



Review of Electricity Distribution Businesses' 2013 Pricing Methodologies

Report to the Electricity Authority

**November
2013**

Acronyms and Abbreviations

ACOT	Avoided Cost of Transmission
AMD	Anytime Maximum Demand
AMP	Asset Management Planning
CMD	Coincident Maximum Demand
COSM	Cost of Service Model
CPP	Customised Price-quality Path
DPP	Default Price-quality Path
EDB	Electricity Distribution Business
ENA	Electricity Networks' Association
ICP	Installation Control Point
RCPD	Regional Coincident Peak Demand
TPM	Transmission Pricing Methodology

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Executive Summary

The Electricity Authority (“the Authority”) engaged Castalia to review the pricing methodologies published by the 29 electricity distribution businesses (EDBs) in New Zealand. The three key objectives of this review are to:

- **Understand** what approaches electricity distributors take in pricing their lines services, and how distributors present those approaches in their pricing methodologies. This provides a stocktake of pricing approaches that will help to inform future regulatory decisions on distribution pricing
- **Evaluate** how closely distributor pricing methodologies align with the information disclosure guidelines and pricing principles issued by the Authority, and how methodologies could be changed to achieve greater alignment with the guidelines and principles
- **Assess** the effectiveness of the information disclosure guidelines and pricing principles, and identify whether any changes could be made to the guidelines or principles to make them more effective

Our review found a large amount of variation in the way that EDBs price across New Zealand. Some of that variation can be explained by physical and customer characteristics on each network—for example, a long stringy network with a large amount of irrigation demand should have a different set of pricing arrangements from a densely populated urban network. However, much of the variation in approach can only be explained by legacy reasons—the pricing approach reflects decisions made a long time ago, for reasons that are no longer apparent.

Regulatory context for distributor pricing

The guidelines and principles exist within a regulatory and commercial environment that has several key components, which at times pull distributors in different directions. Two examples:

- The pricing principles encourage EDBs to set prices that signal the cost of additional usage of the network. However, if the need for investment is created by demand from low users (consuming less than 8,000 kWh per year), then distributors have limited flexibility to reflect that cost in their prices due to the impact of the Low User Fixed Charge regulations
- The pricing principles also encourage distributors to price in ways that reflect consumer responsiveness to changes in price. This clearly aims to increase utilisation of the network. However, this outcome could weaken progress against other broader government objectives. For example, greater distribution network utilisation can lead to higher levels of overall electricity consumption (if demand increases outside of peak times), which may work against energy efficiency objectives.

This highlights that the guidelines and principles are applied by EDBs in a complex environment. Given that the guidelines and principles are voluntary, we should expect mandatory regulations and commercial objectives to dominate.

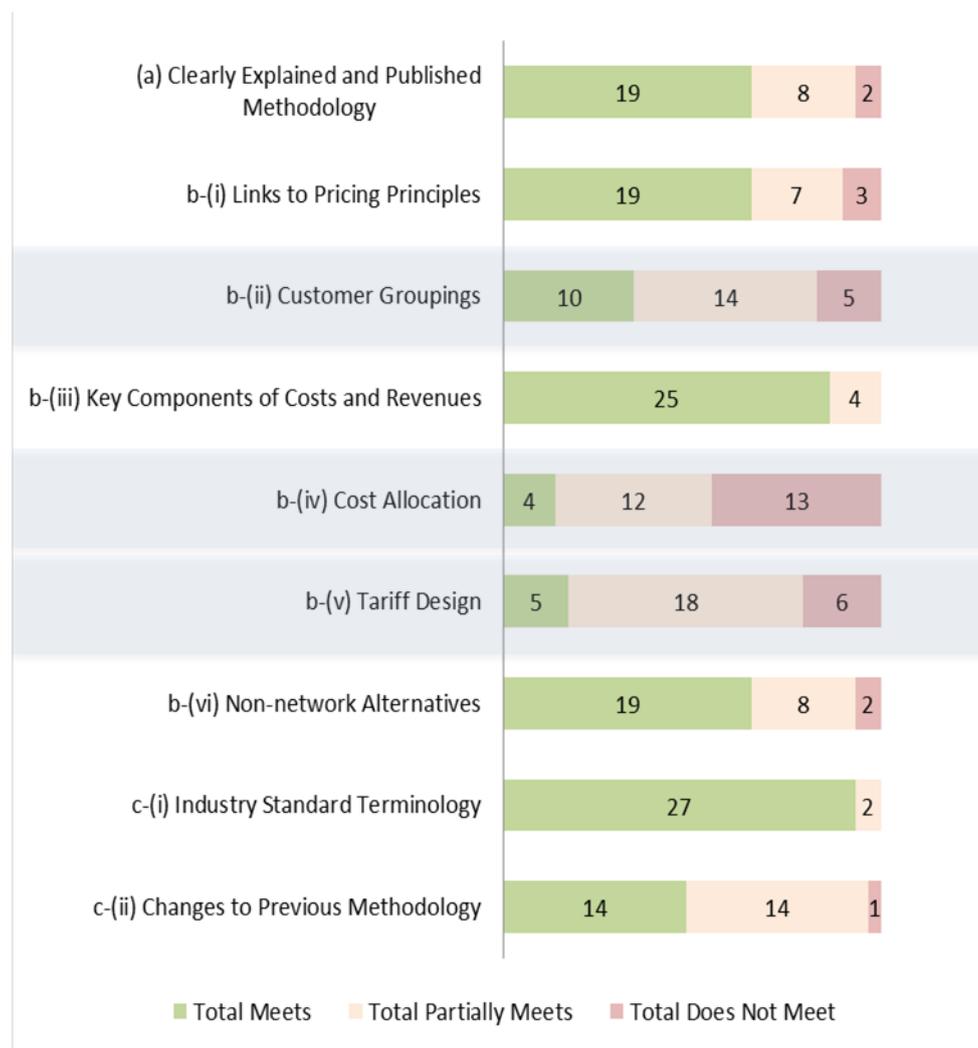
Some guidelines and principles are closely followed, while others are not

Figure ES.1 provides an overview of our evaluation of the 29 pricing methodologies against the information disclosure guidelines, and Figure ES.2 provides an overview of our evaluation against the pricing principles.

Many of the guidelines are stand-alone requirements—for example, to explain and publish the methodology and link the methodology to the pricing principles. However, guidelines b(ii), b(iv), and b(v) are the three sequential steps in the process of determining lines charges. First, customers are grouped according to certain characteristics. Second, costs are allocated to those customer groups. Finally, tariffs are designed to recover the costs allocated to different groups. Our assessment of alignment with these guidelines is shaded blue in Figure ES.1.

Distributors tended to align more closely with the stand-alone guidelines than the three sequential stages of determining prices. In large part this is because the guidelines require distributors to provide a rationale for why the three steps have been carried out in the way that they have. This requirement reflects the fact that there are a variety of different ways to group customers, allocate costs, and design tariffs, and that distributors should be able to explain the reasons for implementing their chosen approach. Most distributors failed to provide compelling reasons to support their pricing methodology.

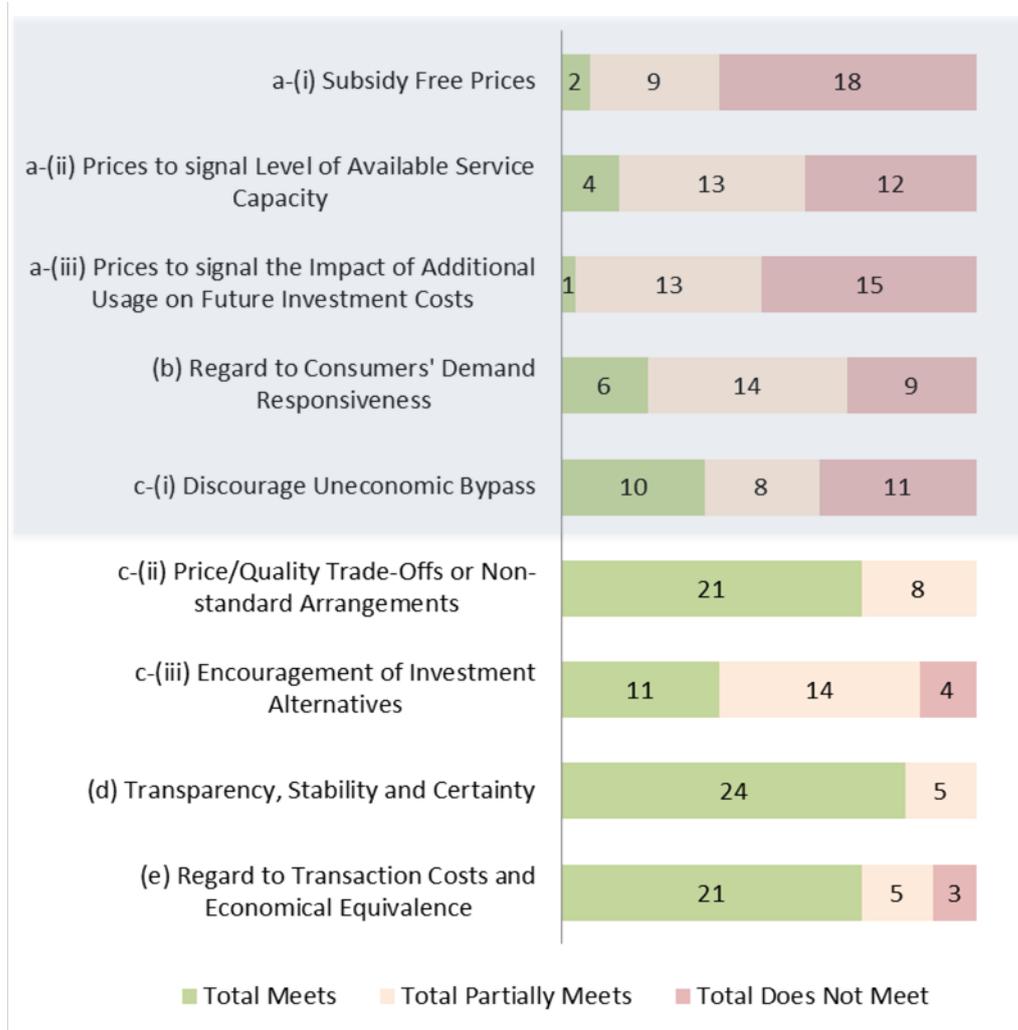
Figure ES.1: Overview of Alignment with the Information Disclosure Guidelines



The pricing principles can also be divided into two parts: firstly, principles that aim to improve the information value or signalling qualities of distributor prices (principles a(i)-c(i)), and principles that aim to overcome some of the conceptual or theoretical problems with natural monopolies (principles c(ii)-(e)).

Our assessment of alignment to the principles that aim to improve the signals provided by distributor pricing is shaded blue in Figure ES.2. Most pricing methodologies do not align well with these principles. However, we found much closer alignment in the pricing methodologies with the principles that aim to overcome many of the more conceptual problems associated with natural monopoly.

Figure ES.2: Overview of Alignment with the Information Disclosure Guidelines



The overall sense emerging from our review of EDB pricing methodologies is that significant changes to pricing are just around the corner—particularly with the introduction and use of more smart metering technology. Some distributors have already taken bold steps to change the way they price their lines services—with The Lines Company moving to demand based charging and billing direct to customers, and WEL Networks introducing advanced pricing options in its latest pricing methodology.

However, the overwhelming picture across the industry is that current pricing arrangements are in place primarily for historical reasons. As a result, most pricing methodologies align well with pricing principle (d), which requires price stability and certainty for stakeholders. However, legacy pricing arrangements are clearly unable to reflect changes that might occur in the cost of providing lines services, which is the focus of pricing principle (a). This is likely to be a major reason why distributors fail to present a convincing rationale for many of the features of their pricing approach, as required by the information disclosure guidelines.

There are ways that EDBs can achieve closer alignment

This review has identified many improvements that can be made to EDB pricing methodologies, with relatively little cost involved to EDBs. These improvements relate both to the substance of the pricing approach and to how it is communicated through annual pricing methodologies. The suggestions have been provided directly to EDBs through feedback on their individual methodologies, and the themes that have emerged from our review are described in this report.

There are three substantive improvements that we believe would greatly improve the value of pricing methodologies and their alignment with the guidelines and principles:

- **Finding simple ways to communicate the essence of the pricing approach used, and explaining why the approach makes sense.** We were surprised to find that no EDBs summarise the key steps involved in their pricing methodology in a single, logical, well-presented diagram. We recommend that EDBs prepare a simple one page schematic showing the logical flow from firm-wide costs and revenues, the allocation of those costs to defined customer groups, and the recovery of allocated costs through tariffs (fixed, variable, demand, etc.). The methodology should then support the approach described by providing reasons why the particular methodology is preferred to alternative pricing arrangements.
- **Better integrating asset management planning (AMP) processes and pricing.** We think that a closer link in the process of preparing AMPs and pricing methodologies provides a very real way to improve how prices signal the economic costs of providing lines services. Although there may not be immediate opportunities to use pricing to manage the investment needs on each network, having closer integration will help to identify when such a prospect does arise, and would help to understand how investment costs will flow through into prices. This provides a more effective basis for engaging with customers on the impacts of any particular investment.
- **Developing better ways to engage with retailers and end-users on pricing.** Distributor price signals clearly work best when they end up in final prices. This relies on retailers understanding the value of the price signal, and perhaps even sharing some of the benefit of a price response. The disaggregated nature of the electricity supply chain means that sharing the benefits of any demand response to price signals requires an agreement between EDBs and retailers. Whether or not such agreements can be reached, there is value to distributors better understanding the demands of end-users on their networks, and how those end-users are likely to respond to prices.

Distributor pricing regulation can help to facilitate better pricing outcomes

Regulation has a role to play in guiding EDBs towards approaches that improve the information value of prices and overcome common natural monopoly pricing problems. However, it is important that this regulation is based on a sound understanding of the interaction between economic theory, technical constraints, and commercial reality.

To achieve this outcome, we recommend that the Authority:

- **Uses this review to reach a view on what the pricing principles require.** The pricing principles contain a lot of economic content and therefore need to be interpreted by EDBs. For the principles to be usefully applied, EDBs therefore need to have a correct understanding of what each principle means

and how alignment can be achieved. We have given our interpretation of the pricing principles in this report, which might provide a starting point for the Authority to explain what each principle requires.

- **Streamlines the regulatory oversight of EDB pricing methodologies by rationalising the guidelines and principles.** We consider that the essence of the principles could be captured through six principles, rather than nine. Principles a(i), (b) and c(i) could be grouped together to deal with the recovery of fixed network costs, while principles a(ii) and a(iii) could be grouped together to deal with the physical characteristics of the network. Streamlining the guidelines and principles would help to make them more focused on explaining what matters to retailers, customers, and regulators.
- **Gives greater prominence to the principles that matter most.** The principles have no hierarchy to resolve any conflicts that arise between them. For example, principle a(iii) might encourage a distributor to charge more when approaching peak capacity constraints, while this might conflict with the price stability promoted under principle (d). In our view, if the principles are designed to encourage prices that signal the economic cost of service provision and are based on customer engagement, then price stability is not a helpful objective given existing legacy pricing arrangements.

We also recommend that the Authority considers requiring distributors to clearly state their approach to capital contributions. Our review found that many pricing methodologies do not provide a complete description of how and when capital contributions are charged. Disclosures on capital contributions are required under Clause 2.4.6 of the Electricity Distribution Information Disclosure Determination 2012, and are provided in a separate document. From our brief review of those policies, it appears that approaches can vary across the industry—with many distributors recovering the full cost of new connections through capital contributions, and others allowing customers to pay back initial connection costs over time. Capital contributions are relevant to understanding how the fixed costs of providing network services are recovered and for establishing the right benchmark for subsidy free prices, so we suggest that these policies should form part of the pricing methodology (or at least be explicitly cross-referenced).

Having completed this review we are now intimately familiar with the guidelines and principles. Overall, we consider that the guidelines and principles provide a useful framework for thinking about what a good pricing methodology should achieve (subject to the comments above). We therefore recommend that the Authority continues to apply the guidelines and principles, rather than moving to a different framework for evaluating pricing methodologies.

Finally, we note that our engagement with EDBs through this work has been very constructive. We found distributors to be genuinely interested in ensuring that their pricing methodologies are clear, coherent, and serve a useful purpose.

1 Introduction and Background

The Electricity Authority (“the Authority”) engaged Castalia to review the pricing methodologies published by the 29 electricity distribution businesses (EDBs) in New Zealand. The purpose of this review is to better understand how different EDBs price the lines services that they provide. This understanding will help the Authority to identify where opportunities might exist to improve distributor pricing through regulatory oversight. We have carried out this review by evaluating how each pricing methodology aligns with the voluntary information disclosure guidelines (“the guidelines”) and pricing principles (“the principles”) issued by the Authority.

This section describes the purpose of our work in more detail, and presents some relevant background for this review. This context highlights that the guidelines and principles operate within an environment that includes other regulatory and industry constraints. Our review does not ignore this context, but does focus on the degree of alignment with the information disclosure guidelines and pricing principles to inform what steps (if any) the Authority should take in the area of distributor pricing.

The information disclosure guidelines and pricing principles are a form of light handed regulation

The Authority is an independent Crown entity responsible for ensuring the efficient supply of electricity in New Zealand. Section 15 of the Electricity Industry Act 2010 defines the Authority’s overall statutory objective to be to “promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers”.

One of the Authority’s functions is to oversee distribution pricing. The Electricity Commission (the Authority’s predecessor) introduced the information disclosure guidelines and pricing principles. The guidelines and principles are voluntary and the Authority therefore does not enforce compliance. The guidelines and principles can therefore be viewed as a form of light-handed regulation primarily directed at improving transparency and understanding of the way that lines charges are set, while encouraging EDBs to adopt efficient pricing approaches.

The information disclosure guidelines set out the information that EDBs should present in their pricing methodologies. The nine guidelines are listed in Appendix A of this report. The guidelines encourage distributors to clearly present how the prices they charge to different customers are set, and why the distributor applies its particular approach to pricing. The guidelines help to make information on pricing approaches more transparent, and make it easier for interested stakeholders to understand distributor pricing.

The pricing principles were developed to guide EDBs in determining their approach to setting prices and developing their pricing methodologies. The nine principles are listed in Appendix B of this report. The principles encourage distributors to adopt pricing approaches that are efficient, by minimising the cost of providing lines services and signalling the efficient cost of supplying different customers.

Other laws and regulations are also relevant to distributor pricing

As mentioned above, the Authority’s information disclosure guidelines and pricing principles are not the only form of regulatory oversight or control applied to distributor pricing. The following other legal requirements are also directly relevant:

- The Commerce Commission has issued **Information Disclosure Requirements** under Part 4 of the Commerce Act 1986. These requirements are mandatory and the Commission is able to impose penalties on any distributor that fails to comply. The requirements cover much of the same material as the Authority’s information disclosure guidelines, but also introduce some additional obligations (such as requiring Board members from each distributor to sign-off the pricing methodology).
- The Commerce Commission also regulates the level of prices charged by “non-exempt” distributors through **Default Price-quality Path (DPP)/Customised Price-quality Path (CPP) regulation**, also under Part 4 of the Commerce Act. Distributors that are consumer-owned are exempt from this form of regulation under section 54G of the Commerce Act. Under DPP/CPP regulation, the Commission sets the maximum weighted average price that distributors are allowed to charge. Distributors have the flexibility to determine different prices for serving different customers, as long as the average price weighted by customer demand does not exceed the price cap.
- The Ministry of Business, Innovation and Employment (formerly the Ministry of Economic Development) issued **Low User Fixed Charge Regulations** in 2004. These regulations require distributors to offer a tariff to residential customers that consume less than 8,000kWh per year that has a fixed charge component that does not exceed 15 cents per day. The regulations also stipulate that other pricing components (typically variable charges) cannot be set in a way that increases the total amount paid by low users.
- Distributors are prohibited from ceasing **supply arrangements to rural customers** (Section 105 of the Electricity Industry Act 2010). Section 113 of the Electricity Industry Act 2010 also provides the power to make regulations controlling the rate of change in rural lines charges.

Together with the information disclosure guidelines and pricing principles, these regulations limit the ways that distributor pricing can operate. These controls are generally seen as a legitimate response to the position of distributors as natural monopolies (the assets of EDBs cannot be economically duplicated). By virtue of the economic characteristics of distribution assets, competition cannot be used as a form of discipline on distribution pricing. While the need for regulatory control in these circumstances is widely acknowledged, distributors frequently express frustration at the apparent overlaps and conflicts between the different forms of distribution pricing regulation (this point is discussed further below).

Previous reviews of distributor pricing

This is the first comprehensive review of distributor pricing in New Zealand. However, the Authority has completed previous regulatory consultations on the information disclosure guidelines and pricing principles.¹

In 2011, the Authority commissioned Concept Consulting to review a sample of distributor pricing methodologies against the information disclosure guidelines.² The

¹ A summary of many of the regulatory consultations on distribution pricing since 2009 is provided on the Authority’s website: <https://www.ea.govt.nz/our-work/programmes/transmission-work/principles-or-model-approaches-to-distribution-pricing/#background>

consultant's report also commented on the application of the pricing principles. One of the recommendations arising from this review was that the Authority develop criteria for evaluating pricing methodologies against the pricing principles. The Authority subsequently released a consultation paper on some proposed criteria, and received comments from stakeholders on the proposed criteria. The Authority has not issued any criteria for evaluating alignment with the pricing principles.

In May 2012, the Authority released a consultation paper on a proposed economic and decision-making framework for distribution pricing.³ The proposed framework applied the same logic used to make decisions on transmission pricing—looking first for market-based pricing approaches, and then allocating costs to parties that either cause the cost or benefit from the service where market forces cannot be used to determine prices. The Authority received 19 submissions on this proposed economic and decision-making framework for distribution pricing.

Purpose of this review

The three key objectives of this review are to:

- **Understand** what approaches electricity distributors are taking in pricing their lines services, and how distributors are presenting these approaches in their pricing methodologies. This provides a stocktake of pricing approaches that will help to inform future regulatory decisions on distribution pricing
- **Evaluate** how closely the distributor pricing methodologies for the year beginning 1 April 2013 align with the information disclosure guidelines and pricing principles, and how methodologies could be amended to achieve greater alignment with the guidelines and principles where closer alignment would be valuable
- **Assess** the overall effectiveness of the information disclosure guidelines and pricing principles, and identify whether any changes could be made to the guidelines or principles to make them more effective

The views expressed in this report represent Castalia's professional opinion, and do not reflect the views of the Authority. In our view, the pricing principles in particular need to be interpreted (they are not self-explanatory), which creates room for legitimate disagreement about what the principles mean and how alignment can best be achieved. The Authority and EDBs may disagree with the way that we have interpreted particular principles, or the emphasis we place on the particular requirements for alignment. We understand that this report will be published, and further work by the Authority in response to the report will include opportunities for parties to debate the meaning and requirements of each guideline and principle.

Structure of this report

This report presents a summary of our findings and our recommendations for improving alignment with the information disclosure guidelines and the pricing principles. The report is structured as follows:

² Concept Consulting, 2011. "Assessment of selected distributors' alignment against the Information Disclosure Guidelines, and their consideration of the Pricing Principles". Available online at: www.ea.govt.nz/dmsdocument/11448

³ See <https://www.ea.govt.nz/our-work/consultations/transmission/decision-making-economic-framework-distribution/>

- Section 2 describes our approach to evaluating the pricing methodologies
- Section 3 presents our assessment of how the methodologies follow the information disclosure guidelines. We first present our understanding of what each guideline means, then summarise the main themes emerging from our review, and finally we provide examples that we believe are useful models of how to follow each guideline
- Section 4 presents our assessment of how the methodologies align with the pricing principles. We first present our understanding of what each principle means, then summarise the main themes emerging from our review, and we provide examples that we believe are useful models of how to align with each principle
- Section 5 concludes with some recommendations on the regulation of distribution pricing

2 Our Approach to Evaluating the Methodologies

We have applied a simple approach to evaluating how each pricing methodology aligns with the Authority’s information disclosure guidelines and pricing principles. First, we summarise what we would expect to see to fully align with each guideline and principle. Then we assess how close each methodology comes to meeting those expectations. This two-step evaluation process is described in this section.

A set of expectations guide our evaluation

Any evaluation process needs a set of benchmarks against which to assess performance. Ideally, these benchmarks will be known in advance, so that the parties being evaluated know how to meet expectations.

We developed a set of expectations for this review to serve as the benchmarks for evaluation, which are presented in Appendix A (information disclosure guidelines) and Appendix B (pricing principles). The expectations translate the guidelines and principles into practical ways to test the compliance of pricing methodologies, while maintaining the flexibility inherent in a principle-based regulatory approach. Rather than simply selecting one or two key words from each principle, the expectations interpret the concepts that underpin each principle. We hope that this approach will help to promote better understanding among distributors, retailers, and regulators on what each guideline and principle is trying to achieve.

Each pricing methodology has been scored against the expectations

We prepared an individual assessment for each distributor that scores how their 2013 pricing methodology aligns with the guidelines and principles. Our scoring approach uses the “traffic light” assessments shown in Table 2.1. Because each guideline and principle has several areas to demonstrate alignment with, this scoring system allows for a more nuanced evaluation than using a binary pass/fail system.

Methodologies that covered most of what was expected received a green. Methodologies that met some of our expectations, but fell short in important areas received an orange. Methodologies that failed to understand or apply the guideline or principle received a red.

Table 2.1: Overview of Pricing Methodology Scoring System

Information Disclosure Guidelines		Pricing Principles	
	Follows guideline		Aligns with principle
	Partially follows guideline		Partially aligns with principle
	Does not follow guideline		Does not align with principle

This scoring system allows each distributor to quickly determine which areas we think they do well, and which areas their pricing methodology could improve. We sent our evaluations to each distributor, and offered to discuss our findings. Over half of the distributors accepted our offer and discussed our evaluations. Those discussions provided a valuable opportunity to explain our evaluation, and to hear about the challenges that distributors face when determining their pricing approaches and preparing their pricing methodologies.

We have consciously tried to make our evaluations practical for distributors. Distributors need to be able to apply the guidelines and principles in a way that achieves their

commercial objectives, minimises risk, and is practically feasible given the information and management systems they have in place. To achieve this objective, we have focused our review on providing pragmatic suggestions on how distribution pricing methodologies could be improved to better align with the purpose and intent of the guidelines and principles.

3 Review of Information Disclosure Guidelines

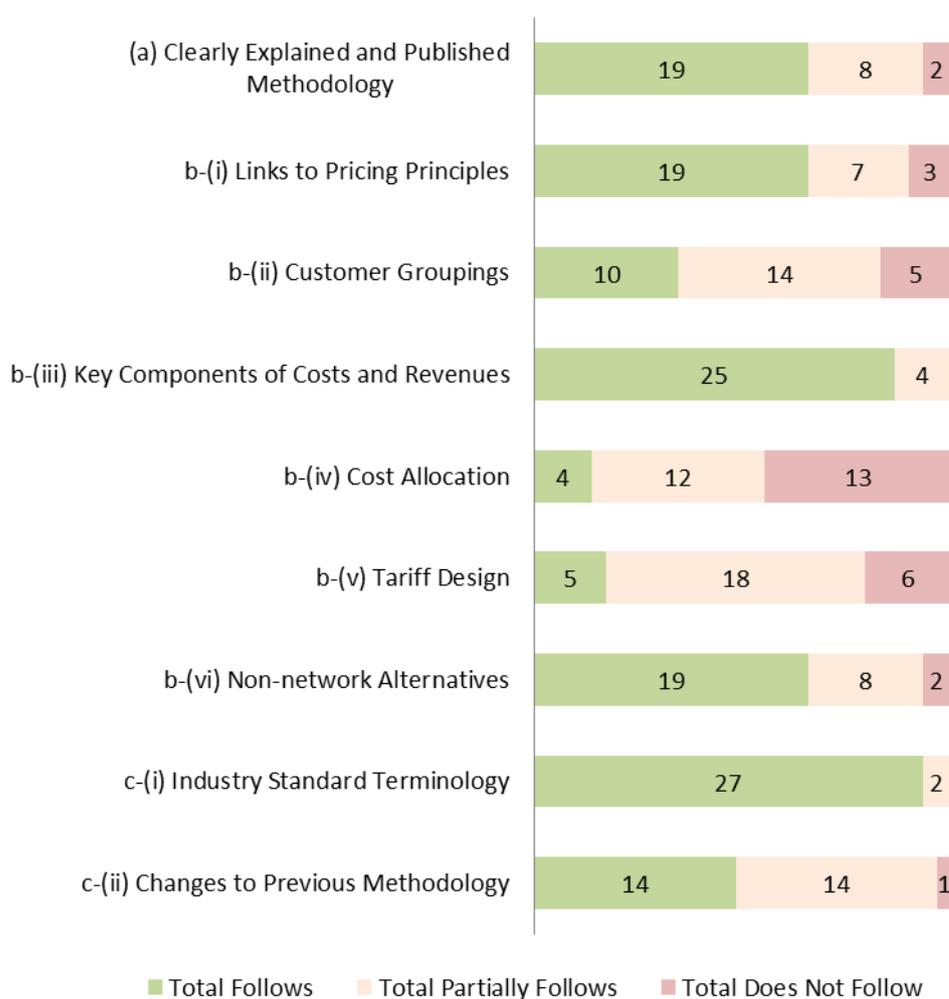
This section presents the findings from our evaluation of the pricing methodologies against the information disclosure guidelines. Many elements of the information disclosure guidelines are being closely followed by distributors. For example, we found that most methodologies were clearly written and used industry standard terminology.

The main area where methodologies could improve is in describing the reasons why particular pricing approaches have been adopted: for example, why customers are grouped in a particular way (such as by location, connection capacity, or level of annual consumption) and why costs are allocated to those customer groups in particular ways (such as by Anytime Maximum Demand or the number of Installation Control Points).

3.1 Summary of Findings: Information Disclosure Guidelines

Figure 3.1 provides an overview of our evaluation of the 29 pricing methodologies against the information disclosure guidelines.

Figure 3.1: Overview of Alignment with the Information Disclosure Guidelines



Most of the guidelines are essentially stand-alone requirements—for example, to explain and publish the methodology and link the methodology to the pricing principles. However, we see guidelines b(ii), b(iv), and b(v) as three sequential steps in the process of determining lines charges. First, customers are grouped according to certain

characteristics. Second, costs are allocated to those customer groups. Finally, tariffs are designed to recover the costs allocated to different groups.

As a general point, we note that we assessed most pricing methodologies as following the stand-alone guidelines more closely than the three sequential stages of pricing. This is largely because the guidelines require distributors to provide a rationale for why the three steps have been carried out in the way that they have. This requirement reflects the fact that there are a variety of different ways to group customers, allocate costs, and design tariffs, and that distributors should be able to explain the reasons for implementing their chosen approach.

The remainder of this section presents our findings under each of the information disclosure guidelines.

3.2 Clearly Explained and Published Methodology

(a) Prices should be based on a well-defined, clearly explained and published methodology, with any material revisions to the methodology notified and clearly marked

What is this guideline trying to achieve?

This guideline is squarely aimed at ensuring a transparent approach to distribution pricing. Transparency is achieved not only through publishing the methodology, but also by clearly explaining the pricing approach and any material changes in the approach.

The transparency achieved by following this guideline should enable the audience to fully understand the implications of the chosen pricing approach. This begs the question: who is the audience of pricing methodologies? We see three parties that might be interested in the content of pricing methodologies for the following reasons:

- **Retailers** should want to understand how network services are priced in order to better control one of their major input costs (note: this is not relevant to The Lines Company, which bills the end consumers on its network directly)
- **Consumers** might want to understand how the costs that make up their electricity bill are charged to their retailer. Distribution charges account for around 30 percent of a typical residential electricity bill
- **Regulators** will want to check whether the relevant rules for distribution pricing are being applied across the industry, and whether those rules are achieving their intended purpose

Is the guideline being usefully applied by EDBs?

We found a high level of alignment with this principle. Most methodologies are well written and clearly explained, and follow a logical structure that traces through the three stages of pricing (grouping customers, allocating costs, designing tariffs). However, we were surprised to find that very few methodologies include an overview diagram that distils the essence of the three steps of pricing onto a single page. We think that such a diagram would help to make the methodologies more accessible to the intended audience.

There appears to be some confusion within the industry about who is expected to read pricing methodologies, and whether it is possible to write a methodology that effectively

serves three different masters (retailers, consumers, and regulators). Not surprisingly, distributors tend to focus first on complying with mandatory regulations (such as low user fixed tariff regulation and Commerce Commission regulation under Part 4 of the Commerce Act), and then on the voluntary guidelines and principles. The needs of retailers and consumers appear to be given a lower priority.

In some cases, we suggested ways that the material contained in the methodologies could be presented more effectively—but were told by distributors that regulation requires information to be presented in a particular way. For example, several methodologies provide a detailed breakdown of the proportion of revenues earned from each tariff code due to their interpretation of the Commerce Commission’s Information Disclosure Requirements. Distributors with a large number of tariff codes can have many codes that account for less than 1 percent of their revenues. It would be more effective to group the presentation of those codes in some logical way, rather than using several pages of the methodology to present this information.

Almost all methodologies clearly identified material revisions, although only a handful of methodologies had been substantially revised in recent years. In cases where revisions to the methodology were not well explained, this affected the clarity of the entire document. For example, some methodologies refer to the recent development of cost allocation models, but do not clearly state whether the model is used to set prices or simply for internal purposes (such as cross-checking prices). We caution against describing analytical tools in pricing methodologies that are not actually used to set prices.

Are there any examples of particularly good practice?

Aurora’s pricing methodology provides a good example of a well-structured, well-written methodology.⁴ The material is presented in a logical structure with clear diagrams that explain how the methodology works (for example explaining the approach to allocating costs) and tables that present key data. Aurora presents maps of its three service and pricing areas (we note that surprisingly few methodologies present maps showing the service area covered).

3.3 Links to the Pricing Principles

(b)(i) The pricing methodology disclosed should demonstrate how the methodology links to the pricing principles and any non-compliance

What is this guideline trying to achieve?

This guideline helps to ensure that EDBs take the pricing principles seriously by identifying areas of non-compliance. This ensures that each EDB focuses on identifying any non-compliance, which should naturally lead them to consider how to limit or eliminate non-compliance over time.

The intent of this principle is also reflected in the need for the Board of Directors to sign-off compliance with the principles under the Commerce Commission Information Disclosure Requirements.

⁴ Aurora: <http://www.auroraenergy.co.nz/userfiles/file/20130305%20Use-of-System%20Pricing%20-Methodology.pdf>

Is the guideline being usefully applied by EDBs?

Most methodologies attempt to demonstrate links to the pricing principles in one of three ways:

- Through a table or section explicitly addressing how the methodology aligns with each principle
- By explicitly referring and naming relevant principles throughout the methodology
- Implying alignment by using similar wording to the principles

In our view, all three approaches are legitimate. However, statements of compliance tend to add several pages of length to the pricing methodology, and in many cases add little, if any, substance. A compelling compliance statement will demonstrate how the EDB aligns with each principle, rather than simply asserting compliance. Several methodologies simply restated each principle along with the statement “our methodology complies with this principle”. In other cases, the information presented in compliance statements simply summarised information presented elsewhere in the methodology or contained abstract comments that did not link to how or why pricing decisions were made. This suggested that some distributors were only considering the principles when putting together a compliance statement (often well after pricing decisions were made).

We would prefer to see compliance statements as an appendix to the methodology, if they are included at all.

Are there any examples of particularly good practice?

A few methodologies explicitly refer to the pricing principles throughout the methodology. These methodologies were generally easy to read, and present good reasons for their pricing approach that are linked to the principles. For example, Eastland Networks provides accurate links to the pricing principles throughout its methodology, and also presents a table showing those links at the end of the document.⁵ While we do not necessarily agree with the substance of the links drawn to the pricing principles, the approach of integrating those links throughout the document helps to ensure that the exercise is not simply “backfilling” regulatory compliance once a methodology has already been established.

WEL Network’s methodology also explains how the pricing principles have been interpreted, before demonstrating how the methodology aligns with those principles.⁶ As mentioned above, this is important because the pricing principles are not self-explanatory.

⁵ Eastland Networks: <http://www.eastland.co.nz/assets/Uploads/Pricing-Methodology2013-14-FINAL-signed.pdf>

⁶ WEL Networks: http://www.wel.co.nz/UserFiles/WelNetworks/File/Amended%20Pricing%20Methodology-%20Disclosure%20for%20April%202013%2022_03_2013_.pdf

3.4 Customer Grouping (Step One of Three)

(b)(ii) The pricing methodology disclosed should demonstrate the rationale for consumer groupings and the method for determining the allocation of consumers to the consumer groupings

What is this guideline trying to achieve?

This guideline is the first substantive step in implementing a pricing methodology. This step allows the distributor to group customers that share particular characteristics together and separate them from other customers connected to the network. Customers are most commonly grouped together because their usage characteristics are similar, and members within each group therefore impose similar costs on the network. However, other customer characteristics may also be relevant for defining customer groups—such as the value that is derived from network services or the quality of supply that can be efficiently provided to different customers.

Properly defined customer groups help to prevent cross-subsidies because the incremental cost of serving each member of the group will be similar (although cross-subsidies between customer groups remain a risk). Grouping customers with similar demand characteristics together also enables fixed costs to be recovered efficiently by minimising any reduction in demand that comes from prices that are set above incremental cost.

Distributors need to make pragmatic decisions when grouping customers together in order to keep the number of customer groups manageable. For example, some residential customers may have quite different demand characteristics (such as price responsiveness), but quite similar incremental costs to serve. Distributors will often group these customers together to keep the total number of customer groups to a sensible number.

Is the guideline being usefully applied by EDBs?

This guideline was generally followed more closely than the other two substantive steps in pricing (cost allocation and tariff design). Most distributors clearly identify the factors leading to each customer category, and how the factors are applied to draw the boundaries around each customer group.

We found a wide variety of approaches taken to grouping customers. Some distributors group their consumers into a small number of larger customer groups, while others allocated their consumers to very specific customer groups. Most distributors have around 3-5 customer groups: typically including residential, commercial, industrial, street lighting, and distributed generation. Many rural networks also have irrigation and/or dairy shed customer groups. The most common factors used to group customers are capacity (installed kVA and/or fuse size), geographical location, and the purpose of the connection: Domestic (permanent residence) /non-domestic.

Table 3.1: Common Factors Used to Allocate Customers to Groups

Factors	Variables	No. of Distributors
Connection Capacity or Consumption	Installed kVA	15
	Fuse size (Amps)	5
	Annual consumption (kWh/MWh)	3
Geography	Location	6
Type of Customer	Market segment (domestic/non-domestic)	9
Other Factors	Type of meter (e.g. half-hour)	6
	Availability of controlled load	2

Several methodologies appear to confuse the different roles played by consumer groups and tariff options. Most methodologies start with the total costs that need to be recovered, and slowly break down the costs of the network by allocating them to smaller consumer groupings. Eventually, costs have been allocated to a specific level that closely resembles the tariffs charged to each consumer. As a result, it can be difficult to draw the line between allocating costs to consumer groups, and the tariff options that are recovering the costs allocated to those consumers.

To help clarify the distinction between consumer groups and tariff options, we find it useful to consider what creates the need to group different customers. As described above, these groups are primarily defined to reflect the different costs that a particular type of customer imposes on the network. In contrast, tariff options are defined to respond to the different price responsiveness (or other behavioural characteristics) of the consumers.

Are there any examples of particularly good practice?

Marlborough Lines provides a clear summary of how its four customer groups are determined, and why this approach has been adopted (on page 20).⁷

All network consumers are categorised into four broad consumer groups. The groups were determined by assessing the predominant end use of energy for each installation and the installed capacity of each connection.

Initially consumers are categorised as being residential or non-residential. The classification of a consumer into residential or non-residential is based upon their predominant end use. The different characteristics of residential consumers compared to businesses consumers make it logical to have a residential consumer group. Residential consumers have different consumption patterns from businesses and have a higher proportion of their total load associated with water and space heating.

⁷ Marlborough Lines: http://www.marlboroughlines.co.nz/Documents/Pricing-Methodology/Pricing-Methodology-Disclosure-2013_14-Final.aspx

Water and space heating loads are generally able to be interrupted by the company's ripple control system. There are also different regulatory restrictions on domestic consumers e.g. the Low User Regulations.

The non-residential consumers are divided into three groups, with two groups for commercial consumers, depending on the maximum capacity supplied to the installation measured in kVA, and one group for irrigation installations.

3.5 Key Components of Costs and Revenues

(b)(iii) The pricing methodology disclosed should demonstrate quantification of key components of costs and revenues

What is this guideline trying to achieve?

The purpose of this guideline is straightforward: it enables the reader to understand what costs are borne by the distributor, and therefore what revenues need to be earned to recover those costs. For example, through alignment with this guideline the reader should be able to tell what proportion of the distributor's total costs go towards transmission charges, and what proportion of distribution costs are asset-related costs and operational expenditure.

This guideline provides an important link between customer grouping and cost allocation because EDB-wide costs ultimately need to be allocated across different customer groups.

Is the guideline being usefully applied by EDBs?

Most methodologies present relevant information on the costs of providing network services, typically divided into:

- Transmission costs
- Return on capital
- Return of capital (depreciation)
- Operation and maintenance costs
- Industry levies
- Other pass-through items

We did identify some confusion about the return on capital required to recover the full costs borne by EDBs that are exempt from DPP/CPP regulation under Part 4 of the Commerce Act. Several of these consumer-owned distributors present the under-recovery of target equity returns as a "discount" provided to their consumers. However, the basis for the rate of return used in the methodology was usually not explained and in some cases was higher than the Commerce Commission's estimates of industry-wide weighted average cost of capital used to set prices for non-exempt EDBs. In one case, a distributor applied its target return on equity across its entire asset base—effectively assuming that the distributor had no debt (which we assume is unlikely to be the case).

Are there any examples of particularly good practice?

All pricing methodologies generally do this well by summarising the key components in a single table.

3.6 Cost Allocation (Step Two of Three)

(b)(iv) The pricing methodology disclosed should demonstrate an explanation of the cost allocation methodology and the rationale for the allocation to each consumer grouping

What is this guideline trying to achieve?

This guideline should enable the reader to understand what variables are used to allocate major cost items across different customer groups. This is important because most fixed network assets are used by more than one customer group, creating the need to allocate shared costs in a transparent and efficient way.

We generally expect to see an explanation of how each of the consumer groups (identified under guideline b(ii)) are allocated the major components of EDB-wide costs (identified for guideline b(iii)).

Is the guideline being usefully applied by EDBs?

This guideline calls for cost allocation to be described and explained. In practice, this requires the specific variables used to allocate costs to be listed, and why those variables are better than other possible variables.

We generally found that most pricing methodologies identified how costs were allocated. Table 3.2 provides a list of the variables used to allocate major categories of EDB costs to customer groups. Transmission costs are most commonly allocated by some measure of peak demand—either regional coincident peak demand (RCPD), coincident maximum demand (CMD), or anytime maximum demand (AMD). Distribution capital and operating costs are commonly allocated based on asset utilization, while distribution administration costs are pro-rated across ICPs.

Table 3.2: Common Variables Used to Allocate Costs to Customer Groups

Cost Category	ICP Count	CMD	RCPD/ADMD	AMD	kVA	Utilised Asset Value	Consumption	Unclear/Other
Transmission Costs	3	7	15	6	2	2	3	2
Capital Costs (depreciation and return)	1	3	-	3	3	13	5	10
Operations and Maintenance	4	1	-	2	2	11	2	8
Administration & Overheads	13	1	-	4	1	3	6	8
Tax Expense	2	1	-	2	1	5	1	17

In our view, the most sensible broad approach to allocating costs involves:

- **Transmission costs** to be allocated according to some measure of coincident peak demand. While Transpower charges distributors based on regional coincident peak demand, distributors may prefer to pass charges based on the coincident maximum demand on their network
- **Asset related costs** (using a replacement cost valuation) to be allocated according to a measure of anytime peak demand or coincident peak demand. Since network assets are built to provide peak capacity, the peak demands of different customer groups have the closest link to costs
- **Operational costs** to be allocated according to some combination of line length, electricity supplied, and ICPs. These variables were all found by the Commerce Commission to be highly relevant when determining operational expenditure allowances for non-exempt EDBs⁸
- **Industry levies** to be charged according to the variable used to set the distributor's levy cost. For example, Authority levies are charged to distributors based on the total quantity of electricity conveyed, so this should be reflected in the allocation of those costs to different customer groups (Electricity Industry (Levy of Industry Participants) Regulations 2010, section 7)

Few methodologies provide compelling reasons for why particular costs are allocated to different groups. Fewer than five methodologies present complete reasons for choosing the cost allocators applied in their methodology. Most EDBs simply state that their costs relate to the need to provide capacity, without linking the need to provide capacity with the cost allocators used. We recommend that methodologies include a brief discussion of the possible cost allocators that could be used, and the reason for choosing one allocator over another. This would help to clearly explain the rationale for the cost allocation methodology.

In some cases, technical constraints will limit the ability to allocate costs efficiently to customer groups. For example, without advanced metering it may not be possible to accurately determine the maximum demand of residential customers. Some distributors have adopted the practical solution to this problem of recording the maximum demand from other customer groups during network peaks, and assuming that the rest comes from residential customers. While not perfect, this approach may be a workable solution to implementing more peak demand pricing given existing metering technology.

Are there any examples of particularly good practice?

Vector's methodology provides a good description of how costs are allocated, together with a diagram that visually conveys the demarcation of costs (on pages 8-9).⁹

Based on the service definition and connection types described above, we have identified three distinct classes of assets that are used to different extents by end consumers in each connection type:

A asset types are all high voltage lines and cables, zone substation and subtransmission assets;

⁸ See: <http://www.comcom.govt.nz/regulated-industries/electricity/electricity-default-price-quality-path/2010-2015-default-price-quality-path/>

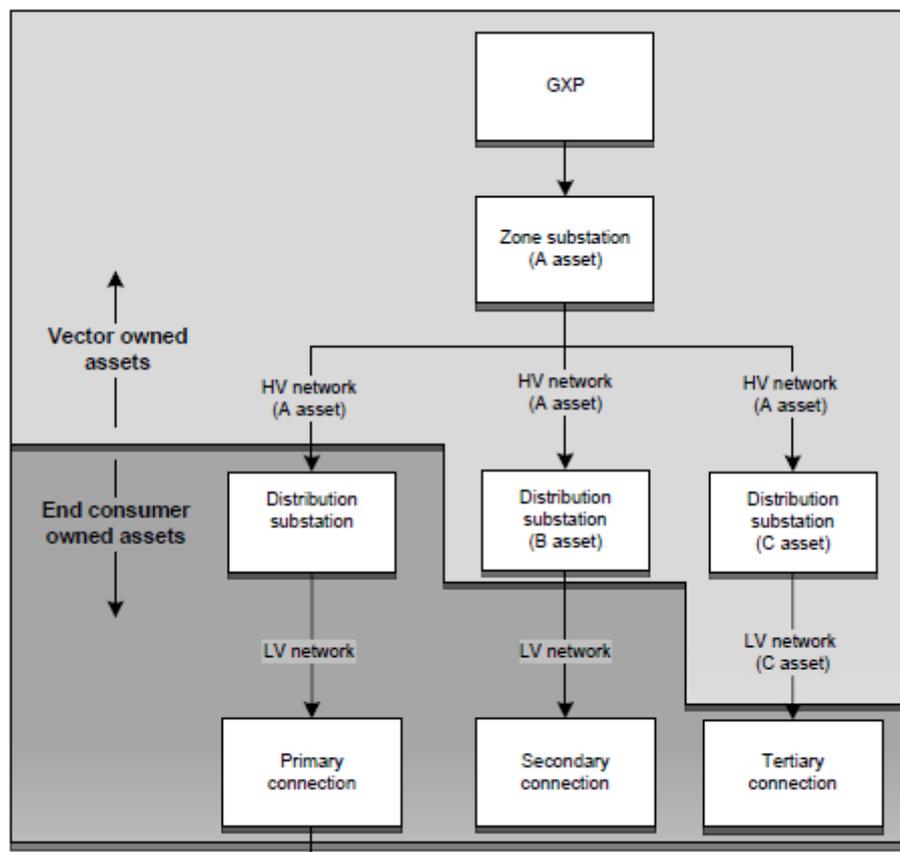
⁹ Vector: <http://vector.co.nz/sites/vector.co.nz/files/Electricity%20%20Pricing%20Methodology%202013.pdf>

B asset types are platforms (distribution substations) that have no Vector owned low voltage lines or cables leaving, excluding platforms that supply only Tertiary end consumers; and

C asset types are all low voltage assets. Platforms (distribution substations) that have Vector owned low voltage lines or Vector platforms that supply multiple end consumers connected at low voltage. Vector selected these asset types to reflect the costs associated with connecting consumers to various points on the distribution network. The use of voltage (high versus low) to segment assets provides a direct link between our asset segmentation (asset type) and our consumer segmentation (connection type).

As a large proportion of our costs are driven by assets, this provides a strong basis for the allocation of cost to consumer segments. This means under Vector's COSM [Cost of Service Model] used for the cost allocation process, low voltage assets are not allocated to high voltage end consumers. This is illustrated diagrammatically in Figure 2 below.

Figure 3.2: Vector Cost Allocation Electricity Network Diagram



Source: Vector, 2013 Pricing Methodology

The key output of the COSM is to determine the price changes required in order for revenues to reflect costs for each consumer segment. To do this the COSM apportions the costs of owning and operating Vector's electricity distribution business into Primary, Secondary and Tertiary consumer segments using specified allocators.

3.7 Tariff Design (Step Three of Three)

(b)(v) The pricing methodology disclosed should demonstrate an explanation of the derivation of the tariffs to be charged to each consumer group and the rationale for the tariff design

What is this guideline trying to achieve?

The purpose of tariff design is to implement a set of prices that recovers the costs allocated to different consumer groups. While achieving this objective, tariffs can be designed in ways that ensure consumers are sent appropriate pricing signals to influence their consumption decisions. Where the objectives of cost recovery and efficient price signalling come into conflict, we would expect distributors to implement tariffs that pose the lowest risk to cost recovery and commercial viability.

The description of the third and final step in the pricing approach should enable the reader to see how the costs allocated to customer groups in step 2 are expected to be recovered through prices, and what outcomes those prices are expected to achieve. For example, day/night tariffs are clearly expected to encourage more night time use of the network than would otherwise exist. Methodologies that use such tariff designs should explain what impact the tariffs are expected to have.

Is the guideline being usefully applied by EDBs?

In most cases, the methodologies present the types of tariffs offered to consumers (for example, fixed, variable, and demand charges), and many also state the proportion of revenues recovered from each tariff type. However, we did not often see *how* the tariffs have been calculated. For example, it is often not clear how the distributor chose a particular fixed to variable ratio (with the exception of the regulated fixed charge for low user residential customers), or how the distributor derived the value for each tariff.

Several distributors characterise the tariff derivation process as one that requires “manual adjustments”. While this may be inevitable given the uncertainties in forecasting costs and demand, the adjustment process itself should be clearly described. One way to do this is to clearly describe the initial design of the tariffs charged to each consumer group, and then analyse the results in terms of whether the tariffs under-recover the costs allocated to that consumer group. Any manual adjustments that need to be made to the tariffs can then be applied in a consistent and transparent way.

Many EDBs express frustration at their inability to send effective pricing signals because their prices are not reflected in the tariffs charged by retailers. A distributor will clearly see less value in sending strong peak pricing signals if retailers in their area recover peak network charges from all electricity supplied. Although this frustration is understandable, there is still some value in sending network pricing signals even if retailers repackage those signals. Any decision by a retailer not to simply pass-through an input cost carries an element of risk, which retailers will need to carefully manage through their prices. Competition between electricity retailers also plays a role in determining how pass-through occurs to final consumers. A retailer may be able to pass distribution charges through to final consumers in a way that makes its tariff offerings more attractive to consumers or a particular group of consumers.

Around half of the distributors present summarised tariff schedules at the end of their pricing methodology. Although this is not needed to align with guideline b(v), we found

these schedules helped to complete the logical flow of the document. The schedules were also helpful for comparing prices with last year's tariff schedules, particularly when accompanied with an explanation of the key price changes and reasons for those changes.

Are there any examples of particularly good practice?

Orion's pricing methodology helpfully shows a breakdown of how the tariffs that have been set for distribution and transmission recover the required distribution and transmission revenue. For example, the table below presents this analysis for General Connections (and comes from page 27 of the methodology).¹⁰

Figure 3.3: Orion Tariff Calculations for General Connections

Chargeable quantity	Distribution price	Transmission price	Distribution revenue \$000	Transmission revenue \$000
Capital contributions				
<i>Undergrounding</i>			1,319	
<i>Connection fees and extensions</i>			4,898	
Volume charges				
<i>Working weekdays (7am - 9pm)</i>				
996,399 MWh	5.212 ¢/kWh	2.324 ¢/kWh	51,932	23,156
<i>Nights, weekends and holidays</i>				
1,188,764 MWh	0.618 ¢/kWh	0.351 ¢/kWh	7,347	4,173
Peak charges				
<i>Network wide</i>				
466,488 kW	30.66 ¢/kW/day	16.93 ¢/kW/day	52,204	28,826
Low power factor				
<i>Low power factor charge</i>				
0 kVAr	15.00 ¢/kVAr/day	5.00 ¢/kVAr/day	0	0
Total revenue			117,700	56,155
<i>compared with target revenue (from section 6.8)</i>			117,700	56,148

Source: Orion, 2013 Pricing Methodology

¹⁰ Orion: <http://www.oriongroup.co.nz/downloads/PricingMethodology.pdf>

3.8 Non-network Alternatives

(b)(vi) The pricing methodology disclosed should demonstrate pricing arrangements that will be used to share the value of any deferral of investment in distribution and transmission assets, with the investors in alternatives such as distributed generation or load management, where alternatives are practicable and where network economics warrant

What is this guideline trying to achieve?

This guideline seeks to ensure that information is available on how non-network alternatives are treated by each EDB. Complete alignment with this guideline should enable potential developers of alternative ways to meet demand to understand whether network charges and any associated payments from distributors would support a business case for investment, and how the EDB will engage with them throughout the project development process.

Price and revenue stability is also important to investors in distributed generation. Investors will want to know whether the approach for pricing use of the network and paying avoided costs are likely to change in the future. This minimises the risk that investors commit their capital based on one pricing approach, and the value of that investment is then eliminated through changes to the pricing methodology.

Is the guideline being usefully applied by EDBs?

Most pricing methodologies provide useful information on how distributed generation that connects to the network will be treated—such as the requirements for receiving Avoided Cost of Transmission (ACOT) payments. Load management receives much less attention—few pricing methodologies appear to provide real incentives for new load management schemes or using prices to encourage the uptake of new load management equipment.

However, few distributors present enough useful information to understand which networks in New Zealand are likely to be most favourable for distributed generation. In reality, larger distributed generators would need to make direct approaches to the network to understand whether their particular project could proceed. Some distributors also express concerns about the impacts of small-scale solar photovoltaic panels connecting to their networks, and raise the prospect of charging these installations in the future for the costs imposed to maintain voltage on the network.

Are there any examples of particularly good practice?

The Power Company provides a good description of its treatment of distributed generation (on pages 17-18).¹¹

“PowerNet’s¹² line pricing methodology and Part 6 of the Electricity Industry Participation Code 2010 applies to Distributed Generation connected to the electricity network for varying capacities.

¹¹ The Power Company: <http://www.powernet.co.nz/files/20120403154802-1333424882-0.pdf>

In certain situations it will be possible to connect Distributed Generation to the network downstream of the meter at a low capacity without modifications to the electricity network, in which case a standard off take Line Charge will be required to be paid to PowerNet.

In other situations there may be incremental costs incurred by PowerNet due to investigation and network modifications required. As with all customers seeking connection to the PowerNet electricity network where incremental costs are incurred an upfront capital contribution may be required to be paid.

For large capacity Distributed Generation options may exist to meet incremental costs either through payment of an upfront capital contribution and / or entering into a New Investment Agreement and / or Delivery Services Agreement with appropriate prudential security. A normal line charge will also apply according to the installation connection capacity of the Distributed Generators off take.

...

Avoided Transmission Charge revenue

Avoided Transmission Charge revenue is allocated to Distributed Generators based on their generation demand injected into the network coincident with Transpower's top 100 demand peaks for the lower South Island, under the Electricity Authority Transmission Pricing Methodology (TPM), for the period 1 September to 31 August.

The Transpower interconnection charge is then applied over the period 1 April to 31 March. This lag can result in a one year delay in the allocation of revenue to Distributed Generators.

The revenue paid to Distributed Generators is based on the annual interconnection rate set by Transpower under the TPM. The Avoided Transmission Charge revenue allocation to Distributed Generators is subject to change in the TPM. Currently there are three Distributed Generators receiving this payment."

3.9 Industry Standard Terminology

(c)(i) The pricing methodology should employ industry standard terminology, where possible

The purpose of this guideline is to ensure that pricing methodologies can be understood by a reasonably well informed (but not expert) reader. Our review found that industry standard terminology was used by all distributors, with very few minor exceptions.

¹² PowerNet Limited is the electricity network management company that develops, manages, and maintains the electricity network assets of The Power Company, Electricity Invercargill, and OtagoNet.

3.10 Changes to Previous Methodology

(c)(ii) The pricing methodology should, where a change to the previous pricing methodology is implemented, describe the impact on consumer classes and the transition arrangements implemented to introduce the new methodology

What is this guideline trying to achieve?

Transparent pricing requires customers and retailers to understand what pricing changes are taking place and the reasons for those price changes. Altering the pricing approach without presenting the impacts on different customers risks annoying them—which in competitive markets would result in a loss of market share. In monopoly industries that do not have this source of discipline, this guideline seeks to ensure that distributors nevertheless acknowledge the need to explain changes.

In essence, this guideline encourages EDBs to clearly identify the winners and losers from any change in pricing approach, and to explain to the losers (in particular) why the change is still a good idea.

Is the guideline being usefully applied by EDBs?

Changes to pricing methodologies have not been significant for most EDBs (although many state that changes are on their radar). As a result, many EDBs in the 2013 methodology mention pricing changes that come from their ability to increase weighted average prices under the DPP.

Where changes to the pricing methodologies occurred, distributors generally summarised these changes very clearly. However, many distributors did not describe the impact of those changes on each consumer group.

Are there any examples of particularly good practice?

WEL Networks' 2013 pricing methodology includes material revisions. The changes to consumer groups are described (on page 9), including in some cases the decision to introduce new customer groups through a transition process.¹³

A number of changes have been made to the price categories (consumer groups) used by WEL effective 1 April 2013, specifically:

- *Price category 1153 (non-time-of-use customers) has been disaggregated into residential (1153), business (1200) and small-scale distributed generation (1250) customers.*
- *A new tariff code 901 has been introduced for electricity exports from small-scale distributed generation. This is a variable price per kWh.*
- *Advanced pricing has been introduced for non-time-of-use customers (price categories 1153, 1200 and 1250) involving off-peak, shoulder and peak tariffs.*

¹³ WEL Networks: <http://www.wel.co.nz/UserFiles/WelNetworks/File/Princng%20Methodology%20Disclosure-%20for%20April%202013.pdf>

- *All external networks (i.e. outside WEL's traditional footprint) are now subject to the same tariffs, which have been rationalised to remove the night tariff, as it did not apply to any ICPs.*
- *Street lights tariffs are now levied at a fixed monthly rate per lamp, rather than on a per kWh basis.*

3.11 Additional Recommended Disclosure—Capital Contributions

Our review found that pricing methodologies generally do not provide a full description of when distributors require customers to make capital contributions, and how any remaining costs (net of capital contributions) are recovered through prices. Disclosing information on capital contributions would enable the reader to understand how all of the fixed costs borne by networks are recovered (including those that are directly reimbursed by customers).

Disclosures on capital contributions are required under Clause 2.4.6 of the Electricity Distribution Information Disclosure Determination 2012, and are typically provided in a separate document. We understand from our review that EDBs have different policies on capital contributions. Although most distributors appear to recover all of the costs that are directly attributable to new or modified connections from capital contributions, this approach is not unanimous across the industry. For example, Orion's prices are based on the long run average incremental cost of serving its customers and its tariffs therefore recover at least part of the costs of connection over time.

Capital contributions are directly relevant to the Authority's pricing principles because they change the appropriate benchmark for assessing subsidy free prices. If a distributor decides not to charge capital contributions, then tariffs need to be set at or above the long run incremental cost to be subsidy free (to recover capital costs from customers receiving service from new connections). However, the tariffs charged by distributors that recover fixed costs through capital contributions only need to recover short run incremental costs to be subsidy free.

The importance of capital contributions suggests that the guidelines should include a requirement for EDBs to disclose their approach to charging for capital contributions. The approach to capital contributions should also be consistent with the benchmark used to assess whether prices are subsidy free under pricing principle (a)(i).

4 Review of Pricing Principles

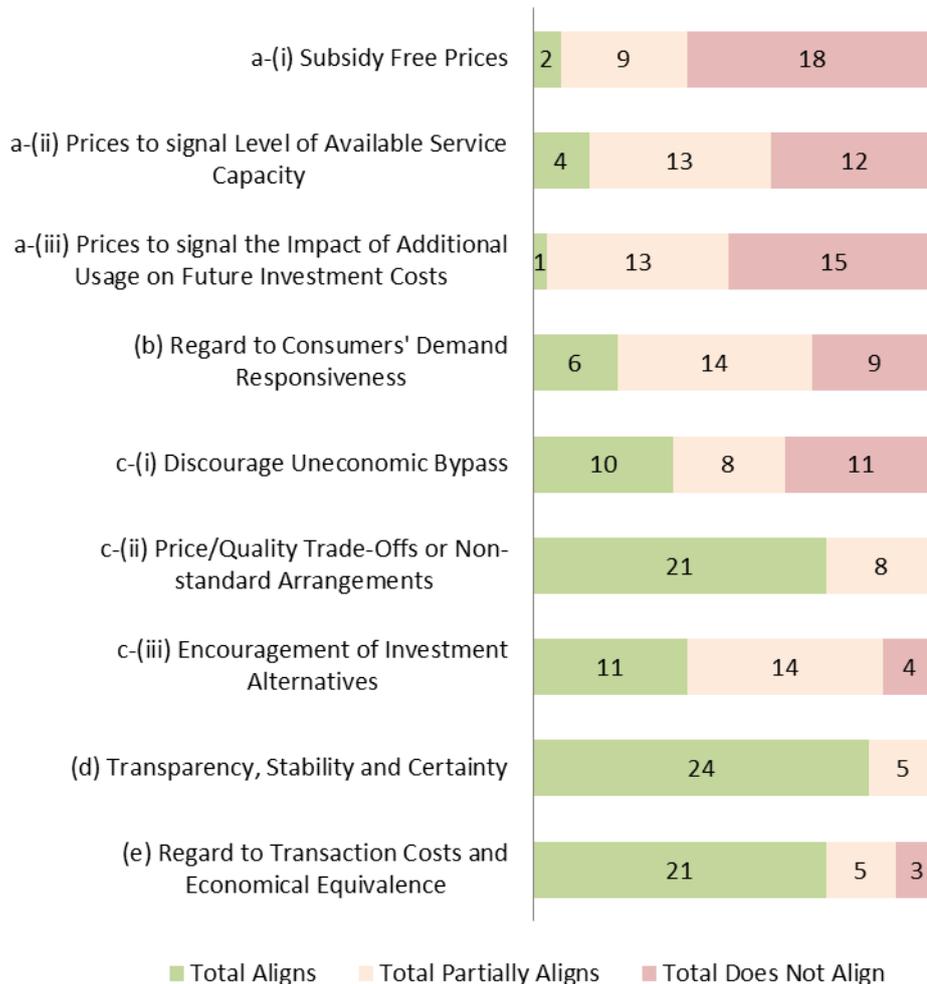
This section presents the findings from our evaluation of the pricing methodologies against the pricing principles. Achieving alignment with the principles is more difficult than the information disclosure guidelines. The principles are heavy on economic content, and therefore need to be interpreted correctly, before being applied.

We found that the interpretation of many of the principles varied across the industry, and at times differed from what we understand each principle to mean. The focus of the principles on economic efficiency also at times conflicts with the commercial objectives of EDBs and the desire for simple, practical pricing approaches. Despite these challenges, we consider that closer alignment with the principles can be achieved—which would require EDBs to place less emphasis on price stability, and give more weight to the role that prices can play to signal the economic costs of providing lines services.

4.1 Summary of Findings: Pricing Principles

Figure 4.1 provides an overview of our evaluation of the 29 pricing methodologies against the pricing principles.

Figure 4.1: Overview of Alignment with the Pricing Principles



We think that the pricing principles can be divided into two parts:

- **Principles that aim to improve the information value of distributor prices** (principles a(i)-c(i)). Most pricing methodologies do not align well with these principles
- **Principles that aim to overcome some of the theoretical problems with natural monopolies** (principles c(ii)-(e)). Most pricing methodologies align relatively closely with these principles.

The rest of this section presents our findings under each of the pricing principles.

4.2 Subsidy Free Prices

(a)(i) Prices are to signal the economic costs of service provision by being subsidy free (equal to or greater than incremental costs, and less than or equal to standalone costs), except where subsidies arise from compliance with legislation and/or other regulation

What is this principle trying to achieve?

This principle promotes economic efficiency because charging less than the incremental cost of service provision encourages customers to consume more of the service than is socially optimal. Prices below incremental cost create the situation where EDBs offer lines services despite not recovering the cost of service provision, which means distributors lose money on each additional unit supplied.

This principle encourages EDBs to identify the upper and lower bounds for efficient prices to different customer groups.¹⁴ For the purposes of this evaluation, we used the following definitions of incremental and standalone cost:

- **Incremental cost** is the cost of operating and maintaining network assets to provide an additional unit of electricity to each consumer group. We interpret this as generally being a short run incremental cost measure. Unlike long run incremental cost, this cost benchmark does not include the fixed cost of building shared network assets or the cost of connecting each consumer (or consumer group) to the network. Most distributors charge their customers directly to recover at least part of the cost of making new connections to the network (known as capital contributions). As a result, the tariffs charged to customers should be assessed against short-run incremental costs to determine whether cross-subsidies exist. As discussed in Section 3.11, the relevant cost benchmark depends on how capital contributions are treated.
- **Standalone cost** is the lowest cost alternative of serving each customer or customer group (at an equivalent or a higher level of service). In most cases, we would expect standalone cost to be set by a non-network solution (for example, a diesel generator or solar home system). These options are a more practical way for customers to bypass the network, rather than grouping together and moving to an entirely new network. Understanding and estimating standalone costs is most relevant to pricing principle c(i).

Cross subsidies occur when the prices charged to a customer (or customer group) do not recover the incremental costs of providing the lines service. For network businesses with a very large proportion of assets being fixed costs that are shared by various customer groups, the incremental costs of serving a consumer are very small. This means that cross subsidies are very unlikely to occur.

¹⁴ We note that many regulators overseas also use upper and lower bounds to assess the efficiency of prices. See for example, ACCC (2006) "Assessing Cross-subsidy in Australia Post". Available online at: <http://www.accc.gov.au/system/files/Assessing%20cross-subsidy%20in%20Australia%20Post%202004-05.pdf>

Is the principle being usefully applied by EDBs?

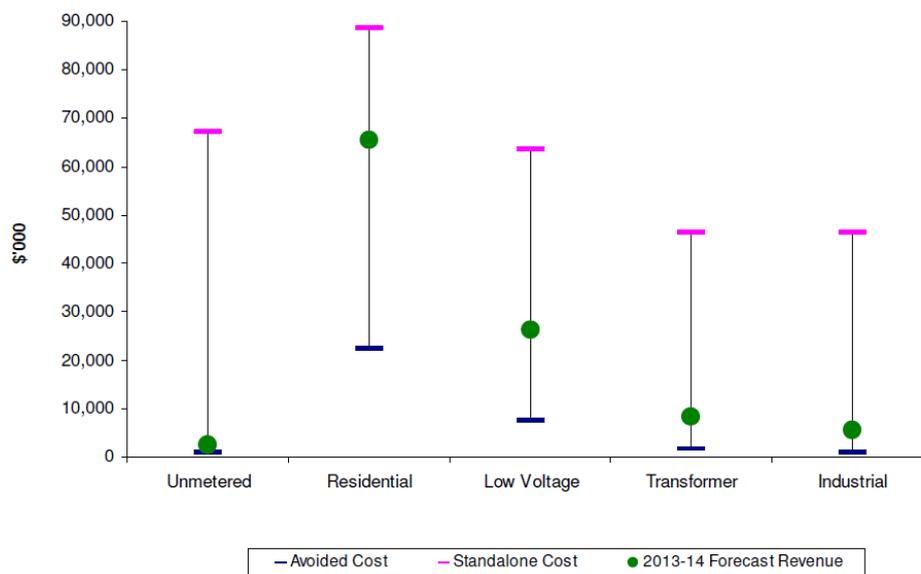
Most distributors have a different understanding of what constitutes a cross-subsidy from the description provided above. As a result, many distributors claim that cross-subsidies are present on their network, but do not present clear evidence that the additional revenue earned from prices is less than the increment cost of service. The claimed cross-subsidies usually relate to the prices charged to high and low users, and urban and rural customers. In our view, these claims appear to confuse cross-subsidies with price discrimination—which involves charging different prices to different customers receiving the same or similar service. As defined above, cross-subsidies involve the recovery of revenue that is less than the incremental cost of serving any particular customer or customer group.

Most EDBs do not provide estimates of incremental or stand-alone costs, and cannot therefore confidently conclude that prices are subsidy free. Just over half of the distributors define incremental and standalone costs, but only five distributors present estimates of the standalone and or incremental costs for their network. The estimates of these costs are essential to be able to determine if customers are being cross-subsidised.

Are there any examples of particularly good practice?

Wellington Electricity’s methodology gets the award for most informative graph (Figure 4.2 below). This graph illustrates estimates of incremental cost (labelled avoided cost) and standalone cost, and where in between these points the revenues earned from prices fall. This not only gives the reader comfort that there are no cross-subsidies between customer groups, but also allows the reader to see how much of the fixed costs of the network are being recovered from each customer group (the vertical difference between incremental cost and forecast revenue).¹⁵

Figure 4.2: Wellington Electricity Illustration of Subsidy Free Zone



¹⁵ Wellington Electricity: <http://www.welectricity.co.nz/disclosures/Pages/Pricing%20Information/WE%202013-14%20Pricing%20Methodology.pdf>

4.3 Signalling Available Capacity or the Need for Investment

(a)(ii) Prices are to signal the economic costs of service provision by having regard, to the extent practicable, to the level of available service capacity

(a)(iii) Prices are to signal the economic costs of service provision by signalling, to the extent practicable, the impact of additional usage on future investment costs

What are these principles trying to achieve?

We see principles a(ii) and a(iii) as flip sides of the same coin, both attempting to link pricing with the physical characteristics of the network. Where available service capacity is plentiful, prices should be low to signal that additional use of that capacity would generate economic efficiency (principle a(ii)). Where available service capacity is scarce, requiring new investment to be made, prices should be high to signal the efficiency gains of deferring the need for investment (principle a(iii)).

Of course, price regulation under Part 4 of the Commerce Act typically results in exactly the opposite pricing outcomes. This is a product of price cap regulation which divides each firm's revenue requirement by the expected level of demand to set a weighted average price cap. When spare capacity exists, high levels of fixed costs are recovered from lower levels of demand—resulting in higher prices. Just before major investments are made, prices are low because fixed costs are spread across higher levels of demand. Prices then rise after an investment is made to recover new fixed costs.

This divergence between economic theory and the practical application of price regulation makes this principle difficult to follow. However, we consider that the principle is useful in encouraging EDBs to explain the cost implications that arise from their particular network characteristics, such as whether the network has spare capacity or constrained capacity. This information is essential to understanding the role that prices might play (if any) to increase efficiency by encouraging network use or deferring investment needs.

Are these principles being usefully applied by EDBs?

In our view, these principles have not been well-applied across the industry. At a high level, we can draw this conclusion from the fact that it is not possible to tell from pricing methodologies which networks generally have plenty of available service capacity to meet customer demands, and which networks are experiencing high growth and plan to make major new investments to replace network assets or service growth.

Distributors could achieve closer alignment with these principles by integrating their asset management planning (AMP) process with pricing. While some networks try to send stronger signals through their pricing to push consumption off peak (for example through zero variable charges at night), no distributor explains a very clear link between its AMP and pricing processes. Instead, these activities seem to be undertaken separately, without considering the impact that network investment has on prices or the role that prices might play in managing network investment.

There are clear practical limitations on the usefulness of linking AMPs and prices. For example, it is unlikely to be useful to fully differentiate the prices charged to different parts of the same network simply because one part of the network requires an investment. In practice, most distributors at least offer prices that either encourage consumers to shift load from peak to off-peak (principle a(ii)), or reduce their peak consumption (principle a(iii)).

Are there any examples of particularly good practice?

An example of good practice on available service capacity comes from the Aurora pricing methodology (on page 23). The last three columns of this table are particularly useful in comparing group anytime and congestion period demand with available installed capacity on the network.¹⁶

Figure 4.3: Aurora Table Showing Available Service Capacity

Group	kVA Range	Connections	Annual Energy Delivery (GWh)	Group Anytime Demand (MW)	Sum of Installed Capacity (MVA)	Group Congestion Period Demand (MW)
S/L	0	3	1.1	0.2	1.7	0.2
L1	0 – 15	10,433	92.9	31.9	151.8	29.6
L2	16 – 149	1,293	58.4	14.3	61.8	10.6
L3	150 - 499	64	21.0	7.9	16.1	4.4
L4	500 – 2,499	21	32.7	6.8	14.3	5.9
L5	2,500+	1	5.1	2.0	5.2	1.0
Total		11,815	210.5	63.0	250.8	51.6

Table 15 - Frankton pricing area cost allocation statistics

One of the most direct links between pricing and future investment needs comes from Scanpower’s pricing methodology (on page 26). Scanpower refers to the intensive network development work described in its Asset Management Plan, and attributes the increase in costs to maintaining those new assets.¹⁷

“As is evident the annual revenue requirement has increased year on year by \$822,107 representing a movement of \$822,107 or 10.8%. In addition to general inflationary movements in the majority of cost categories, the most significant increase is in the area of Operations & Maintenance Costs. As can be referenced in Scanpower’s Asset Management Plan 2013-2023, the company is entering a 5 year phase of relatively intensive network development work to build additional capacity and ameliorate foreseeable voltage constraints, hence the increased revenue requirement in this area.”

¹⁶ Aurora: <http://www.auroraenergy.co.nz/userfiles/file/20130305%20Use-of-System%20Pricing%20-Methodology.pdf>

¹⁷ Scanpower: <http://www.scanpower.co.nz/files/pricing-methodologies/Scanpower-Pricing-Methodology-Disclosure-2013-2014.pdf>

4.4 Fixed Cost Recovery

(b) Where prices based on ‘efficient’ incremental costs would under-recover allowed revenues, the shortfall should be made up by setting prices in a manner that has regard to consumers’ demand responsiveness, to the extent practicable

What is this principle trying to achieve?

This principle encourages distributors to direct the recovery of network fixed costs towards those consumers that will reduce their demand by the lowest amount. This increases economic efficiency because a greater use of electricity networks is achieved than if more price-responsive customers were charged a greater proportion of the networks’ fixed costs. This encourages EDBs to consider how the different consumer groups they serve might respond to changes in price, and to direct their prices towards those customers that are less price-responsive.

This pricing principle is grounded in the economic theory of Ramsey-Boiteux pricing. When thinking about taxation, Ramsey formulated the principle that an efficient mark-up of price over incremental cost would respond to different levels of price responsiveness.¹⁸ Boiteux applied this to natural monopolies by pointing out that price mark-ups are needed for natural monopolies to stay in business, otherwise they would never recover fixed costs.¹⁹

Is the principle being usefully applied by EDBs?

Most distributors do not consider this principle very useful in practice. Many state that it is simply not possible to determine the demand responsiveness of different customer groups, and even if they could restrictions such as low user fixed charges prevent them from fully implementing such a pricing approach.

While there is reluctance on the part of the industry to think about their pricing in this way, many EDBs in fact seem to be crudely applying this principle. It is common for distributors to set prices for industrial and commercial customers close to incremental cost—these parties pay more attention to their lines charges and pose a greater risk of changing behaviour to avoid those charges. As a result, a greater proportion of network fixed costs need to be recovered from residential customers.

If residential customers have a lower price elasticity than industrial consumers (which is generally accepted), then the pricing approach described above is consistent with Ramsey-Boiteux pricing. However, while the approach appears commonplace in the industry, no distributors describe it this way in their methodologies.

While recovering more fixed costs from residential customers may be an efficient outcome, it is not necessarily “fair” or politically sustainable. The generally accepted wisdom holds that residential lines charges have increased substantially in recent years as cross-subsidies from industrial and commercial customers have been unwound (in

¹⁸ Ramsey, F (1927). “A Contribution to the Theory of Taxation”, *The Economic Journal*, Volume 37, Issue 145 (march 1927), 47-61

¹⁹ Boiteux, M (1971). “On the Management of Public Monopolies Subject to Budgetary Constraints”, *Journal of Economic Theory*, 3, 219-240

combination with increases in transmission costs). However, as discussed above (under principle a(i)), cross-subsidies will be very rare in a largely fixed cost business like electricity distribution. A more correct characterisation of the pricing trend is that commercial and industrial customers previously paid a higher proportion of network fixed costs, and this has shifted towards residential customers over time.

This principle also ignores “energy efficiency” by applying the conventional economic view that all output expansion improves welfare. In reality, several laws and policies conflict with that view—most specifically section 54Q of the Commerce Act, which states that the regulatory regime should promote incentives, and avoid imposing disincentives, for distributors to invest in energy efficiency and demand side management. This issue is currently being examined by a working group of the Electricity Networks Association (ENA).

Are there any examples of particularly good practice?

The Electricity Invercargill pricing methodology (at page 49-50) contains the following statement. This is an accurate interpretation of the principle, and we like the use of a rule of thumb for assessing price responsiveness.²⁰

“PowerNet believes that this principle is similar to the Ramsey Pricing principle which is a form of price discrimination used by monopolies, where those consumers with inelastic demand face higher charges as their consumption is least likely to be distorted as a result.

This principle is difficult to apply as price elasticity information is difficult to obtain and it is likely the price elasticities will be different within each load group.

A rule of thumb from past experience led to the conclusion that a 10% increase in charges would result in a 1% decrease in usage for about six to nine months, after which usage would return to normal as consumers adjusted to the new prices and returned to previous habits and patterns of usage.”

Although Electricity Invercargill provides a measure of elasticity, its methodology does not explain how this is applied in practice, or how it relates to different customer groups. Powerco’s methodology provides a useful discussion of the price responsiveness of different customer groups (on page 48).²¹

“Given the nature of distribution networks, prices based on efficient incremental costs are likely to under-recover allowed revenues. However, setting prices based on a precise definition of price responsiveness, or price elasticity of demand, is difficult for electricity distribution for a number of reasons. First, there is limited information on the actual price elasticity of demand for electricity in New Zealand. Second, retailers rebundle distribution prices into a final retail price for their consumers. In many cases, the structure of distributors’ prices (i.e. the extent to which prices are charged on a daily or per unit of energy basis) is changed by retailers. It is therefore very difficult to discern customers’ responsiveness to changes in distribution prices alone.

²⁰ Electricity Invercargill: <http://www.powernet.co.nz/files/20130328131611-1364429771-0.pdf>

²¹ Powerco: http://www.powerco.co.nz/uploaded_files/Publications-and-Disclosures/New/pricing/2013-Elec-Pricing-Methodology.pdf

The Commerce Commission, in its work on the pricing methodologies of regulated suppliers, has acknowledged the difficulty of this issue. It has stated that it would judge this principle by checking to see if certain rules have been followed. For example, where one group of consumers is less price-responsive than another group of consumers of the same service, then, all else being equal, one would expect the prices of the less price-responsive consumers to be higher.

Graphs one and two on page 38 show that, as consumers' capacity increases, the unit cost expressed as a c/kWh charge reduces. Larger consumers tend to exhibit a higher price elasticity of demand, because they are typically better able to modify their usage patterns to consume during low cost periods or switch to alternative energy sources (e.g. gas) if the cost of electricity rises. As larger consumers also face, on average, lower prices per unit, this is consistent with the Commerce Commission's expectation.²⁰

²⁰ *Research on how elasticity of electricity consumers based on size is very limited. However, in Powerco's experience large electricity consumers demonstrate a stronger interest in price signals to shift load. See Powerco's Consumer Report 2009-2011 for a summary of the feedback from consumers."*

4.5 Avoiding Uneconomic Bypass

(c)(i) Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to discourage uneconomic bypass

What is this principle trying to achieve?

This principle aims to ensure that prices that enable the recovery of fixed network costs do not drive any customers to an alternative solution that increases total costs to all parties involved (i.e. bypass that is uneconomic). This will occur if the network does not avoid any costs when a customer disconnects, but the customer incurs cost in taking up an alternative supply arrangement. This means that uneconomic bypass is possible when the cost of an alternative falls in between the incremental cost to the network of serving the customer and the price that the customer is charged.

This principle encourages EDBs to identify customers that are most at risk of bypassing their network, and to provide specific policies and processes for managing that risk, such as through non-standard arrangements and prudent discounts. EDBs clearly need to apply strict criteria on the use of prudent discounts.

Is the principle being usefully applied by EDBs?

About half of the networks state that uneconomic bypass is not a concern on their network. We would expect this statement to be supported by some evidence or reasons why customers are unlikely to bypass their network. Some distributors state that having prices set below standalone cost provides the necessary protection from bypass. However, as stated above, prices that fall below standalone cost can still encourage uneconomic bypass if the recovery of network fixed costs leads customers to adopt an alternative supply option that would cost more than the incremental cost of providing network services.

Some distributors explain alignment with this principle well by setting out where uneconomic bypass would be an issue, and describing the process that they use to negotiate prices that remain above incremental cost, but prevent bypass.

Are there any examples of particularly good practice?

Horizon Energy's methodology provides a good statement of alignment with this principle (on page 26).²²

"In our view, the greatest risk that prices exceed stand-alone cost is where consumers are situated close to a GXP or where they have alternative supply options (i.e. own generation or use of alternative fuels) such that they can bypass the distributor network. Only a handful of large consumers are likely to have the scale to approach Transpower for a GXP connection or to install their own energy supply to bypass the distribution network. We consider that use of non-standard contracts facilitates negotiation with consumers who believe their stand alone cost is lower than price therefore avoiding the risk of breaching stand-alone cost."

4.6 Engaging with Stakeholders

(c)(ii) Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to allow for negotiation to better reflect the economic value of services and enable stakeholders to make price/quality trade-offs or non-standard arrangements for services

What is this principle trying to achieve?

This principle reflects the concern that regulated service providers have few incentives to actively engage with their customers, and may therefore either over-build or under-build their networks, or operate them in ways that do not meet customer demands. The issue of consumer engagement has been receiving increasing attention in regulated industries in recent years, in part due to the sense that regulated businesses do not engage well with their customers.²³ A better approach to customer engagement should allow prices to more closely resemble "market-like" transactions because customers have the ability to communicate their expectations and preferences to the regulated firm.

There are a wide range of activities that could be undertaken to engage with customers: including direct negotiations, customer panels, consultations/meetings, and customer surveys. The principle does not prescribe any particular approach, but clearly encourages EDBs to gain some insight on what customers want, and respond to customer preferences through their prices.

²² Horizon Energy: <http://www.horizonenergy.net.nz/sites/default/files/documents/Horizon%20Energy%20Pricing%20Methodology%20for%20Line%20Charges%20introduced%201%20April%202013.pdf>

²³ See for example IPART review on "Customer Engagement on Prices for Monopoly Services", 2011-2012: http://www.ipart.nsw.gov.au/Home/Industries/Research/Reviews/Customer_Engagement/Customer_Engagement_on_Prices_for_Monopoly_Services

Is the principle being usefully applied by EDBs?

The most common way that EDBs respond to this principle is by completing an annual customer survey. The pricing methodologies typically do not state what questions are asked in the surveys, or how customers respond. Where the survey questions are provided, they appear to be too general to gain meaningful insights on customer preferences. Examples of the questions asked in annual surveys include:

- Would you like to see an improvement in the quality of supply?
- Would you be willing to pay for an improvement in quality of supply?

Not surprisingly, many customers want quality to improve but are not prepared to pay for it. We therefore conclude that customer surveys do not seem to elicit much useful information that is actually used when setting prices or trading off different aspects of quality. To achieve that level of customer engagement, the surveys would probably need to have more specific questions.

Another way to apply this principle is to engage with customers about the impacts of specific events—such as following outages arising from severe weather, or before particular investment decisions are made. This approach means that electricity network issues are relevant to customers, and is therefore more likely to provide meaningful engagement.

We found that distributors do engage effectively with “non-standard” customers—typically larger users with bespoke needs. As a result of these interactions, distributors tend to understand the preferences of their larger customers quite well and non-standard contracts are often negotiated to reflect specific price/quality trade-offs.

Are there any examples of particularly good practice?

Powerco’s methodology explains a very specific example of customer engagement relating to a particular investment (on page 50).²⁴

“At the community level, Powerco has considered the price quality trade-off associated with proposed investments. For example, Powerco undertook a consultation process with the Taihape community. The substation supplying the town and surrounding area only has one transformer. If this were to fail around 3,800 consumers would lose supply. Powerco consulted with the community on whether it would be prepared to incur higher line charges to fund installation of a second transformer. The feedback from the community was they were not willing to accept higher charges.”

²⁴ Powerco: http://www.powerco.co.nz/uploaded_files/Publications-and-Disclosures/New/pricing/2013-Elec-Pricing-Methodology.pdf

4.7 Encouraging Investments in Network Alternatives

(c)(iii) Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to, where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives and technology innovation

What is this principle trying to achieve?

This principle reflects the concern that regulated service providers will have few incentives to investigate “non-wires” solutions to consumer demands, even when such alternatives would lower the total cost of supply. While alternative solutions will not be practical or efficient in all cases, this principle encourages distributors to at least consider whether any alternatives exist, and how they stack up in terms of meeting the investment need at a lower cost.

Is the principle being usefully applied by EDBs?

Most EDBs state that they pay the Avoided Cost of Transmission (ACOT) to distributed generators. Although compliance with Part 6 of the Electricity Participation Code appears to be a driving factor for making ACOT payments, these are not required *per se* under the Code. Some EDBs also do not charge distributed generators for injection to their network. We did not find any substantive discussion of distribution alternatives or technology innovation in the pricing methodologies.

Several EDBs point out that distributed generation does not in fact avoid any transmission cost. Instead, generators located on their networks simply shift the recovery of transmission costs from one network to other networks within the pricing regions defined by Transpower (upper North Island, lower North Island, upper South Island, lower South Island). We understand that the Authority is currently investigating the benefits and costs of ACOT payments as part of its work on transmission pricing.²⁵

Rather than paying ACOT to small distributed generation, many distributors waive injection charges or variable tariffs to small distributed generators. This is because small distributed generators make only a very small contribution to avoiding transmission costs, and the contribution is often not reliably metered.

Are there any examples of particularly good practice?

The following statement in Westpower’s pricing methodology is slightly more complete than the statements found in most of the pricing methodologies in describing how its pricing encourages distributed generation and demand response (on page 24).²⁶

²⁵ See <http://www.ea.govt.nz/our-work/programmes/priority-projects/transmission-pricing-review/second-issues-paper/>

²⁶ Westpower: <http://www.westpower.co.nz/system/files/resources/pricemethod2013.pdf>

“Westpower pays out avoided transmission charge benefits to embedded generators to encourage such generators to reliably generate during transmission peak periods. Westpower also allows smaller generators to connect to Westpower’s network and utilize the distribution network for delivering their generation to other connections without incurring network charges. Connection costs are applicable, as per Westpower’s distributed generation policy. For further details on connection of distributed generation and charges please refer to Westpower’s public website.

Because of Westpower’s peak/control-period prices, consumers have a clear value against which to assess network alternatives or behaviour changes. Many consumers, particularly major consumers, have the opportunity to turn on generators, reduce demand, or both in response to our pricing. Westpower’s residential consumers heat their hot water through controlled meters in response to Westpower’s very low controlled pricing rate.”

4.8 Price Stability and Certainty

(d) Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact to stakeholders

What is this principle trying to achieve?

This principle reflects the reality that all changes to a pricing methodology will have transition and administration costs, meaning that there is a value in price stability and certainty. A rapid transition to new prices risks damaging customer relationships and potentially even creating financial problems for particular customers.

This principle encourages distributors to signal their pricing intentions in advance, and to think about transition measures wherever possible. In our view, this principle does not encourage distributors to stick with the status quo even if it is problematic or inefficient.

The Commerce Commission Information Disclosure Requirements have reinforced the importance of developing and communicating clear pricing intentions by requiring EDBs to provide a statement of their “pricing strategy over the next 5 years”.

Is the principle being usefully applied by EDBs?

The majority of EDBs give more weight to this principle than is likely to be justified. Legacy pricing approaches are widespread throughout the industry—by which we mean approaches that have few desirable features, but are retained in order to avoid the costs and risks that are associated with change.

These costs may be very real, and distributors need to carefully consider any case for change (particularly significant changes). Unless the change is clearly communicated and explained, customers are likely to feel aggrieved. This underscores the importance of effective customer engagement before significant changes are introduced (principle c(ii)). Price stability is also likely to be in the commercial interests of EDBs because changing pricing approaches (for example to incorporate demand charges) carries an element of revenue risk. If customers respond to price signals at a greater level than anticipated, the EDB’s revenues may not be sufficient to recover all costs.

Are there any examples of particularly good practice?

As mentioned above, WEL Networks made significant changes to its pricing approach and pricing methodology in 2013. However, WEL Networks has introduced those changes in a way that recognises the value of stability and includes appropriate transition measures. The following statement is from pages 27-28 of the WEL Networks' pricing methodology.²⁷

“WEL considers that to achieve “prices that are transparent, stable and provide certainty” customers should know WEL’s strategies, tariff design, cost allocation methodologies, and any price changes in advance of them applying, and should be able to identify the tariff(s) that apply to them...

A notable aspect of this pricing methodology is the adoption of targeted and glide path (i.e. phased) adjustments. We consider this approach is consistent with (d), as it provides customers both clarity as to the direction of charges over time and time to adjust to any changes.

Many of the changes made to our tariff design this year reflect this principle:

- the separation of business and residential customers transparently signals to stakeholders our intention to separately price these in future to reflect their different economic costs;*
- the establishment of a price for exports from small scale distributed generation provides transparency and signals to customers that there are network costs associated with these activities;*
- the rationalization of the external network tariff options improves transparency and means that the tariff schedule is easier for customers to understand.*

WEL has chosen to unbundle its costs into broad categories, and use a limited number of allocators to allocate the cost categories to consumer groups. This ensures that our approach is relatively easy to understand, and administrative costs are kept in check, reflecting this principle.”

4.9 Minimising Transaction Costs

(e) Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers

What is this principle trying to achieve?

This principle reflects the concern that regulated service providers will tend to place insufficient weight on any costs that they impose on other parties, and that those parties will not have sufficient bargaining power to change the monopolist's behaviour. For

²⁷ WEL Networks: <http://www.wel.co.nz/UserFiles/WelNetworks/File/Pricing%20Methodology%20Disclosure-%20for%20April%202013.pdf>

example, electricity retailers all need to sign a use of system agreement in order to retail on the network, and will have little control over the terms of such agreements.

This principle encourages EDBs to recognise the costs that they can impose on retailers, consumers and other stakeholders and find ways to minimise those costs, where possible. In reality, distributors will be primarily interested in ensuring their own commercial viability and therefore looking for ways to minimise their own costs (rather than the costs of other parties). However, it is reasonable to expect that distributors will seek pricing solutions that do not impose costs on other parties where such solutions are also acceptable to the EDB itself.

One example of a simple way to manage transaction costs on retailers is to adopt similar pricing approaches on contiguous networks. This would allow retailers with a particular geographic focus (such as the upper North Island) to expand their service offerings network by network. We would expect this to be particularly useful for networks that are located near larger urban centres, such as Auckland. By aligning their pricing approach with Vector's to the extent practicable, these distributors would be reducing costs for those retailers that establish their business in Auckland and look to expand outwards over time.

Is the principle being usefully applied by EDBs?

The biggest issue of transaction costs appears to be tariff rationalisation. Some EDBs still have more tariff categories and codes than necessary, and have not moved quickly to disestablish tariffs that are not being used by more than a handful of consumers.

In accordance with this principle, pricing methodologies appear to maintain economical equivalence across different electricity retailers (i.e. do not provide a particular competitive advantage or disadvantage to any retailer).

Are there any examples of particularly good practice?

The Centralines pricing methodology provides a good statement on how the views of retailers have been taken into account in changing pricing approach (in this case to introduce more tariff codes) (on page 47).²⁸

“Centralines recognises the need to minimise undue complexity for retailers, subject to its legitimate business needs to signal costs to consumers and ensure equity between consumers. All retailers are subject to the same tariff schedules from Centralines. Therefore, Centralines considers that its prices are economically equivalent across all retailers.

In 2013-14 Centralines has introduced a number of new price categories by splitting the CH2 price category based on consumer type. Whilst this does add complexity to Centralines' pricing structure Centralines' considers that the equity considerations between consumers, which will be addressed by the progressive relative adjustment of tariffs between these groups, outweigh such administration costs. Centralines' minimised the administration overhead on retailers in making this change by notifying retailers of which of the new categories each ICP would go into, thereby removing any need for analysis on the part of the retailer.”

²⁸ Centralines: http://www.centralines.co.nz/docs/publications/pricing/centralines_pricing_methodology_disclosure-2013141.pdf

Some distributors also clearly benchmark themselves against other networks. For example, Westpower explicitly uses Orion as a benchmark for explaining its prices. Some contiguous networks also have joint management arrangements, which help to achieve greater alignment in approach and manage transaction costs. For example, Unison and Centralines are managed by the same entity, while OtagoNet, Electricity Invercargill and PowerNet are also jointly managed.

5 Recommendations

This review has provided the opportunity to better understand what the pricing methodologies published by EDBs contain, and how their contents match up with the information disclosure guidelines and pricing principles. The findings presented in this report lead us to the following recommendations for EDBs and the Authority to make the preparation and oversight of pricing methodologies more effective.

Recommendations for the Electricity Authority

We recommend that the Authority:

- **Uses this review to reach a view on what the pricing principles require.** The pricing principles contain a lot of economic content and therefore need to be interpreted by EDBs. For the principles to be usefully applied, EDBs therefore need to have a correct understanding of what each principle means and how alignment can be achieved. We have given our interpretation of the pricing principles in this report, which might provide a starting point for the Authority to explain what each principle requires.
- **Streamlines the regulatory oversight of EDB pricing methodologies by rationalising the guidelines and principles.** We consider that the essence of the principles could be captured through six principles, rather than nine. Principles a(i), (b) and c(i) could be grouped together to deal with the recovery of fixed network costs, while principles a(ii) and a(iii) could be grouped together to deal with the physical characteristics of the network. Streamlining the guidelines and principles would help to make them more focused on explaining what matters to retailers, customers, and regulators.
- **Gives greater prominence to the principles that matter most.** The principles have no hierarchy to resolve any conflicts that arise between them. For example, principle a(iii) might encourage a distributor to charge more when approaching peak capacity constraints, while this might conflict with the price stability promoted under principle (d). In our view, if the principles are designed to encourage prices that signal the economic cost of service provision and are based on customer engagement, then price stability is not a helpful objective given existing legacy pricing arrangements.

Having completed this review we are now intimately familiar with the guidelines and principles. In our view, the guidelines and principles provide a useful framework for thinking about what a good pricing methodology should achieve (subject to the comments above). We therefore recommend that the Authority continues to apply the guidelines and principles, rather than moving to a different framework for evaluating pricing methodologies.

Recommendations for electricity distribution businesses

We recommend that EDBs:

- **Find a simple way to communicate the essence of the pricing approach they use.** We were surprised to find that no EDBs had summarised the key steps involved in their pricing methodology in a single, logical, well-presented diagram. We recommend that EDBs prepare a simple one page schematic showing the logical flow from firm-wide costs and revenues, the allocation of those costs to defined customer groups, and the recovery of allocated costs through tariffs (fixed, variable, demand, etc.).

- **Achieve better integration between asset management planning processes and pricing.** We think that a closer link in the process of preparing AMPs and pricing methodologies would be a very real way to improve the way that prices signal the economic costs of providing lines services. Although there may not be immediate opportunities to use pricing to manage the investment needs on each network, having closer integration will help to identify when such a prospect does arise, and would help to understand how investment costs will flow through into prices. This provides a more effective basis for engaging with customers on the impacts of any particular investment.
- **Develop better ways to engage with retailers and end-users on pricing.** Distributor price signals clearly work best when they end up in final prices. This relies on retailers understanding the value of the price signal, and perhaps even sharing some of the benefit of a price response. The dis-aggregated nature of the electricity supply chain means that sharing the benefits of any demand response to price signals requires an agreement between EDBs and retailers. Whether or not such agreements can be reached, there is value to distributors better understanding the demands of end-users on their networks, and how those end-users are likely to respond to prices.

Appendix A: Expectations for Following the Information Disclosure Guidelines

Table A.1 describes what we expect each pricing methodology to show to follow the requirements in the Information Disclosure Guidelines.

Table A.1: Expectations of Distributor Pricing Methodologies to Show Alignment with the Information Disclosure Guidelines

Information Disclosure Guidelines	What we expect to see
(a) Prices should be based on a well-defined, clearly explained and published methodology, with any material revisions to the methodology notified and clearly marked	<ul style="list-style-type: none"> ▪ A summary of key changes from last pricing methodology ▪ Published on the website, and other proven effective channels for communication with stakeholders ▪ Document uses a logical structure, and sensible explanations that are easy to understand (e.g. through the use of tables and charts)
(b) The pricing methodology disclosed should demonstrate: <ul style="list-style-type: none"> (i) How the methodology links to the pricing principles and any non-compliance 	<ul style="list-style-type: none"> ▪ Explicit links to pricing principles are correctly identified ▪ All instances of non-compliance are identified
(ii) The rationale for consumer groupings and the method for determining the allocation of consumers to the consumer groupings	<ul style="list-style-type: none"> ▪ Clear categorisation of consumers ▪ Identify factors leading to each category, and how factors are applied to consumer groups ▪ Reasonable rationale for allocation of customers to groups
(iii) Quantification of key components of costs and revenues	<ul style="list-style-type: none"> ▪ Major cost/revenue components are identified at a level relevant to consumers (a more aggregated level than the Commerce Commission's requirements) ▪ Identify major changes to baseline costs/revenues
(iv) An explanation of the cost allocation methodology and the rationale for the allocation to each consumer grouping	<ul style="list-style-type: none"> ▪ Clear description of <i>how</i> costs are allocated to different consumer groups ▪ Reasonable rationale for allocation of costs ▪ Identify the relationship between the costs and consumer groups, or explain the absence of any relationship

Information Disclosure Guidelines	What we expect to see
<p>(v) An explanation of the derivation of the tariffs to be charged to each consumer group and the rationale for the tariff design</p>	<ul style="list-style-type: none"> ▪ Clear description of <i>how</i> tariffs are derived ▪ Reasonable rationale for the tariff design, ▪ Identification of the link between costs allocated to each group and the way tariffs recover those costs
<p>(vi) Pricing arrangements that will be used to share the value of any deferral of investment in distribution and transmission assets, with the investors in alternatives such as distributed generation or load management, where alternatives are practicable and where network economics warrant</p>	<ul style="list-style-type: none"> ▪ Clearly describe whether the pricing arrangements share the value of any investment deferral, for example, by making ACOT payments or not charging variable fees to distributed generation
<p>(c) The pricing methodology should:</p> <p>(i) Employ industry standard terminology, where possible</p>	<ul style="list-style-type: none"> ▪ Use industry standard terminology, where possible
<p>(ii) Where a change to the previous pricing methodology is implemented, describe the impact on consumer classes and the transition arrangements implemented to introduce the new methodology</p>	<ul style="list-style-type: none"> ▪ Identify clearly where a change has occurred ▪ Describe what the change is, and the impact of the change on each consumer group ▪ Clearly describe any transition arrangements, where applicable

Appendix B: Expectations for Aligning with the Pricing Principles

Table B.1 describes what we expect each pricing methodology to show to align with each of the pricing principles.

Table B.1: Expectations of Distributor Pricing Methodologies to Show Alignment with Pricing Principles

Pricing principles	What we expect to see
<p>(a) Prices are to signal the economic costs of service provision by:</p> <p>(i) being subsidy free (equal to or greater than incremental costs, and less than or equal to stand alone costs), except where subsidies arise from compliance with legislation and/or other regulation</p>	<ul style="list-style-type: none"> ▪ Explanation of the approach to defining and calculating incremental and standalone costs ▪ Illustration of how current prices for different consumer groups and locations on the network compare to these cost benchmarks, identifying situations where current prices are not subsidy free
<p>(ii) having regard, to the extent practicable, to the level of available service capacity</p>	<ul style="list-style-type: none"> ▪ Description of current service capacities (kVA) at different areas of the network, and how much of that capacity is currently used to meet demand ▪ Summary of current prices by network location and consumer group, including a breakdown of the fixed and variable components of prices and any price incentives offered ▪ Explanation of the relationship between prices and service capacity, using analysis of cost drivers during peak and off-peak periods to explain the chosen ratio of the fixed and variable prices
<p>(iii) signalling, to the extent practicable, the impact of additional usage on future investment costs</p>	<ul style="list-style-type: none"> ▪ Forecasts of investment needs to meet future demand over an investment timeframe (Concept Consulting suggests 20-30 years), clearly justifying growth assumptions ▪ Analysis of peak demand growth by consumer group and network location to illustrate the relationship between prices and future investment ▪ A breakdown of pricing structure by consumer group, clearly highlighting any peak consumption component designed to deter consumption during future peak hours and the resulting investment needs

Pricing principles	What we expect to see
(b) Where prices based on ‘efficient’ incremental costs would under-recover allowed revenues, the shortfall should be made up by setting prices in a manner that has regard to consumers’ demand responsiveness, to the extent practicable	<ul style="list-style-type: none"> ▪ Explanation of whether this principle applies (i.e. whether the EDB considers that efficient incremental prices would under-recover revenue) ▪ Explanation of how the distributor has attempted to gauge the demand responsiveness of different consumers, presenting supporting analysis where possible, and how prices have been designed to reflect this
(c) Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to: <ul style="list-style-type: none"> (i) discourage uneconomic bypass 	<ul style="list-style-type: none"> ▪ Description of when the distributor might expect uneconomic bypass to occur, the distributor’s approach to mitigating uneconomic bypass, and why this approach has been chosen ▪ Explanation of the distributor’s cost allocation methodology, presenting formulas and cost breakdowns by consumer group and network location
(ii) allow for negotiation to better reflect the economic value of services and enable stakeholders to make price/quality trade-offs or non-standard arrangements for services	<ul style="list-style-type: none"> ▪ Description of how the distributor includes its stakeholders in making price/quality trade-offs (i.e. consultation processes), noting the role of the quality targets set by the Commerce Commission ▪ Description of the distributor’s approach to non-standard arrangements with different consumer groups, and the rationale for choosing this approach ▪ Summary of the number and size of connections currently under non-standard arrangements
(iii) where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives and technology innovation	<ul style="list-style-type: none"> ▪ Analysis of feasible transmission and distribution alternatives within the network area, and an explanation of how these alternatives are incorporated in developing prices ▪ Description of any policies or services offered by the distributor to help customers develop alternatives ▪ Identification of network segments and consumer groups where the distributor has encouraged the adoption of alternatives

Pricing principles	What we expect to see
(d) Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact to stakeholders	<ul style="list-style-type: none"> ▪ Description of the distributor’s price change processes, focusing on stakeholder communication (retailer notifications) ▪ Explanation of how stakeholder impact is assessed and incorporated into the pricing design, and how conflicts are managed (i.e. through non-standard agreements) ▪ Description of any transition approaches to price changes designed to minimise any impact to stakeholders, with a high level analysis of the costs and benefits of the transition approaches, and a timeframe for implementing price changes
(e) Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers	<ul style="list-style-type: none"> ▪ Description of the most relevant transaction costs in the pricing process ▪ Explanation of how the distributor has considered economical equivalence across retailers, and its approach to maintaining this equivalence ▪ Consideration of how the methodology aligns with that of larger distributors nearby in order to reduce the costs to retailers of operating across contiguous networks



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