NETWORKS PRICING
2009 REGULATORY RESET

PRICE CONTROL MECHANISM

FINAL DECISION PAPER

MAY 2008

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

INTRODUCTION

Background

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

1.2 Part 3 of the NT Code specifies the price regulation framework to be observed by the Commission (as the regulator) and by the network service provider[2] when setting the prices to be paid by network users. The Commission has been undertaking network price regulation under these provisions of the NT Code since 1 April 2000.

1.3 The network service provider in all regulated networks in the Northern Territory is the networks business division of the Power and Water Corporation ("Power and Water").

1.4 The current regulatory period – the second regulatory period – began on 1 July 2004 and ends on 30 June 2009. A regulatory period is defined in clause 3 of the NT Code as the period between major price reviews (or 'resets') during which time the price control mechanism used in setting network prices is held constant.

1.5 The third regulatory period is the five-year period commencing 1 July 2009. In the lead-up to the commencement of the third regulatory period, the NT Code requires the Commission as regulator – in consultation with interested parties – to review the price control mechanism used in the second regulatory period, with a view to modifying the price control mechanism as appropriate. The Commission is referring to the process of establishing the price control mechanism to apply from 1 July 2009 as the "2009 Reset".

1.6 The 2009 Reset was initiated by an Issues Paper published in October 2007. The Issues Paper sought to identify the main issues to be dealt with at the initial broad design stage of the Reset, and invited interested parties to add to or modify that list and to put forward preferred approaches.

1.7 Following its consideration of submissions received in response to the Issues Paper and in light of its own further analysis, the Commission published a draft decision on price regulation methodology issues in March 2008 ("Draft Decision"). The price control mechanism involves the practical and technical detail for the administration of network price regulation over which the Commission as regulator – in consultation with stakeholders – has a degree of discretion.

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

[2] The NT Code uses the term "network provider". References throughout this Paper to network service provider should be read as referring to the network provider, as defined in the Code.

1.8 Submissions on the Draft Decision were received from

- Power and Water Corporation (Power and Water);
- Northern Territory Major Energy Users (NTMEU); and
- Northern Territory Treasury (NT Treasury).

Purpose of this Paper

1.9 This Paper presents the Commission's final decision on the price control mechanism to apply in the third regulatory period ("Final Decision"). This Final Decision has been prepared following the Commission's consideration of the submissions received in response to the Draft Decision published in March 2008.

Content of the Decision Paper

1.10 Chapter 2 provides the Commission's Final Decision on the price control mechanism to apply to regulated electricity networks in the Northern Territory during the forthcoming regulatory period.

1.11 Chapter 3 outlines the procedures which the Commission will follow in order to make its subsequent Determination giving effect to this Final Decision.

1.12 Chapter 4 addresses the central decisions regarding the price control mechanism to be applied during the forthcoming regulatory period, namely the form of the price control mechanism for standard control services.

1.13 Chapter 5 addresses in detail matters associated with implementing the base year adjustment component of the price control mechanism for standard control services.

1.14 Chapter 6 addresses in detail matters associated with implementing the prospective CPI minus X component of the price control mechanism for standard control services.

1.15 Chapter 7 addresses in detail various matters associated with the Determination and approval of individual network access tariffs.

Consultation process and timetable

1.16 When reviewing the price control mechanism, clause 62(2) of the NT Code requires the Commission:

> *"...to conduct all its determination and approval processes in an open, transparent and competitively-neutral manner, including by consulting with network users, end-use customers, members of the public and all licensed electricity entities that may be affected, directly or indirectly, by the resultant prices."*

1.17 The Commission is therefore required to determine the price control mechanism to be used in regulating network access prices in the third regulatory period by facilitating public consultation and promoting wide-ranging discussion of the issues by all stakeholders.

1.18 The timetable guiding the Commission's consultation process is now as follows:

Due Date	Event
30 June 2008	submission by Power and Water of a services classification proposal; and deadline for any requests for correction or modification of the Commission's Po adjustment model
31 July 2008	publication of the Commission's decision regarding the services classification proposal
22 August 2008	submission by Power and Water of an initial regulatory proposal
3 October 2008	publication of the Commission's Initial Draft Determination, based on whether or not it proposes to approve the initial regulatory proposal and, if not, what revisions it proposes to require before a revised regulatory proposal could be approved by the Commission
24 October 2008	submissions due from all parties (including Power and Water) on the Draft Determination
7 November 2008	publication of the Commission's Revised Draft Determination, including whether or not it approves the initial regulatory proposal and, if not, what revisions would be required before a revised regulatory proposal could be approved by the Commission
31 December 2008	submission by Power and Water of a revised regulatory proposal, and publication
31 March 2009	publication of the Commission's Final Determination of the regulatory arrangements to apply during the third regulatory period, and the Final Approval of all related matters

Inquiries

1.19 Any inquiries regarding the 2009 Reset should be directed to:

Executive Officer
Utilities Commission
GPO Box 915
DARWIN NT 0801

Telephone: (08) 8999 5480
Fax: (08) 8999 6262
Email: utilities.commission@nt.gov.au

CHAPTER

2

PRICE CONTROL MECHANISM: FINAL DECISION

2.1 This chapter contains the Commission's final decision regarding the price control mechanism to apply during the third regulatory period. The Commission's reasons for the constituent decisions are developed in the following chapters.

Procedural approach

2.2 For the purposes of the 2009 Reset, to the maximum extent possible under the NT Code and consistent with this Final Decision, the Commission will follow the procedures set out in the *National Electricity Rules*[3] for arriving at a Final Determination, in order to achieve consistency with procedural practice now evident elsewhere in Australia in the regulation of electricity distribution networks.

Services classification proposal

2.3 By 30 June 2008, Power and Water must submit a 'services classification proposal' to the Commission:

- proposing how the network services provided by Power and Water should be distinguished according to the classification in Part B, Division 1 of the *National Electricity Rules*; and
- if the proposed classification of Power and Water's network services differs from the current classification as set out at Appendix A, setting out the reasons for the difference.

2.4 The Commission will approve this proposal within 30 days of receipt unless it is inconsistent with the requirements in the NT Code or (otherwise) clause 6.2.1 of the *National Electricity Rules*.

Initial regulatory proposal

2.5 By 22 August 2008, Power and Water must submit an 'initial regulatory proposal'.

2.6 A single regulatory proposal is required covering all of Power and Water's regulated networks. However, proposed prices should be provided separately for each network.

[3] The version of the *National Electricity Rules* used by the Commission for the purposes of this Final Decision can be viewed on the networks pricing page (2009 Regulatory Reset) of the Commission's website (www.utilicom.nt.gov.au). This version is an extract of the *National Electricity Rules* Version 18.

2.7 A regulatory proposal must include (but need not be limited to):

- proposals in relation to all elements specifically required under this Final Decision; and
- an indication of the parts of the proposal (if any) Power and Water submits as confidential and not suitable for publication.

2.8 In relation to standard control services, a regulatory proposal must include:

- a proposed Po adjustment factor calculated using the Commission's Po adjustment model;
- a draft Network Pricing Principles and Methods Statement to apply to the setting of individual prices; and
- for the regulatory year commencing 1 July 2009, the proposed Network Tariff Schedules consistent with all other elements of the regulatory proposal (the 'initial pricing proposal');

and, in relation to the proposed Po adjustment factor and the initial pricing proposal, must be accompanied by:

- details of all amounts, values and inputs relevant to the calculation;
- an explanation of the calculation and the amounts, values and inputs involved in the calculation; and
- a demonstration that each calculation, and the resultant amounts, values and inputs on which it is based, comply with relevant requirements of this Final Decision.

2.9 In relation to standard control services, a regulatory proposal may include:

- a demand management scheme; and
- a service target performance incentive scheme.

Otherwise, no such scheme will apply.

2.10 A regulatory proposal must include:

- for alternative control services – a proposed control mechanism; and
- for negotiated network services – a proposed negotiating framework.

2.11 The Commission will publish its Initial Draft Determination by 3 October 2008, including whether or not it proposes to approve the initial regulatory proposal and, if not, what revisions it proposes to require before a revised regulatory proposal could be approved by the Commission.

2.12 The final date for receipt of submissions on the Initial Draft Determination will be 24 October 2008.

2.13 The Commission will publish a Revised Draft Determination by 7 November 2008, including whether or not it approves the initial regulatory proposal and, if not, what revisions are required before a revised regulatory proposal could be approved by the Commission.

2.14 If the Commission refuses to approve an amount or value, the substitute amount or value on which a determination is based will be:

- calculated on the basis of all applicable approved components of the regulatory proposal; and
- amended from that basis only to the extent necessary to enable the amount or value to be approved in accordance with this Final Decision or (otherwise and as

applicable) the relevant provisions of chapter 6 of *National Electricity Rules* or the NT Code's pricing principles.

Revised regulatory proposal

2.15 If revisions are required before the regulatory proposal can be approved by the Commission, Power and Water is required to submit a 'revised regulatory proposal' by 31 December 2008.

2.16 In its revised regulatory proposal, Power and Water may only include revisions required to address matters raised by the Revised Draft Determination.

2.17 The Commission will publish its Final Determination of the regulatory arrangements to apply during the third regulatory period, and the Final Approval of all related matters, by 31 March 2009.

Approval criteria

2.18 To be approved by the Commission, a regulatory proposal must comply with this Final Decision, any accompanying regulatory information instrument and the approved services classification.

2.19 For standard control services:

- the proposed Po adjustment factor must:
  - be calculated in accordance with the Commission's Po adjustment model; and
  - comply with any additonal requirements of any accompanying regulatory information instrument issued by the Commission;
- the draft Network Pricing Principles and Methods Statement must comply with:
  - the applicable requirements of this Final Decision;
  - any applicable requirements of the NT Code; and
  - clause 6.18.3, clause 6.18.4 and clause 6.18.5 of the *National Electricity Rules*.
- the prices proposed in the annual Network Tariff Schedules must:
  - comply with the price control mechanism as determined by the Commission (see "Price control mechanism for standard control services" below); and
  - in all other respects be consistent with the approved Network Pricing Principles and Methods Statement.

2.20 For alternative control services, the control mechanism(s) must be consistent with the requirements of clause 6.2.5 of the *National Electricity Rules*.

2.21 For negotiated services, the negotiating framework must be consistent with:

- the applicable requirements of this Final Decision;
- any applicable requirements of the NT Code, including the requirements set out in the chapter 2 Negotiation of Access and chapter 3 Access Terms; and
- the minimum requirements for a negotiating framework listed in clause 6.7.5(c) of the *National Electricity Rules*.

2.22 Where a regulatory proposal relates to a matter not specified or prescribed in this Final Decision, the Commission will refuse to approve that matter only if:

- where the matter is subject to a specific requirement in the NT Code – it is inconsistent with the Code's requirement;
- where the matter is not subject to any specific requirement in the NT Code – it is inconsistent with the relevant provision of chapter 6 of the *National Electricity Rules*; or
- where the matter is not subject to any specific requirement in either the NT Code or chapter 6 of the *National Electricity Rules* – it is inconsistent with the NT Code's pricing principles.

Po adjustment model

2.23 The Commission's Po adjustment model, which will be published in conjunction with this Final Decision, sets out the manner in which Power and Water's efficient costs of supplying standard control services in a single regulatory year are to be calculated.

2.24 When applying the Commission's Po adjustment model:

- with respect to the rate of return, any parameter values that have been determined by the Commission must be used;
- with respect to the regulatory asset base, the initial value of $350 million (excluding gifted assets) as at 1 July 2002 (in July 2002 dollars) must be rolled forward using amounts calculated, determined or estimated in accordance with the requirements of clause 6.5.1 of the *National Electricity Rules*;
- with respect to annual depreciation expense, the depreciation schedules used must conform with the requirements set out in clause 6.5.5(b) of the *National Electricity Rules*;
- with respect to estimated operating expenditure, amounts calculated, determined or estimated must be consistent with:
  - clause 6.5.6(c) of the *National Electricity Rules*;
  - the manner used to calculate the X_2 value underlying the X factor as determined by the Commission; and
  - Power and Water's approved cost allocation procedures; and
- with respect to estimated annual revenue, amounts calculated, determined or estimated must be consistent with the NT Code's pricing principles and the requirements of this Final Decision.

2.25 Power and Water (and other stakeholders) may request corrections and modifications to the Po adjustment model issued by the Commission where this is considered necessary to achieve consistency with the applicable provisions of the *National Electricity Rules* or of the NT Code. Requests for corrections or modifications must be lodged with the Commission by no later than 30 June 2008. The Commission will publish its response to each request for correction or modification within five business days of receipt of the request.

Price control mechanism for standard control services

2.26 For standard control services, price control must be applied in the following manner:

- the financial variable subject to price control is Power and Water's prices for all such services;

- price control is applied via a 'tariff basket', which expresses as an index the weighted average of each year's prices for such services, using the same formula as determined by the 2004 Reset;
- the size of any Po adjustment to be applied at the end of the second regulatory period – in order to align efficient costs and revenues – is to be determined by an ex-post building block assessment of Power and Water's 2008/09 network costs and revenues;
- the Po adjustment factor to apply to the tariff basket in 2008/09 (the final year of the second regulatory period) is to be calculated as follows:

  $Po = (R^* - R)/R$

  where:

  R^* is the estimated total efficient cost of Power and Water supplying standard control services in 2008/09 (in $ millions); and

  R is the estimated total revenue derived by Power and Water from the existing prices applying to standard control services in 2008/09 (in $ millions);
- the allowed year-on-year movement in the tariff basket is to be determined by the CPI minus X control, with:
  - cost pass through arrangements, applied in a manner consistent with relevant provisions of the *National Electricity Rules* if events occur which, if not passed through, could put at risk the efficiency of Power and Water's decisions and actions; and
  - modified as appropriate in accordance with any approved demand management scheme and service target performance incentive scheme;
- the value of CPI in the CPI minus X control is to be determined by reference to the all capital cities headline CPI index published by the Australian Bureau of Statistics, and measured as the percentage increase in the most recently published four quarter average index at the time an annual pricing proposal is submitted to the Commission relative to the published four quarter index value for the corresponding period in the previous year;
- the value of X in the CPI minus X control is as determined by the Commission using a total factor productivity (TFP) based approach;
- the X factor is to be comprised of three components as follows:

  $X \equiv X_1 + X_2 - X_3$

  where:

  X_1 = the difference between the TFP growth for the electricity distribution industry in Australia and that for the economy as a whole;

  X_2 = the difference between the best observed operating expenditure partial productivity level in the electricity distribution industry in Australia and Power and Water's operating expenditure partial productivity level; and

  X_3 = the difference between the input price growth for Power and Water and that for the economy as whole;
- the weighted average price for each individual end-use customer for a particular year of the regulatory period is not to exceed the corresponding weighted average price for that individual end-use customer for the preceding regulatory year by more than a permissible percentage ('the side constraint');
- in other respects, the structure of network prices is to be consistent with the Network Pricing Principles and Methods Statement;

- for the second and each subsequent year of the regulatory period, and consistent with the relevant requirements of the NT Code, an 'annual pricing proposal' is to be submitted:
    - setting out Power and Water's proposed Network Tariff Schedules for direct control services, including the tariff classes that are to apply for the relevant year, the proposed tariffs for each tariff class and, for each proposed tariff, the charging parameters (i.e., the constituent elements of a tariff) and the elements of service to which each charging parameter relates;
    - describing the nature and extent of change in the proposed Network Tariff Schedules from the tariffs applying in previous regulatory year; and
    - demonstrating compliance with this Final Decision and the approved Network Pricing Principles and Methods Statement; and
- Power and Water is to maintain on its website:
    - the approved Network Tariff Schedules for the relevant year; and
    - a statement of expected network price trends (to be updated for each year) giving an indication of how Power and Water expects network prices to change over the regulatory period and the reasons for the expected changes.

Values as determined by the Commission

2.27 When applying the Commission's Po adjustment model, the rate of return is to be calculated using the following parameter values:

- an equity beta (βe) of 1.0;
- the market risk premium (MRP) of 6.0%;
- the proportion of debt funding (D/V) of 0.6; and
- the assumed utilisation of imputation credits (γ) of 0.5;

unless or until these values are replaced by final values determined by the Commission as part of its Draft Determination.

2.28 The value of the X factor to apply to the CPI minus X control during the regulatory period is to be calculated using the following component values:

- X_1 = 0.0%;
- X_2 = 0.25%; and
- X_3 = 1.1%

unless or until these values are replaced by final values determined by the Commission as part of its Draft Determination.

2.29 The permissible percentage for the purposes of the side constraint on the prices of standard control services in the first year of the third regulatory period is to be the greater of the following:

- CPI – X + Po plus 2%; and
- CPI plus 2%.

For the second and each subsequent year of the third regulatory period, the permissible percentage is to be the greater of the following:

- CPI – X plus 2%; and
- CPI plus 2%.

Further Po adjustment

2.30 Before the end of the third regulatory period, and for that period (or such part thereof as the Commission considers is required), the Commission will assess the actual operating and capital costs incurred by Power and Water in supplying standard control services and compare those costs with the relevant revenues received in that same period (or part thereof) in order to assess whether those revenues were less than, met or exceeded efficient costs.

2.31 For the purposes of this assessment:

- where actual costs and revenues are not known, the Commission will use expected costs and revenues;
- the Commission will use the building block approach to assess Power and Water's costs for the year or years in question consistent with the approach being applied by the AER under the *National Electricity Rules* at that time; and
- the Commission will observe all the requirements for the making of a determination under the *Utilities Commission Act*.

2.32 The Commission will then determine how much (if at all) the weighted average tariff for the last regulatory year of the third regulatory period should be increased or reduced (expressed as a percentage change) in order to equate efficient costs and revenues.

CHAPTER

3

PROCEDURAL APPROACH

3.1 This chapter explains the procedures that the Commission will use to arrive at its Final Determination giving practical effect to the Final Decision as contained in chapter 2.

Procedures and timelines

NT Code requirements

3.2 Under the NT Code, the Commission is charged with determining the following matters:

- the methodologies for determining:
  - the revenue or price caps in the first year of a regulatory period;
  - the WACC;
  - the revenue or price caps for the second and subsequent years of a regulatory period; and
  - the efficiency gains factor (X factor);
- the methodology to be used for valuing network assets for regulatory purposes;
- the methodology to be used to assess which network access services are subject to effective competition and can be excluded from the revenue cap applying to regulated network access services;
- the approaches to be used for assessing whether, in the Commission's opinion:
  - the network service provider's pricing principles statement is consistent with the clause 74 network pricing objectives, and
  - the network service provider's proposed individual tariffs and charges complies with the principles laid down in chapter 7 or is consistent with requirements elsewhere in the Code; and
- the approaches to be used for assessing:
  - what form its 'oversight' of the network service provider's broad application of the principles set out in chapter 8 of the Code should take; and
  - whether, in the Commission's opinion, the network service provider's capital contributions principles and methods statement is consistent with the requirements in chapter 8 or elsewhere in the Code.

3.3 Clause 62(2) of the NT Code requires the Commission:

> *"...to conduct all its determination and approval processes in an open, transparent and competitively-neutral manner, including by consulting with network users, end-use customers, members of the public and all licensed electricity entities that may be affected, directly or indirectly, by the resultant prices."*

3.4 Also, clause 66(3) of the NT Code requires the Commission to determine the revenue or price caps that are to apply during each regulatory period in a manner that, in the Commission's opinion, most effectively achieves the desired outcomes set out in clause 63 and *"is consistent with generally accepted regulatory practice at the time"*.

3.5 Within this framework, and subject to specific requirements elsewhere in the NT Code, it is up to the Commission to decide on the procedures that the Commission uses to arrive at its Final Determination giving practical effect to its decisions on the price control mechanism to apply to regulated electricity networks in the Northern Territory during the forthcoming regulatory period.

Approach for the 2004 Reset

3.6 For the 2004 Reset, the Commission adopted a two-stage process, namely:

- first, it issued its determination of the key price control mechanism issues (termed the 'Methodology Decision'); and
- secondly, based on information obtained from Power and Water, it then proceeded to make its own assessment of the values and parameters required to implement the price control mechanism (termed the 'Implementation Decision').

3.7 The Final Determination effectively combined these two decisions.

3.8 After the Final Determination, the Commission went through a separate and subsequent process with Power and Water to approve the required Network Pricing Principles and Methods Statement.

3.9 Besides providing necessary information for the Commission's assessments, Power and Water participated in these processes much like any other interested party.

3.10 The Commission's decision criteria for the 2004 Reset were effectively that it would determine what methods, parameters and values were most consistent with the NT Code's requirements.

National approach

3.11 A noteworthy feature of the procedures recently adopted by the National Electricity Rules is the focus on the regulated entity making certain proposals and the regulator restricting its activities mainly to responding to those proposals. The approach is loosely based on the 'propose/respond' features of the National Gas Code.

3.12 Rather than the Commission being in the driver's seat when it comes to developing much of the implementation detail of any price control mechanism, under the *National Electricity Rules* it would be Power and Water, as the network service provider, that is called upon to develop and submit its own proposals about how best, and most practically, to implement decisions regarding the Final Decision.

3.13 Under such procedures, it is then for the Commission as regulator to approve or not approve what Power and Water has proposed, within the framework of the Final Decision and the NT Code's objectives and principles.

Commission's draft decision

3.14 The Commission's Draft Decision was to follow – to the maximum extent possible under the NT Code – the procedures recently included in the *National Electricity Rules*[4] for arriving at a Final Determination, in order to achieve consistency with procedural practice now evident elsewhere in Australia in the regulation of infrastructure networks.

[4] The Version of the *National Electricity Rules* used by the Commission for the purposes of this Draft Decision can be viewed on the networks pricing page (2009 Regulatory Reset) of the Commission's website (www.utilicom.nt.gov.au). This version is an extract of the *National Electricity Rules* Version 18.

3.15 Accordingly, in the Draft Decision, the Commission proposed the following process to arrive at the Final Determination:

- by 1 September 2008, within the constraints and guidance contained in the Commission's final Price Control Mechanism Decision (due to be published on 2 May 2008), Power and Water is required to submit an 'initial regulatory proposal' covering all of Power and Water's regulated networks;
- by mid-October 2008, the Commission will publish its draft determination, based on whether or not it approves the initial regulatory proposal and, if not, what revisions would be required before a revised regulatory proposal could be approved by the Commission;
- by mid-November 2008, submissions are due from all parties (including Power and Water) in response to the Commission's draft determination;
- by 31 December 2008, Power and Water is required to submit a 'revised regulatory proposal'; and
- by end-March 2009, the Commission will publish its final determination based on whether or not it approves the revised regulatory proposal and, if not, its own determination of the regulatory arrangements to apply during the third regulatory period.

3.16 Under the Draft Decision, a regulatory proposal must include:

- an indication of the parts of the proposal (if any) Power and Water submits as confidential and not suitable for publication; and
- only revisions required to address matters raised by the Commission's draft determination.

Views expressed in submissions

3.17 Only the NT Treasury explicitly addressed this aspect of the Draft Decision.

3.18 NT Treasury generally argued in favour of procedures consistent with the national regime.

> *"... Northern Territory Treasury is currently developing options for reform of the electricity industry regulatory framework. An underlying objective is to promote greater alignment with the arrangements applying in the National Electricity Market (NEM).*
>
> *On this basis, Treasury supports the Commission's proposal to follow the procedures used for NEM electricity networks as set out in the National Electricity Law and Rules, to the maximum extent possible under the Territory's Electricity Networks (Third Party Access) Code, pending a final decision by Government on directions for future regulatory reform." (p. 1)*

3.19 Neither Power and Water nor the NTMEU raised any objections to this aspect of the Draft Decision.

Commission's analysis and conclusion

3.20 There being no objections to the proposed adoption of a 'regulatory proposal' approach, the Commission has decided that no change is necessary to this aspect of its Draft Decision.

3.21 It has decided, however, to make some refinements to its proposed timetable, mainly in order to ensure that the revised regulatory proposal that may be required of Power and Water is in response to a Draft Determination that takes account of views of parties expressed in response to the Commission's preliminary response to Power and Water's initial regulatory proposal. Accordingly, the Commission will issue both:

- an Initial Draft Determination, based on whether or not it proposes to approve the initial regulatory proposal and, if not, what revisions it proposes to require before a revised regulatory proposal could be approved by the Commission; and

- following consideration of submissions on the Initial Draft Determination, a Revised Draft Determination, including whether or not it approves the initial regulatory proposal and, if not, what revisions would be required before a revised regulatory proposal could be approved by the Commission.

3.22 Minor adjustments to other aspects of the timetable are also necessary to accommodate this two-stage draft determination process.

3.23 The timelines now involved in arriving at the Final Determination are as follows:

- by 22 August 2008, Power and Water is required to submit an initial regulatory proposal;
- by 3 October 2008, the Commission will publish its Initial Draft Determination, including whether or not it approves the initial regulatory proposal and, if not, what revisions would be required before a revised regulatory proposal could be approved by the Commission;
- by 24 October 2008, submissions are due from all parties (including Power and Water) on the Initial Draft Determination;
- by 7 November 2008, the Commission will publish a Revised Draft Determination, including whether or not it approves the initial regulatory proposal and, if not, what revisions would be required before a revised regulatory proposal could be approved by the Commission;
- by 31 December 2008, Power and Water is required to submit a revised regulatory proposal; and
- by 31 March 2009, the Commission will publish its Final Determination of the regulatory arrangements to apply during the third regulatory period, and the Final Approval of all related matters.

Criteria for approving a proposal

Commission's draft decision

3.24 In addition to formalising the requirement for a 'regulatory proposal' to be made by Power and Water in response to this Final Decision, the Draft Decision also involved the Commission's approval processes being guided by the requirements of the *National Electricity Rules* wherever this is not in conflict with any specific requirements in the NT Code.

3.25 Specifically, in the Draft Decision, the Commission indicated that a proposal by Power and Water would be approved:

- first, where the proposal complies with this Final Decision (which, by definition, must be consistent with the NT Code in general and the NT Code's pricing principles in particular);
- secondly, where the proposal relates to a matter not specified in this Final Decision ***but*** is subject to a specific requirement in the NT Code, as long as it is consistent with the Code's requirement;
- thirdly, where the proposal relates to a matter not specified in this Final Decision ***and*** is not subject to any specific requirement in the NT Code, as long as it is consistent with the relevant provision of chapter 6 of the *National Electricity Rules*; and
- fourthly, where the proposal relates to a matter not specified in this Final Decision ***and*** is not subject to any specific requirement in either the NT Code or chapter 6 of the *National Electricity Rules*, as long as it is not inconsistent with the NT Code's pricing principles.

3.26 The pricing principles and objectives set out in the NT Code (NT Code's pricing principles) are cited in Box 1 at the end of this chapter.

3.27 The Draft Decision also indicated that, unless the Final Decision (and its constituent decisions) expressly states the decision criteria that the Commission will apply with regard to a particular decision, the Commission would only refuse to approve an element of the regulatory proposal if it is inconsistent with the requirements or intent of this Final Decision or (otherwise and as applicable) the relevant provisions of chapter 6 of *National Electricity Rules* or the NT Code's pricing principles.

3.28 Consistent with the clause 6.12.2 of the *National Electricity Rules*, the Commission recognised that, in its draft determination or final determination, it would need to set out the basis and rationale of the determination, including:

- details of the qualitative and quantitative methods applied in any calculations and formulae made or used by the Commission;
- the values adopted by the Commission for each of the input variables in any calculations and formulae, including:
  - whether those values have been taken or derived from Power and Water's current Po building block proposal; and
  - if not, the rationale for the adoption of those values;
- details of any assumptions made by the Commission in undertaking any material qualitative and quantitative analyses; and
- reasons for the making of any decisions, the giving or withholding of any approvals, and the exercise of any discretions for the purposes of the determination.

3.29 In addition, the Commission recognised that, if it were to refuse to approve an amount or value required as part of the Final Decision, the substitute amount or value on which the determination is based would need to be:

- determined on the basis of all approved components of the current regulatory proposal; and
- amended from that basis only to the extent necessary to enable it to be approved in accordance with this Final Decision or (otherwise and as applicable) the relevant provisions of chapter 6 of *National Electricity Rules* or the NT Code's pricing principles.

Views expressed in submissions

3.30 Only Power and Water explicitly addressed this aspect of the Draft Decision.

3.31 Power and Water was concerned that the process by which the Commission proposed to apply the various jurisdictional legislative and regulatory instruments, and the national regulatory framework, when assessing Power and Water's regulatory proposal, lacked clarity. In particular:

> *"[The Draft Decision] [m]akes it difficult for Power and Water to understand how each of the Northern Territory Electricity Networks (Third Party Access) Code (Access Code) and Chapter 6 of the National Electricity Rules (and the NSW Transitional Rules encapsulated in Chapter 6) (Rules) will be applied during Power and Water's reset, and in particular how matters will be considered, accepted or rejected by the Commission." (p. 1)*
>
> *"...The Commission should make clear how it intends to consider, approve or reject each matter that it has set out in the Draft Decision. While the Commission has made clear that it intends to use the Rules, it is not clear to Power and Water precisely how these would be applied." (p. 1)*

3.32 Neither the NTMEU nor NT Treasury raised any issues regarding this aspect of the Draft Decision.

Commission's analysis and conclusion

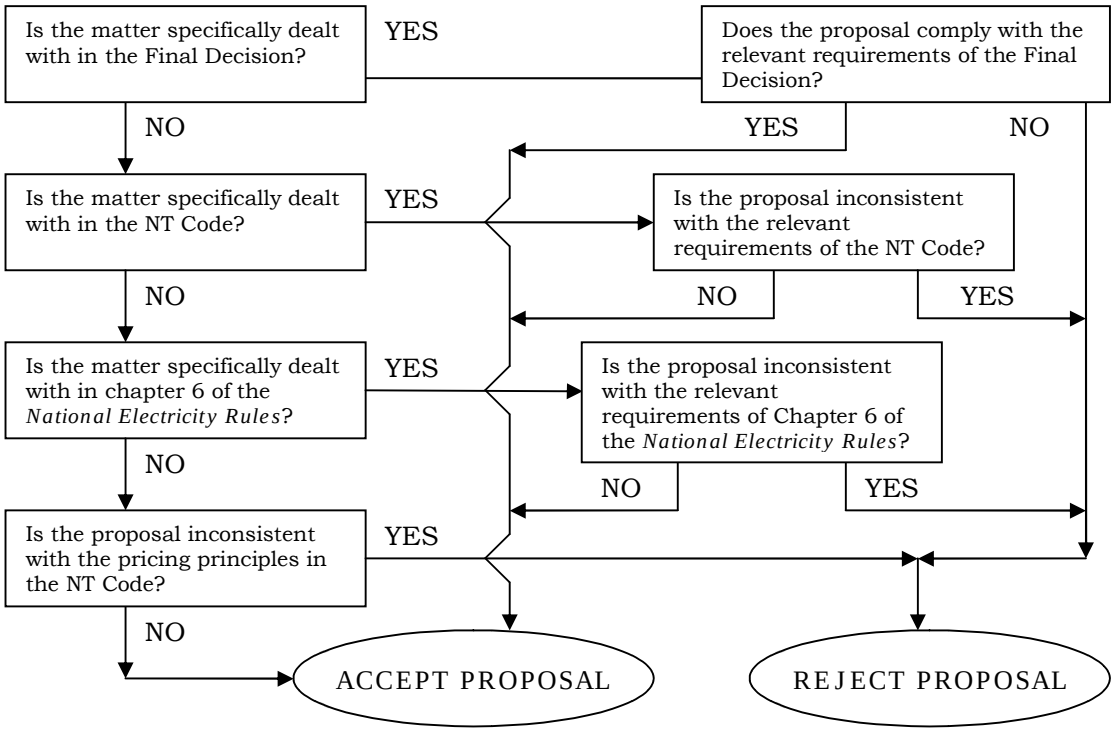
3.33 Some of the uncertainties concerning Power and Water are the uncertainties that will face any regulated entity as the AER assesses a regulatory proposal under the *National Electricity Rules*. Regulators are not in the position to give any guarantees concerning their specific decisions up front.

3.34 Nevertheless, the Commission recognises that its Draft Decision may have been conflicting in some respects. The Commission considers that the possible conflicts in the various decision criteria included in the Draft Decision are best dealt with by following a simplified approach.

3.35 Unless this Final Decision expressly states the decision criteria that the Commission will apply with regard to a particular constituent decision, the Commission will refuse to approve an element of the regulatory proposal only if:

- where the proposal relates to a matter not specified in this Final Decision ***but*** is subject to a specific requirement in the NT Code, it is inconsistent with the Code's requirement;
- where the proposal relates to a matter not specified in this Final Decision ***and*** is not subject to any specific requirement in the NT Code, it is inconsistent with the relevant provision of chapter 6 of the *National Electricity Rules*; and
- where the proposal relates to a matter not specified in this Final Decision ***and*** is not subject to any specific requirement in either the NT Code or chapter 6 of the *National Electricity Rules*, it is inconsistent with the NT Code's pricing principles.

3.36 These decision criteria are consistent with the decision hierarchy illustrated in the diagram below.



Box 1: NT Code's pricing principles

Clause 63 of the Code requires the Commission to administer access price regulation under the Code in a way that achieves the following outcomes:

"(a) efficient costs of supply;
(aa) expected revenue for a regulated service or services that is at least sufficient to meet the efficient long-run costs of providing that regulated service or services, and includes a return on investment commensurate with the commercial and regulatory risks involved;
(b) prevention of monopoly rent extraction by the network provider;
(c) promotion of competition in upstream and downstream markets and promotion of competition in the provision of network services where economically feasible;
(ca) an efficient and cost-effective regulatory environment;
(d) regulatory accountability through transparency and public disclosure of regulatory processes and the basis of regulatory decisions;
(e) reasonable certainty and consistency over time of the outcomes of regulatory processes;
(f) an acceptable balancing of the interests of the network provider, network users and the public interest; and
(g) such other outcomes as the regulator determines are consistent with the underlying principles set out in clause 2."

Clause 68 of the Code requires the Commission, in setting a revenue or price cap, to have regard to the following factors:

"(a) the demand growth that the network provider is expected to service using any appropriate measure including but not limited to –
(i) energy consumption by category of network users or other relevant groups of persons who consume energy;
(ii) demand by category of network users or other relevant groups of persons who consume energy;
(iii) numbers of network users or other relevant groups of persons who consume energy by category of network users; and
(iv) length of the electricity network;
(b) the service standards applicable to the network provider under this Code and any other standards imposed on the network provider by any regulatory regime administered by the regulator and by agreement with the relevant network users;
(c) the potential for efficiency gains to be realised by the network provider in expected operating, maintenance and capital costs, taking into account the expected demand growth and service standards referred to in paragraphs (a) and (b);
(d) the network provider's cost of capital applicable to the relevant network access service, having regard to the risk-adjusted rate of return required by investors in commercial enterprises facing similar business risks to those faced by the network provider in the provision of that service;
(e) the provision of a return on efficient capital investment undertaken by the network provider in order to maintain or extend network capacity that is commensurate with the commercial and regulatory risks involved;
(f) the right of the network provider to recover reasonable costs incurred by the network provider in connection with the operation and maintenance of the network, including those arising from but not limited to –
(i) any Territory and Commonwealth taxes or equivalent taxes paid in connection with the operation of its business as a provider of network access services; and
(ii) the tariffs and charges paid to other network providers irrespective of whether these tariffs and charges are regulated under this Code;
(g) any increase in the rate of a tax or any new tax, whether it is a tax or tax equivalent imposed by the Territory, a State or the Commonwealth that directly increases the cost of providing the access services that are directly attributable to the increase in the rate or to the new tax;
(h) any reduction or increase in network energy losses; and
(j) the on-going commercial viability of the network provider."

Clause 74 of the Code sets out the objectives of network tariffs to be observed under the Code as follows:

"The reference tariffs are –
(a) to reflect efficient costs of supply;
(b) to involve a common approach for all network users, with the actual tariff with respect to a particular network access service only differing between users because of –
(i) the user's geographical and electrical location;
(ii) the quantities in which the relevant network access service is to be supplied or is supplied;
(iii) the pattern of network usage;
(iv) the technical characteristics or requirements of the user's load or generation;
(v) the nature of the plant or equipment required to provide the network access service; and
(vi) the periods for which the network access service is expected to be supplied;
(c) to be transparent and published in order to provide pricing signals to network users;
(d) to promote price stability; and
(e) to reflect a balancing of the quest for detail against the administrative costs of doing so which would be passed through to end-use customers."

CHAPTER

4

FORM OF PRICE CONTROL

Introduction

4.1 This chapter addresses the central decision in the methodology that will be applied in the 2009 Reset, namely the form of the price control mechanism for standard control services.

4.2 Whether the control is over prices or revenues (or both) is the first part of this decision.

4.3 The price or revenue variable used, whether any adjustments are to be made at the end of the preceding regulatory period and the determinants of the allowed annual path (especially the X factor), form subsequent parts of the decision.

Price control variable

NT Code requirements

4.4 In the first regulatory period, the NT Code specified the form of price control, and hence prescribed the network price control mechanism to be used in some detail.

4.5 The NT Code is much less prescriptive in relation to the form of price control to be applied by the Commission during the second and subsequent regulatory periods.

4.6 The requirements in the *National Electricity Rules* regarding the form of price control involved in the price control mechanism for standard control services are consistent with the NT Code's requirements. The control mechanism can impose controls over the prices of direct control services or the revenue to be derived from direct control services or both.

4.7 Specifically, under clause 6.2.5(b) of the *National Electricity Rules*, the price control mechanism may consist of:

- a schedule of fixed prices; or
- caps on the prices of individual services; or
- caps on the revenue to be derived from a particular combination of services; or
- tariff basket price control; or
- revenue yield control; or
- a combination of any of the above.

2004 price control mechanism

4.8 For the second regulatory period, the Commission adopted a price cap form of price control, rather than continue with the revenue cap approach used in the first regulatory period.

Commission's draft decision

4.9 In the Draft Decision, the Commission considered that there were no grounds for reversing its decision in 2004 to move from a revenue cap to a price cap, and accordingly proposed to retain the price cap form of price control.

4.10 The Commission also restated its reluctance to change an approach for which, in 2004, the benefits of continuity and consistency across periods were an important attraction.

Views expressed in submissions

4.11 Submissions did not take up this issue.

Commission's analysis and conclusion

4.12 Since there were no objections to the proposal to maintain control over prices rather than revenues, the Commission has decided that no change is necessary to this aspect of its Draft Decision.

Tariff basket price control mechanism

NT Code requirements

4.13 The NT Code leaves the precise form of any price cap to the Commission (clause 66(1) of the NT Code).

4.14 Likewise, the *National Electricity Rules* say nothing beyond recognising in clause 6.2.5(b) that a tariff basket price control is a rule-compliant price control mechanism.

2004 price control mechanism

4.15 Under the 2004 Determination, price control is exercised over the weighted average of individual network access tariffs (or 'the tariff basket'). The method used for calculating the associated weighted average of network tariffs is to express a particular year's weighted average tariff in index form. Price control is then applied to the change in the index in each year of the regulatory period.

4.16 Specifically, under the 2004 price control mechanism:

- a single weighted average is calculated combining the network access tariffs for the regulated networks (Darwin/Katherine, Tennant Creek and Alice Springs); and
- each network access tariff is represented, and weighted according to quantities sold to customers in the most recent year for which actual figures are available (that is, effectively lagged two years).

4.17 Under the 2004 methodology, the index representing the weighted average of individual network access tariffs for each forthcoming year "t" is calculated as follows:

$$P_t = P_{t-1} * [\Sigma_{i=1...n}[p^i_t * q^i_{t-2}] / \Sigma_{i=1...n}[p^i_{t-1} * q^i_{t-2}]]$$

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

4.18 The approach to the introduction of new tariffs or tariff components in the 2004 price control mechanism requires Power and Water to estimate the quantities that would have been sold had the network tariff or tariff component been in place in the previous year. The Commission assesses the reasonableness of these estimates and the supporting evidence before determining the weights to apply to any new tariffs or tariff components.

4.19 The 2004 price control mechanism also requires Power and Water to introduce an explicit network tariff category for any customer being offered a discounted tariff in the same way as any other new tariff. Power and Water's proposed network tariffs to other customers on non-discounted tariffs may then be increased to the extent permitted by the tariff basket control. In this way, Power and Water is able to recover part of the cost to it of offering the discounted network tariff (subject to the negotiated prices meeting the Commission's discounting guidelines).[5]

Commission's draft decision

4.20 The Commission proposed to continue with the use of two years' lagged quantity weights. The use of quantity weights which are lagged two periods is well established regulatory practice, reflecting the availability of verifiable quantity data.

4.21 The development of new network tariffs or tariff components that better reflect cost or service characteristics was also supported by the Commission. Tariff development that achieves improved economic cost signalling and hence resource allocation is a primary objective of network access pricing.

4.22 Nevertheless, the Commission considered that the introduction of new network tariffs or tariff components should be an infrequent occurrence, and that the approved Network Pricing Principles and Methods Statement would provide adequate discipline on the development of new tariffs or tariff components.

4.23 Accordingly, the Draft Decision proposed the price control would be applied, as in the 2004 Determination, to a 'tariff basket' representing the weighted average of each year's network access tariffs for standard control services.

Views expressed in submissions

4.24 Submissions did not take up this issue.

[5] The Commission's discounting guidelines are outlined in the *Framework for Negotiation of Discounted Network Tariffs*, May 2002.

Commission's analysis and conclusion

4.25 Since there were no objections to the proposal to maintain price control via a 'tariff basket' representing the weighted average of each year's network prices, the Commission has decided that no change is necessary to this aspect of its Draft Decision.

Adjustments to base year costs or revenues (Po adjustment)[6]

NT Code requirements

4.26 Neither the NT Code nor the *National Electricity Rules* place any particular requirements on the transition between one regulatory period and another. Consistency with the Code's or Rules' objectives and principles instead is the main requirement.

2004 price control mechanism

4.27 Under the 2004 price control mechanism, Power and Water's network costs were re-examined to ensure that the opening weighted average tariff at least recovered the efficient costs of supply of regulated network access services. As a result of this examination, a percentage adjustment (the Po adjustment) was applied to the weighted average of network access tariffs applying at the end of the first regulatory period in order to form an appropriate basis for network access tariffs at the commencement of the second regulatory period.

4.28 In choosing the form of price control applying during the second regulatory period, the Commission indicated that its desire was to put in place a price control mechanism that could continue to operate effectively over a number of subsequent regulatory periods and, in particular, provide a basis for the eventual transition towards a 'pure' price cap approach.[7] In effect, this indicated that Po adjustments were not expected to be automatic or even desirable.

Commission's draft decision

4.29 The Commission noted that a price cap with a regular Po adjustment (or gains sharing arrangement in one form or another) is in reality what can be termed a 'cost of service approach'. A cost of service approach involves use of a forward looking, multi-year building block approach. Only a price cap without any Po adjustment or gains sharing mechanism would qualify as a 'pure' price cap approach.

4.30 A pure price cap aims to provide a light-handed regulatory approach with low compliance and regulatory costs and good incentive properties. Prices are uncoupled from the network service provider's costs of operation. However, this assumes that the existing price levels and initial cost base are 'about right'.

4.31 In the Draft Decision, the Commission acknowledged that there is no certainty that closing prices in the second regulatory period align with efficient costs, with the possibility being that they could fall short of, or be over-recovering, efficient costs.

4.32 Where the required level of confidence is lacking about the general equivalence of starting price levels and the cost base, the Commission acknowledged that a 'base year' cost analysis is required and, if necessary, an opening price level adjustment needs to be made. Costs may diverge from prices for valid reasons – that is, reasons that are outside the control of management. For example, commencing year efficient costs and X factors

[6] This type of adjustment was referred to in the 2004 Reset as the Z factor adjustment. All references in the 2009 Reset will now instead be to the "Po adjustment".

[7] Utilities Commission, *Networks Pricing: 2004 Regulatory Reset Final Methodology Decision*, November 2003, p.16.

applying subsequently may have been over- or under-estimated (regulatory error), or CPI movements may have diverged from movements in relevant input prices in ways not foreshadowed when the X factor values were set.

4.33 If the rationale underlying the external benchmarking approach is applied consistently, the divergence of closing prices from efficient costs would be regarded as largely cyclical in nature, and therefore self-balancing, or the result of either good management, which should be rewarded with higher profits (thereby removing the requirement for additional gains sharing mechanisms), or poor management, for which compensation should not be provided in the following period.

4.34 In practice, it would be unwise for a regulator, when considering whether to continue to apply the benchmarking approach, to ignore the claims of a network service provider that its costs have indeed moved significantly above previous experience *for reasons that are outside its control*.

4.35 Moreover, the Commission recognised that its analysis in 2004 was, to a degree, constrained both by data limitations and experience. To an extent, this is an unavoidable consequence of moving away from cost of service methods. Regulators that have taken this decision have recognised that there will be a transitional period during which the methods of external benchmarking are refined and the outcomes made more robust. It is reasonable in these circumstances to periodically review base year costs.

4.36 Accordingly, the Draft Decision involved Power and Water's network costs at the end of the second regulatory period being subject to a rigorous zero-based assessment to determine whether a Po adjustment is warranted in order that the weighted average of network access tariffs to apply at the commencement of the third regulatory period are sufficient to recover the efficient costs of supply of regulated network access services.

Views expressed in submissions

4.37 Only Power and Water explicitly addressed this aspect of the Draft Decision.

4.38 In doing so, Power and Water emphasised the importance – in its estimation – of undertaking a Po adjustment at the end of the second regulatory period. For example:

> *"...Power and Water's tariff revenue is currently well below its building block calculation of costs, and is expected to continue to be so in 2008-09." (p. 6)*
>
> *"...the 2004 Determination has led to a wide divergence between Power and Water's actual tariff revenue and that which would be derived by a cost based build up, ..." (p. 8)*
>
> *"... Power and Water's expectation [is] that a Po of around 19% will be required to ensure that Power and Water recovers its 2008-09 costs alone." (p. 7)*

4.39 Neither the NTMEU nor NT Treasury raised any objections to this aspect of the Draft Decision.

Commission's analysis and conclusion

4.40 The Commission is not yet in a position to evaluate Power and Water's assertions. This will only be possible once Power and Water submits a documented case as part of its initial regulatory proposal.

4.41 While cautious with regard to Power and Water's contention about the likely magnitude of a Po adjustment, the Commission repeats its view (in the reasons supporting the Draft Decision) that its analysis in 2004 was, to a degree, constrained both by data limitations and by limited experience with the TFP-based approach.

4.42 The Commission is committed to undertaking the building block assessment with respect to the final year of the second regulatory period (2008/09) in such a way as to identify and quantify the relative contribution of the main factors giving rise to any Po adjustment. Among other things, this ex-post analysis of outcomes from the 2004 Determination will assist in strengthening the basis of decisions during the 2009 Reset.

4.43 Power and Water's network costs and revenues at the end of the second regulatory period will therefore be subject to a one-year ex-post building block assessment to determine whether a Po adjustment is warranted in order to align efficient costs and revenues for standard control services.

Basis for X factor

NT Code requirements

4.44 Clause 70 of the NT Code includes the following requirement:

> *"(2) The methodology to be used by the regulator to adjust the revenue or price cap [between years] is to involve increasing the previous year's cap in line with both –*
>
> *(a) the factors which the regulator considers to be the main real-terms drivers affecting the network provider's costs (such as the growth in the quantity of electricity transported annually over the electricity network); and*
>
> *(b) inflation (as measured by the rate of change in the consumer price index),*
>
> *and decreasing it by an efficiency gains factor ("X factor").*
>
> *(3) The use of an efficiency gains factor is to ensure that the benefits of efficiency gains are shared between end-use customers (those gains achieved up to the X factor level) and the network provider (any gains achieved in excess of the X factor)."*

4.45 Under the NT Code, the Commission is responsible for determining the basis and measurement of the X factor. Clause 2(1A) of Schedule 10 of the NT Code states that:

> *"The methodology for determining the value of X to apply in the second and subsequent regulatory control periods is to be determined by the regulator in a manner that most effectively achieves the outcomes in subclauses (1) and (3) and is consistent with generally accepted regulatory practice at the time."*

4.46 Likewise, clause 6.2.6 of the *National Electricity Rules* requires that, for standard control services, the price control mechanism must be of the prospective CPI minus X form, or some incentive-based variant of the prospective CPI minus X form.

4.47 The X factor for use in a price control mechanism under the *National Electricity Rules* is the subject of clause 6.5.9 of those Rules. In contrast to the NT Code, the *National Electricity Rules* currently restricts the X factor to being a factor that is to equalise (in terms of net present value) the revenue to be earned by the network service provider from the provision of standard control services over the regulatory period with the provider's total revenue requirement for the regulatory period. Within this framework, the *National Electricity Rules* permit different X factors for different years of the regulatory period.

2004 price control mechanism

4.48 Under the 2004 price control mechanism, the X factor used to escalate the weighted average of network access tariffs was calculated based on externally benchmarked expected efficiency improvements. The 2004 price control mechanism explicitly rejected the 'cost of service' building block approach in which the network price path is derived from a projection of required revenues based on estimates of Power and Water's future operating and capital costs.

Commission's draft decision

4.49 In submissions to the Commission's Issues Paper, both the NTMEU and Power and Water expressed a preference for the Commission to place more weight on cost of service analysis when determining the quantum of the price control, and consequently less weight (or possibly no weight) on external efficiency benchmarks.

4.50 There were two aspects to these calls for a move away from the basis of calculating the X factor as adopted in the 2004 price control mechanism.

Regulatory consistency

4.51 The first set of arguments in favour of reverting back to a cost of service approach to calculating the X factor was that not to do so is at odds with the *National Electricity Rules*.

4.52 The Commission acknowledged the requirement under the NT Code to determine the revenue or price caps that are to apply during each regulatory period in a manner that, in the Commission's opinion, most effectively achieves the desired outcomes set out in clause 63 and *"is consistent with generally accepted regulatory practice at the time"* (clause 66(3)).

4.53 The Commission considered that it is important that efforts are made where possible to align the regulatory regime in the Northern Territory with national developments.

4.54 However, the Commission noted that the AEMC has scheduled a review of the use of productivity-based methods as an alternative to the cost of service building block approach, and Victoria is in the process of finalising a rule change application to include total factor productivity (TFP) approaches in the *National Electricity Rules*. Internationally, external benchmarking approaches are currently applied in New Zealand and Holland.

4.55 Consequently, the Commission considered that, in terms of both generally accepted regulatory practice and the direction in which the *National Electricity Rules* may be moving, external benchmarking approaches of the kind applied by the Commission in 2004 are acceptable. In the Commission's view, neither the requirements of the NT Code in regard to generally accepted regulatory practice nor the Commission's own desire for convergence with the *National Electricity Rules* constrain it to apply cost of service regulation.

Giving weight to future developments

4.56 The second set of arguments in favour of reverting back to a cost of service approach was that this is the only approach that can effectively take into account future cost pressures and demand developments.

4.57 Due to the increasing complexity, expense and intrusiveness of cost of service analyses, the difficulties in forecasting cost movements over a five-year period with reasonable certainty, and the Commission's frustration at the continuing poor quality of Power and Water data and the limitations this has placed on data-based analysis, the Commission concluded that there is intrinsic merit in the incentive properties of a lighter-handed, externally benchmarked approach, particularly for a small and relatively less-complex network.

4.58 Overall, the Commission did not consider the future costs argument to be sufficient to justify reversing its 2004 decision and moving back to a detailed cost of service methodology. Since the 2004 decision, considerable progress has been made in the refinement of the external benchmark approach and, in New Zealand and elsewhere, useful experience has been gained in its application to networks. Similar future cost issues have been addressed in these cases, and the Commission stated its intention to, as far as reasonably possible, apply the available best practice solutions.

4.59 Accordingly, the Draft Decision proposed that the calculation of the X factor to apply to the prospective CPI minus X basis of the control mechanism for standard control services would be determined by the Commission using a productivity-based approach rather than a multi-year building block approach.

Views expressed in submissions

4.60 In its submission on the Draft Decision, Power and Water elaborated on its various concerns with an extensive critique of the TFP-based approach to calculating the X factor.

4.61 Generally, Power and Water argued that:

> *"…[the TFP-based methodology] will not enable Power and Water to meet its capital and operating expenditure budgets for the third regulatory control period…"(p.1)*

4.62 Power and Water put forward several lines of argument in support of this conclusion.

4.63 First, Power and Water argued that the building block approach currently used elsewhere in Australia is a 'well founded, well demonstrated and precedented approach to revenue resets' and that productivity methods, by contrast, are 'experimental':

> *"… there is considerable evidence to suggest that a cost based approach is a well founded, well demonstrated and precedented approach to revenue resets elsewhere, which would seem to provide a basis for it being used in the Northern Territory market." (p.6)*
>
> *"…TFP is not currently included as an alternative to the building blocks control setting method in the new Chapter 6 of the Rules. The Rules were developed subject to a fully consultative approach, in which TFP was considered but not included; …" (p. 9)*
>
> *"… the agreed limitations of applying TFP … derive largely from the absence of robust, consistent and relevant long term data on outturn costs of supply as well as a range of physical input and output parameters, for a large number of firms operating in the electricity distribution sector." (p. 9)*
>
> *"TFP has never been applied to regulate electricity and gas distribution or transmission businesses in Australia. Rather, the building blocks control setting method has been the standard regulatory approach to determining a business' revenue requirement. TFP could therefore be considered to be 'experimental', particularly in the way that the Commission intends applying it…" (p. 8)*

4.64 Secondly, Power and Water argued that the Draft Decision will not take into account the causes of divergence between actual and forecast (base-year) revenue requirements over the current regulatory period:

> *"…the proposed methodology … [d]oes not take into account the causes of divergence between actual and forecast (base-year) revenue requirements over the current regulatory control period, resulting from the application of a TFP-like methodology." (p. 1)*

4.65 Thirdly, Power and Water argued that the Draft Decision does not consider future costs or the roll forward of Power and Water's regulated asset base between each year of the regulatory period:

> *"… the Commission's Draft Decision will result in Power and Water not being able to fund the operations and capital expenditure it has committed to in its Draft 2008-09 SCI over the third regulatory control period, and which has been put forward to the Shareholder on the basis of objective needs and capacity to deliver, determined with reference to estimates of economic growth and expected customer demand." (p. 6)*
>
> *"The Commission's Draft Decision would result in Power and Water being unable to fund [its capital expenditure requirements]. This is because, as noted above, the Commission proposes to only consider Power and Water's capital expenditure requirements for 2008-09 and will not consider its future capital expenditure requirements in its calculation of Power and Water's 2009-10 opening tariffs. Power and Water's opening tariffs will only allow it to recover its recalculated 2008-09 costs and will then be adjusted annually for each remaining year of the regulatory period by a productivity measure." (p. 7)*
>
> *"…the Commission's proposed methodology …does not:*
>
> - *Consider future costs – Power and Water has an increasing expenditure pattern over the next regulatory period which will not be taken into account under the proposed method. The proposed method instead establishes a base year which is meant to, but does not, simulate all future years; or*
> - *Roll forward Power and Water's RAB between each year of the regulatory control period, meaning that Power and Water's asset base is not assumed to grow in real terms at all over the regulatory period. This is at odds with what Power and Water considers will be the case. The proposed method therefore does not meet Power and Water's requirements to maintain financial capital maintenance, because Power and Water will essentially only receive a return on, and of, capital for 2008-09 expenditure (and the RAB at the start of the regulatory control period), not on its forecast rolled forward RAB." (p. 1)*

"… the Commission's proposed methodology …:

- *Determines Power and Water's MAR for the third regulatory control period based on historic capital and operating expenditure values;*
- *Does not involve forecasting future required capital and operating expenditure over the regulatory control period; and therefore*
- *Does not seek to recover Power and Water's costs of maintaining, on a financial or operational sense, the assets in place for each year of the regulatory control period." (p. 5)*

4.66 Fourthly, Power and Water argued that growing markets are not suitable for a TFP-like method of regulation:

"This historical and proposed trend in expenditure [with operations and maintenance costs increasing steadily since 2004-05 and expected to continue to rise] is characteristic of a growing market and is not suitable for a TFP-like method of regulation; …." (p. 6)

4.67 Fifthly, Power and Water argued that the Victorian Draft Rule Change Proposal advocates the use of a rolling X factor mechanism to allow for compensation for 'industry wide capital expenditure bow waves' albeit with a lag:

"The Victorian Government's Draft Rule Change Proposal is to allow a version of TFP as an alternative to the building blocks control setting method in Chapter 6 of the Rules. However, under the Draft Rule Change proposal:

- *The X-factor is a rolling X mechanism and is calculated annually by the regulator based on the previous year's total productivity data. This is designed to ensure that distribution businesses are financially compensated for industry wide capital expenditure bow waves, albeit with a lag (page 14 of the Draft Rule Change Proposal); and*
- *It is not intended that it could even be applied by a regulator as a mandatory measure, rather it makes very clear that the TFP method should only ever be proposed by the utility." (p. 8)*

4.68 Sixthly, Power and Water argued that 'off ramp' provisions need to accompany the application of any productivity–based methods (as in the US):

"The application of TFP in the United States appears to accommodate uncertainty surrounding a business' future expenditure requirements in growing markets, akin to the Northern Territory, by allowing for "off ramps". These are not currently part of the Commission's Draft Decision, and involve reviewing and updating either initial prices (Po) to take account of past expenditure, or X estimates. This provision provides a certain level of revenue protection for businesses regulated by TFP. Power and Water would support the incorporation of such measures for uncertainty;…" (p. 8)

Commission's analysis and conclusion

Assessing Power and Water's arguments

4.69 Power and Water's first line of argument (that the building block approach currently used elsewhere in Australia is a 'well founded, well demonstrated and precedented approach to revenue resets' and that productivity methods, by contrast, are 'experimental') fails to take account of important experience elsewhere.

4.70 First, it is significant that Victoria, which was at the forefront of applying the building block approach in Australia, is now at the forefront of advocating a move to a productivity–based approach. In its most recent electricity distribution pricing review, the Essential Services Commission (ESCV) noted the following problems with using the building block approach to set future prices:

" • *tensions in a privatised industry with monopoly characteristics between the firms seeking to maximise returns and the expectations and objectives of customers;*
- *the clear information asymmetry and reliance on the information provided by the utility with incentives to "talk up" costs and "talk down" future sales;*
- *its underestimation, in hindsight, of the challenges in relying on reported costs;*

- *restructuring of DBs [distribution businesses] including arrangements with entities with common ownership, but which are not directly covered by the regulatory regime, and the possibility that such arrangements may not be at arm's length, with the potential to inflate or obscure reported costs;*
- *the challenges generally of obtaining transparent cost data and unravelling complex and changing cost allocations making comparisons and forecasts difficult; and,*
- *the considerable difficulty obtaining information per se, with delays in some cases and others where information was withheld entirely."*[8]

4.71 The Commission would face many of the same problems encountered by the ESCV were it to apply the building block approach to set prices for the third regulatory period. It would face additional problems arising from the less mature state of Power and Water's information systems, which only serve to magnify the challenges arising when it comes to assessing Power and Water's expenditure forecasts. Whereas the building block approach relies upon firm-specific forecasts of expenditure and demand to determine the trajectory of prices, the TFP approach makes greater use of 'known and measurable' information when setting the trajectory of prices during the regulatory period (i.e., measured productivity growth rather than company-specific forecasts of expenditure and demand). In fact, the TFP approach substantially reduces the Commission's discretion over how Power and Water's expenditure requirements may be expected to change over the regulatory period. Under the TFP approach, the Commission's discretion is limited to establishing the expenditure requirements implied by the initial set of prices. The assumption about the change in cost over the regulatory period is to be determined on the basis of measured productivity growth and inflation.

4.72 Secondly, the Commission notes that the productivity–based approach has formed the entire basis of the New Zealand thresholds regime for electricity distribution businesses as well as having been used widely in the United States (as noted by Power and Water).

4.73 Overall, the Commission's view is that sufficient experience now exists with application of the productivity–based approach in other jurisdictions to confirm its use as a valid and robust alternative to a forward-looking application of the building block approach.

4.74 Power and Water's second line of argument (that the Draft Decision will not take into account the causes of divergence between actual and forecast (base-year) revenue requirements over the current regulatory control period) is rejected. The Commission acknowledges that allowed revenues and incurred costs may have diverged during the second regulatory period. Indeed, notwithstanding the fact that the best estimate of the long term growth rate of total factor productivity can change over time (as the available data changes), the Commission concedes that the productivity growth rate implicit in the second regulatory period's X_1 value may have been, with the benefit of hindsight, somewhat optimistic. Furthermore, no allowance was made for an input price differential between electricity distribution inputs and those used in the economy as a whole.

4.75 In the Draft Decision, the Commission has recognised that electricity distribution industry (and economy–wide) productivity growth rates have tapered off in recent years, and this may continue during the third regulatory period. Furthermore, the Commission also recognises the potential for continued divergence between electricity distribution and economy–wide input prices for both operating expenditure and capital inputs. The Commission's expert advisors will make assessments of these factors.

4.76 The point at issue is whether the evidence from the second regulatory period and the analysis of productivity and input price trends supports Power and Water's

[8] Essential Services Commission, *Electricity Distribution Price Review 2006–10 Final Decision, Volume 1, Statement of Purpose and Reasons*, October, Melbourne, pp.12–13.

contentions regarding current and expected future cost pressures. If the contention is supported, electricity distribution prices will be allowed to increase in real terms during the third regulatory period. Revenue will be aligned with efficient costs through the Po adjustment, such that real revenue will then increase more than proportionately with increases in output in recognition of the trend to slower productivity growth and higher input price increases facing the electricity distribution industry.

4.77 Power and Water's third line of argument (that the Draft Decision does not consider future costs or the roll forward of Power and Water's regulated asset base between each year of the regulatory period) is based on a number of misunderstandings of the Commission's proposed approach.

4.78 Principally, while the Commission is proposing to align revenue with efficient costs for the final year of the second regulatory period via a Po adjustment, tariffs are to be adjusted year by year over the third regulatory period on the basis of a weighted average price cap using productivity–based methods. Because a *price cap* mechanism is being used, revenue is set on a *per unit* of output basis rather than as an absolute amount (as would be the case if a revenue cap was being used instead of a price cap). This means that as output grows over time, then so does allowed revenue and, correspondingly, allowed costs. Implicitly, the regulatory asset base is allowed to grow in line with output (adjusted for forecast productivity growth) rather than being held constant in real terms as implied by Power and Water.

4.79 In productivity analysis, the value of the capital stock (the equivalent of the regulatory asset base) is rolled forward using actual capital expenditure and an assumed rate of economic depreciation. The annual user cost of capital is then determined by multiplying the value of the capital stock each year by the depreciation rate plus a rate reflecting the opportunity cost of capital. This allows a return of and return on capital in a process broadly equivalent to the building block approach. The main difference between productivity- and building block-based approaches is that the productivity approach sets the future change in allowed revenue (and, thus, costs) on the basis of industry–wide developments rather than specific forecasts of the business' own costs.

4.80 Another misunderstanding seems to be the inference that the building block approach would recover Power and Water's expected costs over the regulatory period. However, under a building block approach, the Commission would not merely set prices that recover Power and Water's expected costs, but would undertake a review of whether those costs are prudent and efficient. The scope of the Commission's discretion in this regard is identical under the TFP and building block approaches.

4.81 Power and Water's fourth line of argument (that growing markets are not suitable for a TFP-like method of regulation) is similar to the Victorian Draft Rule Change Proposal recommendation that the productivity–based method only be applied to businesses that are in a 'steady state' and that are not expected to experience lower or higher productivity growth than the industry average. However, this reflects the Victorian proposal's preference for only having one X factor. Other productivity–based regimes, such as that applying in New Zealand, allow for the inclusion of a diverse range of businesses by including a number of components in the X factor – much as the Commission is doing in the third regulatory period. Limiting participation and comparisons to 'industry average' firms is, thus, an unnecessary restriction.

4.82 Power and Water's fifth line of argument (that the Victorian Draft Rule Change Proposal advocates the use of a rolling X factor mechanism to allow for compensation for 'industry wide capital expenditure bow waves' albeit with a lag) has been considered by the Commission. While the rolling X factor proposal has some merit, the draft Victorian proposal also includes potentially longer periods between regulatory reviews than the standard five years. The Commission's expert advisor, GHD Meyrick, has used the latest available productivity information in arriving at its preliminary X factor recommendations, and will apply the same approach when making a final recommendation for the Commission's Draft Determination. However, the fixed length of the third regulatory period reduces the need to adopt a rolling X factor approach. Data

and other limitations also make the rolling X factor approach impractical at this point. Accordingly, the Commission recognises the desirability of – and is supportive of – attempts to develop a national database to support annual calculation of electricity distribution productivity.

4.83 Regarding Power and Water's sixth line of argument (that 'off ramp' provisions need to accompany the application of any productivity–based methods (as in the US)), it needs to be recognised that regulatory regimes in the US do not normally have fixed lengths or fixed review dates. Where there is a fixed regulatory period, as there is in the NT, the need for such provisions is diminished. It also needs to be recognised that including significant off-ramp provisions reduces the incentive power of the regime and brings it much closer to rate of return regulation.

Additional considerations

4.84 The above assessments offer a number of challenges to Power and Water's overall contention that the Commission's TFP-based approach will not enable Power and Water to meet its capital and operating expenditure budgets for the third regulatory period.

4.85 None of the above is to deny that the Commission, in applying a TFP approach, is anticipating that the proposed changes to the *National Electricity Rules* will occur. Nor that the TFP method is being applied by the Commission as a mandatory measure, rather being left to Power and Water to propose as may be consistent with the Victorian Draft Rule Change Proposal. The Commission is adopting the 'propose/respond' model subject to a number of constraints, one of which is the continued use of a combination of the building block and productivity–based approaches. The Commission stands by its reasoning.

4.86 The Commission also acknowledges that cost is a relevant marker for price regulation because owners of regulated businesses need a degree of assurance that they will recover at least their costs in order to have an incentive to invest.

4.87 For this reason, the Commission's use of an initial Po adjustment will see prices at the commencement of the regulatory period being set with reference to the (firm-specific) cost incurred by Power and Water in supplying the regulated services, consistent with what implicitly is the case for the building block approach. Therefore, the criteria applied by the Commission when setting the initial prices are as would be applied when assessing expenditure forecasts under the building block approach. These criteria require the Commission to be satisfied that the expenditure reflects efficient cost, is prudent and efficient, and based on a realistic expectation of demand. These criteria should provide Power and Water with substantial assurance that, at the commencement of the next regulatory period, it is able to recover the efficient cost of providing standard control services.

4.88 Generally, whether the price controls that result from applying the TFP approach will continue to permit Power and Water to recover at least its efficient costs over the remainder of the regulatory period will depend upon whether the X factor determined by the Commission and derived by reference to industry-wide total factor productivity and inflation provides a no less (statistically) unbiased estimate of the change in Power and Water's unit costs over the regulatory period than would be derived under a building block approach.

4.89 There are a number of features in the Commission's approach that, in combination, should ensure that this requirement is met.[9]

[9] Many of the points in this section are argued persuasively in the Victorian Department of Primary Industries, *(Draft) Proposed Rule Change to the Australian Energy Market Commission to Permit the Use of the 'TFP Approach'*, March 2008.

4.90 First, the TFP approach requires consistency in the manner in which the initial prices are set and total factor productivity growth is estimated, including that there be consistency with the regulatory asset base and how capital inputs are derived when estimating productivity growth.

4.91 Secondly, there is the cost pass through mechanism, which permits the immediate pass through of the costs associated with specified exogenous events. Cost pass through mechanisms have been a feature of the building block approach since the commencement of independent economic regulation in Australia. The ability to pass through costs associated with certain exogenous events provides an important bound on the risks borne by network service providers. The cost pass through mechanism applies under the TFP approach as it does under the building block approach.

4.92 Accordingly, Power and Water should have a reasonable expectation of recovering at least the efficient cost of providing the services under the TFP approach.

4.93 Nevertheless, it is conceivable that there is still progress to be made in the reliability of estimates of the TFP inputs (such as the growth in total factor productivity). Equally, the Commission is not prepared to dismiss suggestions that there are significant uncertainties surrounding Power and Water's future expenditure requirements.

4.94 Hence, in order to minimise the risk to Power and Water and its customers from significant unforseen developments under the TFP approach as the technique is further refined, the Commission has decided to commit to a further Po adjustment assessment at the end of the third regulatory period. As a result, any misalignment between revenue and efficient cost that occurs during the regulatory period will be remedied by an adjustment (expressed as a percentage change) to the weighted average tariff between the last regulatory year of the third regulatory period and the first regulatory year of the following regulatory period.

4.95 Specifically, before the end of the third regulatory period, and for that period (or such part thereof as the Commission considers is required), the Commission will assess the actual network operating and capital costs incurred by Power and Water and compare those costs with the relevant revenues received in that same period (or part thereof) in order to assess whether those revenues were less than, met or exceeded efficient costs.

4.96 The Commission will use the building block approach to assess Power and Water's costs consistent with the approach being applied by the AER under the *National Electricity Rules* at that time. Where actual costs and revenues are not known, the Commission will use expected costs and revenues.

4.97 Of all the options, this seems the most effective way of ensuring that revenue remains broadly aligned with efficient costs. Whether substantial changes in costs occur is a matter best assessed once 'known and measurable' information is at hand, rather than acting now on conjecture.

CHAPTER

5

Po ADJUSTMENT FOR STANDARD CONTROL SERVICES

Introduction

5.1 This chapter addresses in detail matters associated with implementing the Po adjustment component of the price control mechanism for standard control services.

Po adjustment proposal

Commission's draft decision

5.2 The Draft Decision required Power and Water to submit a proposed Po adjustment ('Po building block proposal') to the Commission, prepared in accordance with Part C and schedule 6.1 of the *National Electricity Rules* where relevant.

5.3 Such a Po adjustment would apply to the weighted average of network access tariffs to apply at the commencement of the third regulatory period, to ensure that commencing prices are sufficient to recover only the efficient costs of supply of regulated network access services.

5.4 Under the *National Electricity Rules* for the economic regulation of network services, each distributor must submit a building block proposal to the AER for the provision of its standard control services specifying the distributor's annual revenue requirement for each year of the regulatory period. The building block proposal must be prepared using the post-tax revenue model developed by the AER, and comply with the requirements of the *National Electricity Rules*. The AER's determination on the distributor's building block proposal is a component of the draft and final distribution determinations.[10]

5.5 The main distinction between the Commission's Draft Decision and the building block approach as used under the *National Electricity Rules* is that:

- the building block analysis is to be undertaken to determine the Po adjustment factor, rather than determining the X value in the CPI minus X price path; and
- the building block analysis is to be based on costs at the end of the second regulatory period (and so a one year building block assessment), rather than determining the annual revenue requirements for each year of the third regulatory period.

5.6 The Draft Decision required Power and Water's Po building block proposal to include the AER's post-tax revenue model and accompanying roll-forward model

[10] See Part C of Chapter 6 of *National Electricity Rules*.

completed to show their application to Power and Water for the final year (2008/09) of the second regulatory period. This building block proposal is to be accompanied by:

- details of all amounts, values and inputs relevant to the calculation;
- an explanation of the calculation and the amounts, values and inputs involved in the calculation; and
- a demonstration that each calculation, and the resultant amounts, values and inputs on which it is based, comply with relevant requirements of this Final Decision.

5.7 The Draft Decision indicated that the Commission would approve the estimated annual revenue requirement for the final year of the second regulatory period in relation to standard control services, as set out in Power and Water's current Po building block proposal, if the Commission was satisfied that, among other things, those amounts were properly calculated using the post-tax revenue model on the basis of amounts calculated, determined or forecast in accordance with the requirements of this Final Decision or (otherwise) Part C of Chapter 6 of the *National Electricity Rules*.

5.8 The Draft Decision also indicated that the Commission would approve the estimated revenue being raised during the final year of the second regulatory period from existing network tariffs applying to standard control services, as set out in Power and Water's current Po building block proposal, if the Commission is satisfied that those amounts have been properly calculated, determined or forecast in accordance with the requirements of this Final Decision or (otherwise) the NT Code's pricing principles.

Views expressed in submissions

5.9 Only Power and Water made specific reference to this aspect of the Draft Decision in its submission.

5.10 Power and Water's main concern was in relation to application of the AER's post-tax revenue model ("PTRM"):

> *"Applying the AER's PTRM would mean that Power and Water's 2008-09 capital expenditure will not be recognised in determining its 2009-10 MAR calculation. Power and Water considers that the Commission should clarify in its Final Decision the apparent mismatch between the need for Power and Water to provide its 2008-09 capital expenditure and the use of the AER's proposed PTRM." (p. 13)*
>
> *"[Power and Water] has a concern about the way in which the Commission's use of the PTRM will practically work given that:*
>
> - *Under the Commission's methodology Power and Water is required to submit its 2008-09 capital expenditure for the purposes of determining the 2009-10 MAR; and*
> - *Under the proposed PTRM, there is an 18 month delay in the allowance for the return on and of capital expenditure before it is included in the MAR." (p. 13)*

Commission's analysis and conclusion

5.11 The Commission accepts Power and Water's argument that the AER's PTRM uses the opening value of each year's assets as the regulatory asset base, which results in any capital expenditure during the year not being recognised until the following year. While this may be satisfactory in a multi-year exercise, it is not when it comes to a single year exercise as required for calculating a Po adjustment factor. The Commission will reflect this in its Po adjustment model.

5.12 More generally, the Commission accepts that the Draft Decision's references to the AER's post-tax revenue model and the accompanying roll-forward model provided inadequate guidance on the required application of the building block approach to the one year ex-post building block assessment.

5.13 Accordingly, the Commission has decided to make a number of related clarifications in the Final Decision in this regard. These involve deletion of references to the AER's post-tax revenue model (and the associated roll-forward model), to be replaced by references to "the Commission's Po adjustment model". This model is being developed by the Commission based upon relevant parts (only) of the AER's models as they apply to a one-year ex-post building block assessment. The Commission's Po adjustment model focuses on the manner in which Power and Water's efficient costs of supplying standard control services in a single regulatory year are to be calculated.

5.14 The Commission's Po adjustment model will be transmitted to Power and Water within five business days of the publication of this Final Decision, and will also be published on the Commission's website.

5.15 This model will clearly differentiate between amounts or values that are mandated by the Commission and amounts or values that may be proposed by Power and Water and are subject to the Commission's approval.

5.16 Power and Water (and other stakeholders) will be able to request corrections and modifications to the Po adjustment model where this is necessary to achieve consistency with the applicable provisions of the *National Electricity Rules* or of the NT Code. Such corrections or modifications can be requested at any time up to and including 30 June 2008. The Commission will respond to all requests for correction or modification within five business days of their receipt.

Measuring the Po adjustment factor

Commission's draft decision

5.17 The Draft Decision required Power and Water's Po building block proposal to include its calculation of the Po adjustment factor to apply to the weighted average of network tariffs in the final year (2008/09) of the second regulatory period.

5.18 The Draft Decision stated that the Po adjustment factor is to be calculated as follows:

$$Po = (R^* - R)/R$$

where:

R* is the latest estimate of the total cost (in $ millions) in 2008/09 of supplying the network access services whose tariffs are to be included in the tariff basket in 2009/10; and

R is the latest estimate of the total revenue (in $ millions) in 2008/09 derived from the existing tariffs applying to the network access services that are to be included in the tariff basket in 2009/10.

5.19 A single Po adjustment factor is to be calculated covering all regulated networks – Darwin/Katherine, Alice Springs and Tennant Creek.

Views expressed in submissions

5.20 Submissions did not take up this issue.

Commission's analysis and conclusion

5.21 The Commission does not consider that any changes are necessary to the Draft Decision in this respect.

Return on capital

Commission's draft decision

5.22 The Draft Decision required the rate of return on capital for the final year of the second regulatory period to be calculated in accordance with the relevant provisions of chapter 6 of the *National Electricity Rules*.

5.23 The Draft Decision also mandated use of the following parameter values in accordance with the transitional arrangements applicable to the AER's upcoming NSW and ACT determinations:

- an equity beta (βe) of 1.0;
- the market risk premium (MRP) of 6.0%;
- the proportion of debt funding (D/V) of 0.6; and
- the assumed utilisation of imputation credits (γ) of 0.5.

Views expressed in submissions

5.24 In its submission on the Draft Decision, the NTMEU argued that the Commission should provide its own assessment and use contemporary data as the basis for the values used for the WACC parameters, instead of using the values required to be used by the AER for the NSW and ACT electricity distribution reviews:

> *"We would note that the setting of these WACC parameters this was not a formal decision taken as part of the review of the Distribution Rules led by MCE SCO, but unilateral decisions made by the NSW and ACT Governments without reference or discussion of the matter.*
>
> *The setting of the WACC parameters is a fundamental issue with considerable financial implications that should be appropriately left for the review to seek stakeholder views, as well as independent advice." (cover letter)*

5.25 In particular, the NTMEU considered the adoption of an equity beta of 1.0 to be too high, and was concerned that this would confer an excessive premium to Power and Water at the expense of consumers. In support of this view, the NTMEU cited recent electricity and gas regulatory decisions that have departed from adopting an equity beta of 1.0:

> *"In SA the local electricity distribution business (ETSA) was given an equity beta of 0.8 by ESCoSA, but on appeal this was increased to 0.9 despite the government considering 0.8 was appropriate. The reason for the success of the appeal was not on the merits but on the issue of regulatory practice and that and equity beta of 0.8 was well beyond previous regulatory decisions although the QCA and IPART had previously used equity beta values of less than unity. ESCoSA used an equity beta of 0.9 for the subsequent gas distribution decision with an observation that gas distribution possibly had greater risk than electricity distribution. A year later in Victoria the regulator settled on an equity beta for gas distribution for current conditions in the range of 0.5-0.8 which was fixed at 0.8. In particular the analysis of the Victorian regulator was extraordinarily detailed." (p. 5)*

Commission's analysis and conclusion

5.26 Contrary to the NTMEU's understanding, the Commission understands that the WACC parameter values in the transitional rules were adopted because these are the values stipulated in the Electricity Transmission Rules (in chapter 6A of the *National Electricity Rules*) and that, until the AER determines otherwise, no distinction should be made between the parameter values applying to electricity transmission and distribution businesses.[11] The *National Electricity Rules* require the AER to undertake a review of

[11] AEMC, *Changes to the National Electricity Rules to establish a national regulatory framework for the economic regulation of electricity distribution, Explanatory Material*, April 2007.

WACC parameters for distribution by 31 March 2009, consistent with the transmission rules.

5.27 The AEMC, in its draft determination on the transmission revenue rules, did not see the need to make a distinction between electricity transmission and distribution businesses with respect to some of the WACC parameters. The AEMC's views did not change in the final determination on transmission.

5.28 The 2004 Reset used the following WACC parameter values:

- an equity beta (βe) of 0.896;
- a market risk premium (MRP) of 6.0%;
- a proportion of debt funding (D/V) of 0.5; and
- an assumed utilisation of imputation credits (γ) of 0.5.

5.29 The Commission considers these values to be the only practical alternative values to be adopted in the circumstances, until the AER completes its review in 2009. While this would involve an equity beta closer to the value advocated by the NTMEU (of 0.896 rather than 1.0), it would also involve a debt funding proportion of 0.5 rather than 0.6. The Commission notes that the effect of these two changes combined would be a slightly *higher* rate of return than that based upon the parameter values nominated in the Draft Decision.

5.30 The AER's review of distribution and transmission WACC parameters is the appropriate forum for the issues to be comprehensively considered. For the purposes of this Final Decision, the Commission considers that there is no appropriate alternative but to adopt the same values as are being applied by the AER in the upcoming ACT and NSW resets. In determining the final values of these parameters in the Draft Determination, the Commission will take into account any views published by the AER to that point.

5.31 Accordingly, the Commission's decision is that, for the purposes of the Commission's Po adjustment model, the rate of return must be calculated in accordance with the relevant provisions of chapter 6 of the *National Electricity Rules* as applicable to an ex-post assessment, with the nominated parameter values being unchanged from the Draft Decision.

Regulated asset value

Commission's draft decision

5.32 The Draft Decision required Power and Water's Po building block proposal to calculate the regulatory asset base for the final year (2008/09) of the second regulatory period based upon the regulatory asset base value of $350 million (as at 1 July 2002 in July 2002 dollars) using the roll forward model referred to in clause 6.5.1 of the *National Electricity Rules*.

5.33 In the statement of reasons accompanying the Draft Decision, the Commission indicated it did not propose to re-open its earlier asset valuation decision placing the $350 million value (in 1 July 2002 prices) on the initial regulatory asset base.[12] Nevertheless, the Draft Decision also indicated that if Power and Water could demonstrate – independent of any DORC valuation – that the roll forward of this initial regulatory asset base will give rise to financial viability problems for Power and Water

[12] The Commission's asset valuation off-ramp decision, made subsequent to the 2004 Reset, involved adoption of a regulatory asset valuation methodology for Power and Water's electricity network assets that valued assets in place at 1 July 2002 at an amount that at least ensured cashflows sufficient to meet certain debt and equity return benchmarks. That decision set the value of Power and Water's regulated network assets as at 1 July 2002 at $350 million (excluding gifted assets).

during the third regulatory period, the Commission was prepared to consider further the financing options available to Power and Water. Such financing issues might justify raising allowed returns above the cost of capital temporarily to address financing constraints that cannot be addressed through other methods (such as dividend policy). Alternatively, a once-off adjustment to the regulatory asset base might be considered.

5.34 The Commission proposed to assess any financial viability case put forward by Power and Water using the framework which it applied to the asset valuation off-ramp decision, updated where applicable by Part C and schedules 6.1 and 6.2 of the *National Electricity Rules*, including in relation to assessing the prudency and efficiency of capital expenditure and the appropriateness of forecasts of that expenditure. The Commission interprets the financial viability of an asset-intensive business like Power and Water's network business (as defined in the Commission's Off-ramp Review and based upon the Commission's consideration of advice submitted by the Allen Consulting Group) as involving:

> *"a high level of certainty that the business will be able to pay its bills as they fall due, and have sufficiently strong cashflow to raise the finance required to fund its continuing operations (including growth)."* [13]

Views expressed in submissions

5.35 Submissions did not take up this issue.

Commission's analysis and conclusion

5.36 The Commission interprets Power and Water's lack of comment on this issue as a reflection of the view that the asset valuation question is a relatively minor contributing factor to Power and Water's concerns about its financial viability, compared with the Commission's proposed use of productivity-based X factors rather than X factors based on a forward-looking multi-year building block approach.

5.37 For this reason, the Commission has concluded that its reference in the Draft Decision to the initial asset valuation as the sole source of financial viability concerns is not appropriate. In the absence of submissions on the matter, the Commission will lock-in the initial regulatory asset base valuation in its Final Decision.

5.38 As noted previously, the Commission agrees with Power and Water's separate suggestion that the Draft Decision's references to the AER's post-tax revenue model provided inadequate guidance on, among other things, the required application of the roll-forward methodology to the one year ex-post building block assessment. The Commission will be providing clearer guidance regarding the roll-forward method to be used for regulatory purposes in its Po adjustment model.

5.39 Accordingly, the Commission has decided that the Final Decision should simply involve the initial value of the regulatory asset base of $350 million as at 1 July 2002 (in July 2002 dollars) being rolled forward to 2008/09 using amounts calculated, determined or estimated in accordance with the requirements of clause 6.5.1 of the *National Electricity Rules*.

Depreciation

Commission's draft decision

5.40 The Draft Decision required Power and Water's Po building block proposal to include the depreciation schedules nominated by Power and Water for the purposes

[13] Utilities Commission, *Networks Pricing: Asset Valuation Off-Ramp Final Decision Statement of Reasons*, April 2005, p.27

equivalent of clause 6.5.5 of the *National Electricity Rules*, which categorise the relevant assets for these purposes by reference to well accepted categories such as:

- asset class (e.g., distribution lines and substations); or
- category driver (e.g., regulatory obligation or requirement, replacement, reliability, net market benefit, and business support), together with:
- details and an explanation of the calculation of all amounts, values and other inputs used by Power and Water to compile those depreciation schedules, with default use of the straight-line depreciation method; and
- a demonstration that those depreciation schedules conform with the requirements set out in clause 6.5.5(b) of the *National Electricity Rules*.

Views expressed in submissions

5.41 Power and Water raised two concerns on this issue in its submission.

5.42 First:

> *"The PTRM applies economic depreciation in the revenue requirement, calculated as the difference in the opening and closing value of assets (depreciation less inflationary gain). This approach is currently not used by any other jurisdictional regulator for distribution and will result in a divergence between Power and Water's regulatory asset base and that expressed by the PTRM; …" (p. 13)*

5.43 Secondly:

> *"The RFM uses a smaller number of asset classes than Power and Water actually uses for its depreciation schedules. This is yet another reason why the RAB that will be established for 2008-09 will not bear any resemblance to the RAB used by Power and Water." (p. 13)*

Commission's analysis and conclusion

5.44 The Commission does not consider Power and Water's concerns regarding the AER's method for calculating regulatory depreciation to be relevant. Going forward, when it comes to application of the building block approach, the AER's methods will take precedence over alternative methods used to date by jurisdictional regulators. When it comes to applying the building block methodology to a single year, the Commission will be guided by the relevant methodology decisions taken solely by the AER.

5.45 Power and Water's concerns about the number of asset classes are unfounded. This will be made clear in the Commission's Po adjustment model.

5.46 Accordingly, the Commission does not consider that any changes of substance are necessary to the Draft Decision in this respect. It has, however, decided to delete the references in the Draft Decision to the requisite asset categories and the like, and to leave such matters to be addressed by a requirement to conform with clause 6.5.5(b) of the *National Electricity Rules*.

Operating expenditure

Commission's draft decision

5.47 The Draft Decision required Power and Water's Po building block proposal to calculate the total of the estimated operating expenditure for 2008/09 in accordance with clause 6.5.6(c) of the *National Electricity Rules*.

Views expressed in submissions

5.48 In its submission, Power and Water requested:

> *"…the Commission's clarification in its Final Decision on the nature of the documentation it should provide to support its 2008-09 expenditure forecasts in order to address the operating expenditure "objectives" and "criteria" set out in sections 6.5.6(a) and (c) of the Rules." (p. 14)*

Commission's analysis and conclusion

5.49 The nature of the documentation required from Power and Water will be more evident from inspection of the Commission's Po adjustment model.

5.50 In conjunction with the Commission's Po adjustment model, two specific requirements are noteworthy.

5.51 First, operating expenditure must reasonably reflect the operating expenditure criteria stated in clause 6.5.6(c) of the *National Electricity Rules*, namely:

- the efficient costs of achieving the operating expenditure objectives (as stated in clause 6.5.6(a));
- the costs that a prudent operator in the network service provider's circumstances would require to achieve the operating expenditure objectives; and
- a realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.

5.52 Secondly, operating expenditure must be calculated in a manner consistent with Power and Water's approved cost allocation procedures.

5.53 With regard to whether operating expenditure is prudent or efficient, the Commission notes that these matters will need to be addressed in a manner consistent with the calculation of the X_2 value underlying the X factor to be determined by the Commission. To this end, the Commission has decided to formally request its TFP advisor GHD Meyrick to take responsibility not only for recommending the X_2 value – see chapter 6 – but also for assessing the proportionate (%) 'efficiency' adjustment necessary to the estimated actual aggregate operating expenditure (for 2008/09) used to calculate the Po adjustment factor. This will ensure absolute consistency with the finalised X_2 value. In preparing its regulatory proposal, Power and Water will be able to seek input from GHD Meyrick in this regard.

Cost of corporate income tax

Commission's draft decision

5.54 The Draft Decision required Power and Water's Po building block proposal to include the cost of corporate income tax for the final year (2008/09) of the second regulatory period.

Views expressed in submissions

5.55 Submissions did not take up this issue.

Commission's analysis and conclusion

5.56 As a result of the Commission's rethink regarding use of the AER's PTRM, and its decision instead to develop its own Po adjustment model, the Commission has reviewed the way taxation is to be treated when calculating the Po adjustment factor.

5.57 Because the Po adjustment calculation is a one-year calculation eschewing forecasts of expenses (including interest expenses) and income, the Commission accepts that it is not practical for its Po adjustment model to distinguish between the return on debt and return on equity in the manner found in the AER's PTRM, and to apply a different tax treatment to the rate of return on debt. For this reason, the Commission no

longer sees the need for both the separate calculation of corporate income tax and for this tax to be treated as akin to an operating cost. The Commission's Po adjustment model instead reverts to the use of a *pre-tax* rate of return, to be applied in an equivalent manner to the return on both debt and equity. This should assist in simplifying the task facing Power and Water in putting together its regulatory proposal.

Annual revenue

Commission's draft decision

5.58 The Draft Decision required Power and Water's Po building block proposal to include the total annual revenue expected from all related network tariffs during the final year (2008/09) of the second regulatory period.

5.59 The estimated annual revenue being raised from relevant network tariffs during the final year of the second regulatory period (2008/09) is to be derived from existing tariffs relating to standard control services.

5.60 Estimates of the volumes of standard control services expected to be sold in 2008/09 must be 'realistic expectations' consistent with the meaning given to this term by clause 6.5.6(c)(3) of the *National Electricity Rules*.

5.61 All revenue derived from the costs – both capital and operating – included in the building block analysis should be included in the associated annual revenue collections.

5.62 Non-sales revenue network items that should be excluded from measuring the efficient revenue collections are those that recover costs aside from those included in the building block analysis. All on-going non-sales revenues which are clearly a substitute for sales revenues should be included.

Views expressed in submissions

5.63 Submissions did not take up this issue.

Commission's analysis and conclusion

5.64 The Commission does not consider that any changes are necessary to the Draft Decision in this respect.

CHAPTER

6

ANNUAL ESCALATION ARRANGEMENTS FOR STANDARD CONTROL SERVICES

Introduction

6.1 This chapter addresses in detail matters associated with implementing the prospective CPI minus X component of the price control mechanism for standard control services. This includes the additional pass through events that are to apply for the regulatory period, and how any proposed efficiency benefit sharing scheme, service target performance incentive scheme or demand management incentive scheme might apply to Power and Water.

X factor

Commission's draft decision

6.2 In the Draft Decision, the Commission proposed that the Price Control Mechanism Decision retain the approach to setting the X factor for use in the CPI-X price control mechanism established by its 2004 Reset Determination, namely basing the X factor on a benchmark estimate of the trend annual rate of productivity (or efficiency) performance for the industry. This then becomes the performance target that Power and Water must equal to maintain the profitability of its networks business. Performance which betters this target increases profit during the regulatory period and provides the key incentive properties of the CPI-X form of price control.

6.3 As a result, the Draft Decision departed from the *National Electricity Rules* in two respects:

- rather than being part of Power and Water's regulatory proposal, the Commission will set the values of the X factor in advance of the preparation and submission of the regulatory proposal, and Power and Water is required to apply these X factor values in all calculations for its own proposal; and
- rather than being designed to equalise (in terms of net present value) the revenue to be earned by Power and Water based on a multi-year building block approach, the X factor will be determined using a productivity–based approach.

Defining the productivity–based X factors

6.4 As is demonstrated in Appendix B (equation (10)), the X factor can be decomposed into three components as follows (where the differential term is restricted to cover operating expenditure only, as in the second regulatory period):

$$X \equiv (\Delta TFP_I - \Delta TFP_E) + y(PFP_B - PFP_f) - (\Delta W_I - \Delta W_E)$$

$$X \equiv X_1 + X_2 - X_3 \quad \ldots (1)$$

where:

Δ represents the proportional change in a variable

TFP = Total Factor Productivity;

PFP = Partial Factor Productivity of operating expenditure;

W = an input price index;

y = a factor determined in conjunction with the efficiency assumption used for the Po building block exercise, the time period over which the remaining efficiency gap will be removed and what proportion of total costs operating expenditure accounts for ($0<y<1$);

the I subscript denotes the industry's value for a variable;

the E subscript denotes the economy as a whole's value for a variable;

the B subscript denotes the best observed practice in the industry for a variable; and

the f subscript denotes the regulated firm's value for a variable.

6.5 Equation (1) shows that the X factor can effectively be decomposed into three components:

- an X_1 component, being the difference between the industry's TFP growth and that for the economy as a whole;
- an X_2 component, being the difference between the best observed operating expenditure partial productivity level and the firm's operating expenditure partial productivity level; and
- an X_3 component, being the difference between the firm's input price growth and that for the economy as whole.

6.6 Thus, if the regulated industry has the same TFP growth as the economy as a whole and the same rate of input price increase as the economy as a whole then the X factor (being the X_1 factor less the X_3 factor) in this case is zero. If the regulated industry has a higher TFP growth than the economy then X is positive, all else equal, and the rate of allowed price increase for the industry will be less than the CPI. Conversely, if the regulated industry has a higher rate of input price increase than the economy as a whole then X will be negative and, all else equal, the rate of allowed price increase will be higher than the CPI.

6.7 In the second regulatory period, the Commission adopted a differential X factor approach where the X_1 component was based on an estimate of industry average productivity growth less economy–wide productivity growth, and the X_2 component was based on the results of a benchmarking study comparing Power and Water's network operating expenditure productivity level with Australian best practice after allowing for operating environment differences. In the second regulatory period, no allowance was made for an X_3 component associated with input price differences between the electricity distribution industry and the economy as a whole.

6.8 In principle, the X_1 component used for the second regulatory period was the sum of the X_1 and X_3 components now being proposed for the third regulatory period. In practice, as the 2004 Reset implicitly assumed that $X_3=0$, the X_1 components in the second and third regulatory periods are empirically equivalent and so can be directly compared.

Measuring the X_1 component

6.9 In determining the value of X_1 for the second regulatory period, the Commission based its decision on a range of evidence available at the time from other jurisdictions. This included the X factors set earlier in Victoria, Queensland, the UK and the

Netherlands and in a draft report to the New Zealand Commerce Commission on electricity distribution productivity performance in New Zealand.

6.10 In setting the X_1 component for the third regulatory period, a larger body of information on electricity distribution productivity performance is now available from other jurisdictions. To assist in assessing and distilling this information, the Commission has engaged GHD Meyrick to advise it on recent productivity growth trends. GHD Meyrick has been asked to provide a recommendation on the components that make up the X factor as set out in equation (1), and the reasons for those recommendations.

6.11 In forming its view of an appropriate electricity distribution productivity growth rate, GHD Meyrick has been asked to consider the following sources:

- evidence from recent Australian electricity distribution price and revenue cap decisions;
- research sponsored by the Essential Services Commission of Victoria on electricity distribution TFP and critiques of that research;
- the final Meyrick 2003 report to the Commerce Commission on electricity distribution productivity performance in New Zealand;
- Meyrick's recent update for the Commerce Commission of its New Zealand electricity distribution productivity analysis;
- evidence from recent electricity distribution regulatory decisions and productivity analyses in the UK, Europe and North America; and
- any other sources GHD Meyrick considers relevant to the subject, including information on Power and Water' productivity performance, if available and sufficiently robust.

6.12 In forming its view of an appropriate economy–wide productivity growth rate, GHD Meyrick has been asked to consider the following sources:

- Australian Bureau of Statistics estimates of market sector multifactor productivity growth; and
- other estimates of economy–wide productivity growth including Meyrick's study for the Productivity Commission.

Measuring the X_2 component

6.13 In determining the value of X_2 for the second regulatory period, the Commission based its decision on information contained in a confidential benchmarking report prepared for Power and Water and the Commission. This report assessed the magnitude of operating environment factors that increased Power and Water's network operating and maintenance (O&M) costs compared to other Australian electricity distribution businesses. It then calculated a gap between Power and Water Networks' O&M costs adjusted for operating environment differences and Australian best practice based on a confidential productivity database covering eleven electricity distribution businesses.

6.14 The adjusted O&M productivity gap was estimated at 20% in 2002. The Commission allocated half this gap to its first year Po factor adjustment and the remaining half to be removed over a 10 year period by the X_2 component. Taking account of the O&M share of total costs, this produced an X_2 factor of 0.25%.

6.15 The Commission intends to adopt a similar approach in setting the X_2 component for the third regulatory period and has engaged GHD Meyrick to advise it on the appropriate magnitude of the X_2 component to apply.

6.16 The 2003 Meyrick report used data for 2001/02 supplied by Power and Water and data from the Meyrick electricity distribution productivity database for ten other businesses covering earlier years from 1998 through to 2000. Meyrick has since undertaken another round of electricity distribution benchmarking in 2004 which

covered data up to and including 2003 for thirteen of Australia's then sixteen electricity distribution businesses.

6.17 The Commission has requested GHD Meyrick to:

- undertake an update of the 2003 Meyrick analysis for Power and Water Network's O&M productivity gap, taking account of operating environment differences using updated data for Power and Water and data for other businesses rolled forward adjusting for price movements and/or (where practical) using estimated industry productivity growth; and
- provide a recommendation regarding the value of the X_2 component as set out in equation (1) of the Final Decision, and the reasons for that recommendation (including the desirability of retaining the value of the X_2 component used for the 2004 Reset versus changing it to another value based on the updated analysis).

Measuring the X_3 component

6.18 The Commission will be requesting GHD Meyrick to assess available information on forecast increases in electricity distribution input prices and economy–wide input prices, drawing on:

- consideration of issues arising in recent regulatory reviews bearing upon the measurement of the X_3 component, including those for electricity transmission prices in Victoria and for the Essential Services Commission of Victoria's Gas Access Arrangement Review for 2008 to 2012;
- forecasts of electricity distribution input price growth and economy–wide input price growth presented in recent regulatory reviews;
- other forecasts of macroeconomic conditions; and
- information supplied by Power and Water.

6.19 Based on its assessment of this information, GHD Meyrick has been asked to provide a recommendation on whether the X_3 component in equation (1) should take on a non-zero value in the third regulatory period and the reasons for that recommendation.

Views expressed in submissions

6.20 In its submission, Power and Water suggested that the proposed method for calculating the X factor should be amended from the Draft Decision in a number of ways.

6.21 First:

> *"…[by setting] opening tariffs based on a full forward looking building block assessment, by calculating a "base" year based on 2008-09 but adjusted for forward looking costs; (p. 10)*

6.22 Secondly:

> *"An X factor should be determined and applied which reflects possible industry-wide TFP efficiencies (total industry "inputs"/ total industry "outputs"). Where industry wide productivity data is not available then the Commission should calculate X with respect to Power and Water's opportunity for real productivity gains; …" (p. 1)*

Commission's analysis and conclusion

6.23 Regarding Power and Water's first proposed amendment (that the Commission amend its methodology to set opening tariffs based on a full forward looking building block assessment for the base year), the Commission believes that Power and Water's comments do not recognise that the Commission is proposing a price cap (rather than revenue cap) application of the productivity–based method which allows the input base (both operating expenditure and capital costs) to expand in line with output increases. Moreover, in its setting of the X factor, the Commission will take into account any slowdown in productivity growth across the industry and actual or expected differential

rates of input price growth (relative to general inflation), if warranted by the evidence. The Commission, therefore, rejects the need to use a 'forward looking adjustment' in its building block analysis to realign revenues and costs in the first year of the third regulatory period.

6.24 Regarding Power and Water's second proposed amendment (that the Commission amend its methodology so that the X factor be calculated using an industry wide efficiency measure), the Commission is already using information on industry-wide productivity performance in arriving at its preliminary - and final - X factor. Power and Water seems to have been influenced by the possibility that the Commission will derive its X factor from existing X factors calculated by other Australian jurisdictional regulators using the building block approach. The Commission does not disagree with Power and Water's point that such X factors are simply smoothing factors and are not relevant measures of productivity performance. The Commission and its expert advisor, GHD Meyrick, recognise that X factors from jurisdictions using the traditional building block approach provide limited information on relevant productivity performance. It is for this reason that primary reliance is being placed on available studies of electricity distribution productivity performance in Australasia and North America in arriving at the X_1 value. Where information is available on the productivity trends that were embedded in building block decisions, this is used as a secondary source of information only.

6.25 The Commission does not propose to depart from its Draft Decision in relation to estimating the X factor.

6.26 In accordance with the Draft Decision, a preliminary value of the X factor has been determined by GHD Meyrick to enable Power and Water to take this value fully into account when developing its initial regulatory proposal.

6.27 Power and Water's initial regulatory proposal in relation to standard control services must be consistent with the following preliminary values of the three X components:

- X_1 = 0.0% (compared with 1.75% for the 2004 Reset);
- X_2 = 0.25% (unchanged, as requested, on the 2004 Reset); and
- X_3 = 1.1% (compared with 0% for the 2004 Reset).

The derivations of these preliminary values is documented in GHD Meyrick's report reproduced at Appendix C.

6.28 Accordingly, GHD Meyrick recommends a preliminary X factor of –0.85% to apply during the third regulatory period, that is, a real price *increase* of 0.85% per annum (compared with the real price *decrease* that has been applying during the second regulatory period of 2% per annum). This preliminary X factor of –0.85% is derived as follows:

$$X = X_1 + X_2 – X_3$$
$$= 0.0\% + 0.25\% – 1.1\%$$
$$= –0.85\%.$$

6.29 The Final Decision incorporates this preliminary value for the X factor (and these preliminary values for the three X components).

6.30 The final X factor (and component values) for use in Power and Water's revised regulatory proposal are to be as determined by the Commission in its Initial Draft Determination (in October 2008). GHD Meyrick will be making its final recommendation to the Commission on the value of each of the three X components prior to release of the Commission's Initial Draft Determination.

6.31 In finalising the X_1 component recommendation, GHD Meyrick will undertake further reviews of recent studies of electricity distribution TFP in Australasia, North America and Europe. In addition, GHD Meyrick will shortly be requesting data from

Power and Water which would support calculating a TFP index for Power and Water over the last several years. This will permit GHD Meyrick to check whether Power and Water's recent productivity growth performance has been consistent with that observed for network service providers in other jurisdictions.

6.32 To help finalise recommendations for the X_2 component, GHD Meyrick will be undertaking an update of the 2003 Meyrick analysis of Power and Water Network's O&M productivity gap taking account of operating environment differences. GHD Meyrick will use updated data for Power and Water and benchmarking data for other businesses rolled forward by adjusting for price movements and, where practical, estimated industry productivity growth. The updated study will take account of improvements in Power and Water's information keeping since 2003. GHD Meyrick will shortly be providing a data request to Power and Water to obtain the information necessary to update the 2003 study and will meet with Power and Water staff to ensure the information is interpreted correctly.

6.33 GHD Meyrick will also examine any further available evidence on movements in electricity distribution input prices relative to the economy as a whole before finalising its recommendation on the X_3 component.

Cost pass through

Commission's draft decision

6.34 The Draft Decision proposed that the price control mechanism would allow cost pass through arrangements to apply if events occur during the third regulatory period which, if not passed through, could put at risk the efficiency of Power and Water's decisions and actions.

6.35 If a positive change event occurs, Power and Water may seek the approval of the Commission to pass through to network users a positive pass through amount. If a negative change event occurs, the Commission may require Power and Water to pass through to network users a negative pass through amount as determined by the Commission.

6.36 To seek the approval of the Commission to pass through a positive pass through amount, Power and Water must submit to the Commission, within 90 business days of the relevant positive change event occurring, a written statement which meets the requirements of clause 6.6.1(c) of the *National Electricity Rules*.

6.37 Power and Water must submit to the Commission, within 90 business days of becoming aware of the occurrence of a negative change event, a written statement which meets the requirements of clause 6.6.1(f) of the *National Electricity Rules*. The Commission may, however, determine that a negative change event has occurred even in the absence of notification by Power and Water.

6.38 If the Commission determines that a pass through change event has occurred (whether that be a positive or a negative one), the Commission will determine:

- the pass through amount; and
- the amount of that pass through amount that should be passed through to network users in each regulatory year during the remainder of the regulatory period.

6.39 In making a determination with respect either to a positive or to a negative pass through, the Commission will undertake a public consultation process in accordance with clause 62(2) of the NT Code and, in making its determination, will take into account the pass through factors specified in clause 6.6.1(j) of the *National Electricity Rules*.

Views expressed in submissions

6.40 In its submission, Power and Water suggested that allowance also be made for:

> *"..."cost pass-through" provisions to deal with significant unforeseen costs that are not reflected in the initial building block assessment, and therefore the opening tariffs. For example, costs associated with the introduction of full retail contestability." (p.10)*

Commission's analysis and conclusion

6.41 On reflection, the Commission notes that the *National Electricity Rules* limit a pass through event to specified events (most notably: a tax change event, a terrorism event, and a service standard event). The Rules also allow for other types of events to be added at the regulator's discretion.

6.42 The Commission therefore has decided to amend its Draft Decision slightly to, in effect, restrict the 'default' events to those in the Rules. As part of its regulatory proposal, Power and Water can (if it wishes) propose any additional types of cost pass through events which it considers should apply, for the Commission's consideration and possible approval.

Efficiency benefit sharing scheme

6.43 The intent of an efficiency benefit sharing scheme is to provide for a fair sharing between the network service provider and network users of the efficiency gains (or losses) derived from the operating expenditure of network service providers for a regulatory period being less (or more) than the forecast operating expenditure accepted or substituted by the regulator for that regulatory period. An efficiency benefit sharing scheme may also be developed to cover efficiency gains and losses related to capital expenditure or distribution losses.

Commission's draft decision

6.44 The Draft Decision proposed that Power and Water could put forward an efficiency benefit sharing scheme to apply to the fourth regulatory period if it so wishes. Otherwise, no such scheme would be implemented during the third regulatory period.

6.45 Were Power and Water to propose an efficiency benefit sharing scheme, it would need to take into account any such schemes developed and published by the AER and the factors in clause 6.5.8(c) of the *National Electricity Rules*.

6.46 An efficiency benefits sharing scheme could only apply in the next (fourth) regulatory period. The Po adjustment applying at the commencement of the third regulatory period effectively negates the role for an efficiency benefits scheme during the third regulatory period.

Views expressed in submissions

6.47 Submissions did not take up this issue.

Commission's analysis and conclusion

6.48 On reflection, the Commission acknowledges that the absence of forecasts of expenditure under a TFP approach makes it impractical to apply any efficiency benefit sharing scheme in the context of a TFP approach. Moreover, in practice, the absence of an efficiency benefit sharing scheme under the TFP approach is unlikely to imply a significant diminution of the incentives for efficiency compared to the building block approach.

6.49 In addition, the Commission has also decided that a further Po adjustment assessment will take place at the end of the third regulatory period. This obviates the role for an efficiency sharing scheme even under a building block approach.

6.50 Accordingly, the Final Decision deletes reference to the possible proposal of an efficiency benefit sharing scheme to apply to the fourth regulatory period.

Service target performance incentive scheme

Commission's draft decision

6.51 The role of a service performance incentive scheme is just as important under the TFP approach as it is under the building block approach.

6.52 From the Commission's perspective, the issue is when (whether via jurisdictional consistency or by eventual adoption of national arrangements) rather than if service performance incentive arrangements will be introduced into the Northern Territory's network price regulation methodology.

6.53 However, at this time, data constraints present too many problems to introduce an S factor involving actual monetary incentives. The issues that concern the Commission include:

- the limited accuracy and availability of data, which might only see use of partial reliability data, which could lead to some perverse incentives with focus on 'easy wins' in relation to measured reliability to the neglect of improvements regarding service performance that is not yet well measured (e.g., the reliability of the worst performing parts of the network);
- the observed variability of service level indicators are a concern, but the short period of data available limit the ability to smooth possible price effects; and
- as the accuracy of the service level data improves, reported reliability levels could worsen unrelated to poor performance.

6.54 The Commission's current view notwithstanding, Power and Water may choose to propose a service target performance incentive scheme. In this case, for the proposal to be approved the Commission would need to be satisfied that the scheme appropriately took into account any such schemes developed and published by the AER and the factors in clause 6.6.2(b) of the *National Electricity Rules*.

6.55 The Draft Decision only proposed implementation of a 'paper trial' for the third regulatory period unless Power and Water proposes a service target performance incentive scheme.[14]

Views expressed in submissions

6.56 Submissions did not take up this issue.

Commission's analysis and conclusion

6.57 While the Commission remains intent on implementing a 'paper trial' for the third regulatory period unless Power and Water proposes a service target performance incentive scheme, it has decided to delete references to such a paper trial from the Final Decision.

[14] A 'paper trial' of a service incentive (S factor) scheme was instituted for the 2004-09 regulatory period in NSW by the Independent Pricing and Regulatory Tribunal, in lieu of providing actual monetary incentives (see IPART's *NSW Electricity Distribution Pricing 2004/05 to 2008/09 Final Report*, June 2004, pp.119-123).

6.58 Details of any paper trial will be developed in conjunction with the forthcoming review of the NT Electricity Standards of Service Code.

Demand management scheme

6.59 A demand management scheme provides incentives for the network service provider to implement efficient non-network alternatives or to manage the expected demand for standard control services in some other way.

Commission's draft decision

6.60 The Draft Decision involved Power and Water being free to propose a demand management scheme in its regulatory proposal if it so wishes. Otherwise, no such schemes would be implemented during the third regulatory period.

6.61 Were Power and Water to propose a demand management scheme, it would need to take into account any such schemes developed and published by the AER and the factors in clause 6.6.3(b) of the *National Electricity Rules*.

Views expressed in submissions

6.62 Submissions did not take up this issue.

Commission's analysis and conclusion

6.63 The Commission does not therefore propose to make a change from the Draft Decision in this respect.

CHAPTER

7

INDIVIDUAL NETWORK ACCESS TARIFFS

Introduction

7.1 This chapter addresses in detail various matters associated with the determination and approval of individual network access tariffs.

Classification of services

Commission's draft decision

7.2 The Draft Decision involved Power and Water's regulatory proposal including a classification proposal:

- showing how the network services to be provided by Power and Water should, in Power and Water's opinion, be classified under the classification in Part B, Division 1 of the *National Electricity Rules*; and
- if the proposed classification differs from the current classification as set out at Appendix A – the reasons for the difference.

7.3 The Draft Decision also proposed that the classification of services would be the current classification as set out at Appendix A unless the Commission considers that, in the light of Power and Water's regulatory proposal and the submissions received, there are good reasons for departing from the current classification in order to meet the requirements in the NT Code or (otherwise) clause 6.2.1 of the *National Electricity Rules*.

7.4 This default services classification at Appendix A is based upon the Commission's 2004 Excluded Services Determination, but re-expressed in the classification terminology in clause 6.2.1(a) of the *National Electricity Rules*:

- direct control services;
- negotiated network services; and
- unregulated services.[15]

7.5 Clause 6.2.2(a) of the *National Electricity Rules* requires direct control services to be further divided into two categories – standard control services and alternative control services.[16] Standard control services must be regulated using the primary price control

[15] If the AER decides against classifying a network service, the service is not regulated under the *National Electricity Rules* (clause 6.2.1(a)).

[16] For example, in circumstances where a service is provided to a small number of identifiable customers on a discretionary or infrequent basis, and costs can be directly attributed to those customers, it may be more appropriate to classify the service as an alternative control service than as a standard control service.

mechanism. Alternative control services may, but need not be, regulated using a different price control mechanism.

Views expressed in submissions

7.6 Power and Water expressed two sets of concern about this aspect of the Draft Decision.

7.7 First, Power and Water expressed their concern that the classification of services would not be settled prior to the submission of its regulatory proposal:

> *"…This requirement [to submit its services classification proposal to the Commission as part of its regulatory proposal] is in contrast to arrangements in New South Wales and Queensland where the distribution businesses are allowed to submit their services classification to the AER well ahead of submitting their regulatory proposal. This allows these businesses to agree with the AER what services are standard control, alternative control, negotiated and unregulated services prior to preparing and submitting their regulatory proposals. This is critical because:*
>
> - *Only standard control services are subject to regulation under the building block approach. This is discussed further below; and*
> - *Power and Water will only be required to prepare and submit a negotiation framework if it has negotiated services." (p.12)*

Power and Water was concerned that:

> *"… if the Commission rejects Power and Water's services classification (required to be prepared in a compressed timeframe) there is a high risk that Power and Water's revenue proposal will no longer satisfy the requirements of Part C of the Rules and will therefore need to be re-submitted to take account of changes to its services classification."(p.12)*

7.8 Secondly, Power and Water was concerned that the Commission's 'default' services classification was not suitable for Power and Water because:

> *"• The requirement to prepare a negotiating framework for above-standard connection services, which the Commission has classified as "negotiated services", would place an unrealistic burden on Power and Water given the number and small size of these services. Moreover, Power and Water considers that above-standard connection services do not satisfy the criteria set out in section 6.2.1(c) of the Rules and section 2F(a)-(g) of the NEL. This is largely because above-standard connection services are not competitively provided and the purchaser of these services has no countervailing market power. Power and Water considers that customers would be seriously disadvantaged if this classification was to be upheld; and*
>
> - *Miscellaneous services do not meet the criteria set out in clause 6.2.2(c) of the Rules for classifying services as alternative control rather than standard control services. Based on this criterion, miscellaneous services are more appropriately classified as a second category of standard control services. Power and Water notes that it is working towards this outcome" (p.13)*

Commission's analysis and conclusion

7.9 To address Power and Water's concern regarding the timing of the approval of classification of services, the Commission has decided to vary the Draft Decision such that, by 30 June 2008, Power and Water must submit a separate services classification proposal to the Commission:

- proposing how the network services provided by Power and Water should be distinguished according to the classification in Part B, Division 1 of the *National Electricity Rules*; and
- if the proposed classification of Power and Water's network services differs from the current classification as set out at Appendix A – the reasons for the difference.

7.10 The Commission will approve this classification within 30 days.

7.11 With regard to Power and Water's concern that the Commission's 'default' services classification was not suitable, the Commission's Draft Decision allows for Power and Water's service classification proposal to differ from the Commission's 'default' classification set out at Appendix A, provided that Power and Water explain the differences.

7.12 How the classification of services should differ from that set out at Appendix A is therefore a matter for Power and Water to address in its services classification proposal. The Commission has an open mind about this issue, and looks forward to Power and Water's contribution in this area.

Alternative control services

Commission's draft decision

7.13 The Draft Decision required Power and Water's regulatory proposal to include, for direct control services classified as alternative control services, a proposed control mechanism.

7.14 The Draft Decision indicated that the Commission will approve the control mechanism(s) proposed for alternative control services if it complies with the requirements of clause 6.2.5 of the *National Electricity Rules*.

Views expressed in submissions

7.15 Submissions did not take up this issue.

Commission's analysis and conclusion

7.16 There being no objections, the Commission has decided that no change is necessary to this aspect of its Draft Decision.

Negotiated network services

Commission's draft decision

7.17 The Draft Decision required Power and Water's regulatory proposal to include, for services classified as negotiated network services, a proposed negotiating framework.

7.18 The Draft Decision indicated that the Commission will approve the proposed negotiating framework provided it is consistent with:

- the applicable requirements of this Final Decision;
- any applicable requirements of the NT Code, including the requirements in the Code's chapter 2 Negotiation of Access and chapter 3 Access Terms; and
- the minimum requirements for a negotiating framework listed in clause 6.7.5(c) of the *National Electricity Rules*.

7.19 The negotiating framework is to set out the procedures to be followed during negotiations between Power and Water and any person (the applicant) who wishes to receive a negotiated network service from Power and Water as to the terms and conditions of access for the provision of the service.

7.20 The approved negotiating framework will replace the Commission's existing Framework for Negotiation of Discounted Network Tariffs.

Views expressed in submissions

7.21 Submissions did not take up this issue.

Commission's analysis and conclusion

7.22 There being no objections, the Commission has decided that no change is necessary to this aspect of its Draft Decision.

Side constraint on annual tariff movements for standard control services

Commission's draft decision

7.23 The Draft Decision proposed that the weighted average tariff for each individual end-use customer for a particular year of the regulatory period not exceed the corresponding weighted average tariff for that individual end-use customer for the preceding regulatory year by more than a permissible percentage (i.e., the side constraint).

7.24 The Draft Decision also proposed that, for the third regulatory period, consistent with clause 6.18.6(c) of the *National Electricity Rules*, the permissible percentage would generally be the greater of the following:

- CPI – X + Po plus 2%; and
- CPI plus 2%.

7.25 Under this approach, the real effective rebalancing limit of 2% is maintained regardless of whether the allowed CPI-X price path requires price reduction or price increases.

7.26 In deciding whether the permissible percentage has been exceeded in a particular year, the Commission will disregard those matters nominated as matters to be disregarded in clause 6.18.6(d) of the *National Electricity Rules* (e.g., approved cost pass throughs).

Views expressed in submissions

7.27 Submissions did not take up this issue.

Commission's analysis and conclusion

7.28 There being no objections, the Commission has decided that no change is necessary to this aspect of its Draft Decision.

7.29 However, for the avoidance of any doubt, the Commission has decided to clearly delineate the permissible percentage applying in the first year of the regulatory period from that applying during the second and subsequent years of that period.

7.30 Specifically, the Final Decision involves the permissible percentage for the first year of the third regulatory period being the greater of the following:

- CPI – X + Po plus 2%; and
- CPI plus 2%.

For the second and each subsequent year of the third regulatory period, the permissible percentage will be the greater of the following:

- CPI – X plus 2%; and
- CPI plus 2%.

Network pricing principles and methods

Commission's draft decision

7.31 The Draft Decision required Power and Water's regulatory proposal to include, for standard control services, a draft Network Pricing Principles and Methods Statement to apply to the setting of individual network tariffs.

7.32 The Network Pricing Principles and Methods Statement must set out the details of the principles and methods to be used for establishing the reference tariffs to apply to individual direct control services.[17]

7.33 The Draft Decision indicated that the Commission would approve the draft Network Pricing Principles and Methods Statement submitted by Power and Water if it was satisfied that this statement is consistent with:

- the applicable requirements of this Final Decision;
- any applicable requirements of the NT Code; and
- clause 6.18.3, clause 6.18.4 and clause 6.18.5 of the *National Electricity Rules*.

Views expressed in submissions

7.34 Submissions did not take up this issue.

Commission's analysis and conclusion

7.35 There being no objections, the Commission has decided that no change is necessary to this aspect of its Draft Decision.

Pricing proposals

Commission's draft decision

7.36 The Draft Decision required Power and Water's regulatory proposal to include for direct control services, for the regulatory year commencing 1 July 2009, the proposed Network Tariff Schedules consistent with all other elements of the regulatory proposal and using values of the CPI and the X factors applying to the control mechanism for standard control services as determined at the time by the Commission (i.e., the initial pricing proposal).

7.37 The Draft Decision indicated that the Commission would approve Power and Water's annual pricing proposal for standard control services if the Commission is satisfied that the proposed tariffs in the Network Tariff Schedules:

- comply in full with this Final Decision; and
- in all other respects are consistent with the Network Pricing Principles and Methods Statement.

7.38 The Draft Decision also indicated that the Commission's approval of annual network tariffs would be conditional on Power and Water maintaining on its website:

- the approved Network Tariff Schedules for the relevant year; and
- a statement of expected network tariff trends (to be updated for each year) giving an indication of how Power and Water expects network tariffs to change over the regulatory period and the reasons for the expected changes.

[17] *Electricity Networks (Third Party Access) Code*, clause 75(5).

Views expressed in submissions

7.39 Submissions did not take up this issue.

Commission's analysis and conclusion

7.40 There being no objections, the Commission has decided that there be no substantive changes to this aspect of its Draft Decision.

7.41 However, the Commission has decided to redress the Draft Decision's omission of any reference to the requirements to be met by annual pricing proposals.

7.42 Consistent with clause 6.18.2(b) of the *National Electricity Rules*, the Final Decision requires a pricing proposal to:

- set out Power and Water's proposed Network Tariff Schedules for direct control services, including the tariff classes that are to apply for the relevant year, the proposed tariffs for each tariff class and, for each proposed tariff, the charging parameters (i.e., the constituent elements of a tariff) and the elements of service to which each charging parameter relates;
- describe the nature and extent of change in the proposed Network Tariff Schedules from the tariffs applying in previous regulatory year; and
- demonstrate compliance with this Final Decision and the Network Pricing Principles and Methods Statement.

APPENDIX

A

DEFAULT SERVICES CLASSIFICATION

This classification is based upon the Commission's 2004 Excluded Services Determination, but expressed in the terminology of the services classification used by the *National Electricity Rules*.

(1) Unregulated services not subject to any price regulation are the following services:

(a) contestable networks engineering consulting services provided by Power and Water.

(2) Negotiated network services which, in the Commission's opinion, do not lend themselves to being regulated by the price cap form of price control applying in the third regulatory control period are the following services:

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

(3) Direct control services, divided into the following subclasses:

(a) Alternative control services which, in the Commission's opinion, do not lend themselves to being regulated by the price cap form of price control applying in the third regulatory control period are the following services:

i. 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 and Water as a normal part of standard network services to all customers including –

- charges for moving mains, services or meters forming part of Power and Water's networks system to accommodate extension, re-design or re-development of any premises;
- the provision of electric plant for the specific purpose of enabling the provision of standby supplies or sales of electricity; and
- provision of metering, or metering data, to a standard in excess of that required for billing purposes; and

(b) Standard control services which, by default, are all other network services.

APPENDIX

B

PRODUCTIVITY-BASED X FACTORS[18]

The principal objective of CPI–X regulation is to mimic the outcomes that would be achieved in a competitive market. Competitive markets normally have a number of desirable properties. The process of competition leads to industry output prices reflecting industry unit costs, including a normal rate of return on the value of assets after allowing for risk. Because no individual firm can influence industry unit costs, each firm has a strong incentive to maximise its productivity performance to achieve lower unit costs than the rest of the industry. This will allow it to keep the benefit of new, more efficient processes that it may develop until such times as they are generally adopted by the industry. This process leads to the industry operating as efficiently as possible at any point in time and the benefits of productivity improvements being passed on to consumers relatively quickly.

Because infrastructure industries such as the provision of electricity distribution networks are often subject to decreasing costs, competition is normally limited and incentives to minimise costs and provide the cheapest and best possible quality service to users are not strong. The use of CPI–X regulation in such industries attempts to strengthen the incentive to operate efficiently by imposing similar pressures on the network operator to the process of competition. It does this by constraining the operator's output price to track the level of estimated efficient unit costs for that industry. The change in output prices is 'capped' as follows:

$$\Delta P = \Delta W - X \pm Z \qquad \ldots (1)$$

where:

Δ represents the proportional change in a variable;

and:

P = the maximum allowed output price;

W = a price index taken to approximate changes in the industry's input prices;

X = the estimated productivity change for the industry; and

Z = relevant changes in external circumstances beyond managers' control which the regulator may wish to allow for.

There are several alternative ways of choosing the index W to reflect industry input prices. Perhaps the best way of doing this is to use a specially constructed index which weights together the prices of inputs by their shares in industry costs. However, this price information is often not readily or objectively available, particularly in regulatory

[18] This Appendix draws on Meyrick and Associates, *Scoping Study into Data Collection Issues for Incentive Regulation* (Report prepared for the Australian Competition and Consumer Commission) November 2003. GHD Meyrick has corrected some aspects of this appendix which were incorrectly specified by the Commission in the version in the Draft Decision report.

regimes that have yet to fully mature. A commonly used alternative is to choose a generally available price index such as the CPI.

In choosing a productivity growth rate to base X on, the productivity growth rate should be external to the individual firm being regulated and instead reflect industry trends at a national or even international level. This way the regulated firm is given an incentive to match (or better) this productivity growth rate while having minimal opportunity to 'game' the regulator by acting strategically.

The framework that underlies the CPI–X approach can be illustrated as follows, starting with the index number definition of Total Factor Productivity (TFP) growth:

$$(1 + \Delta TFP) \equiv ({}^{Y_1}/_{Y_0})/({}^{X_1}/_{X_0})$$

$$= [\,({}^{R_1}/_{R_0})/({}^{P_1}/_{P_0})\,] \,/\, [\,({}^{C_1}/_{C_0})/({}^{W_1}/_{W_0})\,]$$

$$= [\,({}^{M_1}/_{M_0}) * ({}^{W_1}/_{W_0})\,] \,/\, ({}^{P_1}/_{P_0}) \qquad \ldots (2)$$

where:

the subscripts represent different time periods;

and

TFP = Total Factor Productivity;

Y = total output quantity;

X = total input quantity;

P = the output price index;

W = the input price index;

R = revenue;

C = cost;

M = the mark-up; and

R = MC.

As a normal return on assets (after allowing for risk) is included in the definition of costs, a firm earning normal returns will have a mark-up factor of one while a firm earning excess returns will have a mark-up of greater than one. Rearranging the above equation gives:

$${}^{P_1}/_{P_0} = [\,({}^{M_1}/_{M_0}) * ({}^{W_1}/_{W_0})\,] \,/\, (1 + \Delta TFP) \qquad \ldots (3)$$

where:

${}^{W_1}/_{W_0}$ = the firm's input price index (which includes intermediate inputs).

Equation (3) is approximately equivalent to:

$$\Delta P = \Delta M + \Delta W - \Delta TFP \qquad \ldots (4)$$

Thus, the admissible rate of output price increase ΔP is equal to the rate of increase of input prices ΔW less the rate of TFP growth, ΔTFP (provided the regulator wants to keep the monopolistic mark-up constant so that $\Delta M = 0$, e.g., if an initial period P_0 change has been used to remove excess or deficient returns). Equation (3) or its approximation (4) is the key equation for a productivity–based regulation framework: the term (W_1/W_0) would be an input price index of the firm's peers and the term ΔTFP would be the average TFP growth rate for the firm's peers. The mark-up growth term could be set equal to zero

under normal circumstances and, since the initial building block review is intended to ensure efficient costs are covered, it is excluded from the following presentation.

The next issue to be considered in operationalising (4) is the choice of the price index to reflect changes in the industry's input prices, W. The most common choice for this index is the consumer price index (CPI). But this is actually an index of output prices for the economy rather than input prices. Normally we can expect the economy's input price growth to exceed its output price growth by the extent of economy–wide TFP growth (since labour and capital ultimately get the benefits from productivity growth). Assuming that the mark-up factors for the economy as a whole are one, the counterpart to equation (2) applied to the entire economy becomes:

$$P_{(E)1}/P_{(E)0} = (W_{(E)1}/W_{(E)0}) / \Delta TFP_{(E)} \quad \ldots (5)$$

where:

$P_{(E)}$ = the output price index for the economy;

$W_{(E)}$ = the input price index for the economy; and

$TFP_{(E)}$ = economy-wide TFP

Substituting the rate of change of the CPI for the economy–wide output price index on the left hand side of (5) and rearranging terms leads to the following identity:

$$1 = (CPI_1/CPI_0) * \Delta TFP_{(E)} / (W_{(E)1}/W_{(E)0}) \quad \ldots (6)$$

Substituting the right hand side of (6) into (2) produces the following equation:

$$P_1/P_0 = [\,(CPI_1/CPI_0)* \Delta TFP_{(E)} / (W_{(E)1}/W_{(E)0})\,] * [W_1/W_0] / \Delta TFP$$

$$= [\,(CPI_1/CPI_0)* (\Delta TFP_{(E)} / \Delta TFP)\,] * [\,(W_1/W_0) / (W_{(E)1}/W_{(E)0})\,] \quad \ldots (7)$$

Approximating the terms in (7) by finite percentage changes leads to the following:

$$\Delta P = \Delta CPI + (\Delta W - \Delta W_{(E)}) - (\Delta TFP - \Delta TFP_{(E)}) \quad \ldots (8)$$

The X factor is therefore defined as:

$$X \equiv (\Delta TFP - \Delta TFP_{(E)}) - (\Delta W - \Delta W_{(E)}) \quad \ldots (9)$$

This equation is often referred to as the 'differential of a differential' equation. Equation (9) shows that the X factor can effectively be decomposed into two terms. The first differential term takes the difference between the industry's TFP growth and that for the economy as a whole, while the second differential term takes the difference between the firm's input prices and those for the economy as whole. Thus, if the regulated industry has the same TFP growth as the economy as a whole and the same rate of input price increase as the economy as a whole then the X factor in this case is zero. If the regulated industry has a higher TFP growth than the economy then X is positive, all else equal, and the rate of allowed price increase for the industry will be less than the CPI. Conversely, if the regulated industry has a higher rate of input price increase than the economy as a whole then X will be negative, all else equal, and the rate of allowed price increase will be higher than the CPI.

If all firms in the industry are operating at similar levels of efficiency initially, then a common X factor can be applied to all firms. However, until incentive regulation has been operating consistently for a prolonged period, there is likely to be a wide spread of productivity levels for individual firms. Differential X factors are often used initially in this circumstance.

The differential X factor approach has usually been adopted where industry-wide data are used to determine the productivity growth rate and input price growth rate in determining the X factor for a number of firms in the industry in the early stages of

incentive regulation.[19] The differential X factor is then used to tailor the regulatory regime to the circumstances of each particular firm (or a small number of groups of firms) by taking account of productivity levels as well as productivity growth rates. Normally, firms that have low productivity levels are potentially capable of achieving higher productivity growth rates. This is because they can make some easy gains by removing the slack from their operations to mimic the operations of the industry's best performers. Consequently, they can achieve productivity growth in excess of the rate of technological change for the industry for an interim period while they catch up to the productivity levels of the best performing firms. The differential X factor is sometimes restricted to focus on a subset of inputs, usually operating expenditure.

Where a differential X factor term is included but restricted to only cover operating expenditure, the X factor can therefore be decomposed into three components as follows:

$$X \equiv (\Delta TFP_I - \Delta TFP_E) + y(PFP_B - PFP_f) - (\Delta W_I - \Delta W_E)$$

$$X \equiv X_1 + X_2 - X_3 \quad \ldots (10)$$

where:

Δ represents the proportional change in a variable

TFP = Total Factor Productivity

PFP = Partial Factor Productivity of operating expenditure

W = an input price index

y = a factor determined in conjunction with the efficiency assumption used for the Po building block exercise, the time period over which the remaining efficiency gap will be removed and what proportion of total costs operating expenditure accounts for ($0<y<1$)

the I subscript denotes the industry's value for a variable

the E subscript denotes the economy as a whole's value for a variable

the B subscript denotes the best observed practice in the industry for a variable

the f subscript denotes the regulated firm's value for a variable.

Equation (10) shows that the X factor can effectively be decomposed into three components:

- an X_1 component, being the difference between the industry's TFP growth and that for the economy as a whole;
- an X_2 component, being the difference between the best observed operating expenditure partial productivity level and the firm's operating expenditure partial productivity level; and
- an X_3 component, being the difference between the firm's input prices and those for the economy as whole.

To implement incentive regulation in the form outlined above requires information on the productivity performance and input price changes of the firm, its peers and the economy as a whole. Operating environment differences also play an important role in determining TFP and PFP levels and have to be allowed for in the analysis.

In the second regulatory period the Commission adopted a differential X factor approach where the X_1 component was based on an estimate of industry average productivity growth less economy–wide productivity growth and the X_2 component was based on the results of a benchmarking study comparing Power and Water Network's operating

[19] This approach has been adopted in New Zealand – see Meyrick and Associates, *Regulation of Electricity Lines Businesses, Analysis of Lines Business Performance – 1996–2003*, Report prepared for the New Zealand Commerce Commission, December 2003.

expenditure productivity level with Australian best practice after allowing for operating environment differences. In the second regulatory period, no allowance was made for input price differences between the electricity distribution industry and the economy as a whole. Going forward, if Power and Water Network's input prices were forecast to be increasing faster than those for the economy as a whole (i.e., it was facing a positive input price differential) then the X_3 component would be deducted from the sum of X_1 and X_2 to produce a less onerous overall X factor thus allowing Power and Water to increase its prices more than would otherwise be the case.

APPENDIX

C

PRELIMINARY X FACTOR RECOMMENDATION

The Commission engaged GHD Meyrick to recommend preliminary values of the X_1 and X_3 components of the X factor, with the value of the X_2 component used for the 2004 Reset of 0.25% being retained for the time being.

GHD Meyrick's recommendations and its reasons are provided in the report reproduced below.

Preliminary X Factor Components

The X factor can be decomposed into three components as follows (where the productivity level differential term is restricted to cover opex only, as in the second regulatory period):

$$X \equiv (\Delta TFP_I - \Delta TFP_E) + y.(PFP_B - PFP_f) - (\Delta W_I - \Delta W_E)$$

$$X \equiv X_1 + X_2 - X_3 \ldots (1)$$

where:

Δ represents the proportional change in a variable

TFP = Total Factor Productivity

PFP = Partial Factor Productivity of Opex

W = Input price index

y = a factor based on the time period over which the remaining efficiency gap will be removed and what proportion of total costs opex accounts for ($0<y<1$)

the I subscript denotes the industry's value for a variable

the E subscript denotes the economy as a whole's value for a variable

the B subscript denotes the best observed practice in the industry for a variable

the f subscript denotes the regulated firm's value for a variable.

This note sets out the preliminary values of the three X factor components recommended by GHD Meyrick. Further work will be undertaken to refine these recommendations over the next four months.

X_1 factor

In arriving at a preliminary recommendation for the X_1 factor, GHD Meyrick has reviewed recent Australian regulatory decisions regarding electricity distribution X factors (and reported productivity growth assumptions embedded in those decisions), recent electricity distribution TFP studies in Australia, New Zealand and North America and estimates of Australia's economy–wide multifactor productivity growth.

Recent Australian electricity distribution decisions have ranged from real price reductions with P_0s of up to 17 per cent and then X factors of 2.5 per cent (ie CPI–2.5) in Victoria to real price increases with P_0s of up to –7 per cent and then X factors of up to –2.5 per cent (ie CPI+2.5) in NSW. Queensland has also allowed real price increases by setting X factors of up to –5 per cent while the ACT and South Australia have both set smaller P_0 price reductions and then set the X factor equal to CPI, thus holding real prices constant in subsequent years. Since these jurisdictions have used the building blocks method where the X factor effectively

acts as a smoothing mechanism, it is difficult to draw implications from these decisions regarding TFP growth rates other than that some states see the need for real price increases resulting principally from increased capital expenditure programs. By implication, these states see electricity distribution TFP worsening. However, the recent electricity distribution decisions in Queensland, Tasmania and the ACT have all incorporated opex partial productivity growth forecasts of 1 per cent per annum (QCA 2005).

The two major electricity distribution TFP studies that have been done in Australasia are Pacific Economics Group (PEG 2008a) relating to Victoria and Meyrick (2003b, 2007) relating to New Zealand. The PEG study covers the period 1995 to 2006. High TFP growth rates were found in the five years following privatisation in 1995 followed by a period of only modest growth through to 2005. The latest PEG results show a large TFP increase of nearly 6 per cent in 2006. Such a high TFP growth rate in one year is implausible for electricity distribution businesses that have been privatised for over a decade – indeed this rate is similar to those observed in the first two years following privatisation. Until this result and the data on which it is based can be tested, GHD Meyrick recommends treating it with the utmost caution.

PEG (2008a) reports an annual average TFP growth rate of 1.7 per cent for Victoria. However, this includes two of the years of high TFP growth following privatisation and the questionable result for 2006. A more reasonable basis on which to form forecasts of sustainable TFP growth would be to take the period since 2000 which excludes the temporary increase in TFP growth following privatisation. Including the high (reported) TFP growth year of 2006 this produces an average annual TFP growth rate of 1.3 per cent while excluding 2006 produces an average TFP growth rate of only 0.4 per cent.

Meyrick (2003b) constructed detailed estimates of productivity growth for New Zealand's 29 electricity distribution businesses for the period 1996 to 2003. The trend TFP growth rate for this period was found to be 2.1 per cent per annum. These results form the basis of the Commerce Commission's current price thresholds regulatory regime. Meyrick (2007) updated the earlier TFP study to include the years up to 2006. TFP was found to have fallen in each of the years 2004 and 2005 due largely to increased opex. The increased opex appears to result from increased maintenance on the relatively large former United Networks system following its sale in 2003 and from the installation of geographic information systems. The trend rate of TFP growth from 1996 to 2006 is 0.9 per cent per annum.

The most recent information on US electricity distribution TFP growth rates can be found in PEG (2008b) where estimates based on a sample of 69 businesses covering the period 1988 to 2006 are presented. The average annual TFP growth rate for the period 1995 to 2006 is 0.88 per cent while a deceleration for more recent years is also observed with the average growth

rate for 2000 to 2006 being 0.75 per cent. PEG (2008b) also presents electricity distribution TFP estimates for the Canadian province of Ontario. The recent data for Ontario is limited and only covers the years 2002 to 2006. PEG found TFP growth for Ontario was flat over this period. In conjunction with London Economics International, Meyrick has also constructed TFP estimates for Ontario and found TFP to have declined slightly over the 2002 to 2006 period (LEI 2008).

Australian Bureau of Statistics estimates of the overall Australian market sector's multifactor productivity (MFP[1]) have also shown some deceleration over the past decade with an average annual growth rate of 1.4 per cent for the period 1995 to 2006 but only 0.9 per cent for the period 2000 to 2006 (ABS 2007a).

GHD Meyrick's preliminary assessment is that TFP growth rates of 0.9 per cent per annum are reasonable estimates of both the electricity distribution industry's and the economy's TFP performance in recent years. This is based on trend growth rates of 0.9 per cent for the electricity distribution industries in New Zealand and the US and a range of 0.4 to 1.3 per cent for sustainable TFP growth in Victoria and average MFP growth since 2000 for the market sector as constructed by the ABS. This produces an X_1 factor preliminary recommendation of zero.

X_2 factor

The Utilities Commission requested GHD Meyrick to use the X_2 factor from the second regulatory period of 0.25 per cent as its preliminary estimate for X_2 in the third regulatory period. The figure used in the second regulatory period involved a 10 year adjustment period which would also cover the third regulatory period. GHD Meyrick will be doing further work over the next four months to update the Meyrick (2003a) report on which the second regulatory period's X_2 factor was based.

X_3 factor

The X factor used in the second regulatory period effectively assumed that the input price differential between electricity distribution and the economy as a whole was zero. Recent regulatory decisions have recognised that electricity (and gas) distribution are now facing relatively high input price pressures (see AER 2007, 2008; ESC 2008). Competition for skilled engineering workers, particularly from the mining sector, has led to high rates of wage increase for linesman and other skill types employed by distribution businesses. Similarly,

[1] MFP is essentially similar to the TFP concept discussed here except that intermediate inputs are deducted from outputs in MFP (ie a value–added output measure is used) whereas they appear explicitly as inputs in the TFP measures. All else equal, MFP measures will produce somewhat higher growth rates than TFP measures.

increases in metals prices have led to increasing capital inputs prices for distribution businesses. The difference between electricity distribution capital input prices and those of the economy as a whole has been further widened by the relatively low proportion of the capital stock in electricity distribution accounted for by computerised equipment, the price of which has increased less than other types of capital.

These input price pressures for electricity distribution have emerged in the relatively recent past and are forecast to continue in at least the medium term. There is, therefore, now a case for including a non–zero input price differential or X_3 factor. In arriving at a preliminary recommendation for the X_3 factor, GHD Meyrick has reviewed recent labour price index movements (at the national level) for the Electricity, gas and water sector and for All industries published by the ABS. Between 2002 and 2007 the Labour price index for Electricity, gas and water increased by an average annual rate of 4.59 per cent compared to an increase for All industries of 3.72 per cent (ABS 2007b) producing a labour price differential of 0.89 per cent. Since labour costs account for the majority of opex and in the absence of detailed information on how electricity distribution materials and services input prices differ from those of the economy as a whole, we use the labour price differential as representative for the opex component of electricity distribution costs.

The capital goods price index for Electricity, gas and water increased annually by 5.27 per cent on average between 2002 and 2007 compared to an increase of 4.07 per cent for All industries producing a capital input price differential of 1.19 per cent (ABS 2007c).

GHD Meyrick assume that opex accounts for one third of electricity distribution costs while capital costs account for the remaining two thirds. Using this weighting produces an input price differential or X_3 factor estimate of 1.1 per cent calculated as follows:

X_3 = 1/3 x 0.86 per cent + 2/3 x 1.19 per cent = 1.08 per cent.

X factor

GHD Meyrick recommends a preliminary X factor of –0.85 per cent (ie a real price increase of 0.85 per cent or a nominal price increase of CPI+0.85 per cent) derived as follows:

$X = X_1 + X_2 – X_3$

= 0 per cent + 0.25 per cent – 1.1 per cent

= –0.85 per cent.

References

Australian Bureau of Statistics (ABS) (2007a), *Australian System of National Accounts, 2006–07, Table 22*, Cat No 5204.0, Canberra.

Australian Bureau of Statistics (ABS) (2007b), *Labour Price Index, Australia, Total Hourly Rates of Pay Excluding Bonuses: Sector by Industry, Original (Financial Year Index Numbers for year ended June quarter)*, Cat No 6345.0, Canberra.

Australian Bureau of Statistics (ABS) (2007c), *Australian System of National Accounts, 2006–07, Tables 88 and 89*, Cat No 5204.0, Canberra.

Australian Energy Regulator (AER) (2007), *ElectraNet Transmission Determination, 2008–09 to 2013–14, Draft Decision*, Canberra, 9 November.

Australian Energy Regulator (AER) (2008), *SP AusNet Transmission Determination, 2008–09 to 2013–14, Final Decision*, Canberra, 31 January.

Essential Services Commission (ESC) (2008), *Gas Access Arrangement Review 2008–2012, Final Decision*, Melbourne, 7 March.

London Economics International (LEI) (2008), *3G IRM Consultation (EB-2007-0673): X Factor Specification, Inflation Index Selection, and Capital Expenditure Issues*, Presentation to Ontario Energy Board on behalf of the Coalition of Large Distributors and Hydro One Networks Inc, Toronto, 26 March.

Meyrick and Associates (2003a), *Benchmarking Power and Water Corporation's Power Networks O&M Costs*, Report prepared for Power and Water Corporation and the Utilities Commission, Canberra, 7 January.

Meyrick and Associates (2003b), *Regulation of Electricity Lines Businesses, Analysis of Lines Business Performance – 1996–2003*, Report prepared for the New Zealand Commerce Commission, Canberra, 19 December.

Meyrick and Associates (2007), *Electricity Distribution Business Productivity and Profitability Update*, Report prepared for the New Zealand Commerce Commission, Canberra, 7 December.

Queensland Competition Authority (QCA) (2005), *Final Determination – Regulation of Electricity Distribution*, Brisbane, April.

Pacific Economics Group (PEG) (2008a), *TFP Research for Victoria's Power Distribution Industry: 2006 Update*, Report prepared for the Essential Services Commission, Madison, February.

Pacific Economics Group (PEG) (2008b), *Calibrating Rate Indexing Mechanisms for Third Generation Incentive Regulation in Ontario*, Report prepared for the Ontario Energy Board, Madison, 28 February.