

COMMERCE COMMISSION
Regulation of Electricity Lines Businesses
Targeted Control Regime

Threshold Reset 2009

Discussion Paper

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Networks Performance Branch

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EXECUTIVE SUMMARY

Background

Under Part 4A of the Commerce Act 1986 (“the Act”), the Commerce Commission (“the Commission”) is required to set thresholds for the declaration of control of electricity lines businesses, i.e. electricity distribution businesses (“EDB”) and Transpower. The current thresholds (also referred to as the “revised thresholds”) applying to EDBs have been in place since 1 April 2004.

On 30 July 2007 the Commission published a paper¹ (“Process Paper”) outlining a process to reset the current EDB thresholds. This Discussion Paper is the next stage in the process, it discusses issues that the Commission considers are relevant in setting thresholds for the declaration of control of EDBs. In forming its initial views, the Commission has considered the potential impact of changes to the regulatory framework arising from the recently announced Cabinet Decision on changes to Parts 4 and 4A of the Act. The thresholds being developed by the Commission under this reset process will meet the requirements of the existing Part 4A regime. Further, the thresholds will remain relevant to the proposed arrangements, and may be transitioned to become the proposed ‘default price-quality path’.²

Resetting the Thresholds

To inform its assessment of threshold options, the Commission has developed a set of principles. The principles are an enhancement of the evaluation criteria used to develop the current thresholds.³ They are defined to reflect the Purpose Statement set out in s57E of the Act. They also reflect regulatory best practice and have regard where appropriate to relevant Government policy statements transmitted to the Commission under s26 of the Act. The Commission proposes to consider possible threshold options against these principles.

Threshold Arrangements

Before detailed design options can be developed two main issues need to be considered. The first is consideration of the high-level structure of the threshold arrangements. The Commission’s initial view is that price and quality are the factors most relevant to the interests of consumers, therefore these should continue to form the basis for the overall threshold structure.

The second issue is consideration of the approach used to derive key threshold parameters. The Commission had previously considered two main approaches, benchmarking and building block analysis (both full and partial). The costs and complexity of regulatory arrangements should be commensurate with the relatively small size of New Zealand’s electricity industry and the Commission therefore has reached an initial view that benchmarking should continue to be used as the primary approach to set the thresholds.

¹ Commerce Commission, *Process for Resetting the Thresholds for Control*, 30 July 2007.

² Media statement, 21 November 2007 – www.beehive.govt.nz/dalziel.

³ Commerce Commission, *Resetting the Price Path Threshold: Discussion Paper*, May 2003, p 6.

In reaching its initial views, the Commission has considered options for resetting the thresholds arrangements under four broad areas. These are the efficient operation of EDBs in terms of productivity and profitability, efficient infrastructure investment, appropriate service quality and the development of refinements to the overall arrangements.

Efficient Operation of EDBs

A core concept in the Purpose Statement is the promotion of the efficient operation of markets related to electricity distribution services. The Commission considers that EDB productivity and profitability are two important indicators of their efficiency. Efficiency is in the interests of consumers as it is concerned with resources being put to their best use (allocative efficiency) and being produced at the least cost (productive efficiency). Profitability is relevant when seeking to ensure the financial sustainability of the industry and, where necessary, limiting excessive profits. Both of these aims are in the interests of consumers. Given appropriate incentives, firms will seek to carry out prudent investments, innovate and reduce costs, increasing their productivity and dynamic efficiency. The Commission considers that the use of productivity and profitability incentives remains appropriate as part of a price-path threshold seeking to ensure the efficient operation of EDBs and thus being consistent with the intent of the Purpose Statement.

CPI-X instruments are commonly used as a basis for regulating utilities under price-cap regimes as they provide incentives for greater ongoing efficiency. The Commission's initial view is that the use of CPI-X remains consistent with the Purpose Statement. It is the Commission's initial view that the B-factor, reflecting the aggregate productivity of the industry relative to the economy, be retained and included within an X-factor.

The Commission considers there are two broad approaches for addressing relative productivity and profitability. The first involves retaining the existing relative productivity and profitability elements of the X-factor across the full regulatory period. The second includes a one-off price adjustment in the first year of the threshold (P_0 adjustment) to reflect the differences in each EDB's relative productivity and relative profitability. A possible variation on the second approach involves the P_0 adjustment only addressing EDB profitability, with the X-factor continuing to be used to address relative productivity.

Incentivising Efficient Investment

Dynamic efficiency is achieved where firms have appropriate incentives to invest efficiently, to innovate and improve the range and quality of services, and to lower costs over time. In seeking to promote dynamic efficiency, the thresholds should ensure that EDBs retain the ability to undertake efficient infrastructure investment. At a minimum, thresholds should not introduce disincentives towards efficient infrastructure investment, particularly for age-based renewals.

To inform its initial research for the reset, the Commission engaged Farrier Swier Consulting (FSC) to review the likely level of future investment requirements. The research estimated an increase in the level of renewal investment in New Zealand from a current level of \$200m per annum to over \$300m per annum over the next 20 years. However, it noted that such an

increase did not constitute a ‘wall of wire’.⁴ The report identified that a small number of EDBs may require moderate renewal investment increases during the 2009 regulatory period, while possibly requiring more significant increases in the 2014 regulatory period.

A range of possible options could be adopted to provide for investment under the price-path threshold, including the use of an annuitised cost of capital⁵ or an adjustment to the basis on which initial prices are set. The mechanism that the Commission initially considers would be most consistent with the existing threshold arrangements would be to add an additional incentive factor (e.g., an I-factor) to the price-path threshold. This would allow increased notional revenue for EDBs having significant renewal investment requirements. The Commission’s initial view is that an I-factor is unlikely to be required during the 2009-14 regulatory period. Such a factor may be more appropriate in later regulatory periods with significant renewal increases facing a number of EDBs. The introduction of a facility allowing for customised thresholds applications may be more appropriate, to account for the moderate increases indicated for the 2009-14 regulatory period.

The Commission is mindful of the possibility that a number of individual EDBs may experience relatively large increases in renewal investments in coming regulatory periods. The Commission considers that any provision for additional investment should only apply where there is sufficient evidence and justification. As such, the mechanisms considered to provide for additional investment are likely to apply only to specific EDBs in exceptional circumstances.

Ensuring Appropriate Quality of Service

The Commission considers that EDBs may trade-off between price and quality when seeking to comply with the price-path threshold (e.g., by reducing costs) and thus that EDBs may not have adequate incentives to maintain an appropriate level of service quality. The Commission’s initial view is that an appropriate level of service can be maintained by setting a separate quality threshold. The Commission considers that it is appropriate to revise the quality threshold for the 2009-14 regulatory period and to consider a number of refinements to the reliability criteria.

The refinements considered by the Commission seek to address extreme events and data variability, and to consider the performance of disaggregated networks. First, the Commission proposes to continue to normalise reliability data to take into account the impact of extreme events. Second, in addition to the variability caused by extreme events, normal variability over time can be addressed through the use of a three-year moving average. The Commission’s third proposed refinement is that where an EDB owns networks with sufficiently different characteristics then reliability performance for those individual networks should be separately considered.

To better consider and incentivise the reliability performance of individual EDBs, it is proposed to establish peer groups of similar EDBs based on network characteristics such as consumer density. Comparisons between peer groups should allow a better determination of

⁴ ‘Wall of wire’ refers to the scenario where a significant proportion of a network’s assets require renewal at the same time.

⁵ See section 5.5.2.

what represents an appropriate level of reliability. EDBs may then be further delineated into performance bands based on historic performance relative to other EDBs in their peer group.

In the absence of reliable consumer demand information the Commission initially considers that peer group performance could indicate appropriate levels that EDBs should seek to achieve. On the basis that the better performers are not over-delivering and that there are no underlying differences in quality expectation between consumers, these performance levels can act as a proxy for consumer demand.

The Commission considers that incentives to improve performance arising from peer group comparison could be combined with a complementary price-path incentive (S-factor). As an example, the Commission's initial view is that EDBs considered to be below-average performers should seek significant reliability improvements. In recognition that those EDBs may require considerable investments to achieve these improvements their price-path could be raised using a positive S-factor. The Commission considers that its proposed approach will better incentivise appropriate levels of reliability performance and is more closely aligned with conditions experienced in a competitive market.

It is the Commission's initial view that the combination of price and quality based incentives, as noted above, would promote the objectives of the Purpose Statement. The requirement for EDBs to continue to take consumer expectations into account in management and business decisions remains important. The Commission's initial view is that the aims of the current customer communication (consumer engagement) criterion should be catered for within the Information Disclosure Requirements. This would give EDBs the flexibility to develop their own approaches to consulting with consumers while not putting them at risk of breaching their thresholds. As such, the consumer engagement criterion would no longer be required as part of the threshold arrangements.

Areas for Potential Refinement

In addition to these incentive focussed areas, the Commission has considered a number of potential refinements to the current threshold arrangements. These are generally independent of the detailed design of thresholds but may impact on threshold parameters and associated processes. These include:

- the scope of the threshold arrangements to promote energy efficiency;
- whether the existing categories of excluded services and pass-through costs remain relevant;
- improved predictability of breaches by reducing the scope for technical breaches;
- whether EDBs should be excluded from providing threshold compliance statements based on historic performance; and
- the use of customised thresholds.

Next Steps

After considering submissions to this paper, the Commission intends to publish a Methodology Paper in May/June 2008. It is intended that this will be followed by a Draft Decision Paper in late September 2008 and a Final Decision Paper in December 2008.

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CHAPTER 1: INTRODUCTION

1 This chapter introduces this document (“Discussion Paper”) and describes its purpose and role within the overall reset process. It concludes with a description of the consultation process.

1.1 BACKGROUND

2 Part 4A of the Commerce Act 1986 (“the Act”) came into effect on 8 August 2001. It provides for a regulatory regime for large electricity lines businesses (“lines businesses”) to be implemented by the Commerce Commission (“the Commission”). The regime consists of two complementary elements:

- a targeted control regime, relating to goods and services supplied by lines businesses; and
- information disclosure requirements (“Information Disclosure”)⁶, relating to the operation and behaviour of lines businesses.

3 Under Part 4A of the Act, the Commission is required to set thresholds for the declaration of control of lines businesses. The Commission first set thresholds (“initial thresholds”) applicable to electricity distribution businesses (“EDB”) from 6 June 2003. These were reset on 1 April 2004 and the current thresholds (also referred to as the “revised thresholds”) were put in place. The Commission proposes to reset the thresholds from 1 April 2009. A new set of thresholds will then apply during the next regulatory period, 1 April 2009 – 31 March 2014.

4 On 30 July 2007 the Commission published a paper⁷ (“Process Paper”) outlining a process to reset the current EDB thresholds. This paper constitutes the first substantive consultative step in this process. It discusses issues which the Commission considers are relevant in determining the methodology for the targeted control of EDBs.

5 In addition to this paper the Commission has released a number of consultant reports informing its initial research on the threshold reset. These, together with the Discussion Paper, should be considered as part of the overall consultative package.

- Farrier Swier Consulting, *Distribution Networks and Asset Management*, December 2007 – FSC (2007).
- Farrier Swier Consulting, *Supplemental Report*, December 2007 – FSC (2007a).
- Meyrick and Associates, *Productivity and Profitability Update*, December 2007 – Meyrick (2007).
- Meyrick and Associates, *Pricing and Investment Incentives*, November 2007 – Meyrick (2007a).
- Parsons Brinkerhoff Associates, *Resetting the 2009 Quality Thresholds: Research Report*, November 2007 – PBA (2007).

⁶ Commerce Commission, *Electricity Information Disclosure Requirements (Consolidating all amendments to 1 April 2007)*, 31 March 2006.

⁷ Commerce Commission, *Process for Resetting the Thresholds for Control*, 30 July 2007.

- Parsons Brinkerhoff Associates, *Consumer Engagement Criterion for Electricity Distribution Businesses*, December 2007 – PBA (2007a).

- 6 It should be noted that neither this paper nor the overall process will consider issues in relation to the thresholds of Transpower New Zealand Ltd (Transpower).
- 7 In drafting this Discussion Paper, the Commission has considered the potential impact of changes to the regulatory framework following the recently announced Cabinet Decision in relation to Parts 4 and 4A of the Act (“Cabinet Decision”).⁸ The Commission notes that legislation to implement these changes is planned to be introduced to Parliament next year. If the legislation is passed then the Commission’s expectation is that the thresholds currently being developed under this reset process would be transitioned to become the proposed ‘default price-quality path’. Were the legislation not to be passed, the Commission retains the view that it is appropriate to have reset thresholds in place from 1 April 2009.

1.2 PURPOSE OF THIS PAPER

- 8 As indicated above, this Discussion Paper is the first step in resetting the thresholds for EDBs under the targeted control regime. The purpose of this paper is twofold.
- 9 First, it sets out the initial set of issues the Commission considers are relevant in determining a preferred methodology for resetting the thresholds. It considers the overall structure and type of thresholds and principles to be used in assessing the options. It discusses pricing related issues such as incentivising efficiency, investment requirements and price/quality trade-offs. It also considers issues relating to quality of service and reliability of supply.
- 10 Second, it invites interested persons to give their views on those issues and to highlight any additional issues they consider relevant. To assist in the provision of feedback, the Commission has posed questions on issues it would like to receive comment on. These are highlighted throughout the document. Comment on issues in addition to the identified questions is also invited.
- 11 It should be noted that the analysis presented within the paper and associated consultant reports is indicative. It is likely that further work will be required on the areas addressed and any further issues identified during consultation. Similarly, it should be noted that the views of the Commission contained in this paper are its initial views and do not represent decisions. The remainder of this paper is structured as follows.

⁸ Media statement, 21 November 2007 – www.beehive.govt.nz/dalziel.

Table 1 Report Structure

Chapter 2	Provides a brief overview of the regulatory framework applicable to New Zealand EDBs. It also describes the Commission's proposed assessment framework.
Chapter 3	Provides a brief overview of the existing threshold regime and an overview of the potential structure of the reset thresholds.
Chapter 4	Discusses pricing issues.
Chapter 5	Discusses network investment in New Zealand and potential incentives.
Chapter 6	Discusses issues on the quality of service provided to consumers.
Chapter 7	Considers a range of possible refinements for the new threshold arrangements.
Appendices	Provide further information and background.

1.3 THRESHOLD RESET PROCESS

- 12 As previously indicated in the Process Paper, the Commission envisages that the reset process will consist of four consecutive stages, each with a consultative element. These four stages are as follows:
- discussion stage;
 - methodology stage;
 - decision stage; and
 - technical drafting stage.
- 13 These four stages (described below) will contain progressively more detail on the proposed thresholds and seek to address and draw conclusions on particular issues as the project proceeds. Indicative timings for the stages are set out in Table 2 below.
- 14 The current discussion stage considers the overall structure and type of thresholds to be applied to EDBs and consists of this paper and a number of research reports.
- 15 The Commission intends to publish its preliminary views in a Methodology Paper. The paper will include proposed options for the detailed form of thresholds, parameters and analytical techniques to be used in developing thresholds and a preliminary indication of the range of threshold levels.
- 16 In the decision stage the Commission will publish its Draft Decision Paper. Having received and reviewed submissions the Commission will then hold a public conference, followed by an opportunity for cross-submissions. Following a further short consultation, allowing respondents to comment solely on the application of the methodology, the Final Decision Paper will then set out the threshold levels to be applied to EDBs.
- 17 The final stage is the technical drafting stage. The draft Gazette Notice will be published with the Final Decision Paper. A short consultation period will follow to allow parties to comment on the technical drafting in the Gazette Notice, prior to the application of the new thresholds on 1 April 2009.

1.3.1 Next Steps

- 18 Having reviewed submissions on this paper the Commission will publish its preliminary views on the form of thresholds in the Methodology Paper. It is intended that the Methodology Paper will be published in May/June 2008. Further steps in the reset process are outlined in Table 2 below.

Table 2 Process Timetable

Indicative Dates	Milestones	Stage
December 2007	Publication of and consultation on this Discussion Paper	1
May/June 2008	Publication of and consultation on the Methodology Paper	2
September 2008	Publication of and consultation on the Draft Decision Paper	3
October 2008	Conference and cross submissions on the Draft Decision Paper	
November 2008	Indicative threshold levels published (to include a short consultation)	
December 2008	Publication of Final Decision Paper	
February 2009	Publication of and consultation on draft Gazette Notice	4
1 April 2009	New thresholds to apply following publication of Gazette Notice	

1.4 SUBMISSIONS

- 19 Views are invited on all the issues raised by this document. To assist in the provision of feedback, the Commission has identified a number of questions throughout the paper on which it invites comment. To assist in submissions a list of these questions can be found in appendix A.
- 20 Submissions on this discussion paper should be received by the Commission no later than 1pm Monday, 18 February 2008. All submissions should be supported by documentation and evidence, where appropriate.
- 21 To foster an informed and transparent process, the Commission intends to publish all submissions on its website www.comcom.govt.nz/thresholdreset. Accordingly, the Commission would appreciate an electronic copy of each submission and requests that hard copies of submissions not be provided (unless an electronic copy is not available). Submissions should be sent to:

electricity@comcom.govt.nz;

or

David Healy
Chief Adviser
Network Performance Branch
Commerce Commission
P.O. Box 2351
Wellington

1.4.1 Confidentiality

- 22 Parties making submissions may wish to provide confidential or commercially sensitive information to the Commission. Parties can request that the Commission makes orders under s100 of the Act in respect of information that should not be made public. Any request for a s100 order must be made when the relevant information is supplied to the Commission and must identify the reasons why the relevant information should not be made public. The Commission will provide further information on s100 orders if requested by parties, including the principles that are applied when considering requests for such orders. Any s100 order will apply for a limited time only as specified in the order. Once an order expires, the Commission will follow its usual process in response to any request for information under the Official Information Act 1982.
- 23 The Commission discourages requests for non-disclosure of submissions, in whole or in part, as it is desirable to test all information in a fully public way. It is unlikely to agree to any requests that submissions in their entirety remain confidential. However, the Commission recognises there will be cases where interested parties making submissions may wish to provide confidential information to the Commission.
- 24 If it is necessary to include such material in a submission the information should be clearly marked and preferably included in an appendix to the submission. Interested parties should provide the Commission with both confidential and public versions of their submissions in both electronic and hard-copy formats. The responsibility for ensuring that confidential information is not included in a public version of a submission rests entirely with the party making the submission.

CHAPTER 2: REGULATORY FRAMEWORK AND PRINCIPLES

25 This chapter provides an overview of the current regulatory framework applicable to EDBs. It also sets out a number of principles to be considered when resetting EDB thresholds.

2.1 INTRODUCTION

26 Section 57D of the Act defines large electricity lines business. They include both the twenty-eight EDBs and Transpower. This paper is concerned with the threshold reset for EDBs only. It uses the term EDB throughout to refer to New Zealand's twenty-eight distribution businesses. As large electricity lines businesses, EDBs are subject to the provisions of the Act.

2.2 THE COMMERCE ACT

27 The Act came into force on 1 May 1986. A number of sections of the Act are relevant to resetting thresholds for EDBs. These are discussed below.

2.2.1 Part 4A

28 Part 4A of the Act came into effect on 8 August 2001 and, among other things, requires the Commission to implement a targeted control regime for the regulation of lines businesses, namely the EDBs and Transpower. Part 4A has a number of sections that apply to setting thresholds. These are discussed below.

The Purpose Statement (s57E)

29 The purpose of the targeted control regime is set out in s57E ("Purpose Statement"). It states that:

"The purpose of this subpart is to promote the efficient operation of markets directly related to electricity distribution and transmission services through targeted control for the long-term benefit of consumers by ensuring that suppliers–

- (a) are limited in their ability to extract excessive profits; and*
- (b) face strong incentives to improve efficiency and provide services at a quality that reflects consumer demands; and*
- (c) share the benefits of efficiency gains with consumers, including through lower prices."*

30 The Purpose Statement may be broken into three parts:

- i) The statement of purpose; to promote the efficient operation of markets directly related to electricity distribution services.
- ii) The means of achieving that purpose; through targeted control for the long term benefit of consumers.
- iii) The amplification of that means, in the form of ensuring that the objectives set out in paragraphs (a) to (c) are achieved.⁹

⁹ *Unison Networks Limited v The Commerce Commission & Powerco Limited*, Unreported, High Court (Wild J), Wellington, CIV 2004 485 960, 28 November 2005, paras [110] – [112].

- 31 Section 57E(a) to (c) have been identified by Parliament as central aspects of the long-term interests of consumers and are central, though not exclusive, goals for the Commission in the performance of its duties under subpart 1 of Part 4A.¹⁰
- 32 Under section 57E(a), the Commission aims to ensure that lines businesses are limited in their ability to extract excessive profits. In other words, the aim is to limit the ability of lines businesses to earn greater than normal profits (after allowing for the degree of risk involved).
- 33 Under section 57E(b) the Commission aims to ensure that lines businesses do not incur unnecessary or wasteful costs, and make appropriate trade-offs between increased quality and cost. Expenditure should be restricted to meeting quality standards required by consumers.
- 34 Under section 57E(c) the Commission aims to ensure that efficiency gains, when achieved, are shared with customers. Implicit in ‘sharing’ is that the lines business can retain some of the gain for a period of time. The sharing could take the form of lower prices or of improved quality of service or a combination of the two.¹¹
- 35 The Commission considers that, in promoting the efficient operation of markets, there are three relevant dimensions of efficiency.¹² These are:
- allocative efficiency – where a business prices its services to reflect the efficient costs of supplying those services, thereby earning normal returns (after allowing for the degree of risk involved);
 - productive efficiency – where a business produces services at the desired quality at minimum cost; and
 - dynamic efficiency – where a business has the appropriate incentives to invest, innovate and improve the range and quality of services, increase productivity, and lower costs over time.
- 36 The Commission considers that the efficient operation of a market is generally best achieved through effective competition. However, in markets with natural monopoly characteristics, such as electricity distribution, competition is unlikely to result in the most efficient outcome for the economy as a whole because it could result in inefficient duplication of assets. The thresholds can therefore be seen as attempting to replicate the pressures that exist in competitive markets for the long term benefit of consumers.

Targeted Control Regime

- 37 Part 4A establishes a targeted control regime for all EDBs. Unlike the approach to regulating electricity lines businesses commonly adopted in overseas jurisdictions, in New Zealand such businesses are not potentially subject to control unless they have breached one or more performance thresholds set by the Commission.

¹⁰ Ibid, para [59].

¹¹ Ibid, para [60]. Justice Wild’s observations in relation to section 57E were not disturbed by the Supreme Court in *Unison Networks Limited v Commerce Commission*, SC/12/2007, 10 September 2007.

¹² Commerce Commission, *Regulation of Electricity Lines Businesses: Discussion Paper*, March 2002.

38 There are three key steps in implementing the targeted control regime and achieving the objectives set out above. The first step is to set the thresholds for declaration of control. The process for setting thresholds is set out in s57G, as:

“The Commission must, as soon as practicable after the commencement of this subpart, and may from time to time –

- (a) consult with participants in the electricity distribution and transmission markets and with consumers as to possible thresholds for the declaration of control in relation to large electricity lines businesses; and*
- (b) set thresholds for the declaration of control in relation to large electricity lines businesses.”*

39 The second step requires the Commission to assess compliance with the thresholds and identify whether any EDB is in breach of the thresholds. Section 57H sets out the process the Commission must follow when making these assessments.

40 The third step requires the Commission to work through a process for deciding on whether or not to declare control (s57H and s57I). The Commission terms this determination process a ‘post-breach inquiry’.

41 These three steps, together with Information Disclosure in subpart 3 of Part 4A allow the Commission to achieve the purpose in Part 4A.

2.2.2 Section 26 and Government Policy

42 Section 26 of the Act requires the Commission to have regard to Government economic policy – Government policy statements (“GPS”) – as transmitted in writing to it by the Minister of Commerce, when exercising its powers under the Act. Section 26 provides:

- i) “In the exercise of its powers under... this Act, the Commission shall have regard to the economic policies of the Government as transmitted in writing from time to time to the Commission by the Minister.*
- ii) The Minister shall cause every statement of economic policy transmitted to the Commission under subsection (1) of this section to be published in the Gazette and laid before Parliament as soon as practicable after so transmitting it.*
- iii) For the avoidance of doubt, a statement of economic policy transmitted to the Commission under this section is not a direction for the purposes of Part 3 of the Crown Entities Act 2004.”*

43 The Minister has transmitted two such statements of economic policy to the Commission pursuant to s26 of the Act: one concerning electricity governance and one concerning infrastructure investment incentives. The Commission has had, and will continue to have, regard to these statements of economic policy in exercising its powers in resetting the thresholds.

44 The meaning of s26 of the Act was considered by the Commission in *Re NZ Kiwifruit Exporters Assn (Inc)/NZ Kiwifruit Coolstorers Assn (Inc)* [(1989) 2 NZBLC (Com) 104,485] and by the High Court in *NZ Co-op Dairy Co Ltd v Commerce Commission* [[1992] 1 NZLR 601]. In the Kiwifruit case, the Commission stated (at page 104):

“...having regard to the general policy discretion in the Act to promote competition s26 may be used to advise the Commission of Government policy or policies or to be more specific in relation thereto. It is not to influence or determine the decisions which the Commission must make. Thus, fully preserving the discretions given to the Commission in the Act, the Commission is required only to have regard to such statements in reaching its decisions. The Oxford Dictionary defines the word ‘regard’ as meaning ‘attention, heed and care’.”

45 In the High Court case in *NZ Co-op Dairy Co* (pages 612 and 613), the Court observed:

"As with any other evidence it is for the tribunal to assess the weight to be given to each item of evidence and in the case of a statement of this kind, which in our view is simply an evidential statement of Government policy - it is certainly not a direction - it remains for the tribunal to assess the weight to be given to it as an expression of official perception of, in this case, the public benefit. We do not think there is any magic in the words 'have regard to'. They mean no more than they say. The tribunal may not ignore the statement. It must be given genuine attention and thought, and such weight as the tribunal considers appropriate. But having done that the tribunal is entitled to conclude it is not of sufficient significance either alone or together with other matters to outweigh other contrary considerations which it must take into account in accordance with its statutory function: NZ Fishing Industry Association v MAF [1988] 1 NZLR 544, at p 566, Ishak v Thowfeek [1968] 1 WLR 1718 (PC), at p 1725. In the end, however weighty the statement may be as an expression of considered Government policy, it does not have any legislative effect to vary the nature of the duties which the Tribunal must carry out."

GPS on Electricity Governance

46 On 29 October 2004, the Government issued the GPS in relation to electricity governance. The GPS has been updated, with a new release published in October 2006 (the October 2006 GPS).¹³ The principal objectives of the October 2006 GPS are to:

- ensure that electricity is produced and delivered to all classes of consumers in an efficient, fair, reliable and environmentally sustainable manner; and
- promote and facilitate the efficient use of electricity.

GPS on Infrastructure Investment Incentives

47 On 7 August 2006, the Government issued the Commission with a GPS relating to infrastructure investment incentives faced by regulated businesses (the August 2006 GPS). Clause 7 of the GPS sets out the following economic policy objectives:

The Government's economic policy objective is that regulated businesses have incentives to invest in replacement, upgraded and new infrastructure and in related businesses for the long term benefit of consumers. The Government considers that this objective will be achieved by:

- a) *regulatory stability, transparency and certainty giving businesses the confidence to make long-life investments;*
- b) *regulated rates of return being commercially realistic and taking full account of the long-term risks to consumers of underinvestment in basic infrastructure; and*
- c) *regulated businesses being confident they will not be disadvantaged in their regulated businesses if they invest in other infrastructure and services.*

48 As set out in clause 8, the Government also considers it to be important for regulatory control to ensure that:

- a) *the consumers of regulated businesses are not disadvantaged by the investments of regulated businesses in other infrastructure and services;*
- b) *businesses are held accountable for making investments in that business where those investments have been provided for in regulated revenues and prices; and*
- c) *regulated businesses provide infrastructure at the quality required by consumers at an efficient price.*

¹³ Ministry of Economic Development, Government Policy Statement on Electricity Governance, October 2006, Issue 123.

49 The Commission has carefully assessed and considered each relevant statement in the August 2006 GPS and the October 2006 GPS for the purposes of drafting this discussion paper in conjunction with the considerations it must take into account in accordance with its statutory functions and powers. The Commission considers that it has given proper and genuine attention to both GPSs in setting out its views in this paper.

2.3 APPLICATION OF REGULATORY FRAMEWORK

50 Section 2.2 outlined the key elements of the targeted control regime as set down in Part 4A of the Act. This section provides an overview of the current thresholds, discussing the basis for thresholds, the process for assessing compliance and the length of regulatory period over which they apply.

2.3.1 Thresholds

51 The Commission implemented the targeted control regime by setting the initial and current price and quality thresholds. A range of threshold options were considered by the Commission in developing the existing arrangements, including thresholds with price, quality, profit-based and sharing elements. On the basis of information available at the time, and taking into account the Purpose Statement, the Commission considered that, at that point in time, options including profit thresholds would be undesirable. The Commission also concluded it would be unnecessary, at the outset of the threshold arrangements, to include a sharing based threshold in the absence of efficiency gains.

52 For the current thresholds the Commission concluded that it was appropriate to set thresholds for both price and quality on the grounds that those were the two key factors of most interest to consumers. Moreover, the Commission acknowledged the trade-off between price and quality and that in the absence of a separate quality threshold, EDBs may not always have an incentive to maintain the quality of service. On that basis, the Commission concluded that threshold arrangements should consist of both price-path and quality thresholds.¹⁴

53 Chapter 3 sets out further details on the current threshold arrangements including the individual components of the price-path and quality thresholds. We conclude this section with a brief discussion of the mechanism used in the price-path and quality thresholds.

Price-path Threshold – CPI-X

54 Under the current threshold arrangements the price-path threshold is determined by the Consumer Price Index (“CPI”) minus an efficiency factor defined as an X-factor. Essentially, an EDB’s average annual prices may increase by no more than the change in the price of goods and services measured by CPI, less an annual percentage X. The X-factor was initially set by the Commission to reflect EDB performance and the scope for future efficiency gains.

¹⁴ Commerce Commission, *Targeted Control Regime: Threshold Decisions*, June 2003.

- 55 CPI-X mechanisms recognise that network businesses face inflationary pressure on costs but also places incentives on those businesses to improve their efficiencies in real terms by X percent per year. Moreover, CPI-X provides further incentives to improve efficiencies as firms get to keep the benefits of those efficiency gains, in the form of higher profits, for the period over which the CPI-X price-path is set. CPI-X arrangements provide strong incentives for efficiency gains, which ultimately benefits consumers in the long term through lower prices.
- 56 CPI-X instruments are commonly used by regulators in overseas jurisdictions as a basis for regulating utilities under price control regimes. While it is recognised that the price-path threshold is not an instrument of control, the Commission notes that the price-path is intended to provide incentives for greater efficiency. As a result, the Commission considers the use of CPI-X to be consistent with promoting the purpose of the targeted control regime. The Commission's view is supported by a recent Supreme Court judgment, where the Court concluded that the Commission's initial and revised price-path thresholds met the statutory purpose.¹⁵

Quality Threshold

- 57 The second component of the current thresholds relates to service quality. Within the context of targeted control and to meet the objectives of the Purpose Statement, the Commission put in place a quality threshold seeking to ensure that EDBs did not allow a material deterioration in reliability and that consumers receive quality of service at the level which they demand.
- 58 Chapter 3 sets out further details on the current threshold arrangements including the individual components of the price-path and quality thresholds.

2.3.2 Compliance Assessments and Post-Breach Inquiries

- 59 In order to assess performance against the thresholds each EDB is annually required, in accordance with the Notice¹⁶, to provide the Commission with a threshold compliance statement. Compliance statements provide a self-assessment of performance with evidence of whether or not the EDB has complied with the relevant threshold.
- 60 In October 2004 the Commission published its Assessment and Inquiry Guidelines (“Assessment Guidelines”).¹⁷ The purpose of the Assessment Guidelines is to provide greater transparency by setting out the Commission’s processes for assessing threshold compliance and undertaking post-breach inquiries. Key elements include the process for assessing compliance statements, the analytical framework for post-breach inquiries and the administrative settlement process. The Assessment Guidelines are further discussed in section 7.2.5.

¹⁵ *Unison Networks Limited v Commerce Commission*, Unreported, SC/12/2007, 10 September 2007.

¹⁶ *Commerce Act (Electricity Distribution Thresholds) Notice 2004*, March 2004.

¹⁷ Commerce Commission, *Assessment and Inquiry Guidelines*, October 2004.

61 On 2 November 2007, the Commission published supplementary guidelines¹⁸ detailing its process for assessing compliance against the reliability criteria of the quality threshold. The reliability criteria is discussed further in chapter 6.

2.3.3 Length of the Regulatory Period

62 Section 57G provides the Commission with a degree of discretion regarding the length of time between resets, stating thresholds may be set “from time to time”. In setting the current thresholds the Commission noted the use of five-year regulatory periods in overseas jurisdictions and the importance of providing sufficient certainty to EDBs. In light of this, and having considered the administrative costs of a reset, the Commission set the thresholds to apply over a five-year regulatory period.

63 The Commission notes that a number of respondents to the Process Paper suggested that the current thresholds should be rolled over for at least one year in light of the MED Review. The expectation arising from the Cabinet Decision, is that the thresholds being developed under the reset would be transitioned to become the proposed ‘default price-quality path’. As such, the Commission retains the view that it is appropriate to proceed with the reset with a view to having arrangements in place from April 2009.

2.4 ASSESSING OPTIONS FOR THE THRESHOLD RESET

64 The Commission intends to evaluate options for the threshold reset against a set of principles drafted to reflect the aims of the overall regulatory framework. This section sets out these principles.

2.4.1 Principles Applied in Developing the Current Thresholds

65 During the development of the current thresholds, the Commission outlined a set of principles (referred to as evaluation criteria) against which it considered possible threshold options. The evaluation criteria (repeated in Table 3) were specified to reflect the Purpose Statement and other relevant considerations, such as regulatory best practice. The necessary trade-offs and justification for adopting these criteria were set out in detail in the Commission’s May 2003 Discussion Paper. For completeness, the relevant section is included as appendix C.

¹⁸ *Supplementary Guidelines for Investigating Breaches of the Reliability Criterion*, November 2007.

Table 3 Evaluation Criteria

Regulatory Framework (Incentive Effects) Criteria
Provides incentives for improved efficiency and for quality of service that reflects consumer demands.
Limits excessive profits and shares the benefits of efficiency gains with consumers, without markedly reducing incentives for efficiency.
Is consistent with the intent of a threshold, as opposed to a form of control.
Minimises distortionary impacts on the operational and investment decisions of lines businesses, taking into account different ownership arrangements in the industry.
Implementation Criteria
Is methodologically robust, replicable and transparent (to the extent appropriate for a threshold, rather than control).
Is cost effective and minimises regulatory risk and uncertainty, while satisfying statutory objectives.
Takes account, where practicable, of industry-specific factors, such as the use of rebates by trust-owned lines businesses.

2.4.2 Proposed Principles

- 66 In light of experience gained operating the thresholds and having regard to the regulatory framework, the Commission proposes to update and augment its evaluation criteria and replace them with an updated set of principles. This section sets out these principles, highlighting the reasons for any changes. Table 4 below sets out the proposed principles.
- 67 The updated set of principles (“Principles”) are divided into “Regulatory Framework Principles” and “Implementation Principles”, referencing relevant provisions of the Act and GPSs. In developing these Principles, the Commission has carefully considered the relevant provisions of the Act, and had regard to statements of the Government’s economic policy transmitted to the Commission by the Minister under s26 of the Act.

Table 4 Proposed Principles

<i>Regulatory Framework Principles</i>	<i>Reference</i>
<i>Excess Profit Limiting</i> – businesses are limited in their ability to extract excessive profits.	s57E(a)
<i>Efficiency</i> – businesses face strong incentives to improve allocative, productive and dynamic efficiency.	s57E(b)
<i>Price/Quality Trade-off</i> – seeks to ensure that businesses provide services at a quality that reflects consumer demands and that businesses maintain appropriate levels of reliability while complying with the price-path.	s57E(b)
<i>Benefit Sharing</i> – efficiency gains should be shared with consumers over time, including through lower prices.	s57E(c)
<i>Investment</i> – businesses should have appropriate incentives to make efficient investments in infrastructure.	s57E(b) GPS Aug 07 (7)
<i>Accountability</i> – businesses should be held accountable for any investments explicitly provided for by a threshold mechanism.	GPS Aug 07 (8b)
<i>Implementation Principles</i>	<i>Reference</i>
<i>Certainty</i> – seek to provide for regulatory stability, transparency, predictability and certainty.	GPS Aug 07 (7a)
<i>Cost-Effectiveness</i> – reduces the regulatory burden to industry and consumers both in terms of costs and resources.	
<i>Robustness</i> – methodologically robust, replicable and transparent.	
<i>Appropriateness</i> – takes into account, where practicable, industry and business specific factors.	
<i>Consistency</i> – takes into account other elements of the regulatory framework and the overall threshold arrangements.	

68 There are a number of differences between the proposed Principles and the evaluation criteria applied in setting the current thresholds. Some have been amended for the purposes of greater clarity or to better reflect the regulatory framework. Others that were previously combined have been separated and expanded with detail provided on the individual components. Finally, a number of new principles have been added. The main changes are discussed below referring to Principles via their italicised titles. Principles should be read to include both the full Principle in Table 4 and the relevant objectives of the documents/clauses referenced. This referencing convention is adopted in the remainder of the paper.

Amendments

69 The first evaluation criterion related to investment and was focussed specifically on minimising any distortionary impact on investment decisions. The *Investment Principle* has a wider focus, recognising that EDBs should have appropriate incentives to invest efficiently.

Separate Principles

70 The aims of the *Excess Profit Limiting Principle* and *Benefit Sharing Principle* were previously treated under a single criterion. The Commission has separated these,

recognising that they are two distinct concepts and are referred to separately in the Purpose Statement.

- 71 Similarly, the aims of the *Efficiency Principle* and *Price/Quality Trade-off Principle* were combined in a single criterion. These have now been split, with greater detail provided on the separate elements. In the case of efficiency, the revised Principle explicitly recognises the different dimensions of efficiency. This is an important consideration given that there are potential trade-offs between those dimensions. In relation to quality, the original evaluation criteria did not explicitly recognise the interaction between price and quality. The interaction is recognised by the *Price/Quality Trade-off Principle*.
- 72 The *Certainty Principle* and *Cost-Effectiveness Principle* had also been combined as a single criterion. The *Certainty Principle* reflects the need for regulatory certainty and reflects clause 7a of the August 2006 GPS. The inclusion of the *Cost-Effectiveness Principle* recognises the importance to consumers, the Commission and industry, of balancing the benefits and costs of the new arrangements. One of the Commission's key considerations is ensuring that the costs and complexity of any new arrangements are commensurate with the size of the New Zealand industry. The revised *Cost-Effectiveness Principle* replaces the previous criteria seeking arrangements to be "consistent with the intent of a threshold rather than control". The Commission considers it more appropriate to place the emphasis on the key aims of the arrangements rather than the mechanism or format used.

Additional Principles

- 73 EDBs may have an incentive to inflate investment requirements in order to receive more favourable price-path terms. The Commission therefore considers that EDBs should be held accountable for any investments explicitly provided for by a threshold mechanism. This is captured by the new *Accountability Principle*.
- 74 A *Consistency Principle* has been added to ensure that the thresholds are consistent with the wider elements of the regulatory framework. A *Consistency Principle* was included in the draft decision paper for the proposed authorisation of controlled gas services.¹⁹ The Commission considers the need to reflect the overall regulatory framework is equally applicable to the threshold reset.

2.4.3 Assessing Threshold Options

- 75 In considering submissions and when assessing options for the new threshold arrangements, the Commission will be mindful of the degree to which the options are consistent with and promote the Purpose Statement and the Principles in Table 4.

Trade-offs Between Principles

- 76 In assessing threshold options the Commission recognises that not all of the Principles are necessarily complementary and that trade-offs between the various Principles will be required. For instance, the promotion of allocative efficiency in the short term can

¹⁹ Commerce Commission, *Authorisation for the Control of Supply of Natural Gas Distribution Services by Powerco Ltd and Vector Ltd: Draft Decisions Paper*, October 2007.

potentially conflict with the promotion of dynamic efficiency. In the long-run the benefits to consumers of innovation and efficient investment are likely to outweigh benefits associated with lower prices in the short-run. A focus on allocative efficiency may not permit sufficient profits to fund investment and innovation and therefore where this trade-off exists the Commission has previously concluded greater weight should be placed on dynamic efficiency.

- 77 A related trade-off is between limiting excess profits and promoting investment. A key aim of regulation is to limit the ability of businesses to earn excess profits, to protect the interests of consumers in markets without effective competition. However, at the same time businesses need to retain a sufficient proportion of efficiency gains in order to provide them with incentives to continue making efficiency improvements and to invest efficiently in their networks. Such improvements and efficient investment are likely to serve the long-term interests of consumers.
- 78 Another trade-off is between price and quality. Under price-cap arrangements, such as the price-path threshold, a business may allow its service quality to deteriorate to reduce costs and maximise returns. In seeking to prevent this, the Commission set a quality threshold alongside the price-path threshold. In setting the revised Principles the Commission has recognised this interaction by setting an explicit *Price/Quality Trade-off Principle*.
- 79 There is also a potential trade-off between the *Certainty/Cost-Effectiveness Principles* and the *Efficiency Principle*, in particular in relation to the predictability of breaches (or removing technical breaches, see section 7.2.3). Reducing the potential for technical breaches is consistent with the *Certainty Principle* and the *Cost-Effectiveness Principle* as it would reduce the total number of breaches and administrative costs associated with reviewing those breaches. However, mechanisms that seek to reduce the potential for technical breaches may also introduce negative incentives in other areas. Seeking to reduce technical breaches relating to pass-through costs by excluding transmission charges from the calculation of notional revenue may discourage efficient development of distributed generation and/or load management. This may lead to a reduction in overall efficiency, which would be inconsistent with the *Efficiency Principle*. The issues associated with pass-through costs and technical breaches are discussed in further detail in chapter 7.
- 80 Where trade-offs between the Principles exist, the Commission will seek to balance those trade-offs and to consider the appropriate emphasis on individual Principles.
- 81 In addition to the regulatory framework, the Commission has considered the discussions and decisions made during the previous reset process. These issues, together with experience gathered operating the existing arrangements, were taken into account when drafting this Discussion Paper. These considerations are discussed further in the following chapters.

- | |
|--|
| <p>(1). Do respondents agree with the Principles as set out? Are there any other relevant principles?</p> <p>(2). Are there any other significant trade-offs between the Principles? If so how can they be best addressed?</p> |
|--|

CHAPTER 3: THRESHOLD ARRANGEMENTS

82 This chapter sets out the main elements of the current threshold arrangements. It describes how the Commission intends to review these arrangements during the reset. It also discusses, at a high level, potential components of future threshold arrangements.

3.1 INTRODUCTION

83 The threshold arrangements have been operating since 2003. The current thresholds were put in place from April 2004 and extend to 31 March 2009. The current threshold arrangements comprise two main parts:

- a price-path threshold – based on CPI-X; and
- a quality threshold – consisting of reliability and consumer engagement²⁰ criteria.

84 Sections 3.2 and 3.3 set out the overall form of the regime and potential components of the future thresholds, while sections 3.4 and 3.5 discuss the detail of the existing price-path and quality thresholds, respectively.

3.2 OVERALL FORM OF THRESHOLD ARRANGEMENTS

85 To set thresholds consistent with its original evaluation criteria the Commission considered a range of possible threshold options in 2004. In its initial decisions, the Commission formed the view that price and quality were the two key factors relevant to the long-term interests of consumers and the efficient operation of EDBs and determined that the arrangements should include both price-path and quality thresholds.²¹ The Commission is of the initial view that this structure continues to meet the Purpose Statement and should form the initial basis for the new arrangements. Maintaining this structure would also be in keeping with the *Certainty Principle*.

(3). Do respondents agree with the Commission's initial view that the arrangements should consist of two main thresholds, one focussed on price and the other on quality?

²⁰ Reflecting the way it is more commonly referred to, the paper uses the term “Consumer Engagement” when referring to the Customer Communication criterion.

²¹ Commerce Commission, *Regulation of Electricity Lines Businesses: Discussion Paper*, March 2002.

3.3 FUTURE FORM OF THRESHOLD ARRANGEMENTS

86 This section considers potential components of future threshold arrangements.

3.3.1 *Incentive Areas*

87 The following five incentive areas are considered relevant when assessing the performance of EDBs and when considering the effective operation of the overall sector. The individual areas are introduced below:

- Aggregate Productivity;
- Relative Productivity;
- Relative Profitability;
- Investment Incentives; and
- Service Quality.

Aggregate Productivity

88 The concept of productivity is closely associated with that of efficiency. When firms carry out prudent investment and innovation they can increase productivity and reduce costs, therefore producing more efficient outcomes. Competition induces businesses to improve their productivity and to pass productivity gains on to consumers in the form of higher quality or lower prices. In the absence of competition other incentives may be required to encourage businesses to improve productivity and pass on efficiency gains.

89 In setting the current thresholds, the Commission included a productivity factor that reflected an expectation that aggregate productivity of the industry was capable of improving relative to the overall economy. A single B-factor was determined and applied to all EDBs seeking efficiency improvements relative to economy-wide productivity performance.

Relative Productivity

90 A second factor, C_1 , reflected the relative productivity of EDBs. EDBs were split into three groups using comparative productivity analysis. The C_1 values were selected to incentivise EDBs with below-average productivity to approach the productivity of the average group over two regulatory periods. It also sought to allow EDBs with above-average productivity to retain relatively more of the efficiency gains during the regulatory period.

91 As indicated in Table 5, relative productivity (and profitability) changes under a price-path can be achieved over different time periods, through immediate price adjustments or via a glide-path. Chapter 4 will discuss these options further.

Relative Profitability

92 Profitability is relevant to efficiency both in the context of limiting excessive profits and from the perspective of ensuring the financial sustainability of the businesses. Regulation essentially involves a trade-off between these two outcomes. Where excess profits are being earned, businesses have greater scope to reduce prices and share efficiency gains with consumers. At the other extreme, the financial sustainability of

the industry is consistent with the long-term benefits of consumers in terms of the efficiency of the overall system.

- 93 In relation to profitability, the Commission introduced a factor, C_2 , reflecting the relative profitability performance based on EDB's residual rates of return. EDBs again were split into three groups, with C_2 values determined to bring the profits of the EDBs more into line over the regulatory period.

Combining Productivity and Profitability

- 94 In setting the current thresholds the Commission considered that the combination of productivity and profitability was appropriate on the basis that an EDB earning relatively high returns could sustain a higher level of price reductions than indicated by its productivity performance. Conversely, if an EDB was earning relatively low returns there was a case for easing the tightness of its price-path threshold based purely on productivity considerations. The final form of the X-factor combined the productivity and profitability factors as:

$$\text{Equation 1} \quad X = B + C_1 + C_2$$

- 95 The Commission's initial view is that it remains appropriate to continue to include productivity and profitability as incentive areas within the thresholds. Consideration of how this should be achieved is the subject of chapter 4.

Investment Incentives

- 96 A key issue in resetting the thresholds will be to ensure that the arrangements incentivise efficient network investment. The investment incentives that regulatory arrangements provide are important as firms' investment decisions will have a significant bearing on efficiency as a whole. If firms over invest then assets are built that are either not required or are replaced before the end of their useful life. On the other hand, if firms under invest then there is a risk that assets will fail, reducing overall reliability leading to greater future investment, which could have been offset by efficient historic investment. Under both scenarios the costs of inefficient investment are ultimately met by consumers in the form of higher costs and/or lower quality.
- 97 Control regimes employed in the UK and Australia allow for individual variations in investment to be accounted for in price or tariff setting. While the current thresholds were based on historic performance there may be merit in introducing a specific mechanism which provides for efficient investment. Allowing for efficient investment is consistent with the *Investment Principle*.
- 98 Chapter 5 considers efficient investment levels in distribution networks and whether any additional threshold mechanism is required to incentivise such investment.

Service Quality

- 99 In situations where regulated entities are constrained only by price, incentives exist to maximise profits by reducing costs. This can be achieved through reducing maintenance or by reducing the number of service personnel. If such reductions are sustained over time, the likely deterioration in the reliability of supply will impact upon service quality. In seeking to incentivise against this behaviour service quality has been screened under a specific quality threshold. This threshold is discussed in section 3.5.

3.3.2 Commission's Initial View

100 The Commission considers that, in general, a price-path threshold based on CPI-X is sufficiently flexible to cover the first four incentive areas. The Commission retains the view that a specific threshold is required to ensure appropriate quality of service. The Commission's initial view is that the overall arrangements should continue to be based on a price-path threshold (with possible additions) in conjunction with an updated quality focussed threshold.

3.4 PRICE-PATH THRESHOLD

101 The existing price-path is based on CPI-X. As set out in section 2.3.1, the Commission considers the CPI-X mechanism to be consistent with the Principles, and that it should form the basis of the new price-path.

102 A CPI-X mechanism comprises three key parameters, which need to be defined:

- the initial price at the start of the assessment period;
- the rate of required annual efficiency gains (i.e., the X-factor); and
- the length of the assessment period over which the price-path applies.

103 As discussed in section 2.3.3, the Commission retains the view that the length of the assessment (regulatory) period should remain at 5 years. The initial price and the X-factor parameters are discussed below.

3.4.1 Setting an Initial Price

104 When putting in place CPI-X arrangements as part of a price cap arrangement, a regulator will determine an initial price for each business from the start of the control period. The level of the initial price is important as it determines the starting point against which price changes are limited for the remainder of the regulatory period.

105 Initial price adjustments are often made under control arrangements. In setting the current thresholds the Commission consulted on introducing an initial price adjustment based on a partial building blocks approach.²² However, the Commission concluded that undertaking an in-depth assessment of business-specific efficient costs was not viable given the data and resources available to it at the time. Consequently, no specific price adjustments were made at the beginning of the regulatory period. Initial prices were set based on the average prices charged by each EDB in the previous year.

106 Reasons for adjusting initial prices include sharing realised efficiency gains, limiting the ability to earn excessive profits and providing for upward price adjustments to fund investment. The possibility of initial price adjustments can also provide incentives for businesses to be accountable for investments provided for under a price-path. Initial price adjustments and their potential form are discussed in more detail in chapter 5.

²² Commerce Commission, *Resetting the Price-path Threshold: Discussion Paper*, May 2003.

3.4.2 *X-factor*

107 As set out above, the X-factor generally reflects the scope for efficiency gains by firms in any given year. In setting the thresholds from 2004, the Commission considered that there were a number of dimensions that were relevant to determining the scope for efficiency gains and thus setting the value of the X-factor. These included:

- the potential industry-wide productivity gain relative to economy-wide productivity;
- the ability of individual EDBs to achieve efficiencies;
- the extent to which EDB revenue is likely to cover its operating and capital costs if no adjustments to the price-path are made; and
- the speed of adjustment imposed by the price-path threshold (i.e., over one threshold period or multiple threshold periods).

108 Taking into consideration these elements, the Commission determined a method of calculating X-factors which sought to incentivise efficiency in terms of both productivity and profitability.

3.4.3 *Augmenting the Price-Path Threshold*

109 In addition to productivity and profitability there are other areas impacting EDB efficiency where incentives may be merited. These areas include incentives for significant network investment above current levels and reflecting trade-offs between price/quality. These potential incentive areas are considered in chapters 5 and 6, respectively.

110 Considering such additions, the growth allowed under the price-path could be defined as below. The additional n incentive factors (Y) being applied, as required, to all or specific EDBs.

$$\text{Equation 2} \quad (CPI - X) + Y_1 + \dots + Y_n$$

3.4.4 *Deriving Price-Path Elements*

111 There are a number of different approaches for determining the appropriate value of the price-path elements. The approaches most commonly adopted by regulators are building blocks and benchmarking. The current thresholds regime has been implemented using benchmarking. The following section briefly discusses these alternatives.

Full Building Blocks

112 Implementing full building blocks is a very information intensive exercise and focuses on the firm's own costs and estimates of what efficient costs might be. It has the potential advantage of being more forward-looking. However, the assessment of the firm's efficient costs is usually subjective and non-reproducible due to the nature of the analysis. It may also depend heavily on external consultants. The regulator invariably faces information asymmetry relative to the firm's managers, and there is a risk the regulator can be 'gamed' about the true level of efficient costs and the possible rate of efficiency gains. To address this, a regulator may take a relatively intrusive or heavy-handed approach to setting price caps. This is a relatively resource-intensive process

and one that may at times be subject to spurious accuracy. In addition, full building block analysis requires a considerable degree of judgement when determining whether expenditure is efficient.

Partial Building Blocks

113 The Commission consulted on partial building block approaches as a basis to incorporate scope for an initial adjustment to prices and to reflect a possible trade-off between price and quality. Partial building block approaches do not require forecasts of future capital and operating costs and can be derived from actual historic costs. This removes the requirement to forecast efficient costs. However, ultimately these approaches were dismissed as again introducing too great a level of complexity and not being feasible given data limitations. The Commission expressed the view that the implementation of a comparative approach to reset the price-path would provide better incentives for efficiency gains than the partial building blocks approach.²³

Benchmarking

114 Benchmarking uses observable information on performance differences between firms to set regulatory parameters. It has the advantage of being objective and transparent as it relies on observable data and a clearly specified methodology which can be readily reproduced. It can also be implemented relatively economically for a large number of firms, some of which operate on a small scale. It does not take account of firm-specific circumstances which limits the ability to target firm-specific factors. However, this can be an advantage as the reduced potential for information asymmetry, compared with full building block analysis, limits the ability of individual businesses to game the process. The Commission notes that benchmarking is increasingly being considered for use in overseas regulatory arrangements.²⁴

3.4.5 Commission's Initial View

115 In consideration of the current threshold arrangements the Commission weighed up the relative merits of the alternative approaches. One key consideration was that the costs and complexity of the arrangements should be commensurate with the relative small size of New Zealand's electricity industry. Given that there are currently twenty-eight EDBs in New Zealand, the resource requirements to undertake full building block reviews of all EDBs are likely to be prohibitive. Therefore, while building block approaches are commonly used overseas the Commission took the view that they would be inappropriate for setting threshold levels.

116 The Commission's retains the view that the use of full building block analysis remains inappropriate when determining the price-path. Partial building blocks and

²³ Commerce Commission, *Resetting the Price-path Threshold: Draft Decisions*, September 2003, p 31.

²⁴ Two examples of the use of benchmarking are by the Utilities Commission in the Northern Territories and the Essential Services Commission in Victoria. The network price regulation methodology currently applied by the Utilities Commission in the Northern Territories for power and water services sets an X-factor based on a benchmark estimate of the annual trend rate of productivity (or efficiency) performance for the industry. In Victoria the electricity distribution price control set in 2006 combines a building-blocks approach with an efficiency carryover mechanism. The efficiency carryover mechanism provides a reward if productivity improvements in excess of the industry level productivity improvements are achieved and a penalty if these industry level productivity improvements are not achieved.

benchmarking are considered to be consistent with the current regulatory framework and will be considered when assessing how best to determine the level of the price-path threshold.

3.5 QUALITY THRESHOLD

117 In addition to the price-path threshold, the current arrangements have a second threshold relating to service quality. Regulatory arrangements often incorporate specific provisions to ensure that businesses improve or maintain levels of service quality. There are a number of potential mechanisms for achieving this, including performance monitoring, disclosure of comparative performance measures, guaranteed service level schemes and financial rewards and penalties. Within the context of targeted control and to meet the objectives of the Purpose Statement, the Commission put in place a quality threshold seeking to ensure that:

- EDBs did not allow a material deterioration in reliability; and
- consumers receive quality of service at a level that they demand.

118 These objectives are introduced briefly in the following sub-sections and will be discussed in further detail in chapter 6.

3.5.1 Reliability

119 In overseas jurisdictions where service quality is regulated, reliability is the performance measure most commonly considered. The Commission recognised that other factors were also relevant, such as the technical quality of supply and customer service levels. However, technical quality and customer service levels were not included as criteria for thresholds due to a lack of usable information and given that some (e.g., voltage quality) are to a large extent beyond the control of EDBs.

120 The reliability criteria of the quality threshold are based on the duration and frequency of supply interruptions. Interruption duration is a measure of the average time for which supply is off and is calculated based on the System Average Interruption Duration Index (SAIDI). Interruption frequency is a measure of how often consumers are affected by interruptions and is calculated based on the System Average Interruption Frequency Index (SAIFI). For an EDB to comply with the existing reliability criteria its annual SAIDI and SAIFI are required to be less than its historical average for the period 1 April 1998 to 31 March 2003.

121 The Purpose Statement requires that the EDBs face strong incentives to improve efficiency and provide services at a level demanded by consumers. SAIDI and SAIFI measures can be considered to support this objective on the grounds that they focus the attention of network businesses on service quality performance and provide incentives to prevent reliability performance from deteriorating. The reliability criteria are discussed in chapter 6.

3.5.2 Consumer Engagement

- 122 The second part of the existing quality threshold comprises a requirement for EDBs to engage in meaningful communication with consumers. Under the existing arrangements an EDB is required to seek the views of consumers about the quality of service they require and to take those views into consideration when making asset management decisions. The EDBs are therefore required to demonstrate that they have well-developed business processes directed at understanding and responding to the preferences of consumers. Specifically, the consumer engagement criterion seeks to reflect the *Price/Quality Trade-off Principle* by seeking to ensure that EDBs face strong incentives to provide services “at a quality that reflects consumer demands”.
- 123 The current consumer engagement criterion seeks an effective communications channel between EDBs and consumers with a view to discerning and reflecting consumer preferences in relation to quality. There are a number of potential issues with the approach, however, largely stemming from the fact that the elements of the consumer engagement criterion are expressed in qualitative terms and are difficult to measure objectively. Furthermore, the limited scope for price/quality trade-offs for the majority of consumers arguably inhibits meaningful reflection of individual demand.
- 124 The Commission notes that a number of overseas jurisdictions have been mindful of the need to ensure that firms deliver service levels reflecting consumer demand. However, none of those jurisdictions employ an instrument analogous to the consumer engagement criterion. Instead, this form of quality regulation is frequently achieved through service incentive schemes where the regulated price or revenue is adjusted based on the quality of service provided.
- 125 The Commission engaged consultants PBA to produce a report reviewing the effectiveness of the consumer engagement criterion and, if appropriate, to recommend alternative approaches that might better achieve the purpose of the targeted control regime. The consumer engagement criterion is further discussed in chapter 6.

3.5.3 Commission’s Initial View

- 126 As set out by the *Price/Quality Trade-off Principle*, EDBs should face strong incentives to provide services at a quality that reflects consumer demands. To achieve this, the Commission’s initial view is that it remains appropriate to retain a quality threshold containing reliability criteria. In addition, there are important considerations regarding the appropriate treatment of the consumer engagement criterion.
- 127 The scope and objectives of the current criterion have the potential to be expanded in view of better data and experience operating the current arrangements. There may be a number of areas where the existing arrangements could be developed to ensure an appropriate level of reliability, in terms of consumer demand, is being provided. In the absence of reliable consumer demand information the Commission is considering the introduction of peer groups to better compare performance and indicate the levels that businesses should be achieving. On the basis that the better performers do not over-deliver and that there are no significant differences in consumer’s quality expectation, such relative peer group performance could indicate appropriate levels of reliability.

128 The Commission is of the initial view that the Purpose Statement and Principles will be achieved if the quality threshold for the period 2009 to 2014 is developed with the following objective in mind.

The threshold should ensure that EDBs seek to achieve appropriate performance targets while complying with the price-path threshold. To do so the threshold should:

- i. identify peer groups of EDBs with similar characteristics, allowing meaningful comparison of relative performance;*
- ii. be set in such a manner so as to provide incentives for poor performing EDBs to considerably improve reliability;*
- iii. be set in such a manner so as to provide incentives for average performing EDBs to modestly improve reliability; and*
- iv. provide incentives such that good performing EDBs will attempt to maintain, or to the extent consumers demand, continue to improve performance.*

129 The Commission considers that the present quality threshold is unable to promote the objective set out above. To do so, the Commission proposes to enhance the current thresholds. These issues are discussed in more detail in chapter 6.

<p>(4). Will the Purpose Statement and Principles be better achieved if a quality focussed threshold for the period 2009 to 2014 is developed with the proposed objective in mind?</p>
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CHAPTER 4: EFFICIENT OPERATION OF EDBS

130 This chapter provides an overview of industry performance to date under the current price-path threshold and considers potential options for resetting the threshold.

4.1 INTRODUCTION

131 The current price-path threshold uses a CPI-X mechanism. CPI-X provides strong incentives for EDBs to make efficiency gains and share the benefits with consumers including through lower real prices. There are a number of different approaches to determine an appropriate value for the X-factor. As set out in chapter 3, it is the Commission's view that the costs and complexity of a 'building blocks' approach is not consistent with the *Cost Effectiveness Principle* and is not commensurate with the structure and size of the New Zealand distribution industry.

132 As discussed in section 3.3.1, the Commission seeks to address a number of areas when setting the parameters of the price-path threshold. The sections below focus on productivity (both aggregate and relative) and profitability.

4.2 AGGREGATE PRODUCTIVITY

133 Productivity is a measure of how efficiently inputs are used to produce outputs. It is commonly defined as the ratio of a volume measure of output to a volume measure of input.²⁵ The industry and economy-wide productivity measures used are based on changes in total factor productivity (TFP) over time.

134 In relation to an EDB, TFP is best considered as the change, over time, in the ratio of the amount of outputs (e.g., energy throughput, connections and system capacity) that it produces relative to the amount of inputs (e.g., capital, labour, materials and services).

4.2.1 Existing Aggregate Productivity Arrangements

135 The current price-path threshold incorporates the difference between the growth in the distribution industry's TFP and the growth in economy-wide TFP. The inclusion of the B-factor based on TFP into the price-path assumes that EDBs should pass industry productivity gains in excess of economy-wide productivity gains onto consumers.²⁶ The B-factor also takes into account the difference between the growth in input prices faced by the distribution industry and those faced by the whole economy.²⁷

136 The use of TFP to calculate the B-factor assumes that past improvements in productivity will be a good predictor of future improvements. However, past improvements would only be a good predictor of future improvements if there was little variation in lines businesses' productivity over time. This may or may not be the case and will depend, among other things, on how close the firms are to industry best practice. A TFP

²⁵ Volume measures are used to remove the effects of price changes.

²⁶ Where EDB aggregate productivity gains are below those of the economy, the Commission may need to provide a more lenient price-path.

²⁷ It was considered appropriate to adopt a zero differential between the distribution industry's input prices and the economy's input prices, given conflicting information from official input price indices and that a statistically significant difference could not be established.

measure is also impacted by the time period that it covers, in terms of its length and the impact of ‘one-off’ events.

- 137 The change in the industry’s TFP over the period 1996-2002 was 2.1 percent while the economy-wide TFP growth was 1.1 percent. The 1 percent difference in the TFP measures was incorporated into the current CPI-X price-path threshold as the B-factor element within the X-factor.

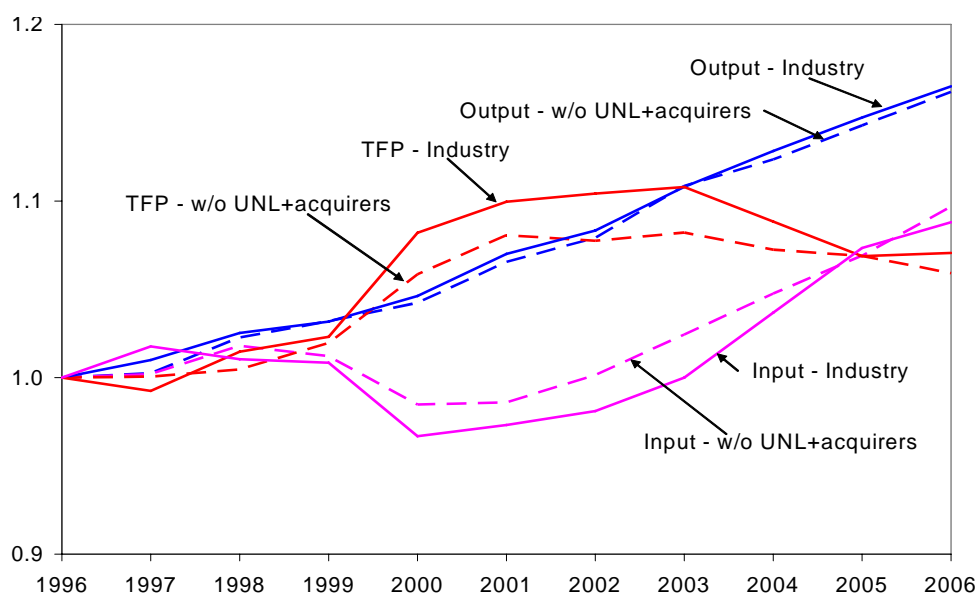
4.2.2 Assessment of Aggregate Productivity

- 138 Meyrick (2007) updated the 2003 analysis²⁸ of EDB performance used to set the B-factor, using data for 2004-2006 and including minor revisions to the original data.

- 139 Meyrick (2007) used three outputs: the number of kilowatt hours, the system line capacity and the number of connections, weighted together to form the output index. The input index is formed using five inputs, operating expenditure (opex), the overhead network line capacity, the underground network line capacity, transformer capacity and other assets, with appropriate weightings. Figure 1 shows the output, input and TFP indices between 1996 and 2006.

- 140 An important factor in the rapid increase in opex in 2004 and 2005 appears to be the sale of UnitedNetworks in 2003 with a significant increase in the opex of the acquiring companies – Powerco, Unison and Vector – in the following two years. The opex of the three acquiring EDBs in 2004 was well above the reported opex for UnitedNetworks and the other three EDBs in 2002. Indices that exclude these companies have also been included in Figure 1.

Figure 1 Industry TFP (1996-2006): Source: Meyrick (2007)



- 141 TFP growth is strong through the 1996-2003 period, but the level of TFP then fell over the period 2003-2005. The fall was driven by strong increases in the input index over

²⁸ *Regulation of Electricity Lines Businesses: Analysis of Lines Businesses Performance*, December 2003.

these years. 2006 saw low TFP growth. The strong increase in the input index over the 2003-2005 period was mainly driven by strong growth in opex and increases in underground cables and transformer capacity. TFP levels for the industry, excluding UnitedNetworks and the acquiring EDBs, have been relatively flat since 2001. The TFP annual growth rate over the eleven year period is 0.9 percent (refer to Meyrick (2007) for further details).

- 142 There have been a number of developments in the New Zealand electricity distribution industry over the last four years. The acquisition of the UnitedNetworks business in 2003 by Powerco Limited, Unison Networks Limited and Vector Limited has been an important change. Taken as a group, these EDBs are the major EDBs accounting for more than 50% of both throughput and connections. There is evidence that the UnitedNetworks system was in need of significant maintenance and upgrading that has had to be carried out by the acquiring EDBs.²⁹ There is also some anecdotal evidence that a few of the smaller EDBs have had to increase their opex significantly as they have gained a better understanding of the condition of their systems with the introduction of better information systems. These one-off factors make it difficult to interpret the productivity performance of the industry as a whole in 2004 and 2005. Gaining a fuller understanding of the reasons behind the increased input usage reported in these years will be a priority for the Commission during the reset process.
- 143 It should also be noted that the output measure for EDBs used in the productivity analysis does not take into account changes in reliability and the security of electricity distribution. This means that an EDB that invests in additional or replacement assets (e.g., installing additional transformers and system strengthening to increase the security of supply or increased undergrounding to improve reliability) will not see an increase in its measured output while its inputs rise, leading to a fall in measured TFP. Allowing for these additional output dimensions poses a number of challenges for productivity measurement, which are discussed in Meyrick (2007). The Commission considers that there may be alternative approaches to reflect the benefits arising from quality oriented investments. These alternative approaches are discussed in chapter 6.

4.3 RELATIVE PRODUCTIVITY

- 144 Relative productivity refers to the comparative productivity performances of EDBs. These comparisons allow for a more specific threshold seeking to ensure that EDBs have an appropriate incentive to move performance towards the best practice frontier and to ultimately share resulting efficiency gains with consumers.

4.3.1 Existing Relative Productivity Arrangements

- 145 For the current threshold arrangements Multilateral TFP (MTFP) analysis was used to rank EDBs in terms of their relative productivity levels. MTFP allows for the

²⁹ Vector's Administrative Settlement Offer, 23 January 2007 (p 18):
"subsequent to the acquisition of the Wellington and Northern networks from United Networks, Vector has increased the level of capital and maintenance expenditures significantly. In the year prior to Vector's acquisition, combined capital and maintenance expenditure on the Wellington and Northern networks was approximately \$34 million. In the June 2006 year, Vector has spent \$107 million on these networks and this is projected to increase to \$125 million in the year ended 31 March 2007, with increased capital expenditures on these networks beyond."

comparison of absolute productivity levels, as well as growth rates.³⁰ EDBs were allocated to one of three groups based on whether they had a high, average or low productivity ranking.

146 EDBs in the three groups, high, medium and low, were assigned C_1 -factors of -1%, 0% and 1%, respectively. This meant that if an EDB had a relatively high productivity level then its price-path would be less stringent as it had less scope to increase its productivity. An EDB with relatively low productivity would have a more stringent price-path as it had greater scope to increase its productivity level. The C_1 -factor values were chosen, reflecting relative EDB growth rates, to incentivise increased productivity over a ten-year timeframe. This timeframe recognised that productivity improvements take time to achieve in a capital intensive industry with long-lived assets.

4.3.2 Assessment of Relative Productivity

147 The findings of Meyrick (2007) indicate that there has not been a major change in relative productivity performance from the 1999-2003 period when compared with the 2004-2006 period using EDB-specific capital shares from the 2004 optimised deprival value³¹ (“ODV”) data.

148 Performance over these periods has been affected by EDBs using the Commission’s 2004 ODV Handbook to value their assets as at 31 March 2004. One major impact of the 2004 revaluation was to increase the relative weightings of underground cables against overhead lines, because many of the underground cables that had previously been recorded in the ODV asset registers, with the corresponding modern equivalent assets (MEAs) as being overhead lines, were able to be recorded as underground cables using the revised rules in the Commission’s 2004 ODV Handbook. This resulted in investment in underground cable having a much greater impact on the input index than was previously the case.

149 Both Nelson Electricity and Electricity Invercargill have a large proportion of underground cables, hence moving to using EDB-specific capital shares from the 2004 ODV revaluation exercise had a major impact on their relative productivity.³²

4.4 RELATIVE PROFITABILITY

150 Relative profitability compares a firm’s profitability against that of its peers. This is generally done by determining each firm’s rate of return based on its revenue, assets, and costs. The relative profitability of an EDB is an important point of reference when considering whether an EDB is earning sufficient profit to enable it to invest in its network over time or whether it is earning excessive profits. If an EDB is earning unsustainably low profits it may need to increase its prices in order to ensure it is able to

³⁰ Meyrick, *Regulation of Electricity Lines Businesses: Resetting the Price-path Threshold – Comparative Option*, September 2003 pp 75-78.

³¹ Commerce Commission, *Handbook for Optimised Deprival Valuation of System Fixed Assets of Electricity Lines Businesses*, August 2004.

³² See Meyrick (2007) p 23.

invest in its network over time thereby maintaining security of supply. Whereas if an EDB is earning excessive profits it may need to have its real prices reduced.³³

4.4.1 Existing Relative Profitability Arrangements

151 In the current threshold arrangements relative profitability was determined using the post-tax residual rates of return measure.³⁴ As with relative productivity, the EDBs were split into three groups based on whether they had high, average or low post-tax residual rates of return.

152 The EDBs in the three groups, high, average and low, were assigned C₂-factors of 1%, 0% and -1%, respectively. EDBs considered to have a relatively low rate of return were assigned a factor of -1% as it was considered that EDBs within this group actually needed to increase prices to earn a reasonable return on the assets they had employed. An EDB with relatively high rates of return was assigned a C₂-factor of 1%, seeking to reduce the ability to earn excessive profits.

4.4.2 Assessment of Relative Profitability

153 The Commission considers there to be a number of existing profitability measures³⁵ that provide useful information on relative profitability levels. These include: the relative profitability indicator (RPI) as calculated in Meyrick (2007); the return on investment (ROI) as disclosed by the EDBs under Information Disclosure; and the notional revenue disclosed by EDBs in their threshold compliance statements.³⁶

154 There are a number of key differences between the RPI and the ROI measures disclosed by EDBs. These include:

- the RPI is based on the asset base excluding the 2004 revaluations to maximise comparability with the Meyrick (2003) results (the overall replacement costs between the reported RPI and ROI measures are thus different and the relative valuations would change due to the changes in the valuation treatment of underground cables for some EDBs, among other things);
- the RPI does not include revaluation gains as income,³⁷ and
- the RPI depreciation allowance is 4.5% of the adjusted ODV while the ROI is based on actual disclosed depreciation.

³³ Changes to EDBs profits can either be implemented over a number of years or with a large adjustment in the first year.

³⁴ This is referred to as the relative profitability indicator (RPI) in Meyrick (2007).

³⁵ This indicator is not a conventional measure of profitability. It is a normalised assessment of profitability based on a common (4.5%) depreciation rate being applied to each EDB.

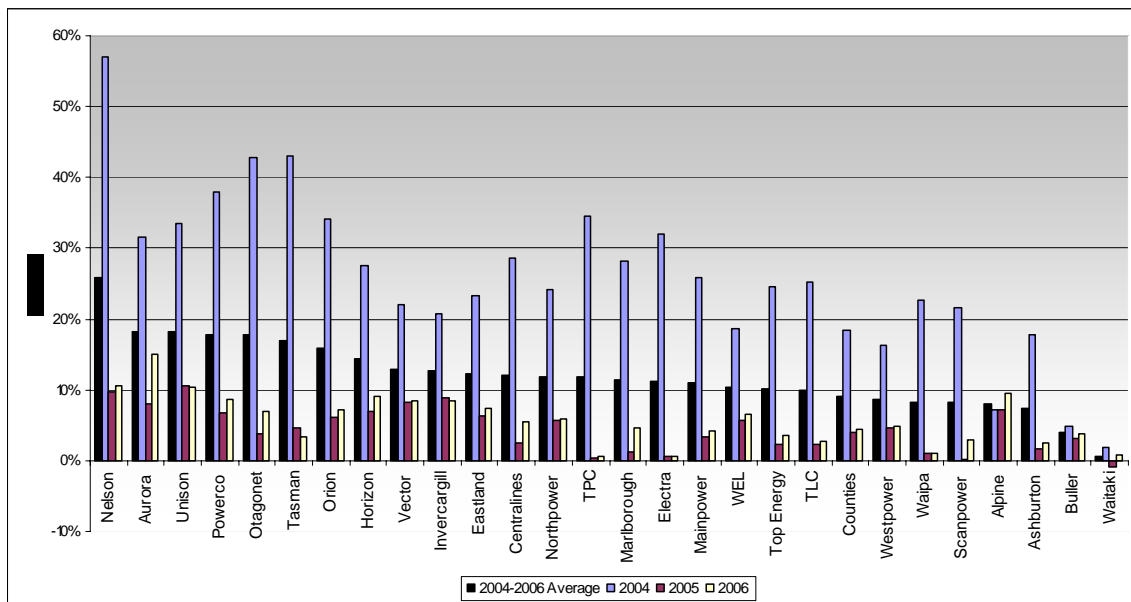
³⁶ Notional revenue is the annualised revenue that would result from applying each set of line charges to the same set of “base” quantities, net of pass-through costs (i.e., transmission charges, local authority rates and Electricity Commission levies). It does not reflect the actual revenue amount of the breach, but provides an approximation to the additional revenue above that permitted by the price-path threshold that would be collected by the business if current charges for distribution services were sustained for a full year, in the absence of demand growth.

³⁷ This is because the focus of RPI is relative rather than absolute levels of profitability and because previous revaluations did not occur for all EDBs in the same year.

155 The EDBs' disclosed return on investment (ROI) information shows that (see Figure 2) there is a significant variations between EDBs. The average ROI for 2004 to 2006 shows 20 EDBs having an ROI of 10% or more. Nelson Electricity had the highest average ROI of 26%, while at the other end of the scale Network Waitaki only had an average ROI of 1%.

156 The EDBs' 2004 ROI has been affected by ODV revaluation gains appropriately being recorded as income in that financial year.³⁸ These revaluation gains relate to the accumulated change in asset replacement costs over the previous decade, which is why the magnitude of the gains is so significant. Given the magnitude of the gains, the Commission considers that the additional income represented by these gains would need to be shared with consumers over a number of years, rather than in just a single year. The Commission's initial view is that the impact of high average ROIs may need to be spread over a number of years going forward.

Figure 2 Disclosed Return on Investment



157 The disclosed ROIs indicate that while some EDBs may require a downwards price adjustment there are a number of EDBs that earn an unsustainably low ROI and, if pricing to the extent allowable under the threshold, may require an upwards price adjustment. A number of trust-owned EDBs have provided their customers with discounts, either explicitly (rebates and line charge holidays) or implicitly (lower prices), during the last four years. This is illustrated by some EDBs' notional revenue being well below their maximum revenue allowed under the thresholds. EDBs that are

³⁸ The Commission is currently consulting on changes to the ROI measure in the information disclosure requirements. Key proposed changes in the future are likely to affect the approach to tax treatment and cost allocation which, if implemented, would mean that the previously disclosed ROIs are likely to be understated. On the other hand, the revaluations in 2004 are likely to provide an upper bound to the amount appropriately treated as income for those EDBs that previously had underground cable assets recorded in their ODV asset register at below historic cost.

not pricing up to their allowable notional revenue could increase their average price level in order to earn higher returns under the current thresholds regime.³⁹

4.5 RESETTING THE PRICE-PATH THRESHOLD

4.5.1 Price-Path Options

158 There are a number of options that the Commission may consider when resetting the price-path threshold, based on their relative consistency with the Principles outlined in Table 4. Options include (summarised in Table 5):

- an EDB specific X-factor, which includes a number of elements similar to the current price-path threshold;
- a 'P₀' adjustment in the first year of the regulatory period in conjunction with an EDB-specific X-factor based on industry productivity growth and differences in EDB productivity;⁴⁰
- a 'P₀' adjustment in the first year of the regulatory period could be used to bring the notional revenue requirement more into line with costs in the first year. Then a common X-factor could be used for subsequent years to ensure that EDBs in aggregate continue to seek efficiency gains; or
- a X-factor glide-path could be set for each EDB to ensure its notional revenue requirement equals costs in the final year of the period.⁴¹

Table 5 Price-path Options

Option	Aggregate Productivity	Relative Productivity	Profitability
<i>Status quo</i>	B	C ₁	C ₂
<i>P₀ in the first year in conjunction with an X-factor taking into account aggregate and relative productivity</i>	B	C ₁	P ₀
<i>P₀ addressing profitability with common X-factor for aggregate productivity</i>	B	–	P ₀
<i>P₀ addressing both profitability and relative productivity, common X-factor for aggregate productivity</i>	B		P ₀
<i>Glide-path with specific target⁴²</i>		X _i	

³⁹ Meyrick (2007), pp 29-31.

⁴⁰ Meyrick (2007a), p 33.

⁴¹ Hawke's Bay Network Limited, *Cross Submission by Hawke's Bay Network Limited to the Commerce Commission on the Regulation Of Electricity Lines Businesses Targeted Control Regime*, 21 March 2003, pp 7-9.

⁴² While this option appears viable *prima facie*, the level of accurate data required to set a specific target is considerable.

4.5.2 Data Quality Issues

159 A number of data and methodology related issues have been identified in the updated productivity and profitability analysis.⁴³ These include: determining why there was a strong increase in opex, particularly in the EDBs that acquired UnitedNetworks, between 2003 and 2006; how the 2004 ODV revaluation should be treated; how outputs recognising changes in reliability performance and system security can be incorporated, and how well official price indices represent overall distribution input prices. These data and specification issues will need to be taken into account when assessing and setting appropriate factors for the price-path threshold reset. These issues are introduced below and will be considered further during the methodology stage.

Aggregate Productivity

160 There are a number of data issues that need to be addressed during the 2009 reset. These include: adjusting for the 2004 ODV valuation step-change, determining the reason for the large increase in opex over the 2003-2005 period and deciding on appropriate capital input shares.

Relative Productivity and Profitability

161 While sufficient relative productivity and profitability data is likely to be available to make a P_0 adjustment, the Commission has a number of further issues to consider. These include: whether more data is required to determine a normal rate of return or the profitability level the P_0 adjustment should aim to move the EDBs to; how long the threshold should be set for; and whether the P_0 adjustment is appropriate in dealing with trust owned EDBs. There are also issues with whether the data is detailed enough to capture relevant differences between EDBs when comparing relative performance and profitability, e.g., is it appropriate to set relative productivity figures without adjusting for different transmission/distribution boundaries and the voltage compositions of systems?⁴⁴

Asset Valuation

162 The Commission consulted on its proposal to revise the approach for asset valuation as part of its review of Information Disclosure.⁴⁵ On 28 September 2007, the Commission released a brief Update Paper⁴⁶ on its review of Information Disclosure. This indicated that the Commission intended to change the date of the next full ODV valuation from 31 March 2008 to 31 March 2009. Given the timing of the threshold reset project, and the impact that asset revaluations have on productivity and profitability analysis, the Commission proposes that any valuations used in the reset be based on rolling forward the 2004 ODV valuations through the addition of actual capital expenditure, indexed by the CPI. The Commission considers that this would not disadvantage EDBs as any valuation write downs will not be known for the 2009 reset.

⁴³ Meyrick (2007), pp 34-35.

⁴⁴ See Meyrick (2007, p 36) for a discussion of the issues.

⁴⁵ Commerce Commission, *Methodology for Rolling Forward the Regulatory Asset Base for System Fixed Assets*, 13 April 2006.

⁴⁶ Commerce Commission, *Update on the Review of the Information Disclosure Regime and Proposed Change to ODV Disclosure Date*, 28 September 2007.

4.5.3 Commission's Proposed Option for Aggregate Productivity

163 The use of an aggregate productivity measure allows for a 'check' of how well the distribution industry is doing compared to the economy. Where the industry, as a whole, is performing better than the economy, the B-factor ensures that they are incentivised to share their efficiency gains with their customers and are restrained in their ability to earn excessive profits. This is consistent with the *Profit Limiting and Efficiency Principles*. The Commission's initial proposal is to retain the B-factor.

(5). Do respondents consider that retaining the B-factor is consistent with the Principles?

4.5.4 Proposed Options for Relative Productivity and Relative Profitability

164 The Commission considers that there are two approaches for dealing with an EDB's profitability and productivity levels. These are outlined below.

Approach 1: Apply an EDB Specific P₀ Adjustment

165 This option would result in a price adjustment in the first year of the regulatory period followed by a glide-path using an X-factor. The P₀ would be used to adjust EDB profitability. The X-factor would be based on either aggregate productivity alone (B-factor), or both aggregate (B-factor) and relative (C₁-factor) productivity. Alternatively, the P₀ adjustment could be used to account for both an EDB's profitability and relative productivity. Use of a P₀ (as opposed to a larger X-factor alone) would retain an ongoing efficiency incentive.

166 One factor relevant to whether a P₀ is appropriate for relative productivity adjustments would be the existing relative productivity of an EDB. If an EDB is earning a relatively high rate of return and has relatively high productivity then a P₀ adjustment for both profitability and productivity may be appropriate. The level of any P₀ adjustment would need to take into consideration the ability of the EDB to continue to make productivity improvements, e.g., an average performing EDB may have greater scope for productivity gains than a high-performing EDB and a greater P₀ factor may be appropriate. However, an EDB with very low productivity may not be able to adjust its productivity performance as quickly as would be required by a P₀ adjustment and thus productivity improvements may be more effectively achieved by a glide-path approach such as the existing C₁ factor.

167 For those EDBs found to be earning excessive profits, a P₀ adjustment can be used to achieve a "normal" level of profitability during the first year while retaining the ongoing efficiency effects of the X-factor. For EDBs earning unsustainably low or negative returns, the P₀ adjustment may be used to increase their price-path threshold.

Approach 2: Retain Existing Arrangements

168 The two C-factors, in combination, are designed to ensure that EDBs are incentivised to improve efficiency and limited in their ability to make excessive profits. The Commission intends to consider whether this approach has been strong enough to ensure that these aims can be achieved within a reasonable timeframe.

169 This approach should provide greater certainty for EDBs by allowing them time to adjust to earning a normal rate of return and to increase productivity. Retention of the C-factors, which are relatively simple to derive and understand, would be in keeping with the *Cost-Effectiveness Principle*, *Certainty Principle* and the *Consistency Principle*.

- (6). Which of the two initially considered approaches are most appropriate when seeking to incentivise EDB productivity and profitability performance? Are there other approaches which should be considered?
- (7). Do respondents consider that the use of a price (P_0) adjustment in the first year of the regulatory period, to account for unsustainably low or excessive profits, would be more consistent with the Principles than retaining the existing arrangements?
- (8). Do respondents consider that a P_0 adjustment can be used to account for differences in relative productivity? Is this more applicable for better performing EDBs? Do respondents consider that a glide-path approach such as the current C_1 factor may be more appropriate for poor performing EDBs?

CHAPTER 5: INVESTMENT INCENTIVES

170 This chapter discusses investment in distribution networks and the potential requirement for an investment specific provision within the price-path threshold. It focuses mainly on renewal driven investment. This chapter considers the potential introduction of mechanisms to incentivise investment in EDB networks. It sets out an assessment of these mechanisms and discusses the related need for accountability.

5.1 INTRODUCTION

171 The Commission engaged FSC to produce a report, FSC (2007), considering distribution network asset management in New Zealand and assessing likely future investment requirements. A significant part of this research was to be informed by information received from EDB responses to a notice issued on 5 July 2007 under s98 of the Act (“s98 Notice”). While emphasising renewal investment, the three key areas addressed by the research were:

- a high-level overview of the current investment position of the New Zealand distribution industry;
- a qualitative assessment of the factors that have implications for asset lifetimes and investment forecasts of the EDBs as a whole; and
- a quantitative assessment of the current network assets and investment patterns of each EDB.

172 This chapter discusses the findings of the report and the Commission’s initial interpretation of the research. Specifically, section 5.2 describes drivers for investment in distribution networks, focussing on those associated with renewal and growth. It considers asset renewal within the broader context of asset management. Section 5.3 considers the development of distribution networks in New Zealand and assesses likely renewal investment needs in the near and medium term. Section 5.4 considers what constitutes efficient investment, while section 5.5 discusses a range of possible mechanisms for incentivising investment. Finally, section 5.6 considers the requirement for investment accountability and how it might be achieved.

173 The Discussion Paper adopts the FSC (2007) interpretation of renewal, i.e., it adopts the term “renewal” to represent the terms that often used interchangeably “renewal”, “replacement” and “refurbishment”. Renewal, in this context, is considered to include activities that physically extend operating life, retire, dispose, and/or replace assets:

- where the purpose of the activity is to maintain the service levels achieved using the assets, improve them, or comply with safety standards and/or regulations; and
- where the asset has deteriorated due to its age/environment such that there are risks of failure, it has high ongoing costs to maintain, or it no longer complies with the legislative, regulatory or statutory obligations.

174 Having discussed the potential requirement for renewal investment in EDB networks during the next regulatory period and beyond, FSC (2007) highlighted that while in aggregate investment needs may not constitute a ‘wall of wire’, there may be a number of EDBs facing a need for increased renewal investments during future periods.

- 175 The current approach to developing thresholds assumes that replacement investment will be evenly distributed over time. If replacement investment does not occur evenly over time but rather is clustered, then EDBs may be required at certain times to fund significant investment beyond that which is provided for under the current approach. The possible need to provide for such future investment requirements is an important consideration for the reset, which is in line with the *Investment Principle*.
- 176 Providing appropriate incentives for efficient investment is important as over or under investment will ultimately increase overall costs for consumers. Where investment incentives are put in place then EDBs should be held accountable for such allowances.
- 177 It should be noted that the analysis presented in this chapter is indicative, being based on a derived model described in FSC (2007). Further work may be required on the issues addressed, particularly if better and/or additional data becomes available. Prior to publishing the FSC (2007) report on its website, the Commission circulated it to EDBs to provide them with an opportunity to comment on whether the information provided in response to the s98 Notice had been accurately reflected. In response, a number of EDBs provided additional information and comments. These responses have been published with the report and will be taken into consideration during the next stage of the threshold reset process.

5.2 INVESTMENT IN DISTRIBUTION NETWORKS

- 178 Distribution network investment consists of two main components: growth investment and renewal investment. Growth driven investment facilitates increased throughput to meet increases in demand from general load growth. Renewal driven investment is the component of investment that sees assets nearing the end of their useful life being replaced by new assets.

5.2.1 Drivers of Investment

- 179 As stated above, growth and renewal are the two main drivers of investment. Before discussing these in more detail we briefly review a number of less prominent drivers including:
- reliability;
 - regulatory obligations;
 - environmental/locational factors; and
 - business specific circumstances.

Reliability

- 180 Reliability of supply is a key requirement for electricity consumers. There is a direct correlation between the level of reliability and network investment, as it is possible to deliver a more reliable network by investing in increased capacity assets or more reliable network assets (or both). Increasing reliability requirements will typically increase the level of asset renewal by advancing its timing or requiring increases to the specifications of the assets being replaced.
- 181 Changes in reliability expectations can result in a shortfall in reliability levels delivered by a network. When this occurs, investment will typically be required to address the

shortfall. In addition to consumer requirements, step changes in reliability investment are also driven by changes to statutory, legislative or regulatory obligations.

(9). To what extent are specific regulatory investment provisions necessary to achieve increased reliability performance?

Regulatory Obligations

182 A broad range of obligations on regulated firms are imposed by Government and/or its agencies. The most common of these obligations relate to:

- health and safety;
- environment; and
- energy regulation (other than reliability).

183 In general, such obligations are uniformly applied across New Zealand, though they are likely to have varying impacts based on an individual EDB's circumstances. The Commission considers that changes in the above obligations have the potential to impact an EDB's investment decisions. FSC (2007) noted that the majority of EDBs provided very little information on regulatory obligations that have impacted renewal investments, with the exception of the threshold regime. With the possible exception of the ongoing review of s62 of the Electricity Act⁴⁷, the Commission is of the initial view that the influence of regulatory obligations on EDB investment decisions is likely to be small.

(10). Other than the thresholds themselves, do current regulatory obligations affect investment decisions of EDBs, if so, how do they affect investment decisions? How can these be accounted for appropriately within the thresholds ?

Business Specific Circumstances

184 A number of other factors will impact the level of network investment by an EDB and to a lesser extent the approach it adopts to managing existing assets. This may be due to a number of factors, including differences in access to and cost of capital, appetite for risk, access to labour and materials, level of consumer engagement, and cash flow.

185 Many of these factors directly relate to EDB size and the degree to which it can achieve economies of scale. While economies of scale are not a direct driver of investment, they will influence the overall efficiency of that investment. Large EDBs are more likely to develop specialisation of labour, have better access to materials, and employ more specialised systems and processes. They have a greater scope to innovate and employ more advanced asset management practices.

186 Where economies of scale are not achievable, their absence can be mitigated by the use of tailored investment and management practices. Smaller companies, who are not able to avail themselves of specialisation, will seek to exploit other areas and develop a more

⁴⁷ Review of s62 of the Electricity Act 1992 "Continuance of Supply" (2013 review).

flexible and adaptable resource base (e.g., multi-skilled crews, smaller work units, flexible scheduling). The potential advantages of smaller size include better awareness of the specific condition and nature of the assets, and decreased distances and response times.

- 187 Similar to its relative scale, a business's location will typically influence investment. An example is varying investment requirements in rural and urban networks and prevailing weather conditions. In general, these factors tend to impact investment activities rather than drive investment.

(11). Should the regime take into account differences between businesses (e.g., locational or scale)? If so, what differences would it be appropriate to take into consideration and why?

5.2.2 *Growth Investment*

- 188 Growth related investment facilitates increasing energy demand. Increasing demand will lead to higher peaks, the key determinant of required capacity (rather than energy throughput). A degree of excess capacity above peak will also be necessary to ensure system reliability. For the majority of EDBs, peak load growth will be the primary driver of network investment. Peak load growth can be broken into two categories:

- customer specific load growth; and
- general load growth.

Customer Specific Load Growth

- 189 Customer specific load growth is that directly attributable to a new customer or development. In general the value of investment required will align with the energy demands of the new customer, however, this is not always the case as existing or spare network capacity may allow for a reduced level of specific investment. It is typical for new customer investment to be funded in some part by the customer through capital contributions.

General Load Growth

- 190 Electricity networks are, in most cases, designed to meet the localised maximum demand after taking into account consumer diversity. In New Zealand and other developed economies average electricity usage has tended to increase. This overall increase is usually not uniform and may vary between consumer types and by location. Sufficient capacity is required to ensure usage levels do not exceed available capacity. Investment triggered by increases in overall demand is typically funded by the EDB.

- 191 In general, demand increases result in increased revenues that will partially or wholly offset the increased investment. However, electricity networks are constructed to meet the expected maximum demand on the network and increases in peak demand are not always equal to increases in average usage. Where increases in peak demand exceed average energy growth, investment may not be completely offset by increased revenues. This is one of the prime drivers for peak reduction and load management schemes operated by utilities.

(12). Do respondents have any views on the Commission's expectation that load growth related investment will, in general, be self-financing and ordinarily should not require specific regulatory provisions?

5.2.3 Renewal Investment

192 Renewal investment sees assets nearing the end of their useful life being replaced. It includes activities that physically extend the operating life of assets, retire, dispose, and/or replace assets, where the purpose of the activity is to maintain or improve asset service levels. It is normally driven by asset age or deterioration and the associated risks of failure. Unlike growth driven investment, asset renewal (as defined above) will not ordinarily attract revenue increases that offset the investment. In this sense, renewal investment is not considered to be self-financing.

(13). Do respondents have any views on the Commission's expectation that renewal investment will not be self-financing?

Interaction between Growth and Renewal

193 Growth related investment has a significant impact on renewal investment forecasts. Assets are often replaced by ones of higher capacity to allow for future growth so it may be difficult to separate renewals from growth driven investment. Historic growth patterns will dictate the overall asset and age profile of a network and in turn influence the timing of future renewal investment. Accounting for future growth will see additions and modifications being made to the existing networks. These modifications will result in assets being replaced prior to the anticipated renewal date.

194 Investment does not usually occur in a fixed and orderly manner. This is particularly true for electricity distribution as evidenced by Figures 3 and 4 below. The age profiles below show the historic construction periods of two EDBs and highlight the different growth profiles that were experienced (according to the supplied age profiles). Their renewal profiles are likely to be significantly different.

Figure 3 Peaky replacement cost profile: Source FSC (2007)

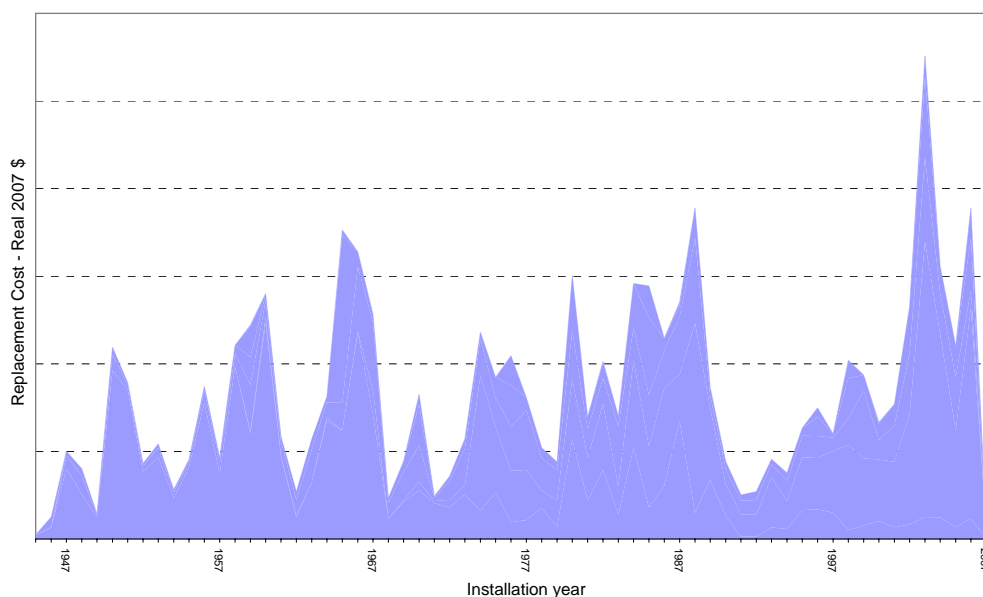
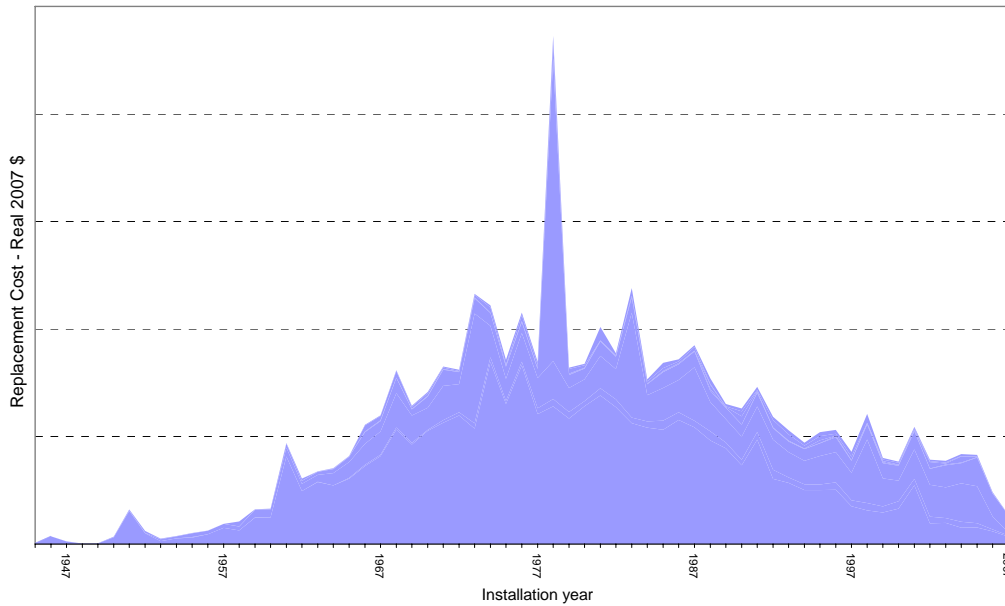


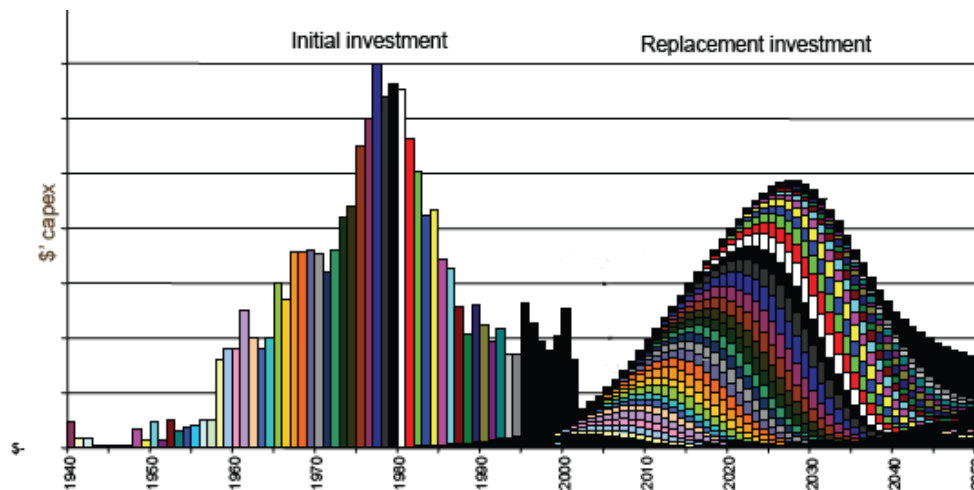
Figure 4 Smooth replacement cost profile: Source FSC (2007)



Potential for a “Wall of Wire”?

- 195 Electricity assets are typically long lived with many remaining in operation for a number of decades. However, a proportion of assets must be renewed and when a large number require renewal at the same time this can result in a significant increase in expenditure. Such an increase in expenditure is referred to by many titles including ‘wall of wire’, ‘cliff-edge replacement’, ‘age-related step change’ and ‘bow wave’.
- 196 The following figure provides a simplified example of basic age-based replacement. It depicts a significant asset construction period between 1970 and 1990 that falls due for replacement from 2020 to 2040. The predicted replacements should be viewed as an upper bound. As described above, growth related investment and other factors will combine to significantly reduce the peak replacement.
- 197 The smooth curve on the right results from the use of a statistical distribution (e.g., Weibull) to reflect that assets will require replacement ‘around’ their expected life. Varying environmental and other conditions that assets are subject to and the variances in durability (materials, construction, etc.) will lead to varying lifetimes around the expected life.

Figure 5 ‘Wall of Wire’ Depiction (1940-2050): Source Benchmark Economics, Presentation to ENA (March 2005)



Commission’s Initial View

198 Given the impact of growth driven investment and the differing historic and likely future development of EDB networks, the Commission considers that it is unlikely that the industry in aggregate will experience significant renewal driven investment peaks or a ‘wall of wire’. One of the aims of FSC (2007) was to investigate the likelihood of such a ‘wall of wire’ occurring in New Zealand. This is further discussed in section 5.3.3.

5.2.4 Asset Management in New Zealand

199 Before discussing network investment in New Zealand the paper gives a brief overview of asset management and its application by EDBs.

200 FSC (2007) reviewed the asset renewal practices and procedures of the EDBs as supplied under the s98 Notice. The information provided by the EDBs highlighted a large degree of variation in the practices and procedures applied. The larger EDBs provided significantly greater levels of information, including material detailing asset renewal policies. A number of the smaller EDBs often did not provide any asset renewal policy documents, or supplied very limited information. Overall, a lack of consistency in the information provided by the EDBs precludes any direct benchmarking of policies and procedures. It was not clear whether this inconsistency was due to a lack of policies and procedures or simply that they were not reported.

201 The following paragraphs review a number of asset management practices that are relevant to renewal investment. These practices include assessment of assets to determine the need for renewal and the degree to which EDBs seek to extend asset lives. The Commission considers that these practices and their degree of success will have a significant impact on investment requirements in New Zealand.

Asset Life Assessment

202 Assets will inevitably fail and the challenge for asset managers is determining when these failures are likely to occur and how best to mitigate the associated risks. The

following provides an overview of methods used to balance the impact and cost of failure with those of asset renewal.

- ‘Run to failure’ is the most basic form of asset renewal. Renewal occurs when the asset fails. This is a very simple and superficially cheap approach to asset management and is still used today for many electricity distribution assets.
- ‘Age based renewal’ is based on the expected life of the asset. In this approach an assumption is made about how long the asset will remain in a serviceable condition and replacement occurs at or prior to this point. There is a lower risk of asset failure, however, the use of a fixed replacement age means that some assets are retired inefficiently early.
- ‘Condition based replacement’ is based on an assessment of the condition of the asset using assessment programmes, tools and models. These are used to predict deterioration to a predetermined level, which triggers replacement.
- ‘Risk based replacement’ is an extension of the other methods allowing for the criticality of the assets and the tailoring of replacement triggers based on specific risk (likelihood and severity).

203 The series of approaches described above represent an evolving approach to asset replacement. The benefits of the more advanced approaches (e.g., condition and risk based replacement) may be offset by their inherent costs. It is important for EDBs to identify the approach that is best suited to their particular circumstances, for example, travel and time required to test and maintain small rural transformers may justify the run to failure cost. In contrast, the cost of failure for a large urban transformer may make risk based replacement a better option. Risk based replacement requires large amounts of asset information to allow for improved decision making. The collection and maintenance of this data will naturally favour larger businesses that can spread the system’s cost over a large asset base.

204 EDBs were requested to provide the Commission with an assessment of the average condition of their assets. All EDBs provided some discussion on this in their responses to the s98 Notice. However, the responses are inconsistent in terms of how EDBs have defined asset condition. In most cases it is not clear if this description is more reflective of the average age of the population, rather than the condition of the assets relative to an expected life. That said, other than noting poor performing specific asset types, most EDBs stated that their assets were in an “average” to “good” condition, and therefore, it would be expected that the ODV Handbook standard asset lives should be achievable on average.

205 Accurate assessment of asset condition will allow EDBs to make better informed decisions on the useful remaining life of assets. Extending assets’ lives has the potential to reduce their total lifetime cost and should help smooth age related renewal peaks. The range of information provided by the EDBs in relation to life extension varied greatly. A large number of the EDBs reported the use of life extension techniques either directly or via examples provided in the asset management plans (AMP) and s98 Notice responses. A number of the EDBs did not provide any evidence that they employ techniques to extend the lives of their assets.

206 Almost all companies reported that assets were replaced when the cost of maintaining them exceeded the cost of renewing them. However, the process or methodology for determining the optimal economic benefit was not provided, either by example or in a documented standard. Some companies referred to Net Present Value (NPV) analysis,

but this was not common. In the absence of any significant details of this approach it is difficult to positively state that the optimisation of asset renewal is being undertaken.

Forecasting

- 207 Asset renewal and growth forecasts are critical to effective asset management as they allow for the identification of resource requirements. FSC (2007) assessed EDB forecasting methods by comparing their estimates with statistical models based on the age profiles submitted. They also considered the quality of forecast related information available to the business, including historical expenditure and asset condition information.
- 208 EDBs were requested to provide the Commission with historical renewal expenditure for each asset category for the previous ten year period. However, a significant number of EDBs advised that they were unable to extract this type of information from their systems and did not provide any useable information. Others provided historical expenditure, but it is not clear how accurately this represents renewal versus growth expenditure. Some were able to provide historical expenditure only for the most recent years and some were only able to provide an estimated average.
- 209 Noting that generally the EDBs have stated that the overall condition of their assets is at least “average”, or “commensurate with age”, it can be assumed that the standard life stated by the EDBs must be achievable, on average. Therefore, to gauge possible inconsistencies in renewal forecasts, the EDBs’ forecasts have been compared against the renewal expenditure required to achieve the standard lives. The assessment of the renewal expenditure forecasts of the EDBs has determined that, in aggregate, they are reasonably appropriate for the age and life of the assets. The FSC (2007) study concluded a number of EDB forecasts were not supported by the relative age profile of their assets.
- 210 The analysis has highlighted a number of EDBs that may be significantly over or under forecasting the renewal needs of their networks. The analysis has shown that nine EDBs may be significantly under estimating the renewal needs of their assets. The modelling indicated that these EDBs may need to double the level of renewal expenditure that they are forecasting over the next 10 year period. Seven EDBs appeared to be significantly over estimating their renewal needs.
- 211 It is important to stress here that these findings, due to a number of limitations, are considered to be indicative only. These limitations are partly due to the inconsistencies in EDB data used for the modelling. However, there are external factors that will impact the accuracy of this form of renewal forecasting, particularly the level of renewal that will occur through other drivers and how it is subsequently classified. The most significant of these drivers is the impact of growth related investment. A number of EDBs stated that they consider much of their required renewal investment to be offset through growth. Noting this, the modelled forecasts can best be interpreted as an upper bound on age-driven renewal needs.

Commission’s Initial View

- 212 Although the s98 Notice specifically requested copies of policies, a large number of companies did not provide this information, or simply provided the publicly disclosed AMP. One EDB reported that it “does not have specific asset replacement policies but

rather some general guidelines”. This statement was in contradiction to information provided in that company’s AMP and is not considered to represent best practice.

- 213 In general, the larger EDBs had better developed asset management policies and procedures. The smaller or more remote businesses placed a greater emphasis on the use of local knowledge, and decisions were more often based on experience rather than predetermined trigger criteria. FSC (2007) highlighted that larger EDBs generally have access to more extensive information systems, while smaller EDBs felt that local knowledge provided advantages. Such local knowledge may provide benefits countering some of the advantages provided by more advanced systems.
- 214 FSC (2007) concluded, from the information provided by the EDBs, that the mechanisms for capturing and reporting investments vary greatly. It found that many of the statements provided by the EDBs indicated approaches inconsistent with best practice. FSC (2007) supported similar findings and analysis undertaken by the Commission through the annual review of AMPs. The Commission is concerned about the variance and inconsistencies evident in EDB asset management practices, particularly in the information supporting asset related decisions.
- 215 The Commission is also concerned about the variance and inconsistencies evident in EDB asset related data. A lack of sufficiently accurate and complete information makes effective analysis and forecasting of future investment requirements difficult. Therefore, in the absence of sufficient and accurate information the Commission is likely to decline requests for specific investment provisions.

<p>(14). Do respondents agree that the lack of accurate and complete information, as highlighted in FSC (2007), makes effective analysis and forecasting of future investment difficult? How can such information shortfalls be addressed?</p>
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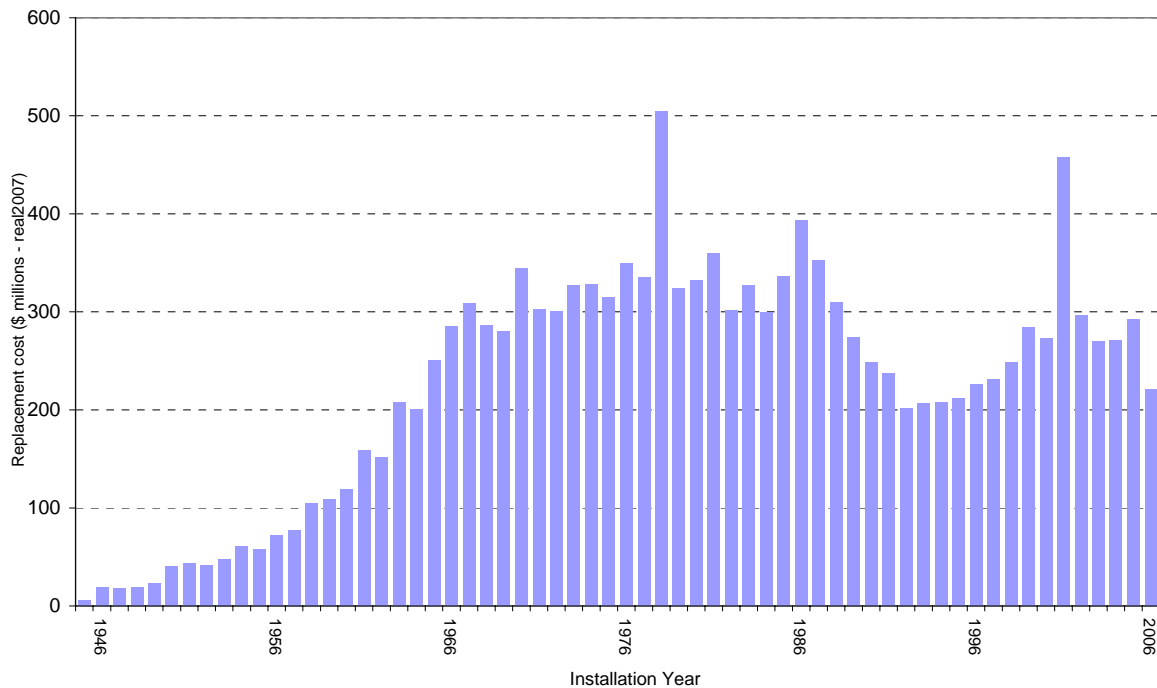
5.3 INVESTMENT IN NEW ZEALAND DISTRIBUTION NETWORKS

- 216 This section provides a high level overview of the FSC (2007) findings on the need for renewal based investment. It also briefly discusses overseas experience of similar issues.
- 217 The Commission sought to assess the extent to which the EDBs need to invest in their networks in the short to medium term (i.e., the next five to ten years). Anecdotal evidence suggested that a number of EDBs may be facing a significant renewal increase or ‘wall of wire’ (as described in section 5.2.3). The degree to which such significant renewal investment is required may have a substantial impact on future expenditure profiles and potentially on the costs involved in distributing electricity.

5.3.1 Historic Investment

- 218 In the absence of comprehensive historic investment information, the most useful indicator of the development of the New Zealand distribution network is the age profiles submitted by the EDBs in response to the s98 Notice. The chart below shows an aggregate age profile generated from the submitted profiles.

Figure 6 Overall NZ age profile (1945-2006): Source FSC (2007)

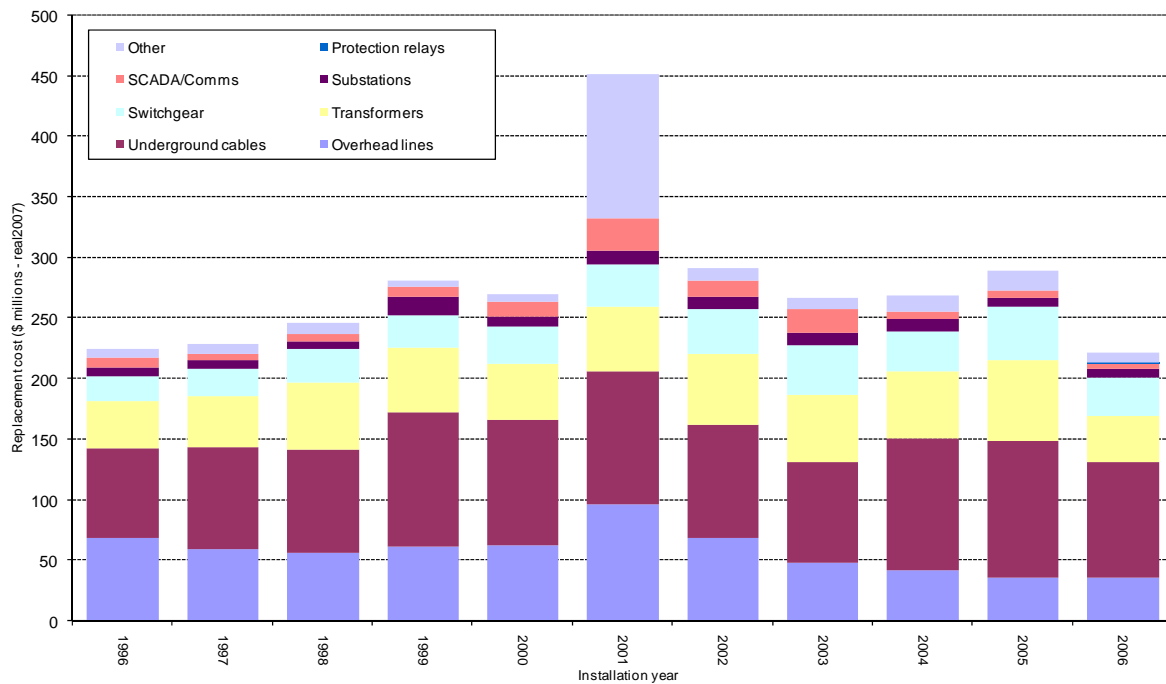


- 219 The profile shows that the major development of the NZ distribution networks began in the late-1940s, with the levels of investment steadily increasing through the 1950s, 1960s and 1970s. This early trend is particularly evident for the development of the overhead network, whereas the development of the underground network had been relatively constant since the mid-1960s. From the mid-1990s, investment in the underground network has begun to overtake that of the overhead network.
- 220 The apparent lack of expenditure prior to the 1960s may be a result of assets constructed in that period having already been removed or renewed. The real investment levels prior to this date may be significantly higher than those indicated on this chart (which is drawn from current asset age profiles).
- 221 Prior to the 1980s the only significant investment driver would have been growth. From the 1980s onwards, it would be expected that asset renewal would begin to have an impact, although this still would have been considerably less than growth driven investment. The significant variability in the above chart reflects varying growth rates and one-off projects (e.g., Auckland CBD tunnel in 2001). Data inconsistencies may also contribute to spikes in the chart.

5.3.2 Impact of Thresholds Regime

- 222 The Commission will consider whether the threshold regime has impacted the investment levels of EDB. Reviewing the overall level of investment between 1996 and 2006 indicates that peak investment occurred in 2001. This peak is partially due to a large single investment in an alternate supply and tunnel to Auckland. The expenditure levels of 2004 and 2005 are comparable with those of 2003. The reason for the 2006 decline was not apparent and the Commission wishes to explore this further.

Figure 7 Historic Replacement Investment (1996-2006): Source FSC (2007)



223 It is difficult to deduce any direct impact that the threshold regime has had on EDB investment, in terms of actual spend. The degree to which the level of physical asset replacement has been maintained will depend on the relative increase in the replacement cost index versus CPI. The Commission is also mindful of the relative lack of trend information.

(15). Have the thresholds had an impact on replacement investment? Are there views as to the reasons for the apparent reduction in 2006?

5.3.3 *Renewal Investment Requirements*

224 An asset age profile is useful in showing the historical development of the network. However, given the influence of growth and indirect drivers on renewal investment the profile will not accurately reflect actual renewals. This can be readily observed in the experience of the UK gas and electricity regulator, Ofgem, as depicted in FSC (2007).⁴⁸

225 A further indicator of the likely extent of renewal requirements is the relative age of assets. Table 6 summarises the overall age of the NZ assets compared to their expected lives as advised by the EDBs. The table indicates the proportion of assets in five age bands and indicates the expected time for renewal assuming a 50 year life. The first 5 year periods signal potential renewal requirements in the next two regulatory periods.

⁴⁸ FSC (2007), Figure 7, p 38.

Table 6 Remaining Asset Life of EDB networks: Source FSC (2007)

	<i>very old</i>	<i>old</i>	<i>moderate</i>	<i>young</i>	<i>new</i>
% of life	> 90 %	> 80%	> 40%	> 20%	< 20%
Years to renewal	0 to 5	5 to 10	10 - 30	30 - 40	40 - 50
% of assets	8%	6%	47%	19%	20%

- 226 The analysis indicates that the majority of New Zealand distribution assets are still of a moderate age, with a large proportion still relatively young. This would suggest that the majority of assets are not likely to require age based renewal during the next ten years.
- 227 Notwithstanding the relatively young assets, FSC (2007) concluded that the level of renewal investment in New Zealand will need to increase steadily over the next twenty years. This is due to replacement of the large proportion of assets that were constructed in the 1950s, 1960s and 1970s. Overall renewal investment is forecast to grow from a current level of \$200m per annum to approximately \$300m per annum over the next 20 years.
- 228 This level of increase is relatively small when compared to other jurisdictions, e.g., UK and Australia, perhaps reflecting smaller historic growth rates in New Zealand. The forecast levels of renewal investment will be offset by increasing demand related investment and should be seen as an upper bound.
- 229 As part of its s98 Notice the Commission asked EDBs to give their assessment of whether they will face a significant increase in renewal driven investment. Twelve EDBs identified increasing requirements for renewal expenditure. The remaining businesses were either not specific in relation to investment requirements or advised that they did not believe that they were faced with increasing renewal investment requirements.
- 230 The quantitative review and modelling in FSC (2007) highlighted that much of the renewal forecast increases occur later in the 20 year review period. The overall levels of renewal investment increases in the next five years are not as material, however, individual EDB variances are still apparent in this period. The following table summarises the findings using a qualitative indication of the increase, with “High” indicating an increase of greater than 100 percent and “Moderate” indicating an increase of greater than 30 percent.

Table 7 Indicative EDB Renewal Increases: Source FSC (2007)

	2009-2014	2014-2019
<i>Buller Electricity</i>		Moderate
<i>Counties Power</i>	Moderate	High
<i>Horizon Energy Distribution</i>		Moderate
<i>MainPower NZ</i>	Moderate	High
<i>Nelson Electricity</i>		Moderate
<i>Northpower</i>		Moderate
<i>Powerco</i>		Moderate
<i>Scanpower</i>		Moderate
<i>The Power Company</i>		Moderate
<i>Top Energy</i>		Moderate
<i>Waipa Networks</i>		Moderate
<i>WEL Networks</i>		Moderate

5.3.4 Commission's Initial View

- 231 The Commission considers that the findings presented by FSC (2007) together with the overall assessments provided by EDBs suggest that the industry is not facing a large imminent increase in renewal driven investment or a so called 'wall of wire' effect.
- 232 The majority of EDBs appear to be facing a smoothly increasing or relatively flat investment profile. This is likely to be due to a combination of factors, including effective asset management, large amounts of growth and replacements due to early failure (e.g., storm damage).
- 233 Notwithstanding this and given the potential that individual EDBs will experience relatively large increases in the coming regulatory periods, the Commission is considering whether to introduce mechanisms within the thresholds to account for significant renewal increases. The Commission considers that any provision should only apply where there is sufficient evidence and justification for additional investment allowances. As such, the mechanism would only apply to specific EDBs in exceptional circumstances. The following section discusses issues around such a mechanism.

- (16). Do respondents have any views on the FSC (2007) assessment that the New Zealand electricity industry does not face a large imminent increase in renewal based investment ('wall of wire' effect)?
- (17). Do respondents have comments on the assessment of relative renewal needs of EDBs (Table 7) during the forthcoming regulatory periods?

5.4 INVESTMENT INCENTIVES

234 In order to determine whether an investment incentive mechanism is appropriate, it is important to first consider what constitutes efficient investment. The concept of efficient network investment can be best explained in relation to peak demand. The characteristics of electricity supply mean that peak demand is the key determinant of required capacity. Efficient investment can therefore be considered to be that which ensures peak demand can be met reliably at the lowest overall cost. If EDBs over invest, then they either build capacity beyond that required to meet peak demand or replace assets that still have remaining useful life too early. If EDBs under invest, the resulting short-term cost savings may increase the likelihood of future asset failure and increase long-term network expenditure.

5.4.1 *International Experience*

235 The potential for increased renewal driven investment is not unique to New Zealand. The same issue has faced a number of regulators in recent periods, for example, both the UK and Australian regulators have had to assess requests for significant additional investment. Initial investments rolled out over relatively short periods had resulted in the need for replacement investment being ‘clustered’ around a shorter time period. Recent overseas reviews of investment requirements have allowed for significant increases in capital expenditure allowances.

236 FSC (2007) forecasted aggregate renewal investment in New Zealand would grow from a current level of \$200m per annum to over \$300m per annum over the next 20 years. However, in percentage terms, such an increase is significantly less than those predicted in the UK or Australia, and is unlikely to require a similar increase in capital expenditure allowances.

5.4.2 *Investment Under the Current Thresholds*

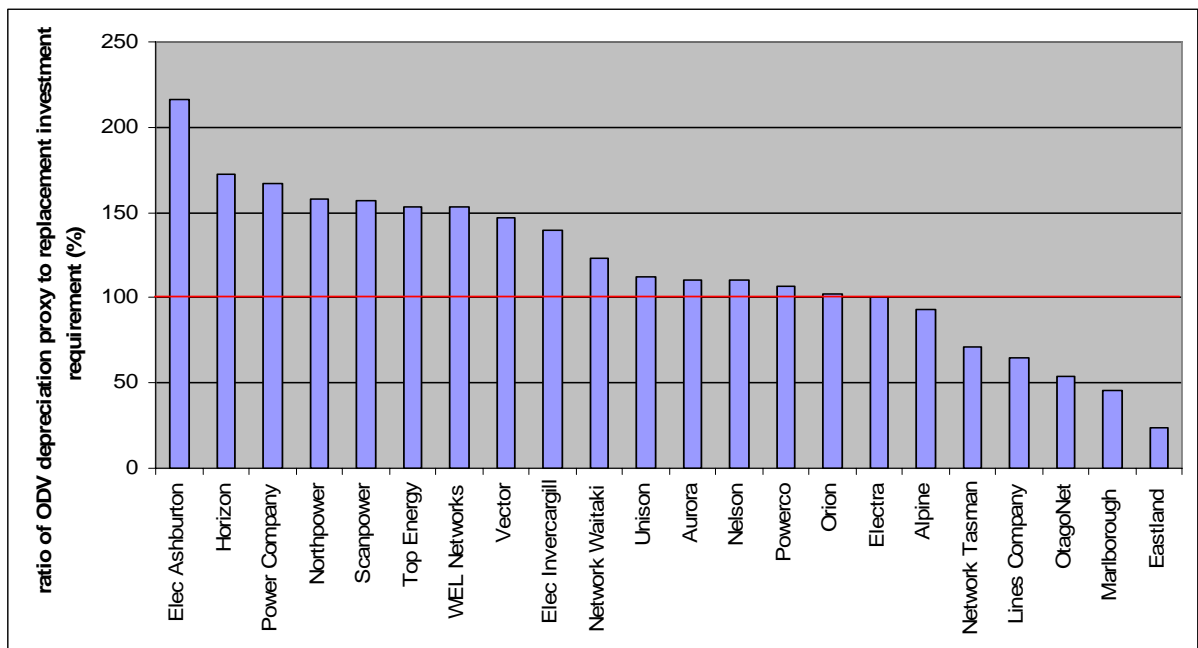
237 The current thresholds were set on the basis of a relatively smooth asset age profile. If the asset profile is assumed to be smooth then EDBs would be earning normal rates of return and the existing arrangements would facilitate efficient replacement expenditure. If, however, the investment profile was relatively peaky, as FSC (2007) suggested may be the case for some EDBs, then average asset lives would be subject to long run cycles and EDBs would not be continually earning normal rates of return over the lifetime of the assets. Rather, the rates of return being earned by EDBs may be higher or lower than the normal rate of return depending on their asset age profile. If regulatory terms are set immediately after a period of significant investment then EDBs will have scope to earn progressively higher rates of return as asset ages increase and the asset value depreciates. Conversely, if terms are set just prior to a period of significant investment then EDBs will earn sub-normal rates of return once the replacement investment has taken place and depreciated asset values have increased. Over time under both scenarios the rate of return will tend toward normal levels. However, at particular points in the asset age cycle, returns substantially above and below normal levels may result.

238 As noted above, as the thresholds relate to price rather than revenue, growth driven investment is likely to be self financing in most cases. However, the same is not true of renewal driven expenditure. Depreciation should cover renewal expenditure in cash terms as EDBs get the benefit of assets incorporated into the regulatory asset base

(RAB). The Commission notes that such cash flows are not the only source of funds that businesses have available to cover efficient capital expenditure. A relevant consideration is whether the currently afforded depreciation allowance will provide sufficient return to cover all renewal driven investment expenditure over the next regulatory period.

239 Meyrick (2007) presented an analysis of the ratio of a proxy for depreciation⁴⁹ for 2006 to renewal investment requirements from FSC (2007). The proxy for depreciation is based on the provision built into the current thresholds regime. Figure 8 depicts the results of that analysis. For six EDBs – Buller, Centralines, Counties, Mainpower, Waipa and Westpower – the depreciation coverage was 300% greater than replacement investment requirements. In order to effectively compare the data for the remaining companies the figures for these six EDBs have been excluded.

Figure 8 Ratio of ODV depreciation proxy to replacement investment requirement (2006)



240 The results imply that for six EDBs the depreciation proxy was less than the replacement investment requirement. For the remaining EDBs the depreciation proxy provides sufficient coverage for renewal investment requirements. If these indicative numbers are correct then there may be six EDBs for whom additional investment provisions may be appropriate. However, the magnitude of the shortfall is also relevant. Where an EDB's depreciation is close to its replacement expenditure (e.g., in the case of Alpine above) additional returns received as assets are rolled into the RAB would raise that EDB's ratio so that it was above the line (because the replacement investment requirement in the next period is not affected by current investment levels but the future depreciation proxy will be). Due to this factor and the availability of alternative funds to finance investment, the shortfall is unlikely to be as significant as depicted above. Provision for additional investment therefore may not necessarily be required for such EDBs.

⁴⁹ The proxy for depreciation uses 4.5 percent of ODV (adjusted to exclude the 2004 assets revaluations) to represent EDB depreciation. See Meyrick (2007), Table 5.

241 At the same time Figure 8 highlights that there are a number of EDBs for whom the depreciation proxy is significantly greater than the investment requirements. In such cases there may be justification for the excess allowance to be removed, for example, using a P_0 adjustment.

5.4.3 Commission’s Initial View

242 The Commission recognises that the analysis set out above is based on an estimate of potential investment requirements and in particular notes that FSC (2007) highlighted significant data gaps and consistency issues. In some cases sufficient data on renewals was unavailable and information had to be derived from age-based modelling. Therefore, the ratios depicted in Figure 8 should be treated as indicative. If actual requirements for additional renewal investment are greater than the indicative analysis suggests, there may be a number of EDBs for whom the depreciation proxy may fall short of that required to meet renewal investments.

243 The Commission notes that providing appropriate incentives is consistent with the *Investment Principle*. The Commission’s initial view is that consideration should be given to providing a mechanism for additional renewal investment within the threshold arrangements where it can be justified. The Commission considers that any such mechanism should also be consistent with the *Limiting Excess Profits Principle* and the *Efficiency Principle*.

244 The Commission considers that an explicit mechanism within the price-path represents one of three broad options for addressing significant renewal investment increases. The Commission considers that any explicit mechanism would only apply where there is sufficient evidence and justification for additional investment allowances. As such, the mechanism would only apply to specific EDBs in exceptional circumstances. The following section considers the form that such a mechanism might take. Currently, should an EDB breach its price-path threshold due to making necessary investments, this would be considered as part of the post-breach inquiry. If the resulting price increase was found to be justified during this process, the EDB would be in a position to undertake the investment. In addition, a mechanism allowing for tailored thresholds could be introduced, taking into account some form of ex-ante investment review. This will be further discussed in section 7.2.6.

- | |
|---|
| <p>(18). Is a mechanism to provide incentives for additional investment expenditure appropriate within the threshold arrangements, if so, for what reasons?</p> <p>(19). Is there sufficient scope within the existing arrangements to account for increasing renewal investment?</p> |
|---|

5.5 MECHANISMS FOR INCENTIVISING INVESTMENT

245 Meyrick (2007) identified a range of mechanisms for incentivising efficient investment. An overview of these mechanisms is set out in this section.

5.5.1 *Efficient Investment Incentives*

246 There have been a range of approaches adopted by overseas jurisdictions which seek to incentivise efficient investment. These are discussed in section 2.3 of Meyrick (2007). However, a number of those mechanisms are more compatible with an approach based on building blocks and thus limits the range of options available under benchmarking based arrangements.

247 Building block approaches use detailed information on an EDB's own forecast costs. Benchmarking, on the other hand, uses observable information on differences in performance between EDBs in order to determine the value of regulatory parameters and cannot to the same degree account for firm specific circumstances. This limits the range of options available under a benchmarking regime.

248 The Commission does not consider that approaches involving: detailed capital expenditure reviews (for inclusion in RAB); K-factor or menu-based approaches would be appropriate for use in an industry the size of New Zealand's. These approaches require a detailed review of individual forecast estimates. The resource requirements of these reviews would be prohibitive for an industry with a large number of relatively small firms and would be inconsistent with the *Cost-Effectiveness Principle*.

5.5.2 *Potential Options to Incentivise Efficient Investment*

249 The Commission has identified two potential, additional mechanisms it considers to be consistent with the Principles set out in chapter 2. These are summarised below.

Annuity User Cost of Capital

250 Using an annuitised user cost of capital approach would allow a normal rate of return to be earned over the asset's life, while providing for the return of the investment over its lifetime. The key advantage of such an approach is that it could reduce the cyclicity of prices in the long run. However, it is noted that in order to ensure the initial prices at the beginning of the period are at an appropriate level to provide the necessary annuitised return, it may be necessary to make potentially large adjustments to starting prices. This could be achieved through a significant P_0 adjustment. Another key consideration is the need for a regulatory commitment to an approach that would apply over the lifetime of a range of assets, which could be up to 60 years.

I-factor

251 Another approach would involve introducing an incentive factor, an I-factor, to the price-path threshold to allow EDBs additional revenue to invest in their networks. The factor could reflect the position of EDBs relative to their asset age profile and provide for increased renewal investments due to aging assets in exceptional circumstances. It would allow a means of reflecting the long term 'cycling' of prices one would expect to find in an industry characterised by long-lived assets that have a peaky asset age profile.

252 As discussed in chapter 3, as an incentive factor the I-factor would be treated separately from the components of the X-factor. In that way it could be applied only to those EDBs that have significant renewal investment requirements. As it would be used only to allow for increasing investment needs it would not be designed to have both positive and negative values; rather it would only take a positive value for those EDBs it was applied to.

5.5.3 *Assessment of Approaches*

253 While the use of an annuitised user cost of capital to ensure normal returns over time would be theoretically possible and intuitively simple, the Commission considers that Meyrick (2007) highlights a number of significant implementation issues. Most notable is the possible need for large P_0 adjustments at the outset, which could result in significant price shocks. Such an approach could therefore be considered to contradict the *Certainty Principle* of the thresholds.

254 The Commission therefore considers that of the approaches discussed, an I-factor is the most appropriate. It has a number of advantages including that it would be compatible with the current threshold mechanisms. Therefore, it would provide for stability and predictability and would be consistent with the *Certainty Principle*. It could also achieve similar outcomes as more intrusive approaches and as a result be consistent with the *Cost-Effectiveness Principle*. Finally, it would not specify the level of investment required thus allowing EDBs to make the relevant decisions. This is consistent with the *Investment Principle*.

Issues with Developing an I-factor

255 Whereas other factors are applied to all EDBs, it would seem appropriate that an I-factor would only apply to EDBs facing a demonstrably significant increase in renewal investment. It would be necessary to define what constitutes such a level of investment and what evidence would be required to demonstrate an EDB's requirements. The interaction between the level of an I-factor and the incentives for EDBs to extend asset lives would also need to be considered. In order to invest efficiently EDBs should have appropriate incentives to extend asset lives where this is cost effective. There should not be a perverse incentive created by an I-factor to either over or under invest.

256 Another relevant issue would be the timing of providing the renewal allowance given that a threshold is set over a period of five years. The Commission's initial view is that the EDB should get the allowance in the regulatory period in which the renewal investment occurs.

257 Finally, while some price-path factors are intended to be transitional, the requirement for an I-factor may be more enduring reflecting the likely increases in investment over a 20 year period, as predicted in FSC (2007).

5.5.4 *Commission's Initial View*

258 As discussed in section 5.4.3, use of a specific mechanism within the price-path represents one of three broad options for addressing significant renewal investment increases. The others being through a post-breach inquiry (currently existing) and through a process allowing for tailored thresholds (proposed in section 7.2.3).

259 The Commission considers that the I-factor mechanism should only apply in exceptional circumstances. Drawing on the indicative assessments in Table 7, the Commission considers that an I-factor is unlikely to be required during the regulatory period beginning in 2009 given that only a small number of EDBs may require it. The Commission’s initial view is that an I-factor would therefore be first applied during the 2014-2019 regulatory period. Use of tailored thresholds may be more appropriate to account for the “moderate” increases indicated for the 2009-2014 regulatory period.

- (20). If a specific investment allowance mechanism were to be introduced in 2009, what is the most appropriate form for such a mechanism?
- (21). The Commission welcomes views on the proposed I-factor mechanism and whether such a mechanism is best introduced from 2014?
- (22). Do respondents consider there to be any other approaches that have not been considered that may incentivise efficient investment?

5.6 ENSURING ACCOUNTABILITY

260 If a specific mechanism for investment incentives is introduced, the Commission considers that EDBs should be accountable for any allowances provided under the mechanism. This section considers this requirement and how it might be achieved.

5.6.1 Requirement for Accountability

261 Regulated firms may have an incentive to overstate the magnitude of their investment requirements if seeking more favourable regulatory terms. The associated costs of which will be ultimately met by consumers through higher charges. In response to this possibility, regulators in other jurisdictions have adopted a range of mechanisms that seek to incentivise accurate requirement forecasts or which retrospectively adjust allowances to address variations between expenditure and estimates.

5.6.2 Mechanisms for Ensuring Accountability

262 One retrospective approach to ensure accountability is to incorporate a clawback mechanism in the arrangements. A clawback mechanism recovers increased revenues allowed for capital expenditure that was not undertaken. One form is an explicit provision built into arrangements that sets out what proportion of under spend will be clawed back. Clawback arrangements can also include a sharing mechanism which allows a business, in light of adequate explanation and a demonstration of efficiency, to keep a portion of the under spend for a given time period. Clawback arrangements generally operate during the regulatory period in which the under spend occurs.

263 An alternative approach is to reflect any under spend in setting the allowed revenue at the start of the next regulatory period by applying a P_0 adjustment. An adjustment would be made to bring the notional revenue requirement more in line with costs in the first year of the next regulatory period.

5.6.3 Commission's Initial View

264 The Commission recognises that investment accountability is in the interests of consumers and thus considers that if an investment incentive mechanism is introduced it should be underpinned by some form of explicit accountability.

265 In its recent draft decisions paper on the proposed authorisation for gas controlled services⁵⁰, the Commission considered issues regarding capital expenditure accountability and how to address under spend. The Commission concluded that clawback arrangements, during a regulatory period, would not provide the right incentives for businesses in terms of promoting efficiency. Specifically, the Commission noted that a clawback mechanism could: damage incentives to outperform capital expenditure forecasts; encourage businesses to spend their full capital expenditure allowance even where this was not necessary; and, by creating uncertainty around allowed revenues, could discourage investment. For these reasons the Commission proposed not to apply a clawback arrangement. Instead, the Commission set out its view that businesses should get to keep the benefits of any under spend during the current regulatory period but noted that the under spend would be monitored. Businesses that could not provide an adequate explanation for the under spend would be under greater future scrutiny. The Commission considers that the arguments made against a clawback within the regulatory period, in the gas draft decision, apply equally in the context of threshold arrangements.

266 A P₀ approach may have a number of advantages as an accountability mechanism as it would allow EDBs to keep any under spend for the regulatory period. Such a mechanism provides incentives for EDBs to seek efficiencies in their expenditure programmes with a view to retaining any under spend from efficiency gains. It is therefore more likely to promote efficient outcomes and to promote the *Efficiency Principle*.

267 Regardless of the approach adopted, the Commission considers that enhanced reporting requirements would be necessary to monitor EDB expenditure against any investment incentives provided under the thresholds.

- (23). Do respondents agree with the Commission's initial view that if an investment incentive mechanism is introduced it should be underpinned by some form of explicit accountability mechanism and if not, why?
- (24). Do respondents have any comments on the Commission's initial view that an accountability mechanism should apply from the beginning of a regulatory period rather than within a regulatory period?
- (25). What do respondents consider to be the most appropriate method of providing investment accountability and why do respondents consider that method to be appropriate?

⁵⁰ Commerce Commission, *Authorisation for the Control of Supply of Natural Gas Distribution Services by Powerco Ltd and Vector Ltd: Draft Decisions Paper*, 4 October 2007.

CHAPTER 6: QUALITY

268 This chapter discusses the existing quality threshold and sets out proposed refinements to the threshold for the 2009-2014 period.

6.1 INTRODUCTION

269 The initial quality threshold set by the Commission on 6 June 2003 was retained for EDBs for the five-year regulatory period from 1 April 2004 to 31 March 2009. This threshold included both reliability criteria and a customer communication criterion (consumer engagement).

270 For the regulatory period from 1 April 2004 to 31 March 2009, the intention of the quality threshold was to provide incentives for EDBs to maintain their reliability, rather than let it fall as a means of reducing costs in response to the price-path threshold, and to supply services at a quality demanded by consumers.

271 Having proposed that a quality threshold be retained (section 3.5) and having reviewed the performance of the current quality threshold, the Commission has considered how it might be developed for the next regulatory period. The purpose of this chapter is to present the Commission's initial thoughts on how it might structure a revised quality threshold consistent with the Principles prescribed in section 2.4.2.

6.2 BACKGROUND

6.2.1 *What is Quality?*

272 When referring to the supply of electricity, the term quality is generally used in three contexts.

- Reliability of supply – the ability of a power system to provide a secure supply of electrical energy at any point in time. Implicit to this is the continuity of supply, as characterised by the number and duration of supply interruptions.
- Service quality – the nature and level of customer service provided to electricity customers. It is directly associated with the transactions between utilities and customers.
- Technical quality – generally covers a wide range of disturbances in power systems, in relation to the technical characteristics of the supply voltage - concerning magnitude, frequency, waveform and symmetry of the phases.

273 Of the three aspects of quality, the Commission's threshold currently only relates to reliability of supply as it is the aspect most directly within the control of EDBs. Technical quality is largely out of direct EDB control, while there are varying customer service responsibilities between retailers and EDBs. The current reliability criteria use the SAIDI and SAIFI measures.

6.2.2 *Why Regulate Quality?*

274 In competitive markets businesses compete against each other for market share. While competition is generally price-focussed, suppliers may compete on other dimensions such as quality to win customers. As natural monopolies, EDBs have no such incentive to distinguish themselves from the general market, through lower prices or higher

quality services. Regulation attempts to replicate the competitive forces of the market by, among other things, setting constraints on price and minimum requirements for network quality.

275 In situations where regulated entities are constrained only by price, incentives exist to maximise profits by reducing costs. This can be achieved in a number of ways including through reduced maintenance and personnel. If such reductions are sustained over time, their effect may become evident through deterioration in the reliability of supply.

6.2.3 Factors Influencing Reliability

276 Many factors influence supply reliability. Some factors are influenced directly by EDB management decisions, whilst others are outside the control of EDBs (such as interruptions on the transmission grid). However, even though certain events are outside the control of EDBs, their effect can be significantly influenced by investment and maintenance decisions within the control of EDBs. Investment decisions, such as the level of automatic restoration equipment and decisions on the level of service capability available following outages, fall within the control of EDBs. It is the combination of all these decisions that can directly influence the severity of the majority of outages.

277 In addition to unplanned outages, supply interruptions can also occur from planned maintenance. Planned interruptions are typically the result of replacement, enhancement, or maintenance activity. These outages also contribute to the overall annual SAIDI and SAIFI performance, so the incentive should exist for EDBs to manage them carefully (e.g., using live line techniques or portable generation) to minimise service interruptions.

278 The debate surrounding appropriate levels and types of investment and service capacity is complex, and regulators will typically prefer businesses to make their own decisions. However, whilst some businesses perform well and provide appropriate levels of supply reliability, others may not. It is considered appropriate for regulators to set parameters within which all distribution businesses should operate (e.g., setting minimum standards and/or by providing incentives). A key factor in determining appropriate parameters for reliability is the expectations of consumers. Consistent with this, businesses should seek to reflect consumers preferred trade-off between price and quality and reflect this in investment and maintenance planning.

6.3 REVIEW OF THE EXISTING QUALITY THRESHOLD

279 The following sections review the two criteria of the current quality threshold: the consumer engagement criterion and the reliability criteria.

6.3.1 Review of the Consumer Engagement Criterion

Background

280 The purpose of the existing consumer engagement criterion is to incentivise EDBs to supply electricity distribution services at a quality that reflects consumer demands. As discussed above, setting both a price-path threshold and a quality threshold acknowledges that there is a trade-off between the price and quality of lines services. The consumer engagement criterion seeks to ensure that EDBs balance the cost of

providing services against the level of reliability consumers demand. The Commission set out that this criterion should require EDBs to demonstrate:

- how they engage with consumers, directly or indirectly, to explain the trade-offs between quality and price, and to assess consumers' willingness to pay for different quality levels;
- what service offers or commitments they make to consumers, directly or indirectly, in response to information obtained during these engagements;
- how they make decisions about target quality levels;
- what types of contractual or other arrangements, if any, they enter into in relation to quality; and
- how they plan to deliver the target quality in terms of medium-term service delivery.

Requirements

281 Engagement with consumers should help EDBs identify consumer quality demands and indicate whether service improvement (and any associated costs) is necessary. On this basis, the Commission set a requirement that an EDB should:

- i) *“properly advise (or ensure that another person properly advises on its behalf) its customers (or another person that accurately reflects the interests of those customers) about the price-quality trade offs available to them in relation to the goods and services provided by the EDB;*
- ii) *consult (or ensure that another person consults on its behalf) with its customers (or another person that accurately reflects the interests of those customers) about the quality of goods and services that they require, with reference to the prices of those goods and services;*
- iii) *properly consider the views expressed by customers during and after that consultation; and*
- iv) *adequately take these views into account when making its asset management decisions.⁵¹”*

282 When setting the consumer engagement criterion the Commission set out that it did not intend to prescribe the manner in which EDBs demonstrate compliance. However, it emphasised that consumer engagement should be central to the asset management planning process. As such, EDB AMPs prepared in accordance with the Information Disclosure are considered to be an important component in demonstrating compliance with the consumer engagement criterion.

Performance

283 Previously the Commission engaged external advisors to review the consumer engagement criterion and provide recommendations on best practice.⁵² These recommendations were subsequently consulted on. Although the Commission has not developed additional guidelines, some EDBs have voluntarily used the principles

⁵¹ Supra n16, Section 6(c).

⁵² PB Associates Ltd and Saunders Unsworth Ltd, *Electricity Distribution Business Asset Management Plans and Consumer Engagement: Best Practice Recommendations*, April 2005.

provided in that report to guide their demonstration of compliance with the consumer engagement criterion.

284 Despite the limited guidance provided to EDBs, the Commission is of the view that the consumer engagement criterion has helped focus EDBs on the demands and preferences of consumers. Due to the subjective nature of this criterion, however, it is difficult to accurately measure its effectiveness. Although the Commission is of the view that some of the forms of communication adopted (e.g., non-targeted surveys) were of limited value, it does signal that EDBs are seeking to take into account the views of consumers.

285 The Commission considers that EDB's efforts to engage consumers continue to be important. The current criterion has proven successful in raising awareness amongst EDBs of the need for consumer engagement. Additional guidance on future requirements would be beneficial in terms of providing transparency and certainty to EDBs. Possible changes to the consumer engagement requirements are discussed later in this chapter.

6.3.2 Review of the Reliability Criteria

Background

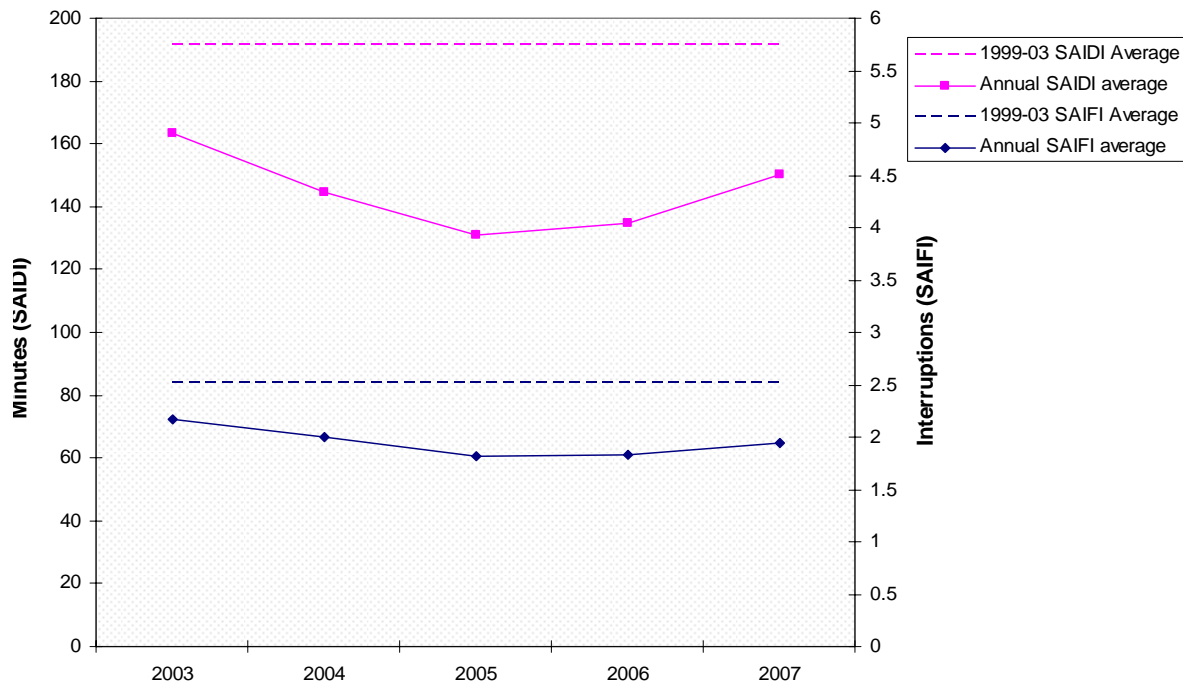
286 When setting the reliability criteria at the start of the current regulatory period the Commission was initially minded to require EDBs to maintain their prevailing rate of improvement. However, in its final decision⁵³, the Commission concluded that maintaining those rates of improvement may not be sustainable for some EDBs. As such, and considering the limitations on the information available at that time, the Commission deemed it more appropriate to, at least initially, set reliability thresholds that required no material deterioration in reliability performance. Accordingly, reliability criteria were set for both SAIDI and SAIFI, using their respective average values over the period 1 April 1998 to 31 March 2003.

Performance

287 To review the performance of the reliability criteria, network reliability figures have been analysed and compared against the levels specified for individual EDBs. The Commission intended that the reliability criteria, at a minimum, should provide incentives for EDBs to maintain historic levels of reliability. While results vary between EDBs, in aggregate, the electricity distribution sector has seen a gradual improvement in reliability, as depicted in Figure 9. This suggests that the reliability criteria have exceeded the objective of maintaining aggregate EDB reliability levels.

⁵³ Commerce Commission, *Targeted Control Regime: Threshold Decisions*, 1 April 2004.

Figure 9 Normalised Reliability April 2003 to March 2007



288 The Commission also notes, however, that the number of data points in Figure 9 is not high. Furthermore, it is noted that the thresholds, calculated over 1999-2003, include the effects of extreme events (i.e., not normalised) which would see higher averages. Figure 9 presents performance over the 2003-2007 period using normalised data (extreme events removed). This contributes to the significant improvement depicted above. However, this is still a useful benchmark as it provides a comparison of average performance against the average value of the reliability criteria. In considering the incentive effects of the reliability criteria, it appears that the risk of investigation (and potential control) due to a threshold breach may be sufficiently strong to encourage EDBs to aim to maintain their levels of reliability performance.

289 During the five year period examined from 2003 to 2007, EDBs breached the reliability criteria 40 times out of a possible 140 times. In terms of assessing those 40 breaches, the Commission has found that the most useful manner by which to assess performance of EDBs is to examine normalised data, that being annual SAIDI and SAIFI data with the impact of extreme events removed. However, the figures that EDBs are required to use when calculating compliance with their individual thresholds are based on non-normalised data. It is not surprising, therefore, that as historical performance of each EDB has been reviewed using normalised data (excluding extreme events) very few EDBs show actual underlying deterioration in reliability. Given the availability of better information on reliability, the Commission is in a better position to refine levels for the next regulatory period, which should lead to fewer technical breaches.

6.4 CONSIDERATIONS FOR THE 2009-2014 QUALITY THRESHOLD

290 As set out in section 3.5.3, the Commission considers that the current scope and objectives of the quality threshold should be expanded in view of better data and the experience operating the current arrangements. The Commission proposes that EDBs

should maintain appropriate levels of reliability while complying with the price-path threshold.

291 To better consider the performance of individual EDBs, it is proposed to establish peer groups of similar EDBs based on characteristics affecting reliability. Comparisons between peer groups should allow a better determination of what represents an appropriate level of reliability. In the absence of reliable consumer demand information (which would give an indication of consumer's willingness to pay for marginal changes in reliability) the Commission considers that peer group performance should indicate appropriate levels that businesses should seek to achieve. On the basis that the better performers are not over-delivering and that there are no underlying differences in quality expectation between consumers, such 'appropriate' quality may act as a proxy for actual consumer demand.

292 The Commission is of the view that the Principles will be better achieved if the quality threshold for the period 2009 to 2014 is developed with the following objective in mind.

The threshold should ensure that EDBs seek to achieve appropriate performance targets while complying with the price-path threshold. To do so the threshold should:

- i. identify peer groups of EDBs with similar characteristics, allowing meaningful comparison of relative performance;*
- ii. be set in such a manner so as to provide incentives for poor performing EDBs to considerably improve reliability;*
- iii. be set in such a manner so as to provide incentives for average performing EDBs to improve reliability; and*
- iv. provide incentives such that good performing EDBs will attempt to maintain, or to the extent consumers demand, continue to improve performance.*

293 The Commission proposes augmenting the current quality threshold to better promote the above objective. Further, a number of refinements are also proposed, including normalising for the effect of extreme events, addressing data variability and the separate consideration of disaggregated networks. These refinements are discussed below.

6.4.1 Refinements

Normalising for Extreme Events

294 Extreme events are a major contributor to variability in reliability performance. The Commission considers it more appropriate when assessing the underlying reliability trends of a business, to consider performance with such one-off events excluded from the data. For this reason, the Commission's initial view is that both the setting of thresholds and the assessment of performance against thresholds should be done on the basis of normalised data. On the other hand, the Commission is aware of negative incentives that may be introduced by this mechanism.

295 The Commission proposes that reliability data should be normalised for extreme events and that the Beta Method set out in its supplementary guidelines⁵⁴ is an appropriate approach to use for this purpose.

⁵⁴ Supra, n 18, p 11.

Normal Variability

- 296 Annual (normalised) reliability data will still vary considerably due to a number of factors. When using averages as a basis for setting thresholds, one may expect that over time 50 percent of the annual reported reliability would be above the average, and 50 percent would be below the average. Further, looking at an isolated threshold breach would not necessarily provide an indication of whether the underlying trend in reliability was deteriorating. Furthermore, it is possible that a number of bad or good years may occur in a row, with this not being indicative of changes to, or stemming from poor engineering design or management practices. This suggests that to review whether performance is deteriorating, the Commission should examine trends over a longer period.
- 297 PBA (2007) suggested various approaches to minimise the frequency of reliability criteria breaches due to the normal variability of data. One approach is to establish performance bands within which the level of reliability would be allowed to move. In this approach, the upper and lower levels of the performance band are set using standard deviations from the average. In this manner, normal variability for a particular EDB peer group is considered. Where an EDB exceeds the upper limit, this would be considered a threshold breach.
- 298 The Commission does not favour this approach because, as set out in its objectives above, it considers that EDBs should at least maintain historic levels of performance. This would allow performance to move within the bands and would effectively constitute setting a de-facto threshold at the upper limit. This would allow performance to deteriorate, over time, to the upper limit.
- 299 The Commission's preferred approach is that discussed in PBA (2007). This is to assess compliance by way of a three-year moving average (using the current year of assessment, as well as the previous two). This means that an abnormal series of events in one year does not unduly give rise to breaches and necessitate investigation by the Commission. It also provides an incentive for EDBs to manage planned outages according to best practice, rather than timing certain planned outages to fall into the following year, where the current year's reliability figures are close to the threshold.

Disaggregated Networks

- 300 The Commission is of the initial view that three EDBs have sufficiently non-contiguous networks that events occurring in one area have either very little or no impact on the other. These are, each having two separate geographic networks, Vector (Wellington and Auckland), Aurora (Dunedin and Central Otago) and Powerco (East and West). Due to the types and locations of these networks, performance in one is not necessarily equivalent to the other. For example, Aurora's Dunedin urban network is unlikely to have similar performance levels as its Central Otago network (predominantly rural). Considering these areas as a single performance area (effectively averaging their SAIDI/SAIFI figures) will mask their respective performance and not allow an accurate assessment of either. Therefore, the Commission is of the view that separate thresholds should be set to monitor performance for each area.
- 301 Similarly, the Commission considers that it should separate out reliability performance where an EDB supplies contiguous networks where the consumers in one are owners or beneficiaries, but consumers in the other are not (for example, Unison's Hawke's Bay

and Rotorua/Taupo networks and Vector's Northern and Auckland networks, in addition to its Wellington network referenced above).

- (26). Do respondents agree that the reliability criteria should be set using normalised data?
- (27). Do respondents have any views on the proposal to use a three-year moving average to address the effect of normal variability?
- (28). What are respondents' views on the proposal that the reliability criteria be applied separately to networks that are either non-contiguous and/or that have ownership/beneficiary differences?

6.4.2 Benchmarking of EDB Reliability

302 To better consider the performance of individual EDBs, it is initially proposed to establish peer groups. EDBs in a certain group would then be further delineated based on their performance relative to each other. The benchmarking of EDBs based on such groups and bands is discussed below.

Benchmarking by Characteristics – Groups

303 The Commission wishes to address the wide variance in reliability performance as evidenced in PBA (2007). Where a group of EDBs have similar underlying characteristics, the Commission considers it unlikely that reliability differences are a result of differing consumer expectations. To better consider the performance of individual EDBs, it is initially proposed to establish groups of similar networks.

304 The PBA peer-grouping study indicated that EDBs should be assigned to a group based on inherent network characteristics such as ICP density, network structure and percentage of network underground. The Commission considers that the basis on which these characteristics have been established is appropriate, and provides a suitable framework for developing peer groups.

Benchmarking by Performance – Bands

305 Within each peer group and based on relative performance, the Commission initially proposes to further delineate EDBs according to relative historic performance that is below-average, average, or above-average. The initial proposed basis for averaging is as follows:

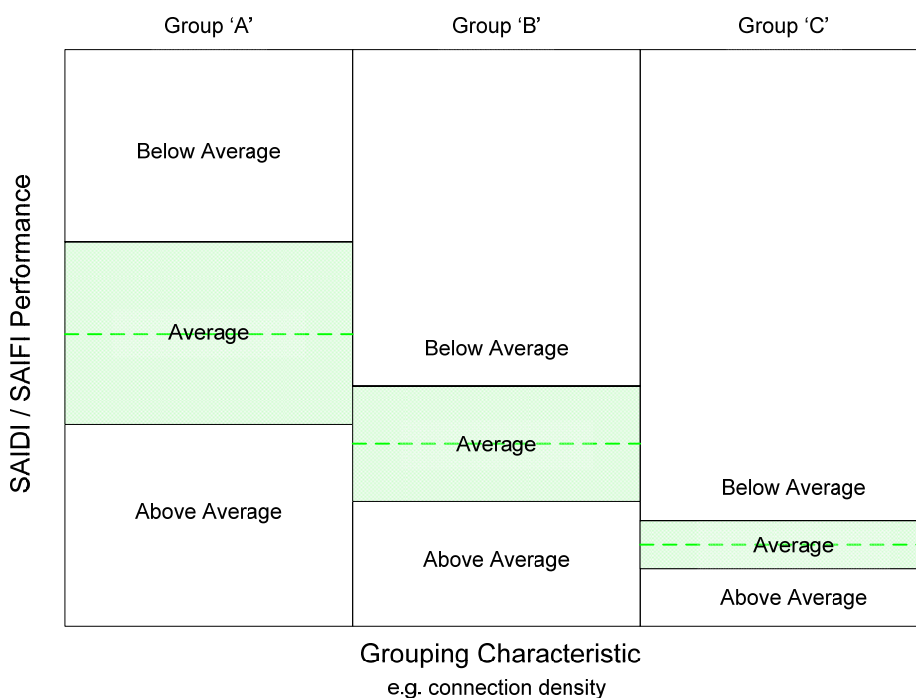
- average SAIDI and SAIFI reliability for each peer group is calculated;
- those EDBs whose reliability is more than 100% above the average will be considered outliers, as their performance is considered not to be sufficiently indicative of the peer group;
- all EDBs identified as outliers are excluded from the data (temporarily), and both the average and standard deviations are recalculated; and
- an average band would be established for each peer group. The band would be determined at a certain standard deviation from the average – for example: 0.5 standard deviations above and below.

306 Those EDBs, including outliers, in each peer group (A to C) with performance levels below⁵⁵ the average would be then classified as “below-average performers”, those within the average band as “average performers” and those with performance levels above as “above-average performers”. This is depicted in Figure 10.

Setting the Bands

307 The Commission acknowledges that the level of variability allowed around (above or below) the average will be somewhat subjective. The approach to forming its initial view on this matter will be guided by how best to provide incentives such that both good and average performing EDBs will attempt to maintain, or if appropriate, continue to improve performance. The bands should also be set in such a manner that those EDBs that appear not to be providing an adequate level of service reliability are identified and required to improve. The Commission would assess progress at the end of the regulatory period, and consider EDB performance and effort at achieving the improvements, at that time.

Figure 10 Example Peer Groups



- (29). Would the establishment of characteristic based peer groups allow for the better comparison of EDB reliability performance?
- (30). Do respondents have views on potential characteristic based grouping criteria (e.g., ICP density, network structure and percentage of undergrounding/urban network)?

⁵⁵ Below/above-average performance refers to SAIDI/SAIFI measures greater/lesser than the average, respectively.

(31). Would the establishment of reliability performance based bands within the groups allow for the better targeting of incentives? Do respondents consider the proposed averaging methodology is an appropriate basis for this?

6.4.3 *Appropriate Performance Incentives*

308 The Commission is seeking to provide incentives for EDBs to provide services that reflect consumer demands. Applying appropriate service quality incentives can to some degree stimulate innovation and improvements in service offerings, with the appropriate demand-based balance between price and quality that exists in competitive markets. A number of approaches to this have been considered, including guaranteed service level schemes, penalty/reward schemes, comparative reporting, and the setting of more detailed minimum standards. The various options are discussed in some detail in the supporting reports to this paper. The Commission's initial view on how best to provide incentives to EDBs to achieve appropriate quality of service is provided below.

Price-Quality Trade-off

309 The Commission is of the initial view that it can provide appropriate overall incentives through a mechanism that combines reliability based incentives with those provided under the price-path threshold. The proposed incentives would be determined by the performance of an EDB in relation to its identified peer group. For each peer group, the incentive is provided by way of an expected rate of improvement or by seeking no material deterioration (depending on where the individual EDB's performance sits within its peer group). The price-path based incentive could be included using an additional factor ($CPI - X + S$).

310 Ongoing improvements in quality and price are likely in a competitive market. In a competitive market the level of improvements will vary due to a number of factors including the maturity of the product or service, consumer demand and the degree of competition. The Commission considers that there are similarities when considering the performance of utilities and that varying levels of improvement are appropriate when developing incentives. Particular treatment of identified peer groups will seek to reflect this. The Commission's initial view on the treatment of identified peer groups in terms of reliability targets and the S-factor within the price-path threshold is set out below and summarised in Figure 10.

(32). Would requiring EDBs to improve their relative reliability performance be more reflective of the pressures that firms would experience in a competitive market?

Below-average Performers

311 Where a number of EDBs have similar underlying characteristics, it is unlikely that the wide variance in reliability performance, evidenced in PBA (2007), reflects differing consumer expectations. Where consumers face similar circumstances, the Commission is of the initial view that below-average performers are providing services at a level that is likely to be inconsistent with consumer demands.

312 In addition, the Commission is of the initial view that the EDBs in this category should be assigned a time-specific reliability improvement glide-path as part of the quality

threshold. The Commission recognises that while the initial improvements may be relatively easy to achieve, improving such that reliability approaches the current average performance band may require additional investment.

313 Meyrick (2007a) discussed the value in providing a positive S-factor to those EDBs that fall within the poor performance category. Primarily, this is in recognition that some investment is likely to be necessary to improve performance. In this instance, as the Commission is requiring reliability improvements to be made in a specific timeframe, it agrees with the approach proposed by Meyrick (2007a), whereby a positive adjustment to the price-path would be provided. This contrasts with the option of providing a symmetrical incentive structure, whereby the poorer performing utilities would be provided a negative incentive (penalty). However, rather than acting as a “reward”, providing a positive S-factor will give additional scope to make necessary improvements.

314 The improvement levels could be specified as:

- an appropriate percentage of the calculated average performance each year; or
- setting the improvement path such that all necessary improvements are made over the one (or more) regulatory periods.

315 The Commission also considers, however, that receiving a positive S-factor adjustment should be conditional. EDBs receiving this adjustment must commit to and provide evidence that sufficient investments are being made to warrant the adjustment. Potential mechanisms to provide investment accountability were outlined in section 5.6.

Average Performers

316 The Commission is of the initial view that average performers should still be striving to improve network reliability though at a moderate level. As the Commission is only seeking moderate improvements via a reliability improvement glide-path, its proposed approach is to not provide any S-factor adjustment for these EDBs. An incentive is provided by a positive adjustment to the S-factor for the above-average performers. In this manner, EDBs whose reliability performance is classed as average will have an incentive to improve network reliability so that they move into the above-average performance band and gain the positive S-factor adjustment in the following regulatory period.

317 It could be argued that an EDB, where its reliability performance falls into a better performance category during the regulatory period (for example, if an average performer moves into the above-average performance band), should immediately be assigned the S-factor appropriate for that level of performance. The Commission is of the view that, given the normal variability of data, each EDB should demonstrate sustained improvement. As such it may be appropriate to reassess the allocation of S-factors at the next regulatory period. Noting, that the bands may change at that time, the timing of the allowance will have a significant impact on the incentive and should be considered further.

318 The Commission also expects that the reliability improvements undertaken by average performers may be more difficult and costly than those by below-average performers. However, an important aspect of these more costly improvements is ensuring that investment is made where consumers demand increased reliability. EDB reliability for average performers would only be subject to moderate improvements, an appropriate

percentage of their average normalised historical average performance. The Commission is of the view that by not providing an S-factor adjustment, average performers are more likely to engage with consumers to identify if further reliability based investments should be made. This should be based on whether consumers are willing to pay higher prices for further improved reliability.

Above-average Performers

- 319 The Commission is of the initial view that, in an absolute sense, all EDBs in a particular peer group should generally be striving to provide network reliability towards the current above-average performance band. Furthermore, any performance level sought should be informed by effective communication with consumers. As an incentive for others to move into this band, and as a potential reward to those already within this band, the Commission is of the view that it should consider making a positive S-factor adjustment to the price-path available to above-average performing EDBs.
- 320 A positive S-factor would seek to recognise EDBs that have achieved reliability performance above their peers, and may offset the cost of associated investments. As discussed in section 4.2.2 EDB relative productivity performance measures do not sufficiently account for the impact of increased input (investment) costs to achieve reliability improvements. This is because under the current price-path threshold framework (using MTFP), additional input costs leading to reliability improvements are recognised but since improved reliability is not recognised as an increase in output, this would reduce relative productivity performance as currently measured. A positive S-factor adjustment would go some way toward offsetting what may otherwise be a negative incentive for reliability improvements.
- 321 Recognising that only incremental improvements for the above-average performers may be achievable, the Commission's initial view is that there are two potential approaches to those EDBs. In addition to one including an S-factor based on improving reliability performance, the other approach is based on maintaining reliability performance.
- Improving – under this option an EDB would commit to slight improvements over a period and be given a positive S-factor, likely to be significant in magnitude.
 - Maintaining – under this option an EDB would have a reliability threshold based on maintaining its average normalised historic performance. No S-factor would be provided under this option.
- 322 The Commission considers that the 'improving' option presents two advantages. It includes an implicit reward for those companies that have achieved better relative historic performance and it retains the incentive for the average performers to improve sufficiently to receive it. In the absence of an S-factor for the above-average performers the level of incentive for the average performers will need to be reconsidered.
- 323 In considering which option would be most appropriate the Commission will consider how EDBs compare with other jurisdictions, submissions on the level of consumer demand for improvement and to what extent there is further, significant scope for improvement.

Overall Incentive

324 An incentive, albeit not financial, is also provided to all EDBs in all groups and across all performance bands. Where an EDB breaches its individual quality threshold, it is potentially subject to a detailed investigation and possibly control. As discussed previously, it appears that this provides significant incentive for EDBs to remain within their thresholds, be it based on improvement on or maintaining historic performance. Over time, this will likely result in reliability performance improving given that average based SAIDI/SAIFI targets will decrease.

- (33). Do respondents have views on providing a positive adjustment to the price-path of the below-average performers to reflect their scope to significantly improve reliability? Do respondents have any views on an approach that would make receiving a positive S-factor adjustment conditional on EDBs providing evidence that sufficient investments have been made to warrant the adjustment?
- (34). Do respondents consider that introducing an S-factor to the price-path, as outlined, will provide sufficient incentive to encourage average performers to further improve reliability? Should EDBs who improve their reliability sufficiently receive an S-factor in that regulatory period or the subsequent one?
- (35). Which of the two options proposed for the above-average performers (as outlined above) do respondents consider to be most appropriate?
- (36). Would it be appropriate to provide different incentives for below-average performers, average performers and above-average performers in the different peer groups. For example, should an above-average performer in a high-density peer group receive a different incentive than an above-average performer in a low-density peer group?

6.4.4 Consumer Engagement

325 As discussed previously, the Commission is of the initial view that where a group of EDBs have similar network characteristics and where consumers face similar circumstances, it is unlikely that there will be a wide variance in consumer expectations for service quality. The Commission is of the initial view that EDBs should continue to be mindful of these expectations and should continue to take consumer expectations into account in management and investment decisions.

326 The Commission considers that the proposed combination and changes to the price-path and quality thresholds are consistent with the Purpose Statement of subpart 1 of Part 4A (s57E). The Commission further considers that the transfer of consumer engagement to subpart 3 of Part 4A would be similarly consistent with that subpart's Purpose Statement (s57T). Both purpose statements refer to the efficiency of the electricity markets, and where s57E(b) makes specific reference to provision of quality at a level that consumers demand, the focus of s57T is the disclosure of information so that consumers can make informed decisions about the services they receive. The combined effect of the proposals recognises the complementarities in both purpose statements.

- 327 For the regulatory period beginning 1 April 2009, the Commission's initial view is to update the reliability criteria, complemented by an S-factor incorporated into the price-path threshold. It is the Commission's initial view that the combination of price and quality based incentives, as noted above, would promote the objectives of the Purpose Statement. The Commission is of the initial view that it is appropriate to transfer the consumer engagement criterion to Information Disclosure from 2009. PBA (2007a) supported this view and suggested that it should be incorporated within the Information Disclosure AMP.
- 328 PBA (2007a) viewed this approach as having the advantage of allowing the requirement to be specified in qualitative terms, giving EDBs the flexibility to develop their own consultative programs, whilst not directly putting them at risk of breaching a threshold. PBA (2007a) also noted the subjectivity and difficulty in reporting compliance within the existing criterion, and the resulting lack of certainty and transparency.

- (37). Do respondents consider that the implementation of updated reliability criteria, possibly complemented by service quality incentives (section 6.5.1), would promote the objectives of the Purpose Statement and fulfil the *Price/Quality Trade-off Principle*?
- (38). Do respondents have any comment on the Commission's initial view that the monitoring of consumer engagement should be transferred from the quality threshold to Information Disclosure?

6.5 FURTHER SERVICE QUALITY INCENTIVES

6.5.1 Service Quality Criteria

- 329 In addition to the mechanisms described above, PBA (2007) found that overseas regulatory regimes included criteria relating to consumer interaction as important components of overall quality regulation. PBA (2007) recommended that the Commission consider adopting similar service quality requirements. PBA (2007) suggested criteria such as:
- average time to respond to customer problems;
 - average time to substantially address customer queries (including call centre metrics);
 - average time to provide connections (or some other distribution service);
 - percentage of connections (or other distribution service) not provided within agreed date; and
 - annual number of service complaints received (resolved and unresolved).
- 330 The Commission is of the initial view that a consumer-focussed business should have in place measures to gauge performance in these areas. PBA (2007) suggested that some EDBs may already measure such performance. For this reason, the Commission considers that such reporting requirements on EDBs may be relatively straightforward.
- 331 Reporting requirements of this form could be implemented as part of the threshold arrangements or as additional reporting requirements under Information Disclosure. The Commission's initial view is that it would be preferable to adopt such reporting requirements under Information Disclosure.

- (39). Do respondents agree with the list of service quality criteria set out above? Should further criteria be considered? Do respondents have any views on the availability and collection of information relating to these criteria?
- (40). If implemented, do respondents consider additional service measures should be part of the threshold arrangements or as additional reporting requirements under Information Disclosure?

6.5.2 Average or Disaggregated Performance Measures

- 332 Another important consideration is the level of detail to which the Commission should monitor network reliability. The Commission considers there to be merit in requiring EDBs to report network performance at a disaggregated level. For example, the Commission could assess performance on the basis of the overall average, but also consider the performance and trends of the worst performing feeders. This may encourage additional focus from EDBs on their fringe consumers.
- 333 Incentives provided by disaggregated performance measures could be complemented by other measures such as guaranteed service level schemes. These would require EDBs to provide some form of payment to consumers whose reliability falls below certain performance limits.

- (41). Do respondents consider performance reporting at a disaggregated level to be appropriate? Should this be undertaken initially under Information Disclosure?
- (42). Would the introduction of guaranteed services level schemes lead to higher service levels for the worst-served consumers?

CHAPTER 7: REFINEMENTS TO THE THRESHOLDS

334 This chapter discusses a number of potential refinements to the threshold arrangements. These are generally independent of the detailed design of thresholds. They instead deal with inputs, possible exclusions and associated processes.

7.1 INTRODUCTION

335 Preceding chapters have considered issues directly related to the detailed design of thresholds. There are a number of possible refinements that are complementary to the design of thresholds. These are the subject of this chapter.

336 A number of considerations have led the Commission to consider these possible refinements. These include: developments in international practice, industry comments and feedback, and the Commission's experience operating the current threshold arrangements. Section 7.2 will discuss a number of these possible refinements.

337 In addition, the Commission, given its aim to promote the efficient operation of distribution services, wishes to consider the potential role of thresholds in relation to energy efficiency. Section 7.3 discusses the role of EDBs in energy efficiency and the suitability of potential measures within the thresholds.

7.2 PROPOSED REFINEMENTS

338 The Commission has identified a number of areas where refinements to the current threshold arrangements may be appropriate. These refinements are discussed in this section. It should be noted that changes to the regulatory framework arising from the recent Cabinet Decision may render the potential need for a number of these refinements redundant (e.g., customised thresholds).

7.2.1 Excluded Services

339 The price-path threshold is determined in relation to specified services as defined by the Notice. The Notice also defines the categories of services provided by a distributor that are to be excluded. When a service is excluded it means that it is not taken into account in determining compliance against the thresholds. Generally, services are excluded where there is deemed to be workable or effective competition in the supply of those services. Services currently treated as being excluded include: services for which loss and constraint rentals are paid; connection, disconnection or reconnection services; and services provided in response to a contestable tender (see appendix D).

340 Resetting the thresholds provides an opportunity for the Commission to re-examine the underlying criteria for determining which services should be excluded. The Commission is currently of the view that the conditions for service exclusion should remain linked to the existence of effective competition as thresholds are intended to mimic competitive pressures. Therefore, where effective competition exists then inclusion in the thresholds is unnecessary.

341 The Commission's initial view is that the definition of excluded services should remain as set out in the Notice.

(43). Do respondents consider that the existing definition of excluded services is appropriate? Do respondents consider that any service categories should be added to/removed from the list (appendix D) and, if so, why?

7.2.2 *Pass-through Costs*

342 Under the current threshold arrangements, provision is made for the pass-through of certain operating costs. Costs are treated as pass-through on the grounds that they are largely beyond the control of EDBs. Pass-through costs, as defined by the Notice, are for any assessment period:

(a) the transmission charges, rates and Electricity Commission levies paid or payable by the distribution business for that assessment period—

but does not include—

(b) any amounts described in paragraph (a) if the distribution business demonstrates beyond reasonable doubt that those amounts were passed on transparently to its customers and/or electricity retailers.

343 Local authority rates and Electricity Commission levies remain beyond the control of EDBs and in the Commission's view should therefore continue to be treated as pass-through for the purposes of the thresholds. However, there are wider considerations in relation to avoided transmission charges and the growth in pass-through volumes. These are discussed in further detail below.

Transmission/Distribution Boundaries and Avoided Transmission Charges

344 The transmission charge is the net amount a distribution business is liable to pay to Transpower or other parties for transmission services (or avoided transmission services). Charges and rebates associated with the transmission network are largely beyond the control of EDBs and therefore should continue to be passed through.

345 However, there are potential issues regarding the boundary between transmission and distribution systems which are to some extent substitutes. This boundary can change over time and it is possible that some movements in transmission costs will be offset by opposite movements in distribution costs. In addition to boundary changes, transmission charges can be avoided through the development of distributed generation. Any avoided transmission charges as a result of the transfer of assets from Transpower to an EDB or development of distributed generation should be reflected in charges to customers and thus should also be reflected in setting the thresholds.

(44). Do respondents agree with the proposed treatment of transmission charges? How might avoided transmission charges be calculated?

Pass-through Volumes

346 Following the setting of the thresholds in 2004, an anomaly in the specification of the gazetted price-path formula was highlighted. It related to the treatment of pass-through costs, particularly in relation to transmission charges. It meant that if an EDB's volumes (chargeable quantities) were increasing then the price cap would allow greater price increases than intended. On the other hand, if an EDB's volumes were decreasing then the price-path threshold would require greater absolute price decreases than intended.

- 347 Following consultation⁵⁶ the Commission concluded that an approach based on the unbundling of transmission revenues and Transpower charges from the price-path formula was the most expedient and transparent way of removing the anomaly. The approach involved excluding transmission charges from the calculation of notional revenue and introducing a new transmission revenue criterion under the price-path threshold. The Commission notes that this approach was widely supported by submitters. Implementation should be relatively straightforward, as such unbundling is already mandated under the Information Disclosure.
- 348 Given the complexity of a number of implementation issues, the Commission considers that the threshold reset process, rather than during a threshold period, is the appropriate time to address the issue. The Commission considers that a number of the implementation issues can properly be addressed as part of the current consultative process and that outcomes can be established that coincide with the new threshold period.
- 349 The Commission therefore proposes that an approach based on the unbundling of transmission revenues and Transpower charges from the price-path formula as set out in the previous consultation be introduced as part of the reset package.

(45). Do respondents consider there to be any particular issues with the pass-through of transmission charges? Do respondents have any views on the proposed approach to address pass-through volume growth?

7.2.3 *Predictability of Breaches*

- 350 Improved predictability of breaches should allow better defined incentives for businesses. One important factor leading to uncertainty on likely future breaches is the presence of technical breaches. A technical breach can be defined as a situation where an EDB has breached one of its thresholds, not as a direct result of its behaviour but rather from factors attributable to the criteria for assessing a threshold breach. In other words, the breach had resulted from a “technicality”. Where the Commission identifies that a breach is of a technical nature, it may consider that it does not merit further consideration. Identified reasons for technical breaches include those arising from: pass through costs, CPI variance, EDB tariff rebalancing and quality issues (extreme events and statistical variation).
- 351 The Commission considers that accounting for such breaches would be consistent with the *Certainty Principle* and the *Cost-Effectiveness Principle* (given the likely reduction in administration). Nonetheless, there are serious and complex trade-offs to be considered. Mechanisms to account for a number of technical breaches may give rise to potential negative incentives. For instance, pass-through of transmission related costs may introduce negative incentives (e.g., around distributed generation and/or efficient load management) leading to a reduction in overall efficiency and therefore be inconsistent with the *Efficiency Principle*.

⁵⁶ Proposed Changes to the Distribution Thresholds Gazette Notice, (28 October 2005).

352 The Commission wishes to increase the predictability of breaches and will consider options for doing so. However, in considering how this should be achieved it is aware of the required trade-offs involving adverse incentives.

(46). What measures do respondents consider should be taken to reduce the scope for technical breaches? Given the trade-offs involved, how can any adverse incentives be dealt with?

7.2.4 Assessment Exemptions

353 Section 57K provides the Commission with discretion on the frequency with which businesses are assessed. To date, the Commission has yet to develop a set of criteria to consider whether EDBs should be granted exemptions from providing a compliance statement in any given year. Any consideration regarding possible assessment exemptions would have regard to the Purpose Statement.

354 The Commission considers that any such criteria should be performance based rather than based on other criteria. Criteria for exemptions may include the size of the business, its recent performance and the quality of information provided to the Commission. Assessment exemptions, if granted, would reduce the information burden on EDBs and be in keeping with the *Cost-Effectiveness Principle*.

(47). Do respondents consider that exemption provisions should be introduced for EDBs achieving a certain level of performance? If so, what criteria would be appropriate?

7.2.5 Assessment Guidelines

355 As noted in section 2.3.2, the Commission published Assessment Guidelines setting out the process for undertaking post-breach inquiries under the targeted control regime. The principal objective of the Guidelines is to increase certainty and transparency in the Commission's approach. A number of respondents to the recent MED review highlighted what they perceived to be a lack of certainty in the assessment process involved in a post-breach inquiry. In considering these issues and to better reflect the *Certainty Principle*, the Commission intends to consult on updated Assessment Guidelines.

(48). Do respondents have views on the current Assessment Guidelines and how the Assessment Guidelines might be improved?

7.2.6 Customised Thresholds

356 If the regulatory framework is not changed as a result of the Cabinet Decision, the Commission will consider whether additional provisions are required to allow EDBs to request ex-ante investment reviews and/or more tailored threshold terms, subject to the EDBs meeting certain criteria. As discussed in section 5.4.3, one option is to use such an approach as an alternative to the inclusion of a specific investment incentive (e.g., an I-factor) or reliance on a breach to review specific EDB circumstances.

(49). Do respondents have views on the potential introduction of customised thresholds? What criteria would be appropriate in assessing requests for such reviews ?

7.3 ENERGY EFFICIENCY

- 357 Energy efficiency is generally considered to relate to maintaining or increasing the level of output delivered, while reducing energy consumption. The concept of energy efficiency encompasses both supply side efficiency and demand side efficiency. Supply side efficiency relates to the efficient production, conversion and delivery of energy. Demand side efficiency is concerned with measures that promote the efficient end-use of energy. Energy efficiency should be distinguished from load management which relates to a change in the time profile of energy consumption for the purpose of reducing supply side costs.
- 358 The Government has signalled its intention to set out objectives regarding energy efficiency, including that the Commission should provide appropriate incentives for demand side management and reducing energy losses.⁵⁷ The Commission considers that the promotion of energy efficiency is consistent with its responsibility to promote the overall efficient operation of EDBs. It recognises, however, that there are limitations to both its scope and that of EDBs when seeking to address energy efficiency.
- 359 EDBs have an existing infrastructure and set of skills that could be used as a cost effective base upon which to construct ancillary activities associated with energy efficiency. However, the core business and expertise of EDBs is in distribution asset management, rather than energy efficiency technologies or processes. Whereas load management initiatives are demand side measures that can be built on supply side expertise, energy efficiency and conservation initiatives involve an understanding of the demand side that many EDBs may lack. There is an existing incentive for EDBs to engage in load management activities such as providing more efficient pricing signals, given there can be direct benefits for EDBs and consumers from deferring network investment. EDBs do not have a direct relationship with most end-consumers. Their scope to promote end-user energy efficiency is therefore tempered by a significant lack of information. Electricity retailers do have direct relationships with the majority of end-consumers and therefore many demand side approaches would be more appropriately driven by such parties rather than EDBs. However, it is not clear if retailers have incentives to reduce rather than expand energy volumes which would be counter to the interests of energy efficiency.
- 360 There are limitations on the Commission's scope to promote energy efficiency. The Electricity Commission has responsibility for developing EDB pricing methodologies including billing transparency and is evaluating metering technology options. As such, the Electricity Commission, rather than the Commission, currently has responsibility for the key demand side mechanisms that can influence energy efficiency. However, there are ways in which the Commission could potentially promote energy efficiency and load management within the threshold arrangements. These include:

⁵⁷ Supra, n13, p 4.

- incentive mechanisms for electricity loss reduction;
- addressing any aspects of the regulatory regime that may act as a disincentive to distributed generation; and
- explicit provisions for the recognition of demand side investments in the RAB of EDBs.

361 There is a practical limit to the extent the above mechanisms can be facilitated under the thresholds. How this may be achieved is discussed in the remainder of this chapter.

(50). Are there further opportunities for EDBs to address energy efficiency? If so, how might these be accounted for in the threshold mechanisms?

7.3.1 System Losses

362 The October 2004 GPS set out obligations on the Electricity Commission with regard to the efficient provision and use of electricity. This included the promotion of pricing structures that provide appropriate signals to manage losses. Being mindful of these and its responsibilities to promote the efficient operation of distribution services, the Commission considers it appropriate to consider incentivising EDBs to optimise total losses on their networks, consistent with the *Efficiency Principle*.

Losses in EDB Networks

363 The level of losses directly affect the efficiency of electricity distribution networks. Higher losses mean additional electricity must be generated to meet system demand, increasing the total cost to consumers. However, some level of losses is inevitable and is affected by a number of factors including the age and maintenance of equipment, investment choices, line length, climatic and topographic conditions. While some of these factors are beyond EDB control, others may be influenced in either the short or medium term. Improvements to the way an EDB manages its network can often be made quickly while the use of less efficient equipment and distributed generation may be medium term options.

364 Meyrick (2007a) considered the level of technical losses and how to create appropriate incentives for minimising losses. It compared the level of losses in New Zealand with those experienced in Victoria over the same period. The analysis suggested that the level of losses in New Zealand were in line with the losses reported for the Victorian EDBs. The average line loss reported for the New Zealand EDBs in 2006 is 6.25 percent. This compares to average line losses of 6.32 percent in 2003 highlighting that the average New Zealand line loss has marginally improved over the last four years. As would be expected, line losses are generally higher among rural EDBs. The highest line loss percentage reported in 2006 was nearly 11 percent whereas the lowest reported was 3 percent.

365 Losses can be reduced through investment choices, for example, use of optimally sized equipment. Choices by EDBs whether to invest in loss reducing/load management equipment will be influenced by costs and the return EDBs could expect on these investments. The degree to which loss levels are taken into account by EDBs when sizing equipment is an area that, in the Commission's view, warrants consideration.

Possible Mechanisms to Incentivise Loss Reduction

- 366 Some international regulatory regimes provide incentives for distribution businesses to optimise losses by providing a loss allowance based on comparators such as industry average, their own historical loss performance or estimates of reasonable losses based on operating conditions. Generally under such arrangements, if the distribution business can better the performance target then it is allowed to keep the benefits for a pre-defined period. Such approaches generally occur in control regimes and may be more difficult to apply in the context of a threshold based regime. Also, such an approach in New Zealand may be ineffective as EDBs do not currently pay for losses.
- 367 A more relevant approach to incentivising the loss reduction would be to adopt a benchmarking approach similar to other parts of the price-path.
- 368 Under such an approach line losses could be compared across EDBs and form the basis of an additional incentive factor. EDBs with particularly low line losses would be rewarded with a positive factor, those with average industry losses would have a zero value for this factor and those with relatively high line losses would be penalised by the application of a negative incentive factor. The values could be determined either on the basis of pre-determined bands for absolute loss levels or based on a comparison of current line losses with a moving average of past years' line losses for each EDB. Regardless of the approach adopted some normalisation would have to be applied to account for factors such as the geography and demography of different EDB areas.
- 369 The advantages of putting in place arrangements to incentivise loss optimisation would be both financial, in terms of reducing total system costs, and environmental in terms of facilitating the more efficient use of the networks. The disadvantage of an approach such as that set out above would be to make the threshold regime more complex and that any measure would need to take into account charging arrangements and/or market policies developed by the Electricity Commission. These factors would have to be weighed up in determining the appropriateness of introducing arrangements to optimise losses.

(51). Do respondents consider that any provision should be made within the threshold arrangements to incentivise the reduction of technical losses? If so, do respondents have any views on the form that such an incentive arrangements could take?

7.3.2 Distributed Generation

- 370 Distributed generation refers to generation that either produces electricity for use at the point where it is located, or supplies electricity to other consumers through a local network at a distribution rather than a transmission voltage. It includes generation from local hydro schemes, landfill gas, small geothermal plant, wind and solar generation, and co-generation.
- 371 In considering ways to improve energy efficiency, the October 2006 GPS set out policy objectives with regards to distributed generation. The GPS proposed regulations to clarify and facilitate the process of connecting distributed generation for both generators and distributors. In particular, by providing a process under which generators may apply to distributors for approval to connect distributed generation and to facilitate associated connection agreements.

372 On 30 August 2007, Electricity Governance (Connection of Distributed Generation) Regulations 2007 came into force. These regulations set out a process for distributed generators to obtain approval to connect, specify terms applying in the absence of contractually agreed terms and set out pricing principles to ensure connection charges are fair and reasonable.

Relevance for the Threshold Reset

373 There are a number of factors that are likely to influence the development of distributed generation. As recognised in the GPS, the key factors relate to the cost and complexity of the connection arrangements and the ongoing charging arrangements for use of both the distribution and transmission networks. Neither of these areas have direct implications for EDB thresholds.

374 The key issue that distributed generation raises for the Commission in resetting the thresholds relates to investment. The thresholds should not disincentivise EDBs from investing in or connecting (third-party) distributed generation where such connections would result in the more efficient operation of the network as a whole. Consequently, it is important that scope for efficient investment in distributed generation is appropriately considered within the reset.

375 The Commission notes that not all investment in distributed generation would necessarily increase efficiency. In some areas the connection of distributed generation may necessitate the reinforcement of existing distribution and/or transmission networks whereas in other areas the connection of embedded generation may, by addressing a local requirement for generation, allow for the deferment of network investment. Therefore, from a cost perspective, the connection of distributed generation can either increase or decrease the overall costs of the network thus impacting on the charges an EDB seeks to recover from its customers. Only to the extent that investment in distributed generation reduced overall costs and fostered greater efficiency could it be considered to be consistent with the *Efficiency Principle* and thus have provision made for it under the thresholds.

Consideration of Distributed Generation

376 The Commission notes that the recent changes to regulations affecting distributed generation have been aimed at removing impediments to the development of distributed generation and not to provide additional incentives specific to distributed generation. Consequently, the key issue is whether any aspect of the arrangements developed under the threshold reset would be likely to impact on the efficient development of distributed generation.

377 The Commission also recognises that there is an interaction between arrangements to incentivise minimising technical losses and distributed generation. As a consequence of being closer to demand, distributed generation can contribute to reducing the total level of losses. Therefore, if an additional incentive factor were adopted to encourage EDBs to reduce line losses then there would be an associated incentive to make greater use of distributed generation in those cases where it was a cost effective way of improving line loss performance.

378 The Commission notes that a number of overseas jurisdictions have examined impediments to distributed generation in recent years. However, regulatory solutions brought forward have largely focussed on charging structures facing distributed

generators. Charging issues are a matter for the Electricity Commission and are therefore outside the scope of the threshold reset.

(52). Do respondents have any views on the impact of the current threshold regime on the development of distributed generation and, if so, whether any changes would be appropriate to the current threshold arrangements?

7.3.3 *Demand Side Measures*

379 One potential demand side measure that the Commission has identified would be to make explicit provisions for the recognition of demand side management investments. The general issue is how to adequately reflect such investments in the RAB.

380 One key issue for the Commission would be the degree to which available information would allow it to consider the merit of efficiency related investments. It may prove difficult to determine whether such investments will lead to overall efficiency gains.

381 There has also been a suggestion that the use of a price-path threshold, rather than a revenue threshold, acts as a disincentive to energy efficiency. The reason being that as a price-path is more directly related to an EDB's return on investment then there are potentially some disincentives to demand side investments if those investments are not reflected in the RAB. However, the associated benefits for energy efficiency associated with a revenue threshold are likely to be small. Yet the benefits of a price-path threshold in terms of limiting excess profits and creating incentives for efficient investment are potentially substantial. Therefore, in the view of the Commission the benefits of the price-path threshold significantly outweigh any potential disincentive for energy efficiency.

(53). What demand side measures do respondents consider could be introduced under a thresholds based arrangement, consistent with the Principles outlined in chapter 2?

Appendix A Questions

QUESTIONS	
1	Do respondents agree with the Principles as set out? Are there any other relevant principles?
2	Are there any other significant trade-offs between the Principles? If so how can they be best addressed?
3	Do respondents agree with the Commission's initial view that the arrangements should consist of two main thresholds, one focussed on price and the other on quality?
4	Will the Purpose Statement and Principles be better achieved if a quality focussed threshold for the period 2009 to 2014 is developed with the proposed objective in mind?
5	Do respondents consider that retaining the B-factor is consistent with the Principles?
6	Which of the two initially considered approaches are most appropriate when seeking to incentivise EDB productivity and profitability performance? Are there other approaches which should be considered?
7	Do respondents consider that the use of a price (P0) adjustment in the first year of the regulatory period, to account for unsustainably low or excessive profits, would be more consistent with the Principles than retaining the existing arrangements?
8	Do respondents consider that a P0 adjustment can be used to account for differences in relative productivity? Is this more applicable for better performing EDBs? Do respondents consider that a glide-path approach such as the current C1 factor may be more appropriate for poor performing EDBs?
9	To what extent are specific regulatory investment provisions necessary to achieve increased reliability performance?
10	Other than the thresholds themselves, do current regulatory obligations affect investment decisions of EDBs, if so, how do they affect investment decisions? How can these be accounted for appropriately within the thresholds?
11	Should the regime take into account differences between businesses (e.g., locational or scale)? If so, what differences would it be appropriate to take into consideration and why?
12	Do respondents have any views on the Commission's expectation that load growth related investment will, in general, be self-financing and ordinarily should not require specific regulatory provisions?
13	Do respondents have any views on the Commission's expectation that renewal investment will not be self-financing?

14	Do respondents agree that the lack of accurate and complete information, as highlighted in FSC (2007), makes effective analysis and forecasting of future investment difficult? How can such information shortfalls be addressed?
15	Have the thresholds had an impact on replacement investment? Are there views as to the reasons for the apparent reduction in 2006?
16	Do respondents have any views on the FSC (2007) assessment that the New Zealand electricity industry does not face a large imminent increase in renewal based investment ('wall of wire' effect)?
17	Do respondents have comments on the assessment of relative renewal needs of EDBs (Table 7) during the forthcoming regulatory periods?
18	Is a mechanism to provide incentives for additional investment expenditure appropriate within the threshold arrangements, if so, for what reasons?
19	Is there sufficient scope within the existing arrangements to account for increasing renewal investment?
20	If a specific investment allowance mechanism were to be introduced in 2009, what is the most appropriate form for such a mechanism?
21	The Commission welcomes views on the proposed I-factor mechanism and whether such a mechanism is best introduced from 2014?
22	Do respondents consider there to be any other approaches that have not been considered that may incentivise efficient investment?
23	Do respondents agree with the Commission's initial view that if an investment incentive mechanism is introduced it should be underpinned by some form of explicit accountability mechanism and if not, why?
24	Do respondents have any comments on the Commission's initial view that an accountability mechanism should apply from the beginning of a regulatory period rather than within a regulatory period?
25	What do respondents consider to be the most appropriate method of providing investment accountability and why do respondents consider that method to be appropriate?
26	Do respondents agree that the reliability criteria should be set using normalised data?
27	Do respondents have any views on the proposal to use a three-year moving average to address the effect of normal variability?
28	What are respondents' views on the proposal that the reliability criteria be applied separately to networks that are either non-contiguous and/or that have ownership/beneficiary differences?

29	Would the establishment of characteristic based peer groups allow for the better comparison of EDB reliability performance?
30	Do respondents have views on potential characteristic based grouping criteria (e.g., ICP density, network structure and percentage of undergrounding/urban network)?
31	Would the establishment of reliability performance based bands within the groups allow for the better targeting of incentives? Do respondents consider the proposed averaging methodology is an appropriate basis for this?
32	Would requiring EDBs to improve their relative reliability performance be more reflective of the pressures that firms would experience in a competitive market?
33	Do respondents have views on providing a positive adjustment to the price-path of the below-average performers to reflect their scope to significantly improve reliability? Do respondents have any views on an approach that would make receiving a positive S-factor adjustment conditional on EDBs providing evidence that sufficient investments have been made to warrant the adjustment?
34	Do respondents consider that introducing an S-factor to the price-path, as outlined, will provide sufficient incentive to encourage average performers to further improve reliability? Should EDBs who improve their reliability sufficiently receive an S-factor in that regulatory period or the subsequent one?
35	Which of the two options proposed for the above-average performers (as outlined above) do respondents consider to be most appropriate?
36	Would it be appropriate to provide different incentives for below-average performers, average performers and above-average performers in the different peer groups. For example, should an above-average performer in a high-density peer group receive a different incentive than an above-average performer in a low-density peer group?
37	Do respondents consider that the implementation of updated reliability criteria, possibly complemented by service quality incentives (section 6.5.1), would promote the objectives of the Purpose Statement and fulfil the Price/Quality Trade-off Principle?
38	Do respondents have any comment on the Commission's initial view that the monitoring of consumer engagement should be transferred from the quality threshold to Information Disclosure?
39	Do respondents agree with the list of service quality criteria set out above? Should further criteria be considered? Do respondents have any views on the availability and collection of information relating to these criteria?
40	If implemented, do respondents consider additional service measures should be part of the threshold arrangements or as additional reporting requirements under Information Disclosure?
41	Do respondents consider performance reporting at a disaggregated level to be appropriate? Should this be undertaken initially under Information Disclosure?

42	Would the introduction of guaranteed services level schemes lead to higher service levels for the worst-served consumers?
43	Do respondents consider that the existing definition of excluded services is appropriate? Do respondents consider that any service categories should be added to/removed from the list (appendix D) and, if so, why?
44	Do respondents agree with the proposed treatment of transmission charges? How might avoided transmission charges be calculated?
45	Do respondents consider there to be any particular issues with the pass-through of transmission charges? Do respondents have any views on the proposed approach to address pass-through volume growth?
46	What measures do respondents consider should be taken to reduce the scope for technical breaches? Given the trade-offs involved, how can any adverse incentives be dealt with?
47	Do respondents consider that exemption provisions should be introduced for EDBs achieving a certain level of performance? If so, what criteria would be appropriate?
48	Do respondents have views on the current Assessment Guidelines and how the Assessment Guidelines might be improved?
49	Do respondents have views on the potential introduction of customised thresholds? What criteria would be appropriate in assessing requests for such reviews ?
50	Are there further opportunities for EDBs to address energy efficiency? If so, how might these be accounted for in the threshold mechanisms?
51	Do respondents consider that any provision should be made within the threshold arrangements to incentivise the reduction of technical losses? If so, do respondents have any views on the form that such an incentive arrangements could take?
52	Do respondents have any views on the impact of the current threshold regime on the development of distributed generation and, if so, whether any changes would be appropriate to the current threshold arrangements?
53	What demand side measures do respondents consider could be introduced under a thresholds based arrangement, consistent with the Principles outlined in chapter 2?

Appendix B Glossary

LIST OF TERMS, ABBREVIATIONS AND ACRONYMS	
The Act	Commerce Act 1986
AMP	Asset Management Plan. The principal document that drives asset investment planning of EDBs.
Assessment Guidelines	Guidelines published by the Commerce Commission to inform interested parties of the Commission's broad process and analytical framework for assessing threshold compliance and for undertaking post-breach inquiries under the targeted control regime.
August 2006 GPS	Government Policy Statement relating to infrastructure investment incentives faced by regulated businesses.
C1-factor	Component of the current thresholds reflecting the relative productivity of EDBs.
C2-factor	Component of the current thresholds reflecting the relative profitability of EDBs.
B-factor	Component of the current thresholds reflecting the expected industry wide (aggregate) improvements in efficiency.
Capex	Capital Expenditure. Expenditure on investment in long-lived network assets, such as overhead lines.
The Commission	Commerce Commission
CPI	Consumer Price Index. Measure of the price change of goods and services.
Electricity Distribution Business (EDB)	A lines business providing distribution services rather than transmission services (i.e., a lines business other than Transpower).
Electricity Lines Business (ELB)	A business defined to be a 'large electricity lines business' in s 57D of Part 4A, including Transpower.
FSC	Farrier Swier Consulting
GPS	Government Policy Statements. Statements of economic policy transmitted in writing to the Commission by the Minister of Commerce under s26 of the Commerce Act.
Initial Threshold	Thresholds set for the EDBs from 6 June 2003.
km	Kilometres

kVA	Kilovolt-amperes (a measure of electrical capacity and apparent power).
kW	Kilowatt (a measure of real power).
MEA	Modern Equivalent Assets. Method of asset valuation that values the network at replacement cost where the replacement cost is determined as the cost of replacing assets with modern equivalent assets.
MED	Ministry of Economic Development
Meyrick	Meyrick and Associates, trading name for Meyrick Consulting Group Pty Ltd.
MTFP	Multilateral Total Factor Productivity. Method of analysis to compare relative distribution business productivity. Allows for the comparison of absolute productivity levels, as well as growth rates.
MVA	Megavolt-amperes (a thousand kilovolt-amperes).
NPV	Net Present Value
October 2006 GPS	Government Policy Statement relating to electricity governance.
ODV	Optimised Deprival Value. Method of asset valuation based on valuing assets at the level at which they can be commercially sustained in the long term, and no more. The resulting value should be equal to the loss to the owner if they were deprived of the assets and then took action to minimise their loss.
ODV Handbook	Handbook describing the optimised deprival valuation methodology.
Opex	Operating Expenditure. The costs of the day to day operation of the network such as staff costs, repairs, maintenance expenditures, and overhead.
Part 4A	Part 4A (Provisions Applicable to Electricity Industry) of the Commerce Act 1986, which commenced on 8 August 2001.
PBA	Parsons Brinkerhoff Associates
Post-breach inquiry	Process Commission works through in order to decide whether or not to declare control on an EDB.
Principles	To assess the threshold options, the Commission has developed a set of Principles based on the evaluation criteria used to develop the current thresholds. The Principles reflect the Purpose Statement set out in s57E of the Act, regulatory best practice, and have had regard to relevant statements of economic policy transmitted to the Commission under s26 of the Act.

Process Paper	Paper published by the Commission on 30 July 2007 outlining a process for resetting the revised EDB thresholds.
Purpose Statement	The purpose of the targeted control regime as set out in s57E of the Commerce Act.
RAB	Regulatory Asset Base
Revised Thresholds	Thresholds for EDBs that were set on 1 April 2004. Also referred to as 'current thresholds'.
ROI	Return on Investment. Measure of profitability as disclosed by the EDBs under the Information Disclosure.
RPI	Relative Profitability Indicator. Measure of profitability providing a normalised assessment of profitability based on a common depreciation rate being applied to each EDB.
SAIDI	System Average Interruption Duration Index. A measure of the average time for which supply is off.
SAIFI	System Average Interruption Frequency Index. A measure of how often consumers are affected by interruptions.
s98 Notice	Notice issued by the Commission on 5 July 2007 under s98 of the Commerce Act requiring EDB's to submit information on their networks.
TFP	Total Factor Productivity. Change in productivity overtime, measured by the change in the ratio of outputs to inputs.
Transpower	Transpower New Zealand Limited. The state-owned enterprise that operates New Zealand's high-voltage transmission network.
X-factor	Efficiency factor. Under a CPI-X control a regulated business may increase average annual prices by no more than the change in the price of goods and services measured by CPI, less an annual percentage X.
WACC	Weighted Average Cost of Capital. The weighted average of the expected cost of equity and the expected cost of debt.

Appendix C Evaluation Criteria

C.1 The following is an excerpt from the May 2003 discussion paper.

REGULATORY FRAMEWORK CRITERIA

Promoting efficiency for the long-term benefit of consumers

C.2 The overall purpose of the statutory framework of Part 4A of the Commerce Act is to promote the efficient operation of electricity transmission and distribution markets for the long-term benefit of consumers. As the Commission has outlined in its March 2002 Discussion Paper and on other occasions, there are three dimensions of economic efficiency. These are:

- allocative efficiency: a market is allocatively efficient when firms price goods or services to reflect the productively efficient costs of supplying those goods or services at the margin;
- productive efficiency: a market is productively efficient when firms produce services of the desired quality at minimum cost, and production activities are distributed between firms in such a way that industry-wide costs are minimised; and
- dynamic efficiency: where firms have the appropriate incentives to invest, innovate and improve the range and quality of services, increase productivity and lower costs over time.

Incentive and distortionary effects

C.3 A trade-off exists between allocative and dynamic efficiency in particular. There is a general acceptance that a regulatory focus on allocative efficiency will not permit the higher profits that motivate investment and innovation. At some stage, the long-term benefits to consumers from the introduction of innovative technologies and services, and from more efficient investment, will outweigh (possibly significantly) the shorter-term benefits of lower prices.

C.4 As outlined in its March 2002 Discussion Paper, the Commission considers that implementing the targeted control regime for the long-term benefit of consumers requires the recognition that, where trade-offs exist between dynamic and allocative efficiency, greater weight should be placed on dynamic efficiency. Consequently, the Commission has set thresholds based on price and quality, rather than on profits. Nevertheless, the Commission also has the statutory responsibility to design a targeted control regime which limits the ability of lines businesses to make excessive profits.

C.5 The converse of the incentive effects of regulation are its possible distortionary effects. Distortions can occur simply through the inclusion or exclusion of inputs, outputs, normalisation factors and other parameters from the method used to set the CPI X parameters. For instance, a regulatory regime that focuses on the various components of costs, rather than on total costs, has the potential for distorting the firm's decisions between incurring capital or operating expenditures. Similarly, an exclusive focus on reliability indicators may lead to the relative neglect of other quality of service indicators.

Limiting excessive profits and sharing benefits of efficiency gains

- C.6 Regulation can be considered to balance the trade-off between providing incentives for efficiency and controlling monopoly rents. If there were no concerns about the potential for excessive profits, then there would be little need to regulate prices (or revenues).
- C.7 There is a trade-off between limiting excessive profits and ensuring the financial sustainability of lines businesses. This trade-off is due to the inherent asymmetry of information between the regulator and the regulated firm, which increases the risk of the regulator setting the regulatory parameters incorrectly.
- C.8 The financial sustainability of firms is often a distinct objective of regulatory regimes in international jurisdictions. By contrast, Part 4A of the Act does not highlight the financial sustainability of individual lines businesses as an explicit outcome of the targeted control regime. The Commission's view is that ensuring the financial sustainability of the transmission and distribution sectors as a whole is essential for the long-term benefit of consumers. In general, this will require individual lines businesses to be financially sustainable over the long term. The Commission acknowledges that changes in market structure over time, through the natural market consolidation of existing lines businesses, may provide outcomes consistent with the purpose statement of the targeted control regime.
- C.9 Under any CPI-X approach, if the X-factor is set too low there is a risk of excessive profits. On the other hand, if it is set too high, there is the risk that the regulated firm may be unwilling or unable to finance investment or, in the extreme, may go out of business. Because firms are detrimentally impacted in the latter case, but consumers lose out in both cases, there is an inherent asymmetry in these outcomes.
- C.10 One option would be to set a modest X-factor, and periodically reset prices (despite the possible incentive problems that this may itself cause) rather than risk setting an X that is too tight. This would be feasible under the partial building blocks option presented above.

Reflecting consumer demands for quality of service

- C.11 Well-managed lines businesses taking advantage of opportunities for innovation may be able to improve quality at the same time as reducing prices. However, once these gains are fully exploited, there is a trade-off that businesses must make between increased quality and cost. The Commission has set a quality threshold along with the price path threshold to ensure that lines business do not allow their reliability to fall, as a means of reducing costs in response to the price path threshold.
- C.12 This quality threshold will initially remain in place when the price path threshold is reset, but is likely to be refined over time. While such a threshold ensures no material deterioration in reliability, it does not account for firms needing to incur higher costs in response to consumers that have a clear preference for increased standards of service quality.
- C.13 Provision for a quality/cost trade-off could therefore be included as one of the components that make up the X factor in the price path threshold, either implicitly with a C factor, or explicitly with an E-factor. (These factors are discussed in Chapters 4 and 6 of this Discussion Paper respectively.) Should the combination of the reset price path threshold and the existing quality threshold not adequately reflect all aspects of the trade-off between price and quality, the Commission may need to consider revising the quality threshold.

Using the CPI-X price path for a threshold rather than control

- C.14 The use of CPI-X for the assessment phase of the targeted control regime clearly differs from its use internationally, because the thresholds are not instruments of control, but a screening mechanism to identify lines businesses that possibly should be investigated further. In some respects, the thresholds act like the “off-ramps” included in some CPI-X control regimes overseas, as they trigger a more detailed review of the prices, revenues, quality of service and/or costs for a lines business. Offramps can be built into the more incentive-oriented CPI X approaches to protect both firms and consumers against X-factors that are too tight or too loose. However, off-ramps used overseas usually comprise an upper and/or lower bound on rate of return, thus acting as a profit threshold rather than a price path threshold.
- C.15 The Commission’s view is that explicit off-ramps (or earnings sharing mechanisms) do not need to be considered in resetting the price path threshold. Concerns regarding excessive profits can be addressed through careful selection of an appropriate methodology for determining the parameters of the CPI-X price path threshold. However, such mechanisms may have possible applications for the control of lines businesses that have breached the thresholds.
- C.16 The incentive effects of CPI-X regulation are likely to be different when used for assessment rather than control, and therefore some of the shortcomings of the various approaches may be of less concern where used to set threshold parameters. For instance, if the X factor is set too high for a relatively efficient lines business, and as a result it breaches the price path threshold, the business still has the opportunity to demonstrate its relative efficiency to the Commission during the course of an investigation.
- C.17 This might suggest that the method or methods used to reset the price path threshold do not need to be as methodologically robust as those that might be used for control. Alternatively, if a robust method can be found for resetting the thresholds, then this method might also be applicable for control, although the values of the parameters may differ. Analytical robustness is further discussed in the following section, along with other implementation criteria for evaluating the methodology used to reset the price path threshold.
- C.18 How robust does the methodology for resetting the price path threshold need to be, given that the price path is a threshold, and not a control mechanism?

IMPLEMENTATION CRITERIA

Regulatory risk and transparency

- C.19 Uncertainty in the regulatory regime can raise a firm’s cost of capital, thus providing disincentives for investment for any given pattern of expected cashflows. At worst, regulatory opportunism can occur if regulators can arbitrarily overturn previous decisions, therefore removing value from regulated firms.
- C.20 The need for transparency arises because regulators need to exercise judgment and a certain level of discretion, but not engage in regulatory opportunism. In relation to regulatory processes and procedures, transparency is somewhat independent of the form of regulation used. Procedural transparency will be addressed in a paper that the Commission will issue on investigation and control processes. However, a lack of transparency may also arise if overly complex methods are used to set the CPI X parameters. Ensuring the transparency of decisions can mitigate regulatory risk, but the

Commission recognises that the substance of decisions (irrespective of how transparent those decisions are) is equally important.

- C.21 Regulated firms often express concern about the intrusiveness of regulatory information disclosure requirements. However, the discretionary nature of regulatory judgments, and thus regulatory risk, can be mitigated if good data is available to clarify decisions. A clear framework for information disclosure requirements, including the purpose, scope, and in particular the precise specification of data, can reduce regulatory risk. The Commission will be reviewing the existing information disclosure requirements for lines businesses, and changing them as required.

Robustness and Replicability

- C.22 One way of reducing uncertainty in the regulatory regime is to ensure the method used to set the X factor is sufficiently robust (and transparent) for there to be a reasonable consensus among stakeholders on the values arising from the application of that method. Minimising the potential for disputes also reduces the costs of regulation.
- C.23 In addition, all parties should be able to derive the same results from the analysis that is undertaken to set the X-factor (if the same data is used). The majority of relevant data will be publicly available under the information disclosure regime and, come the time, the Commission will provide details of the methodology for resetting the price path threshold in the Gazette.

Cost Effectiveness

- C.24 The compliance and administration costs imposed by regulation can themselves detrimentally impact efficiencies. The Commission's approach is to develop a targeted control regime that satisfies the requirements of the statutory framework at the lowest possible cost, and is workable in practice. It is important to note, however, that this cost effectiveness criterion does not simply mean that the cheapest method is preferred outright. Rather it means selecting the most cost effective option that achieves the regulatory objectives.
- C.25 Building block approaches are typically the most resource intensive of the various approaches to CPI-X regulation, as they require a detailed review by the regulator of firm-specific costs. For this reason, the Commission's preference is not to use a building block method as the primary approach for resetting the price path threshold. However, the Commission has not ruled out its use for determining a possible Po adjustment (i.e. D factor), and the method could be considered for use if required in controlling the prices (or revenues) of lines businesses that have breached the thresholds. The possible use of a D factor is discussed in Chapter 5 of this Discussion Paper.
- C.26 Compliance costs stem from the need for firms to collect and prepare the information required by the regulator, although high data collection costs may themselves be symptomatic of inefficiencies. For example, the information disclosure regime may require the same information to be disclosed as that which would generally be needed by the management of an efficient lines business for the purposes of operational and investment planning. Hence, for relatively less efficient firms, achieving the purpose of the statutory framework may involve incurring greater costs, at least temporarily. Costs associated with actions consistent with the purpose of the thresholds regime are not, in the Commission's view, compliance costs.
- C.27 The legislation does not require the Commission to undertake a net efficiency analysis of its proposed approaches or alternative options. The Commission, however, continues

to invite interested parties to provide their own analysis of the net benefits of various aspects of the regulatory regime. In the context of this Discussion Paper, the Commission seeks submissions on the net benefits of the options for resetting the price path threshold.

- C.28 The Commission acknowledges that forward-looking cost-benefits studies, by their very nature, are difficult and the results uncertain. Because of this, views regarding the cost effectiveness of one method versus another will invariably be subjective, requiring, in this context, the Commission to exercise its judgment.

Industry-specific factors

- C.29 A number of factors are specific to the New Zealand transmission and distribution sectors. Therefore, an important evaluation criterion is the ability of the selected method to satisfactorily account for such factors, not only in respect to implementation, but also in terms of the desired incentive effects of the regime. For example, trust owned distribution businesses may respond differently from other lines businesses to the incentives provided by the targeted control regime.
- C.30 In addition, as has been discussed in the Commission's draft Decision Paper (31 January 2003), many trust-owned distribution businesses pay out rebates or dividends to consumers. Unless explicitly taken into account in resetting the CPI X price path, distribution businesses that instead pass on implicit rebates through lower prices may be penalised relative to others, simply due to the method used by them to distribute wealth to their consumer owners.

Appendix D Excluded Services

D.1 The following definition from the Notice specifies the existing excluded services. This is provided to assist respondents in answering question 42.

“specified services means, in relation to a lines business, all goods and services, provided in New Zealand, that are electricity distribution or transmission goods or services or are directly related to the provision of electricity distribution or transmission, and includes—

(a) the provision, operation, and maintenance of electricity works such as lines, cables and substations that facilitate the local or regional conveyance of electricity from embedded generators or the national grid to customers; and

(b) the provision, operation, and maintenance of electricity works such as the high voltage direct current inter-island link and lines, cables, and substations that facilitate the national conveyance of electricity throughout the national grid; and

(c) the sale of electricity conveyance services to electricity retailers or customers—

but does not include—

(d) any goods and services described in paragraph (a), (b) or (c) if the lines business demonstrates beyond reasonable doubt that there is workable or effective competition for the provision of those goods and services; or

(e) non-conveyance goods and services, such as energy use monitoring services, consulting services, or the provision of information not directly related to the provision of electricity distribution or transmission, if the lines business demonstrates beyond reasonable doubt that those goods and services are not directly related to the provision of electricity distribution or transmission; or

(f) the provision of system operator services, if the lines business demonstrates beyond reasonable doubt that there is workable or effective competition for the provision of those services; or

(g) services for which loss and constraint rentals are paid, if the lines business demonstrates beyond reasonable doubt that amounts received for those services are passed on transparently and in full to its customers; or

(h) financial services related to transmission (known as “financial transmission rights”), if the lines business demonstrates beyond reasonable doubt that the amounts arising from settlement of those services are passed on transparently and in full to its customers; or

(i) in relation to a distribution business, connection, disconnection, or reconnection services, if the distribution business demonstrates beyond reasonable doubt that there is workable or effective competition for the provision of those services; or

(j) in relation to a distribution business, services provided in response to a contestable tender, if the relevant customers agree in writing that, and the distribution business demonstrates beyond reasonable doubt that, there is workable or effective competition for the provision of those services; or

(k) in relation to Transpower, goods and services provided under new investment contracts, if the other party agrees in writing that the terms and conditions are reasonable or reflect contestable provision of the goods and services; or

(l) in relation to Transpower, goods and services provided as a result of new investment if Transpower demonstrates beyond reasonable doubt that the new investment was approved under a process (whether regulatory or otherwise) that provides for affected customers to make and approve price-quality trade offs and opportunity for competitive provision of new investment by parties other than Transpower.”