*_{0203} * \left(\frac{CPI_{0304}}{CPI_{0203}}\right) * (1 - X) * \left(\frac{Q_{0304}}{Q_{0203}}\right) \quad \text{... (9)}$$

where:

R* is the annual revenue requirement consistent with the building blocks approach;

CPI is the all capital cities headline CPI index published by the ABS;

X is a factor reflecting the difference between annual movements in the costs of providing consumer goods and services generally in Australia and in providing network access services at an efficient level;

Q is a measure of the quantum of network access services *provided* during the year; and

the 0203 and 0304 subscripts denote values for the 2002-03 and 2003-04 financial years respectively.

5.65 This approach requires:

- forecast of the annual movement in the CPI between 2002-03 and 2003-04;
- a value for X; and
- a measure of the Q variable as well as a forecast of the annual movement in the measure of Q between 2002-03 and 2003-04.

5.66 The Draft Determination used a forecast of the annual movement in the CPI between 2002-03 and 2003-04 of 2.1%.

5.67 The Draft Determination proxied the X factor by using the X_1 value determined earlier in this Paper.

5.68 The Draft Determination involved the Commission's weighting of various indicators of Power Networks' output, with the weights reflecting the Commission's judgment, as follows:

Weighted Average Cost Drivers

Cost drivers	2002-03	2003-04	weight	% increase

length of line	7,643	7,718	78%	*0.98%*
distribution substations	3,700	3,710	10%	*0.27%*
132kV substations	6	6	1%	*0.00%*
zone substations	10	10	1%	*0.00%*
customers	74,981	76,106	10%	*1.50%*
			100%	***0.92%***

Views in submission

5.69 Neither Power and Water nor NT Treasury commented on this issue in their submissions.

Commission's final decision

5.70 The only modification made to the Commission's decision is a minor correction in the weighted average percentage increase in the network cost drivers. As a result, the percentage increase has been corrected from 0.92% (in the above Table) to 0.94%.

Variations to Power Networks' 2004 data

(1) Adjustment of O&M to efficient levels

Issue

What should be the extent, if any, of the adjustment to the 2002-03 O&M expenditure levels on account of operating inefficiencies within Power Networks?

Background

5.71 In the 2000 Determination, the Commission agreed to allow Power Networks to phase in operating efficiencies then targeted by the Government over a three-year period, consistent with a phasing-in approach being used by other regulators where the adjustment task is substantial.

5.72 The Commission estimates that these efficiencies targeted around a 20% reduction in Power Networks' O&M costs. The Government has since abandoned these efficiency targets.

5.73 In 2002, the Commission agreed to the engagement by Power Networks of independent consultants (Meyrick & Associates) to evaluate Power Networks' operating performance against other relevant electricity networks businesses in Australia.

5.74 Meyrick's general conclusion was as follows:

> *"After allowing for differences in functional coverage and factors beyond management control, [Power Networks'] current unit O&M costs would have to be reduced by around 20 per cent to reach best practice. Ten years appears to be a reasonable timeframe for removing the performance gap implying a reduction in the current unit O&M cost of two per cent per annum." (Report (confidential), p.vi.)*

Commission's draft analysis and conclusions

5.75 When it initially received Power Networks' data set for implementing the Form of Regulation Decision, the Commission was alarmed at the dramatic increases in the O&M expenses implied over the equivalent year's values used in the 2000 Determination.

5.76 A comparison of Power Networks' O&M expenditure for 2002-03 used in the 2000 Determination with that put forward in Power Networks' 2004 data is set out in the following table:

	$M
2000 Determination	
Power Networks' original estimate	21.360
adjusted figure used in 2000 Determination	20.399
2004 reset data	32.912

5.77 Considerable interaction between the Commission and Power Networks' (and its advisers) after receipt of Power Networks' O&M data gave the Commission comfort that the O&M estimates for 2002-03 used in the 2000 Determination were considerably under-reported at that time by Power Networks. This seemed to have occurred for a number of reasons, including the reliance then on a top-down desktop allocation of overheads and other costs to the networks' line of business within Power and Water – now replaced with a more systematic bottom-up allocation of costs embedded in a new financial information system.

5.78 The Commission was therefore satisfied that the actual O&M data for 2002-03 reflects an appropriate *starting point* for the estimating of the Z factor.

5.79 Under of the Code, the Commission must have regard to, among other things:

> *"...the potential for efficiency gains to be realised by the network provider in expected operating, maintenance and capital costs..." (clause 68(c)); and*
>
> *"...(the degree of) efficient operating and maintenance practices on the part of the network provider..." (clause 69(2)).*

5.80 Moreover, paragraph 7(3) of schedule 6 of the Code states that:

> *"...the operating expenditure to be included in the calculation of a revenue or price cap is to be based on costs facing an efficient operation in Territory circumstances."*

5.81 O&M costs are to be based on *efficient* cost so that network users and end users of electricity are not paying for management inefficiency because they do not have a choice of network service provider.

5.82 The O&M inefficiencies identified by Meyrick could reflect either:

- the operating policies and practices of the board and management; and/or
- government- (i.e., shareholder-) imposed constraints on managerial discretion.

5.83 The Commission's view was that the difficulties which management has experienced since 1998 in achieving any significant reductions in its per unit O&M costs are to some (indeterminate) extent indicative of constraints experienced by management in implementing policies and practices aimed at reaching Australian best practice O&M levels.

5.84 Based on the Meyrick report, the Commission accepted that Power Networks' O&M expenses are around 20% above industry best-practice levels even in the Northern Territory context. This finding broadly accorded with the findings of a similar exercise for the Government in 1998.

5.85 The Draft Determination was based on the Commission's assessment that one-half of the 20% inefficiencies observed by Meyrick against best practice in the Northern Territory context are attributable in one way or another to the Government as shareholder, which sees this amount of O&M excluded from the building blocks calculation.

5.86 As confirmed by the limited efficiency gains achieved by management since 1999, such constraints are intended by the Government to deliver certain social benefits (as arise from a no-redundancy policy and a continuing apprenticeship scheme, for example).

5.87 If network users and end-use customers contribute towards the cost of providing these social benefits (which they would not be expected to do if electricity was privately supplied in the Northern Territory or governance arrangements were similar to those generally applying in the NEM States), this is equivalent to a tax imposed on electricity consumption.

5.88 The effect of the draft decision would be the return to shareholders being below the WACC. Likewise, this treatment would see the Government as shareholder retaining in full the benefit of any decisions it (or the board and management) make *in future* to remove the policy-imposed impediments to efficiency. This is fully consistent with incentive-based regulation. It also would ensure competitive neutrality in upstream and downstream markets.

5.89 As to the remaining one-half of the 20% inefficiencies observed by Meyrick, by necessity this amount must be attributed to the board and management. In the Draft Determination, the Commission indicated its preference for a more practical phase-in period of 10 years (which is the basis of the X_2 factor determination in chapter 4).

Views in submission

5.90 Power and Water did not agree with the proposed treatment of O&M expenditure by the Commission, in particular the decision to reduce Power Networks' 2002-03 expenditure by 10%.

5.91 In its submission, Power and Water argued that:

> *"The decision to reduce 2002-03 operational and maintenance costs 10% up front would require an immediate reduction in network costs for 1 July 2004, which is inconsistent with the Meyrick finding, and also ignores the fact that the majority of Power and Water's costs, especially employment expenses, are unable to be changed quickly…*
>
> *…therefore, it is likely that Power and Water will incur losses in the first years of the regulatory period, as costs are unable to be adjusted at the pace at which the Commission has assumed.*
>
> *… the Commission does not appear to have assessed whether the efficiency measures outlined in the Draft Determination are achievable by Power and Water in the timeframes set out in the Determination. Power and Water considers the timeframes are unrealistic because:*
>
> - *Power and Water faces two principal constraints to achieving efficiencies in the short term, namely;*
>   - *Its relatively fixed number of staff, which contribute to a significant proportion of total operational costs; and*
>   - *its obligation to maintain payments to debt holders. The estimated shortfall in revenue therefore increases pressure on other cost components, as debt must be repaid.*
> - *The only area in which Power and Water can reduce costs will be its budgeted (non-personnel) operations and maintenance expenditure and capital expenditure / refurbishment. Power and Water submits that cost reductions in these areas would be unfavourable because:*
>   - *Reductions in (non-personnel) operations and maintenance costs will directly impact on the standards of service and the reliability of supply in regulated areas. Reductions in cyclical and specific maintenance lead directly to increased outages and asset degradation, and in turn negatively impact on service standards; and*
>   - *Reductions in capital expenditure impact directly on Power and Water's ability to meet system security upgrades and safety requirements. Undertaking these works from capital reserves, as has been suggested by the Commission, leads to deficits in funds available to replace assets at the end of useful lives."*

5.92 Power and Water preferred instead that the X_2 factor be increased from 0.3% to 0.6% to allow efficiencies to be achieved over a reasonable timeframe, in line with the Meyrick Report.

5.93 Power and Water argued that:

> *"The Meyrick Report identified that Power and Water's operation and maintenance expenditure would have to be reduced by around 20% to reach best practice. Meyrick proposed that "ten years appears to be a reasonable timeframe for removing the performance gap implying a reduction in the current unit O&M cost of two per cent per annum"*

Commission's final decision

5.94 As explained in chapter 4, the Draft Determination did not involve an expectation that Power Networks could or should cut its O&M costs overnight.

5.95 The central question for the Commission is whether, in circumstances where the service provider is below the industry standard for efficiency, it is reasonable to expect customers to pay prices that include a full commercial return to the (inefficient) service provider. In chapter 4, the Commission determined a value for the X_2 factor that allowed for closure of one-half of the identified efficiency gap over a 10 year period. This rate of improvement is expected to be operationally achievable, and therefore compatible with maintenance of the target rate of return.

5.96 Consistent with its decision in chapter 4 on the value of the X_2 factor, the Commission has chosen not to depart from its draft decision to incorporate the closure of the remaining 10% O&M efficiency gap within the value of Z. The effect of this is to reduce the allowed cost base beyond its current level, thereby lowering the rate of return and providing an equitable sharing of the costs of inefficiency.

(2) Technical optimisation of asset values

Issue

Should the inclusion of a global technical optimisation allowance in the DORC value of Power Networks' assets, as applied in the 2000 Determination, be continued?

Background

5.97 The 2000 Determination involved two types of optimisations:

- the first involved the exclusion of some specifically identified assets which were excess to requirements; and
- the second was an overall optimisation of total network assets, based on adjustments typical in other networks. Rather than applying individual factors to each asset group, a weighted average of such factors was used, which resulted in a weighted average factor of 2.24% being applied for this purpose.

5.98 Power Networks has advised the Commission that it has reduced the list of assets subject to the first type of optimisation and no longer considers the second type to be appropriate.

5.99 Paragraph 6 of schedule 7 of the Code requires that, in valuing network assets for second and subsequent regulatory control periods:

> *"Subsequent revaluation of assets brought into service after 1 July 1999 and subsequent valuation of existing assets generally in service on 1 July 1999 (for use during the second or subsequent regulatory control periods, where the revaluations are to be used for regulatory purposes) are to be undertaken on a basis to be approved by the regulator."*

Commission's draft analysis and conclusions

5.100 Under the Code, the basis of any optimisation procedures is a matter to be approved by the Commission.

5.101 The optimisation process is an important part of the DORC valuation methodology. Without it, the depreciated replacement cost is likely to overstate the current market value of the assets, and the resultant tariffs paid by network users and end users of electricity are likely to be in excess of the tariffs that would be sustainable in an equivalent competitive market.

5.102 In light of its draft decision dealing with the consequences of the deprival value concept (see below), the Commission accepted the shortened list of identified assets excess to requirements involved in the Power Networks' 2004 data as the reversal of the longer list of optimisations in the 2000 Determination.

5.103 However, the Commission's draft decision was to continue application of the global technical optimisation adjustment factor (of 2.24%) given it has no reason to believe that all technical and engineering aspects of the design of the network system would be repeated by a modern equivalent system, as observed in systems elsewhere in Australia.

Views in submission

5.104 Power and Water indicated that it had no objections to its pre-2000 assets being optimised by 2.24%, consistent with practice in the first regulatory period.

Commission's final decision

5.105 Accordingly, the Commission has not modified its draft decision on this matter.

(3) Discounting values of non-commercial sunk (pre-2000) assets

Issue

Does the DORC valuation of Power Networks' assets, even after the technical optimisations included by the Commission, meet the requirements of the deprival value concept required to be applied under the Code?

Background

5.106 Schedule 7 of the Code states the requirements for valuing network assets for second and subsequent regulatory control periods in the following terms.

> ***"5. Valuing network assets for first regulatory control period***
>
> *(1) Sunk assets (assets in place before the commencement date of the Code) are to be valued at available book values underlying the published and audited financial accounts at the end of the preceding financial year (30 June 1999) provided those values do not exceed the assets' optimised deprival value, as defined in this Schedule.*
>
> *(2) Deprival value is the minimum loss that would result if the business were deprived of the asset.*
>
> *(3) For example –*
>
> *(a) if the asset can and should be replaced – the deprival value of the asset is its replacement cost; or*
>
> *(b) if the asset would not be replaced – the deprival value of the asset is the greater of the net present value of expected cash flows from its continued use or the net realisable value of disposing of the asset (its economic value).*
>
> *(3A) Optimised deprival value is a variant of the deprival value approach and takes account of the most efficient method of providing the asset's services if the asset is to be replaced.*
>
> *(4) For example, if the asset can and should be replaced – the optimised deprival value of the asset is its optimised replacement cost.*
>
> *(5) During a regulatory control period, assets acquired after commencement of that period are to be valued at cost.*

> ***6. Valuing network assets for second and subsequent regulatory control periods***
>
> *(1) Subsequent revaluation of assets brought into service after 1 July 1999 and subsequent valuation of existing assets generally in service on 1 July 1999 (for use during the second or subsequent regulatory control periods, where the revaluations are to be used for regulatory purposes) are to be undertaken on a basis to be approved by the regulator.*
>
> *(2) In approving the basis of asset valuation to be used, the regulator must have regard to –*
>
> *(a) the agreement of the Council of Australian Governments of 19 August 1994 that deprival value should be the preferred approach to valuing network assets;*
>
> *(b) any subsequent decisions of the Council of Australian Governments regarding the valuation of public sector assets; and*
>
> *(c) generally accepted regulatory practice at the time.*

5.107 The Council of Australian Governments has not modified its position of 19 August 1994 that deprival value should be the preferred approach to valuing public sector assets.

5.108 DORC is generally used by regulators in Australia in valuing electricity network assets, as it both avoids the circularity involved in the deprival value test and because the market assumptions associated with its use closely correspond with circumstances observed in most electricity markets.

5.109 The Productivity Commission, in its recent reviews of the national access regime, has acknowledged that reliance on DORC valuations irrespective of the circumstances can sometimes give rise to perverse outcomes. This may be the beginning of a challenge in policy circles to the routine use of DORC for regulatory purposes.

Commission's draft analysis and conclusions

5.110 When it initially received Power Networks' data set for implementing the Form of Regulation Decision, the Commission also expressed alarm at the dramatic increases in the regulated asset base DORC valuation relative to the equivalent year's values used in the 2000 Determination.

5.111 The latest asset values for 2002-03 were based on:

- 30 June 2001 replacement cost valuations conducted by Sinclair Knight Merz ("SKM"), a reputable independent asset valuation consultant; and
- desktop optimisations, additions, roll-forwards, transfers and escalations by Power Networks.

5.112 Considerable interaction between the Commission and Power Networks (and its advisers) after receipt of Power Networks' asset data gave the Commission comfort that the replacement cost values, additions, roll-forwards, transfers and escalations were generally consistent with good regulatory and electricity industry practice.

5.113 The Commission noted that while it had accepted an earlier valuation of Power Networks' assets as at 31 January 1999 carried out by a consortium of Sinclair Knight Merz and Deloitte Touche Tohmatsu ("1999 SKM valuation") based on the DORC valuation approach as a basis for calculating the regulated asset base for the first regulatory control period, it did so because:

- this valuation was in fact the value of those assets underlying the published and audited financial accounts at 30 June 1999 (i.e., the book value); and
- that valuation (by definition) did not at the time *exceed* the assets' optimised deprival value.

5.114 In the first regulatory control period, the Code required that sunk assets be valued at available book values – *provided that* those values did not exceed the assets' optimised deprival value. The optimised deprival value (ODV) was defined as follows:

> *"...if the asset can and should be replaced – the deprival value of the asset is its replacement cost; or*
>
> *if the asset would not be replaced – the deprival value of the asset is the greater of the net present value of expected cash flows from its continued use or the net realisable value of disposing of the asset (its economic value)."*

5.115 At the time of the 2000 Determination, the recorded book value was equal to the associated DORC value of the assets.

5.116 As network access tariffs (i.e., the expected cash flows) are derived in part on the value of the asset base, the latter part of this definition leads to problems of circularity. Accordingly, in the first regulatory control period, consistent with the first part of the above definition, the Commission assumed that ODV was equal to DORC.

5.117 Because records were deficient, only partial allowance for historical capital contributions was possible in the 2000 Determination.

5.118 From the Commission's perspective, the gap that had opened up between the available book values of those assets as evident in the balance sheet in Power and Water's latest statutory accounts had brought to the fore whether all assets would be replaced and/or the extent to which such values exceed the net realisable value of disposing of the assets. These matters were primarily an issue with regard to the sunk assets at commencement of the Code (hereafter referred to as "pre-2000 assets"), as assets constructed or acquired since then have been undertaken in conjunction with the regulatory regime as well as with enhanced shareholder governance arrangements.

5.119 Given the non-commercial status of Power and Water prior to 2000, and government involvement in determining system augmentations and extensions, the Commission expressed the view that it was highly doubtful that all pre-2000 assets could or would be replaced solely on commercial grounds.

5.120 An alternative view of the past role of government was that it funded non-commercial asset investment by Power Networks without expecting that such assets would subsequently earn a full commercial rate of return. The capital that it employed in such assets in part was in effect a capital grant (or contribution). Just as a network service provider is not entitled to a return on capital contributed by customers in the form of gifted assets or capital contributions made towards the cost of constructing or acquiring otherwise uneconomic assets, neither should it now be expected that network users and end users of electricity should pay tariffs that incorporate a full commercial return on capital contributed by the government that at the time was not expected to earn a full commercial rate of return.

5.121 The Commission indicated that the doubts it had in these various regards could only be dismissed were the Government to confirm that it would be prepared to pay a full commercial rate of return on assets in the prices it pays for CSO services it purchases from Power and Water, and that it would do so irrespective of whether the electricity supplier in the Territory was government-owned or not. This would imply that the Government would be prepared itself to pay for services supplied by a *private* electricity supplier based on an amount of capital employed *equal to* the current DORC valuation, thereby not taking exception to Territory consumers and business doing likewise. Only on these grounds would the net realisable value of Power Networks' pre-2000 assets not fall short of the current DORC valuation of those assets.

5.122 The Commission was not prepared to validate the full DORC valuation of Power Networks' assets in the absence of evidence to the contrary of the Government's position on the matters outlined above.

5.123 In the Draft Determination, the Commission flagged its intention to discount the DORC values of the pre-2000 asset (only) by around 10% (including the technical

optimisation discussed in the previous issue), to keep network access tariff increases within sustainable bounds.

5.124 The Commission acknowledged that this 10% value was based on the exercise of its judgment. In the absence of any confirmation from the Government that it is prepared *in future* to purchase tax-funded services from Power and Water inclusive of a risk-adjusted commercial rate of return on the current (pre-optimised) value of Power and Water's pre-2000 assets, the Commission indicated that it was prepared to embark on a more detailed study of the market value of Power Networks' assets early in the second regulatory control period – including by engaging independent experts on such matters. The purpose of this study would be to assess whether the extent of any discounting of pre-2000 assets in the final determination represents a material error sufficient to trigger a mid-period recalculation of tariffs in accordance with clause 71 of the Code.

Views in submission

5.125 Both Power and Water and NT Treasury objected to the Commission's draft decision on this matter.

5.126 NT Treasury argued that the proposed discount of pre-2000 non-financial asset values:

> *"...detracts from regulatory transparency and certainty. To the extent that the proposed discount understates the true economic value of pre-2000 assets, the adjustment will have a significant impact on the financial viability of the Power and Water Corporation and its capacity to maintain infrastructure standards at existing levels.*
>
> *The capacity of the Corporation to adjust its asset base to more efficient profiles in the short term is severely limited due to the lumpy and long-life nature of previous investments, which may have been commercially viable when originally made. Additionally, given recently introduced reforms which have resulted in enhanced corporate focus and opportunities for competition, Treasury considers that effective incentives are in place for the Corporation to achieve a commercially orientated asset base over the medium to longer term.*
>
> *...Finally, Treasury considers that the Commission's stated intention to base its determinations in this area with reference to the apparent objectives of previous Government investment decisions is inappropriate. Treasury contends that the interests of sound regulatory policy would be promoted if the Commission bases its determinations on the facts of a matter against the context of its statutory principles and objectives.*

5.127 NT Treasury did, however, note:

> *"...the Commission's proposal to undertake further, independent analysis of non-financial asset values in the future. This exercise has the potential to reduce regulatory uncertainty and hence is supported."*

5.128 Power and Water opposed the Commission's 7.76% optimisation factor applied to pre-2000 assets owned by Power and Water. A decision to devalue assets would have a direct impact on revenue received by Power and Water over the second regulatory period.

5.129 In particular, Power and Water argued that the Commission had not followed an appropriately open and transparent process in arriving at its position on the value of pre-2000 assets. The discount applied was arbitrary and lacked a suitably robust foundation. Further optimisation was unwarranted, and the writing down of asset values as a means of addressing CSO-related matters of government policy was an inappropriate response that would distort outcomes.

Commission's final decision

5.130 The Commission was candid in its draft decision in stating that its objective was to moderate the impact of apparent asset value increases on end-use customers and, in so doing, to provide a balanced outcome between the interests of Power Networks and its customers.

5.131 The Commission is not aware of any deterministic formula for deriving the "right" level of opening and subsequent asset values. The Commission's statutory framework provides direction on matters that must or should be taken into account, but these include elements that are often in conflict and for which a balance must be struck. These include the economic efficiency impacts of subsequent price levels and whether, on economic grounds, prices are too high or too low, the impacts on customers (who may themselves have made investments based on "reasonable" expectations of future prices), and the implications for the longer term financial viability of the network.

5.132 DORC and other valuation methods provide important information but on all except the narrowest of interpretations they do not remove the need for judgment and balance. Asset valuation for price regulation purposes has a long history of debate, which is continuing.

5.133 As experts in the area conclude:

> *"In particular, the regulatory asset base in regulation has a specific purpose, which is to reflect the value of the regulated assets in the eyes of the regulator at each point in time, and the test for the appropriateness of any method for updating of the regulatory asset base has specific objectives – which is to ensure that the method by which the regulatory value is changed over time provides incentives for efficiency, including to minimise cost but also to continue investment in the regulated activities where it is efficient to do so. There should be no presumption that accounting conventions developed for other purposes – such as measuring the financial performance of government businesses – are appropriate for this task." (The Allen Consulting Group, Methodology for Updating the Regulatory Value of Electricity Transmission Assets, Final Report August, 2003 Report to the Australian Competition and Consumer Commission, p.46)*

5.134 In common with many other regulators, the Commission's preference is to roll forward asset values using prudent capital expenditure, allowed depreciation and indexing for inflation. The rolling forward methodology implies updating the regulatory asset base for a regulated entity to reflect the actual outcomes for the regulated entity over the previous regulatory period. That is, the updated regulatory asset base would reflect prudent levels of capital expenditure undertaken and funds returned (regulatory depreciation and disposals) over the period.

5.135 The asset values built into current network prices have in the main been accepted by customers and have provided Power Networks with what many analysts would regard as a healthy cashflow. Substantial revisions are not compatible with a roll forward approach to capital maintenance.

5.136 The Commission acknowledges, however, the force of both Treasury's and Power and Water's arguments about the risks associated with any arbitrary adjustments to Power Network's regulated asset base by the Commission.

5.137 Upon re-examining the underlying asset valuation, the Commission recognises that its concerns were mainly aroused by its willingness to include corrections on account of yet-to-be-verified errors in Power and Water's asset register.

5.138 The Final Determination involves the Commission's stepping back from both aspects of its draft decision – that is, the inclusion of corrections for yet-to-be-verified asset valuation errors *and* discretionary adjustments directed at moderating subsequent price impacts – and instead relying on currently verified asset values. By relying on currently verified values, the return 'of' and return 'on' capital elements of the cost of service provision in 2002-03 are quite similar in aggregate to outcomes projected in the 2000 building block analysis.

5.139 The Commission will also institute a process for re-examining the opening asset values in the first regulatory control period and the roll-forward during that period. In undertaking this exercise, the Commission considers that a range of economic, financial and equity issues need to be considered before arriving at a final position.

5.140 To accommodate the possibility that its subsequent investigations might establish that the value of Power and Water's network assets has been under- or over-estimated in the current reset, the Commission has established the following "**asset valuation off-ramp**" to its Final Determination to be triggered if the Commission is satisfied prior to 31 March 2005 that the valuation of the initial asset base at 30 June 2000 and/or the asset amounts rolled-forward during the first regulatory control period underlying this Determination involved a "material error". For this purpose, a "material error" will be one that involves an error in the Z factor that is at least equivalent to one year's allowed price increase (i.e., CPI-X_1-X_2). If the error is less than this amount or the investigations are not concluded to the Commission's satisfaction by 31 March 2005, the matter will be deferred until all factors can be taken into consideration at the time of the next regulatory reset. If a material error is established, that error will be automatically corrected depending on the size of the required correction, but without any retrospectivity. If the correction of any material error involves an adjustment equal or less in value than the determined Z factor value of 4.4%, an additional Z-like adjustment will be applied to the weighted average of approved tariffs in 2004-05 when determining the regulatory constraint to apply to weighted average tariffs in 2005-06. If the correction of any material error involves an adjustment greater in value than the determined Z factor value of 4.4%, the additional Z-like adjustment to be applied to the weighted average of approved tariffs in 2004-05 when determining the regulatory constraint to apply to weighted average tariffs in 2005 06 will be limited to 4.4% and the remainder of the correction will be phased in equally over the remaining four years of the second regulatory control period via necessary Z-like adjustments.

5.141 A comparison of Power Networks' DORC asset values for 2002-03 used in the 2000 Determination with those put forward in Power Networks' 2004 data is set out in the following table:

DORC Values ($M)	2000 Determination	2004 Regulatory Reset	Difference	Contribution to increase in asset base
SKM 1999 Valuation	308.157	308.157		
assets transferred	0.000	70.946	70.946	56.8%
capital expenditure	103.230	143.670	40.440	32.4%
optimisation	-21.868	-3.856	18.012	14.4%
indexation effect	21.933	37.039	15.106	12.1%
depreciation expense	-66.274	-83.618	-17.344	-13.9%
other	-29.694	-31.976	-2.282	-1.8%
2002-03 Asset base	315.484	440.362	124.878	

Resultant values of efficient total costs of supply in 2003-04 (A)

5.142 By applying the above final decisions, the Commission is able to calculate the efficient cost of supply in 2003-04 as follows:

2002-03	**$M**
Non-financial assets net of contributed capital (Power Networks' 2004 reset data)	440.362
Pre-2000 non-financial assets (estimated as 76.7% of asset base) (Power Networks' 2004 data)	
adjusted by technical optimisation factor	*2.24%*
equals **Total regulated asset base**	**432.796**
real WACC	*7.42%*
equals	
efficient return on capital employed in non-financial assets	32.132
Working capital	**3.111**
nominal WACC	*9.67%*
equals	
efficient return on capital employed in financial assets	0.301
Total efficient return on capital employed	32.433
Efficient return of capital employed	21.543
O&M (Power Networks' 2004 data)	32.192
adjusted by efficiency adjustment factor(a)	*9.57%*
equals Efficient return of operating costs	29.111
Required revenue	**83.087**
adjusted by:	
output escalation factor	0.94%
CPI	2.10%
X factor	1.75%
2003-04 required revenue (A)	**84.133**

(a) The adjustment factor of 9.57% is the weighted average of a 10% factor applying to the network activity as regulated in the first regulatory control period and 0% for streetlighting activity.

Updating total revenue raised from tariffs in 2003-04

5.143 The second value required to calculate the Z factor is an updated estimate of the total revenue (in $ millions) in 2003-04 derived from all the existing tariffs for the network access services included in the tariff basket in 2004-05.

Methodology

5.144 This step was not part of the 2000 Methodology. Hence, a methodology is now required for this purpose.

5.145 As with the estimation of costs, the Form of Regulation Decision requires the Commission to base its analysis wherever possible on actual data with respect to the 2002-03 year, being the most recently available actual data. A separate methodology is therefore required to escalate the resultant efficient revenue estimate from 2002-03 to 2003-04.

5.146 The Commission has decided to adopt an approach, similar to the approach used to escalate costs, based on the following formulation:

$$R"_{0304} = \sum_{j=1\ldots n} \left[R^{j}"_{0203} * \left(\frac{CPI_{0304}}{CPI_{0203}}\right) * \left(\frac{Q^{j}_{0304}}{Q_{0203}}\right) \right] \quad \ldots \textbf{(10)}$$

where:

R^j" are annual revenue collections associated with tariffs applying to the j^{th} service in the tariff basket being used in the second regulatory control period based on efficient revenue-raising practices and, where applicable, the relevant price control (revenue cap), and where:

$j = 1$ is the annual sales revenue associated with the regulated network access services that were regulated services during the first regulatory control period based on both efficient revenue-raising practices and the relevant price control (revenue cap), which includes the DKTL tariff but not the system control charge;

$j = 2$ is the annual sales revenue associated with the network access tariff associated with Power Networks' streetlighting activities; and

$j = 3$ is the annual revenue collections associated with all other (non-regulated) business activities undertaken by Power Networks employing the capital and operating cost bases used in the building blocks analysis;

CPI is the all capital cities headline CPI index published by the ABS;

Q^j is a measure of the quantum of the j^{th} service *charged for* during the year; and

the $_{0203}$ and $_{0304}$ subscripts denote values for the 2002-03 and 2003-04 financial years respectively.

5.147 The issues confronting the Commission in this task are less complex than those with respect to estimating efficient costs, but they are important nevertheless.

(1) Inclusion of non-sales revenue

Issue

Should certain items of non-sales revenue be included in the estimation of efficient revenue collections (B)?

Background

5.148 In the 2000 Determination, the revenue items to be counted against the revenue cap were not explicitly defined, but the Commission's practice during the first regulatory control period was to limit these amounts to sales revenue only.

Commission's draft analysis and conclusions

5.149 Generally, the annual revenue collections from all business activities undertaken by Power Networks employing the capital and operating cost bases used in the building blocks analysis should be *included* in assessing the extent to which a regulatory control is being complied with. Where the regulatory control is based on the building blocks analysis (as is the case in the second regulatory control period, albeit only through the Z factor adjustment), all revenue derived from the costs – both capital and operating – included in that building blocks analysis should be included in the associated annual revenue collections notwithstanding that the associated charges are unregulated for whatever reason. If this were not the case, any charging for such costs in addition to the regulated tariff would give rise to "double-dipping" on the part of the regulated service provider.

5.150 The non-sales revenue network items that should be excluded from measuring the efficient revenue collections (B) are those that recover costs aside from those included in the building blocks analysis.

5.151 The Draft Determination involved the inclusion of all *on-going* non-sales revenues which are clearly a substitute for sales revenues, including:

- revenues from recoverable works; and
- revenues from other 'miscellaneous charges'.

5.152 Non-sales revenues excluded from the Draft Determination were:

- annual capital contributions (with the associated assets not earning a return for Power Networks);
- interest receipts (with the associated financial assets not in the regulated capital base); and
- all other items in the "non-sales revenue" category of Power and Water's statutory accounts attributable to the networks' line of business that are not on-going (i.e., are once-off) in nature.

Views in submission

5.153 Neither Power and Water nor NT Treasury commented on this issue in their submissions.

Commission's final decision

5.154 As a consequence, the Commission has decided not to modify its draft decision.

(2) Use of regulated networks' 2003-04 revenue cap

Issue

Should the 2002-03 regulated networks' revenue collections be escalated to 2003-04, or should the 2003-04 revenue collections be directly based on the determined 2003-04 revenue cap?

Background

5.155 2003-04 network revenue collections are regulated by the Commission. Prior to the commencement of the year, a revenue cap was determined in accordance with the 2000 Determination.

Commission's draft analysis and conclusions

5.156 In contrast with the earlier years of the first regulatory control period, the Commission expects that 2003-04 network revenues will accord closely with the revenue cap.

5.157 The Draft Determination involved the direct use of the 2003-04 revenue cap. This is the most straight-forward approach and avoids many of the difficulties that would be associated with escalation of 2002-03 revenues.

5.158 In the absence of any indications to the contrary, the draft decision did not involve any allowance for an over-recovery of the revenue cap in 2003-04 (or an under-

Views in submission

5.159 Neither Power and Water nor NT Treasury commented on this issue in their submissions.

Commission's final decision

5.160 As a consequence, the Commission has decided not to modify its draft decision.

(3) Escalating other sales revenue and non-sales revenue

Issue

How should collections of sales revenue in addition to regulated access services (streetlighting) and non-sales revenue observed in 2002-03 be escalated to 2003-04?

Background

5.161 Q^j is a measure of the quantum of the j^{th} service charged for during a year, for which it is necessary to forecast the percentage annual movement between 2002-03 and 2003-04.

Commission's draft analysis and conclusions

5.162 The Draft Determination only required escalation of streetlighting revenue and non-sales revenues for such quantity changes between 2002-03 and 2003-04.

5.163 The quantum of streetlighting services and the services for which revenue is classified as non-sales revenues in the statutory accounts is difficult to estimate.

5.164 Because of the difficulties involved in estimating the quantum of streetlighting services and the services for which revenue is classified as non-sales revenues in the statutory accounts, the Draft Determination made no allowance for escalation of these items. The same nominal value of revenue was factored-in for 2003-04 as observed in 2002-03. Not only was no allowance made for quantity changes, but no allowance was also made for any CPI-linked price escalation.

Views in submission

5.165 Neither Power and Water nor NT Treasury commented on this issue in their submissions.

Commission's final decision

5.166 As a consequence, the Commission has decided not to modify its draft decision.

Resultant values of efficient revenue collections in 2003-04 (B)

5.167 By applying the above variations to the 2000 Methodology in conjunction with Power Networks' 2004 data, the Commission is able to calculate efficient total network revenue collections in 2003-04 as follows:

	$M
2003-04 revenue cap	75.353
adjusted by under's and over's adjustment factor	*0.00%*
plus Streetlighting revenue, 2002-03	0.641
adjusted by escalation factor	*0.00%*
equals Sales revenue (network access services)	75.994
Non-sales revenue, 2002-03 (Power Networks' 2004 data)	4.579
adjusted by escalation factor	*0.00%*
equals 2003-04 non-sales revenue	4.579
2003-04 expected revenue (B)	**80.573**

Calculation of Z factor

5.168 Having calculated the component "A" and "B" values, the Commission has derived the Z factor for the Final Determination as follows:

	$M
2003-04 required revenue (**A**)	84.133
2003-04 expected revenue (**B**)	80.573
Z factor ((A-B)/B)	**4.4%**

5.169 It is noteworthy that, relative to the 2000 Determination with respect to 2002-03, the inclusion of non-sales revenue in expected revenue (B) to a large extent offsets a significant increase in required revenue (A).

5.170 Accordingly, the Commission's final determination regarding the Z factor is as follows:

FINAL DETERMINATION

That the Z factor for application at the commencement of the second regulatory control period be 4.4%.

That the equivalent of Z factor adjustments to a current year's weighted average tariff be applicable during the second regulatory control period only as a result of the following "asset valuation off-ramp":

- ***the off-ramp is applicable only if, prior to 31 March 2005, the Commission is satisfied that the valuation of the initial asset base at 30 June 2000 and/or the asset amounts rolled-forward during the first regulatory control period underlying the above determined value of the Z factor involved a "material error";***
- ***a "material error" is one that involves an error in the Z factor that is at least equivalent to one year's allowed price increase (i.e., CPI-X_1-X_2);***
- ***if a material error is established, that error will be automatically corrected depending on the size of the required correction, but without any retrospectivity;***
- ***if the correction of a material error involves an adjustment equal or less in value than the determined Z factor value of 4.4%, an additional Z-like adjustment will be applied to the weighted average of approved tariffs in 2004-05 when determining the regulatory constraint to apply to weighted average tariffs in 2005-06; and***
- ***if the correction of a material error involves an adjustment greater in value than the determined Z factor value of 4.4%, the additional Z-like adjustment to be applied to the weighted average of approved tariffs in 2004-05 when determining the regulatory constraint to apply to weighted average tariffs in 2005-06 will be limited to 4.4% and the remainder of the correction will be phased in equally over the remaining four years of the second regulatory control period via necessary Z-like adjustments.***

CHAPTER

6

SIDE CONSTRAINTS: THE S FACTOR

Background

6.1 The Form of Regulation Decision defined the S factor as the factor to constrain the annual movement in the weighted average tariff proposed for each individual customer.

6.2 In applying such side constraints to network access tariffs, the main issues and options are:

- coverage: applying them to all end users (as in Victoria), or to residential customers (as in New South Wales), or to contestable/non-contestable customers (as in Queensland);
- form: applying them at the individual customer level (as in New South Wales and Queensland) or at a customer group level (as in Victoria); and
- quantification: specifying the constraints either as a maximum real-terms percentage change, that is, relative to CPI movements, or as a maximum nominal percentage change, or as a maximum dollar amount change.

6.3 In New South Wales, the side-constraint currently used is CPI+2% per annum or $30 per annum for standard periodic bills (excluding fees for miscellaneous and monopoly services and charges for higher service standards) for the same pattern and volume of electricity consumption for residential customers.

6.4 In Victoria, the side-constraint currently used is CPI+2% per annum for average network access tariffs for any customer class for years 2 to 5, with CPI flat applying in year 1.

6.5 In Queensland, the side-constraint currently used is CPI+5% per annum for individual contestable customers, and CPI+2% per annum for individual non-contestable customers (including those eligible for contestability but electing to remain within the franchise).

Commission's draft analysis and conclusions

6.6 Network access is a monopoly service, irrespective of the size or nature of the customer. For this reason, it is logical to provide all customers with the protection afforded by side constraints.

6.7 The case for a differential constraint between customer types depends on the extent to which particular customers are assessed as in need of more or less protection. This may be because they are considered to be at greater risk of large price increases, for example because they are heavily subsidised at present prices, or

because they are considered to be more sensitive to price increases. An example of the latter would be low income households. However, in the Commission's view, this objective (of protecting sensitive customers) would be better addressed through measures applied to retail rather network prices. As retail price constraints are being applied to franchise retail tariffs, the relevance of additional network price side constraints is questionable.

6.8 Regulatory practice is moving towards application of side constraints to movements in individual customer bills, for the same pattern and volume of electricity consumption. Although the constraint would apply to each individual customer bill, compliance testing of proposed tariffs is assessed based on standard customer usage profiles. Once defined, these can easily be built into compliance spreadsheets.

6.9 The value of the constraint needs to be considered in the context of the level of the Z factor adjustment as well as the X factors. The constraint must accommodate both these adjustments.

6.10 In light of regulatory-sourced hangover from the first regulatory control period for some rebalancing, the Commission considered a 5% real-terms weighted average price constraint – being at the higher end of regulatory practice elsewhere – would provide both encouragement to Power Networks to apply a medium-term perspective to its price structuring decisions and protect network users from price shocks.

6.11 The S factor needs be set at a higher level in the first year (i.e., 2004-05) to allow for the effect of the Z factor as well as the rebalancing pressure built up during the first regulatory control period.

6.12 Hence, the Draft Determination involved use of a 5% side-constraint on annual increases in an individual's network access tariff on an on-going basis during the second regulatory control period, with the constraint to apply to 2004-05 tariffs (only) being Z+5%.

6.13 Accordingly, the Draft Determination regarding the S factor was for an S factor of:

- Z+5% in relation to 2004-05; and
- 5% in relation to each of the four years after 2004-05.

Views in submission

6.14 Neither Power and Water nor NT Treasury commented on this issue in their submissions.

Commission's final decision

6.15 In principle, the S factor constraint aims at protecting each individual "consumer" subject to the approved network tariff schedule(s).[7] The weighted average tariff (of all tariff schedules) is separately subject to the primary CPI+Z-X control. The S factor constraint (or secondary control) does not apply to the same measure of the tariff, but instead to the change in tariff confronting each individual end-users.

6.16 In practice, S factor compliance will be undertaken on the basis of each "tariff schedule". The "price" facing individual end-users is a tariff schedule, with

[7] Protection of end-use customers is only possible under the Code via the S factor constraint because the structure of the approved network tariff schedule(s) involves charging at the individual end-use customer level.

"movements within the schedule" being consistent with an unchanged price, and only "movements of the schedule" with a year-on-year change in the price.

6.17 As no arguments were submitted questioning the Draft Determination in relation to the S factor, the Commission has decided not to depart from its draft decision generally (and the accommodation of the Z factor increase aside) to use a 5% side-constraint on annual increases in an individual's network access tariff. However, in view of the impact the Z factor will have in 2004-05 and the difficulty Power and Water might experience in progressing any rebalancing of its tariffs structures in 2004-05, the Commission has decided that the S factor to apply to network access tariffs in 2004-05 and 2005-06 will, at Power and Water's option, be *either* Z+5% in 2004-05 and 5% in 2005-06 *or* Z% in 2004-05 and 10% in 2005-06. The cumulative effect upon end-use customers will be the same under either option.

6.18 Accordingly, the Commission's final determination regarding the S factor is as follows:

FINAL DETERMINATION

That the S factor for application during the second regulatory control period be as follows:

- ***in relation to 2004-05 and 2005-06: at Power and Water's option, <u>either</u> Z+5% in 2004-05 and 5% in 2005 06 <u>or</u> Z in 2004-05 and 10% in 2005-06; and***
- ***in relation to each of the three years after 2005-06: 5%.***

That these S factor values be subject to review during the second regulatory control period only as a consequence of a triggering of the asset valuation off-ramp.

APPENDIX

A

CONSEQUENTIAL AMENDMENT TO EXCLUDED SERVICES DETERMINATION

The Excluded Services Determination published as part of the "Revenue Determinations - April to June 2000" in March 2000 is amended to read as follows:

Excluded Services Determination

(1) For the purposes of clause 72(2) of the Code, excluded services not subject to any price regulation are the following services:

(a) contestable engineering consulting services provided by Power Networks.

(2) For the purposes of clause 72(3) of the Code, excluded services which, in the regulator's opinion, do not lend themselves to being regulated by the price cap form of regulation applying in the second regulatory control period are the following services:

(a) services (including metering, electric lines or electric plant) for the specific benefit of any third party (and requested by the third party) and not made available by Power Networks as a normal part of standard services to all customers including –

i. charges for moving mains, services or meters forming part of Power Networks' system to accommodate extension, re-design or re-development of any premises;

ii. the provision of electric plant for the specific purpose of enabling the provision of standby supplies or sales of electricity; and

iii. provision of metering, or metering data, to a standard in excess of that required for billing purposes;

(b) the provision of connection equipment to a standard in excess of a standard associated with the "least overall cost, technically acceptable" assets; and

(c) power system (but not network system) control costs directly associated with the activities of a system controller licenced under the Electricity Reform Act 2000.

APPENDIX

B

WEIGHTED AVERAGE COST OF CAPITAL (WACC)

WACC
(based on 2002-03 year-average actual parameters)

Risk-free rate [(a)]	5.37%
Equity risk premium	6.00%
Asset beta	0.50
Debt beta	0.10
Beta (levered) [(b)]	0.896
Cost of equity before dividend imputation	10.75%
Imputation factor	0.50
Cost of equity (post-tax)	8.85%
Tax rate	30%
Cost of equity (pre-tax)	**12.64%**
Risk-free rate	5.37%
Debt risk premium	1.20%
Debt issuance costs	0.125%
Cost of debt (pre-tax)	**6.70%**
Equity-to-capital ratio	50.00%
Debt-to-capital ratio	50.00%
Nominal pre-tax WACC	**9.67%**
Forecast CPI [(c)]	2.09%
Real-terms pre-tax WACC [(d)]	**7.42%**

Notes:
(a) Average of 10 year Commonwealth Bond rate for 1 July 2002 to 30 June 2003, taken from Reserve Bank Bulletin statistical tables (www.rba.gov.au).
(b) The Monkhouse formula is used to derive the equity beta.
(c) The forecast CPI is measured as the difference between in yields on nominal and indexed 10 year Commonwealth Bonds, taken from Reserve Bank Bulletin statistical tables.
(d) real pre-tax WACC calculated using a market transformation to adjust pre-tax nominal WACC.