



# ELECTRICITY PRICING METHODOLOGY 2011

EFFECTIVE 1 APRIL 2011

DISCLOSED UNDER REQUIREMENT 22 OF THE ELECTRICITY INFORMATION  
DISCLOSURE REQUIREMENTS 2004

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## 1. EXECUTIVE SUMMARY

### REQUIREMENTS

1. This document contains the information required to be disclosed under:
  - sections 22 and 23 of the Commerce Commission's *Electricity Distribution (Information Disclosure) Requirements 2004*; and
  - the Electricity Authority's *Distribution Pricing Principles and Information Disclosure Guidelines*, published by the Electricity Commission in March 2010.
2. Powerco considers this pricing methodology to be compliant with all of these requirements.

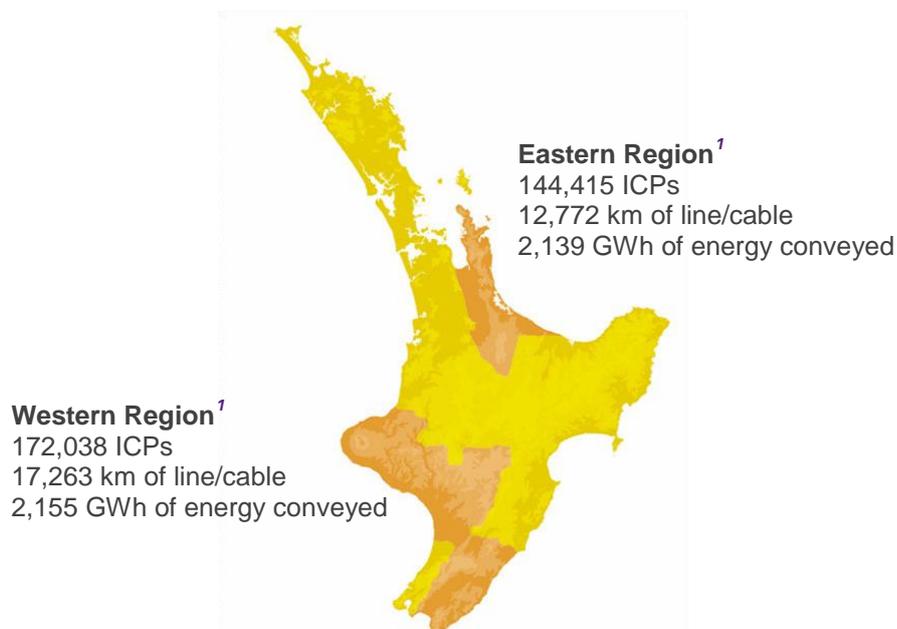
### PRICING PRINCIPLES

3. In determining Powerco's pricing a balance is required between a number of competing forces. These forces include:
  - historical pricing structures and prices and where possible, ensuring that consumer rate shocks are kept to an acceptable level;
  - the cost of implementation to all participants within the industry;
  - any regulatory requirements such as the Commerce Act (Electricity Distribution Default Price-Quality Path) Determination 2010 and Electricity (Low Fixed Charge Tariff for Domestic Consumers) Regulations 2004;
  - keeping business risk to a minimum on uncontrollable costs;
  - the price signals or incentives required to ensure efficient use of the network; and
  - the ability of consumers/retailers to respond to these signals or provide these same signals without dilution to consumers.
4. Powerco grew rapidly between the mid 1990s and early 2000s. The focus of pricing since the last merger in 2002 has been a consolidation driven by the need to operate a more efficient number of price groups. An important principle of the consolidation process was to minimise the impact on consumers and retailers.
5. By 2010 thirty seven price groups had been consolidated into sixteen groups. Powerco is now undertaking a pricing review with the aims of better aligning Eastern and Western pricing and preparing Powerco to respond to the future challenges and opportunities of the next 20 years. This includes considering the recent amendments to the Commerce Act 1986 and the Electricity Industry Act 2010. The Electricity Authority's pricing principles will be a key part of the pricing framework.

## PRICING METHODOLOGY

- Two different pricing methodologies continue to be used across Powerco's Network. The Western Region uses a Grid Exit Point (GXP) methodology and the Eastern Region uses an Installation Control Point (ICP) methodology. The two methods generally differ in the way quantities for charges are measured.

### *Map of Powerco's Eastern and Western Regions*



## OVERVIEW OF WESTERN REGION

- A Grid Exit Point (GXP) methodology is used for the Western Region covering Taranaki, Wanganui, Rangitikei, Manawatu, Tararua and Wairarapa. The GXP methodology is a wholesale delivery model whereby the network cost allocation is maintained at a relatively high level, being connection category and geographical location. Connection category is based on the usage consumers make of the different components of the network i.e. sub-transmission, high voltage (11kV) and low voltage (400V).
- Essentially all sales for service take place at the GXP. Volumes and demand data for industrial consumers, normally 11kV network users, are calculated from half hour metering data, adjusted for losses, with the balance of volume and demand inputs being derived from the Reconciliation process and with retailer ICP counts accessed from the industry ICP registry. For the majority of consumers minimal market segmentation occurs in the GXP method which should reduce barriers to a competitive retail market and promote innovation in retailer designed consumer tariffs.

<sup>1</sup> Figures as per Powerco's Asset Management Plan 2011-2020.

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## OVERVIEW OF EASTERN REGION

9. An Installation Control Point (ICP) methodology is used for the Eastern Region. This methodology has not been significantly altered since the acquisition of the UnitedNetworks Limited (UNL) networks in the Tauranga, Thames Valley and Coromandel regions in 2002. This methodology is a retail delivery model whereby the sale for service takes place at the consumer's metering point. Load characteristics tend to vary with the demand size and the market segment of the consumer. This methodology allocates costs to reflect the assessed average characteristics, or actual characteristics, of the various consumers within the determined groups. This pricing structure is more reflective of a retailer type tariff and subsequently is more likely to prohibit innovation in retailer tariffs to end consumers due to the retailer not wanting to accept re-bundling risk. This methodology enables an ability to provide a greater degree of targeted price signals to specific groups or individual market segments of consumers to encourage efficient use of the network. Retailers provide the individual consumer metering data to enable calculation of the line charges. Existing revenue requirements have been updated for changes in allowable threshold revenue, transmission charges, indirect costs and load growth forecasts.

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## COST ALLOCATION

10. Powerco has recently reviewed its cost of supply model to determine the required returns from each pricing region and tariff group. The cost of supply model uses a number of key inputs and cost drivers to determine the appropriate allocation of costs between the relevant consumer groups. The key allocators contained within this model are:
  - average number of connected ICPs;
  - coincident maximum demand (CMD);
  - installed kVA;
  - optimised replacement cost (ORC);
  - contribution to system demand & ICP numbers, which is used in the determination of GXP cost allocation; and
  - contribution to coincident maximum demand & ICP numbers, which is used in the allocation of costs between load groups.

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## LEGISLATIVE REQUIREMENTS

11. The two pricing methodologies have been updated to ensure compliance with government regulations for both low fixed charge residential tariffs and *Commerce Act (Electricity Distribution Default Price-Quality Path) Determination 2010* (DPP). This notice only allows Powerco to increase its notional revenue (sum of price times quantity for all price options) by the average annual change in CPI.
12. The Commerce Commission amended the Default Price Path in November 2010 to include a "revenue differential adjustment" term. This removes the link between the price an EDB charged in the previous period and its price path for the next pricing period. Powerco has incorporated this change into pricing.
13. The *Electricity (Low Fixed Charge Tariff for Domestic Consumers) Regulations 2004* require that for every residential standard tariff option is available, another tariff option

is available for residential consumers where the fixed charge component is no more than 15 cents per day and that the total charge per year for the average consumer is the same or no more than the standard option. Price changes therefore require that the annual charges for the low fixed charge option<sup>2</sup> for the average<sup>3</sup> residential consumer are no more than the annual charge under the standard option for the same consumer as required by the regulations.

14. This methodology must also comply with the Electricity Authority's pricing principles. Paragraphs 62-89 detail how the pricing methodology complies with the Electricity Authority's pricing principles and information disclosure guidelines.

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<sup>2</sup>Distributors are required to offer a low fixed option charge where the daily fixed line connection charge represents a maximum of fifteen cents per day.

<sup>3</sup> Average consumer is defined as an 8000 kWh per annum consumer in accordance with the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004.

## 2. REQUIREMENTS

15. This pricing methodology complies with the requirements detailed below.

### ELECTRICITY AUTHORITY DISTRIBUTION PRICING PRINCIPLES AND INFORMATION DISCLOSURE GUIDELINES

<b>Pricing Principles</b>	
(a)	Prices are to signal the economic costs of service provision, by:
(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;
(ii)	having regard, to the extent practicable, to the level of available service capacity; and
(iii)	signalling, to the extent practicable, the impact of additional usage on future investment costs.
(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.
(c)	Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to:
(i)	discourage uneconomic bypass;
(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; and
(iii)	where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives (e.g. distributed generation or demand response) and technology innovation.
(d)	Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact on stakeholders.
(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.

<b>Information Disclosure Guidelines</b>	
(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.
(b)	The pricing methodology disclosed should demonstrate:
(i)	how the methodology links to the pricing principles and any non-compliance;
(ii)	the rationale for consumer groupings and the method for determining the allocation of consumers to the consumer groupings;
(iii)	quantification of key components of costs and revenues;
(iv)	an explanation of the cost allocation methodology and the rationale for the allocation to each consumer grouping;
(v)	an explanation of the derivation of the tariffs to be charged to each consumer group and the rationale for the tariff design; and
(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.
(c)	The pricing methodology should:
(i)	employ industry standard terminology, where possible; and
(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.

**COMMERCE COMMISSION, ELECTRICITY DISTRIBUTION (INFORMATION DISCLOSURE) REQUIREMENTS 2008 (FIRST PUBLISHED ON 31 MARCH 2004)**

16. The Commerce Commission has required EDBs to disclose their pricing methodology annually since 2004. The requirements are:

**22. Disclosure of pricing methodologies—**

Every disclosing entity must publicly disclose,—

- (a) At the beginning of each financial year, the methodology used at the beginning of that financial year to determine the line charges payable or to be payable; and
- (b) Any change in the methodology or adoption of a different methodology, within month of the change or the different methodology taking effect.

### **23. Contents of pricing methodology disclosures—**

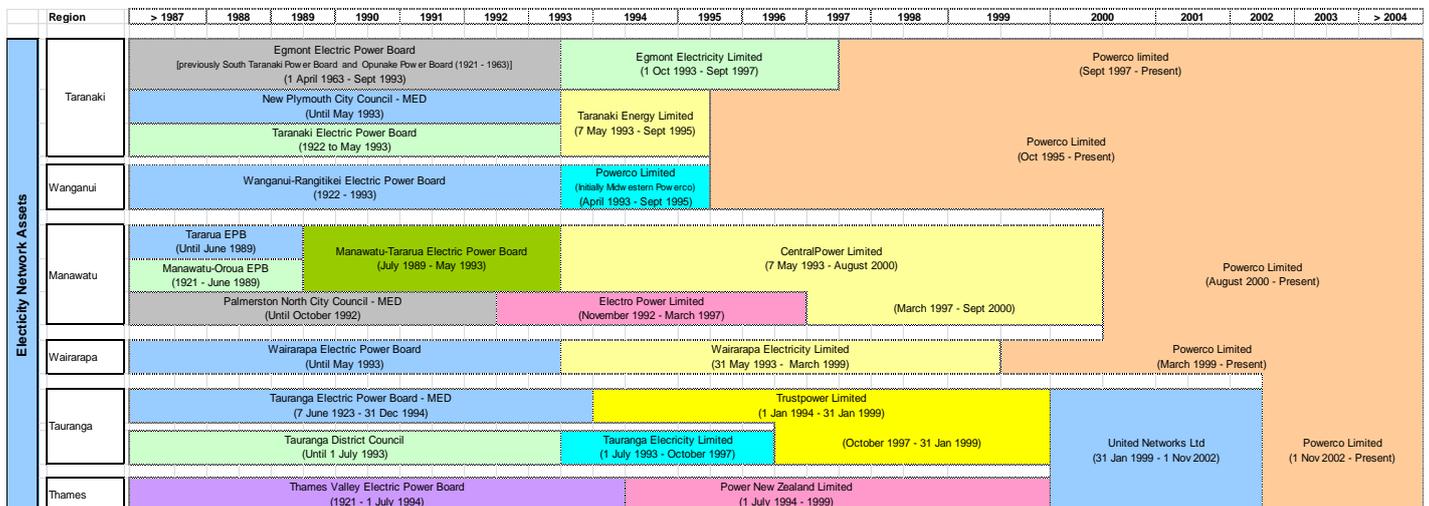
Every disclosure under requirement 22 must—

- (a) Describe the methodology used to calculate the prices charged or to be charged; and
- (b) Include the key components of the revenue required to cover costs and profits of the disclosing entity's line business activities, including cost of capital and transmission charges, which must include the numerical value of each of the components; and
- (c) State the consumer groups used to calculate the prices charged or to be charged, including—
  - (i) The rationale for the consumer grouping; and
  - (ii) The method by which the disclosing entity determines which group consumers are in; and
  - (iii) For each of these consumer groups, the statistics relating to that group which were used in the methodology; and
- (d) Describe the method by which the disclosing entity allocated the components of the revenue required to cover the costs of its line business activities amongst consumer groups, which must include the numerical values of the different components allocated to each consumer group and the rationale for allocating it in this manner; and
- (e) Describe the method by which the disclosing entity determined the proportion of its charges which are fixed and the proportion which are variable, and the rationale for determining the proportions in this manner.

### 3. POWERCO'S PRICING STRATEGY

#### BACKGROUND TO POWERCO

17. Powerco is a utility network ownership and management business and is New Zealand's largest provincial distributor of electricity and gas, with around 420,000 consumers connected to its networks. Powerco's electricity networks are in Tauranga, Thames, Coromandel, Eastern and Southern Waikato, Taranaki, Wanganui, Rangitikei, Manawatu and Wairarapa.
18. Powerco's vision is to lead New Zealand in electricity and gas delivery, and its mission is to provide a safe, reliable and economically efficient electricity and gas network distribution services whilst achieving earnings.
19. The diagram below shows a timeline of mergers and acquisitions that led to the current formation of Powerco.



*Timeline of Mergers and Acquisitions that led to formation of Powerco*

#### PRICING STRATEGY

20. Powerco grew rapidly from its first merger in 1995, to its current footprint. This incorporates eleven businesses that existed in the late 1980s. The focus of pricing since the last merger in 2002 has been a consolidation from 47 to 16 price categories. This has been driven by the need to operate a more efficient number of price groups.
21. An important principle of the consolidation process was to minimise the impact on consumers and retailers. For example, Powerco operates quite different pricing methodologies in our Eastern and Western regions and the pricing methodology for the Eastern Region has not been substantially changed since it was inherited by Powerco in 2002. Rather than adopting a "big bang" approach to align pricing, Powerco has followed an incremental strategy, minimising the change for consumers and retailers.
22. In 2010, the first stage of the consolidation process was completed. Powerco is now undertaking a pricing review with the aims of better aligning Eastern and Western pricing and preparing Powerco to respond to the future challenges and opportunities of

the next 20 years. This includes considering the recent amendments to the Commerce Act 1986 and the Electricity Industry Act 2010. The Electricity Authority's pricing principles will be a key part of the pricing framework.

23. Until the pricing review has been completed, Powerco will continue to use its existing pricing methodology. Changes to electricity line charges with effect from 1 April 2011 reflect increases in charges as a result of a CPI adjustment of 1.7%, DDP compliance (differential adjustment), and a pass through of Transpower's interconnection and transmission charges. Powerco also closed the tariff options INTR, CTUN, CTON/CTOF in the Eastern network due to the on-going rationalisation of legacy tariff options on this network.

## 4. SUMMARY OF PRICING PROCESS

24. The pricing process can be summarised as follows:
- determine suitable groupings of connections across each network based on similarities of network and consumer characteristics such as geography, rural/urban connection density, mains size, protection rating and/or transformer capacity;
  - calculate total costs for the relevant period, such as transmission costs (including ACOT), capital costs, operating, maintenance costs and administration costs;
  - determine appropriate allocation of costs across each network and tariff category; and
  - calculate prices based on the relevant cost allocations ensuring compliance with the relevant regulations and considerations as detailed in paragraph three.

## 5. QUANTIFICATION OF KEY COMPONENTS OF COSTS AND REVENUES

25. The key components of network costs and revenue for Powerco's Eastern and Western Regions are summarised below. Network assets and system length largely drive these costs. Consequently, these costs are largely fixed and independent of business conditions, such as consumer density and consumer class.

### OPERATING COSTS

26. These are the costs associated with the provision of electricity distribution services. These costs include:
- statutory charges and levies (excluding those that are pass through costs);
  - network planning and asset management costs;
  - network management and dispatch costs;
  - network operation costs;
  - cost of support services such as billing, record management, planning, contract administration, regulatory compliance and resource costs;
  - depreciation on electricity lines business assets; and
  - tax.
27. Where possible, Powerco's operating costs in relation to the electricity business are allocated directly to each relevant region. Where this is not possible the allocation between regions is based on each regions optimised replacement cost (ORC).
28. Powerco's indirect operating costs in relation to the electricity business are allocated between regions and customer groups using a weighted average of each groups contribution to system demand and ICP numbers.

## TRANSMISSION COSTS

29. These are the costs charged by both Transpower for transmission services and other parties who provide services that substitute for transmission or distribution services. Transmission costs include Transpower's interconnection, connection and new investment charges and any avoided cost of transmission (ACOT) payments made by Powerco.
30. Transmission costs are allocated between customer groups using a weighted average of the coincident maximum demand (based on the 100 regional coincident peaks) attributable to each load group and the number of ICPs within each load group.

## COST OF CAPITAL

31. This is the cost of capital (both debt and equity) invested in Powerco. Powerco requires large amounts of capital to maintain and develop network assets to meet increased demand and supply quality standards, legal compliance requirements and to ensure a reasonable standard of safety and reliability.
32. Capital costs are allocated into regions based on the replacement cost of the assets within each group.

**Table 1: The numerical value of each of the key components of the revenue required to cover costs and profits of Powerco's lines business activities for the relevant financial year**

Key Component	Eastern Region (\$,000)	Western Region (\$,000)	Total Network (\$,000)
Operating Costs	50,096	58,837	108,933
Transmission Charges <sup>4</sup>	35,734	35,134	70,868
Cost of Capital	49,981	62,084	112,065
<b>Total</b>	<b>135,811</b>	<b>156,055</b>	<b>291,866</b>

<sup>4</sup>Transmission costs include Transpower charges and avoided costs of transmission (ACOT).

## 6. EASTERN REGION METHODOLOGY

### CONSUMER GROUPS

#### RATIONALE FOR CONSUMER GROUPS

33. Powerco uses five categories of consumer groups in the Eastern Region for pricing purposes:
- un-metered consumers;
  - residential and small commercial consumers with a capacity less than and equal three phase 60 amps;
  - consumers with capacity greater than three phase 60 amps but not greater than three phase 300 amps;
  - consumers with capacity greater than 100kVA with half hour metering; and
  - individually priced consumers.
34. Powerco, being sensitive to consumers' and retailers' need for price stability, has continued with the same consumer groupings that UnitedNetworks Ltd had in place. Changes to the pricing structure may have significant rate shocks. The rationale for the grouping of consumers is the broad divisions of capacity provided on the distribution network.

#### METHOD FOR DETERMINING ALLOCATION OF CONSUMERS

35. Consumers in the Eastern Region are allocated to one of the two distribution networks of Valley and Tauranga based on the grid exit point that is associated with the consumer's ICP.
36. Consumers are then allocated into an appropriate category based on the market segment attributable to the consumer, mains size, protection rating and/or dedicated transformer capacity.

**Table 2: Statistics for Eastern Region Consumer Groups used in the Pricing Methodology**

Consumer Group	ICPs	Volume (MWh)	Anytime Maximum Demand (kW)	On Peak Demand (kW)
Un-metered consumers	463	16,417	N/A	N/A
Residential & Small Commercial – capacity less than three phase 60 amps	139,145	1,154,498	N/A	N/A
Capacity three phase 60 amps to 300kVA without half-hourly metering	658	91,665	N/A	N/A
Capacity greater than 100kVA with half hourly metering	197	139,078	N/A	N/A
Individually priced consumers	158	1,164,805	201,072	91,949

## COST ALLOCATION METHODOLOGY AND RATIONALE OF ALLOCATION TO EACH CONSUMER GROUP

### STANDARD CONSUMERS

37. Powerco has recently developed a cost of supply model for the Eastern Region, but being sensitive to consumers' and retailers' need for price stability, the method of revenue allocation has not changed materially since the acquisition of the network from UnitedNetwork Ltd in 2002.
38. The cost of supply model uses a number of key inputs and cost drivers to determine the appropriate allocation of costs between the relevant consumer groups. The key allocators contained within this model are:
- average number of connected ICPs;
  - coincident maximum demand (CMD);
  - installed kVA;
  - optimised replacement cost (ORC);
  - contribution to system demand & ICP numbers, which is used in the determination of GXP cost allocation; and
  - contribution to coincident maximum demand & ICP numbers, which is used in the allocation of costs between load groups.
39. For consistency between regions, the cost of supply model allocates costs into one of three groups. The groups consist of:
- mass market (which includes unmetered, residential & small commercial consumer groups);
  - commercial consumers with a capacity greater than 100 kVA but less than 299 kVA;
  - commercial consumers with a capacity greater than or equal to 300 kVA (this includes individually priced consumers in the V40, T50, V60 & T60 groups).

### NON-STANDARD CONSUMERS

40. The individually priced consumer group revenues are determined by:
- a return on dedicated assets employed;
  - an allocation of upstream assets based on an anytime maximum demand (AMD);
  - allocation of direct costs incurred based on AMD and on peak demand; and
  - an allocation of indirect costs on the basis of a 70% fixed component with the balance based on peak demand.

## ADJUSTMENTS TO UNL METHODOLOGY SINCE 2002

41. Adjustments to the residential group prices were also required to account for the implementation of the low fixed charge regime required by the *Electricity (Low Fixed Charge Tariff for Domestic Consumers) Regulations 2004*. Further adjustments have been undertaken to reduce the number of load groups in response to consultative feedback to simplify Powerco's tariff offerings in this region and also to modify pricing signals to reflect constraints now appearing due to significant load growth being experienced on the networks.

## QUANTIFICATION OF KEY COMPONENTS OF COSTS AND REVENUES

42. The key components of costs and revenues are described in paragraphs 25 – 32. The breakdown of these costs into consumer groups is provided in Table 3.

**Table 3: Revenue required to cover costs and profits of Powerco's lines business activities allocated by key revenue components to each consumer group for the relevant financial year**

EASTERN REGION					
Distribution network	Consumer Group	Revenue required for:			
		Operating Costs \$(000s)	Transmission \$(000s)	Cost of Capital \$(000s)	Total \$(000s)
Tauranga	Mass market (Including Unmetered ICPs)	18,350	12,495	18,457	<b>49,303</b>
	100 – 299 kVA	635	505	661	<b>1,801</b>
	300 kVA + (including individually price consumers)	3,982	3,107	4,166	<b>11,255</b>
Valley	Mass market (including unmetered ICPs)	19,979	12,360	20,330	<b>52,669</b>
	100 – 199 kVA	362	298	406	<b>1,066</b>
	300 kVA + (including individually priced consumers)	6,788	6,970	5,960	<b>19,717</b>
<b>Total</b>		<b>50,096</b>	<b>35,734</b>	<b>49,981</b>	<b>135,812</b>

## FIXED AND VARIABLE CHARGES

43. Distribution costs tend to be fixed in nature, rather than related to the delivered energy volumes. The assets employed are expensive and the cost of the assets is not directly

related to the usage of the assets, i.e. the cost is the same regardless of whether the assets are being used by an end-consumer at any particular time.

44. However, Powerco wants to promote the economically efficient use of network assets. Line charges are designed to allow end-consumers the opportunity to modify their behaviour to make efficient use of network assets.
45. The larger capacity load groups have the bulk of the charge fixed, while lower capacity connections have the fixed component set at closer to 50% of the total line charge.
46. Powerco's ability to amend the existing fixed and variable rate structure is limited by Powerco's policy of avoiding price shocks to end-consumers, limitations imposed on residential fixed charges by the *Electricity (Low Fixed Charge Tariff for Domestic Consumers) Regulations 2004* and limitations imposed on total revenue by the *Commerce Act (Electricity Distribution Default Price-Quality Path) Determination 2010*. Powerco, therefore, determines the proportion of fixed and variable charges by reference to existing rates while recognising the largely fixed nature of the underlying costs. Regulations have effectively set the fixed and variable components for residential groups.
47. Transpowers AC rental rebates are excluded from the bundled tariffs and are passed through to retailers directly.

#### SHARING VALUE OF DEFERRAL OF INVESTMENT

48. Powerco recognises that the ability to control and shift load during peak times via load signalling equipment has the potential to defer investment. Powerco continues to offer a number of tariff options in the Valley and Tauranga distribution networks that provide discounts based on the availability and degree of load control at the consumers ICP. Powerco also provides a number of "NITE" tariff options within these networks which are designed to encourage consumers to shift load to off-peak periods.
49. Powerco continues to encourage embedded and distributed generation by providing payments to generators equivalent to Powerco's avoided costs of transmission (subject to Powerco's Distributed Generation (DG) Policy).

## 7. WESTERN REGION METHODOLOGY

### CONSUMER GROUPS

#### RATIONALE FOR CONSUMER GROUPS

50. Powerco uses three categories of consumer group for cost allocation and charging purposes in the Western Region. The three categories are:
- less than 100kVA connections
  - 100 to 299kVA connections
  - greater than 300kVA connections.
51. The rationale for the grouping of consumers is the broad divisions in capacity they represent on the distribution network and taking into account other factors such as geography, rural/urban connection density and different load characteristics i.e. supply voltage and significant individual demand. The groupings represent a trade-off between the simplicity required to reduce processing costs and the level of complexity required to appropriately allocate costs while providing the appropriate cost signals to the relevant network users.

#### METHOD FOR DETERMINING THE ALLOCATION OF CONSUMERS TO GROUPS

52. Consumers are allocated to a region and group based on the GXP that is associated with their connection and according to their installed capacity.

*Table 4: Statistics for Western Region Consumer Groups used in the Pricing Methodology*

Consumer Group	ICPs	Energy Volume (MWh)	Annual Demands (kW) & (kVA)	Installed Capacity (kVA)
Less than 100kVA connections	163,531	1,581,320	3,870,157	N/A
100 to 299kVA connections	200	96,571	337,538	N/A
Greater than 300kVA connections	241	546,952	1,647,119	3,344,460

## COST ALLOCATION METHODOLOGY AND RATIONALE OF ALLOCATION TO EACH CONSUMER GROUP

53. Powerco has recently developed a cost of supply model for the Western Region which uses a number of key inputs and cost drivers to determine the appropriate allocation of costs between the relevant consumer groups. The key allocators contained within this model are:
- average number of connected ICPs;
  - coincident Maximum Demand (CMD);
  - installed kVA;
  - optimised Replacement Cost (ORC);
  - contribution to system demand & ICP numbers, which is used in the determination of GXP cost allocation; and
  - contribution to coincident maximum demand & ICP numbers, which is used in the allocation of costs between load groups.

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### STANDARD AND NON-STANDARD CUSTOMERS

54. See paragraphs 37 - 40 on the cost allocation process.

## QUANTIFICATION OF KEY COMPONENTS OF COSTS AND REVENUES

55. The key components of costs and revenues are described in paragraphs 25 – 32. The breakdown of these costs into consumer groups is provided in Table 5.

**Table 5: Required revenue to cover costs and profits of Powerco's lines business activities allocated by key revenue components to each consumer group for the relevant financial year**

WESTERN REGION					
Consumer Group	Price Category	Revenue required for:			
		Operating Costs \$(000s)	Transmission \$(000s)	Cost of Capital \$(000s)	Total \$(000s)
E1 – less than 100 kVA	A	29,379	17,998	28,203	<b>75,579</b>
	B	18,214	9,230	21,842	<b>49,286</b>
E100 (100 – 299 kVA)	A	305	228	268	<b>801</b>
	B	53	41	69	<b>162</b>
	C	-	-	-	<b>-</b>
	D	22	16	29	<b>67</b>
	E	160	118	136	<b>414</b>
	F	16	12	18	<b>46</b>
	G	31	15	39	<b>85</b>
	H	318	161	326	<b>804</b>
	I	687	484	687	<b>1,858</b>
	J	20	8	25	<b>52</b>
E300 (300 kVA+ Including individually priced consumers)	A	2,634	2,043	2,846	<b>7,523</b>
	B	906	693	1,164	<b>2,763</b>
	C	149	123	217	<b>489</b>
	D	309	214	397	<b>919</b>
	E	1,212	900	1,092	<b>3,203</b>
	F	488	390	561	<b>1,439</b>
	G	214	102	265	<b>581</b>
	H	1,055	538	1,036	<b>2,629</b>
	I	2,092	1,590	2,142	<b>5,824</b>
	J	574	231	723	<b>1,528</b>
<b>Total</b>		<b>58,837</b>	<b>35,134</b>	<b>62,084</b>	<b>156,054</b>

## FIXED AND VARIABLE CHARGES

56. Like the Eastern Region, distribution costs tend to be fixed in nature rather than related to the delivered energy volumes. The assets employed are expensive and the cost of the assets is not directly related to the usage of the asset, i.e. the cost is the same regardless of whether the assets are being used by an end-consumer at any particular time.
57. However, Powerco wants to promote efficient use of the network. Line charges are designed to allow end-consumers the opportunity to modify their behaviour to make efficient use of the network.
58. As with the Eastern Region, Powerco's ability to amend the existing fixed and variable rates is limited by Powerco's policy to avoid price shocks for the end consumer and to meet both the Low fixed Charge regulations and the price path threshold regulations applicable to Powerco under Part 4 of the Commerce Act 1986.
59. Transpowers AC rental rebates have been excluded from the bundled tariffs and are passed through to retailers directly.

## SHARING VALUE OF DEFERRAL OF INVESTMENT

60. Powerco recognises that the ability to control and shift load during peak times via load signalling equipment has the potential to defer investment. Powerco continues to offer a lower daily fixed charge for the E1 consumer group within the Western Region based on the availability of controllable load at the consumer's ICP. Powerco's volume charges to the mass market are also structured to encourage consumers to shift load to off-peak periods.
61. Powerco also continues to encourage embedded and distributed generation by providing payments to generators equivalent to Powerco's avoided costs of transmission (subject to Powerco's Distributed Generation (DG) Policy).

## 8. COMPLIANCE WITH ELECTRICITY AUTHORITY PRICING PRINCIPLES

62. This section demonstrates how Powerco's pricing methodology has considered the Electricity Authority's pricing principles. Powerco is fully compliant with the principles.

*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.*

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### INCREMENTAL COST

63. The term "incremental cost" (IC) is defined as the cost of the next additional unit of production and "long run incremental cost" (LRIC) is defined as the cost of providing an additional unit, including the capital cost of increasing the capacity of the network.
64. Incremental costs are difficult to evaluate in a meaningful way for electricity distribution businesses (EDBs). Much of the time the IC is zero, meaning that the next unit of electricity can be distributed to a customer within the existing capacity of the network system. Once in a while the IC will be a very large number, meaning that the next unit of electricity would require additional installed capacity to be distributed.
65. In addition, the "unit" being supplied could be an extra unit of capacity to an existing customer, or providing a connection for a new customer. To calculate IC, Powerco has analysed the forecasted level of growth on the network over the next ten years against forecasted customer connection and system growth capex. We have used this as a proxy for incremental cost and results in a figure of 0.0098 c/kWh.
66. Powerco is required by legislation to supply some consumers at prices below the marginal cost of connection. This is mainly in remote locations with few customers where electricity supply was built under public subsidisation, and the cost of renewing the line is more than the sum of line charges over the life of the assets. The Electricity Industry Act 2010 now allows EDBs to provide alternative energy supply, rather than lines services. Powerco is actively identifying these customers and has installed two stand alone power systems. With consumer consent, we will look to install more systems. This aims to reduce the number of customers being supplied at below marginal cost.

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### STANDALONE COST

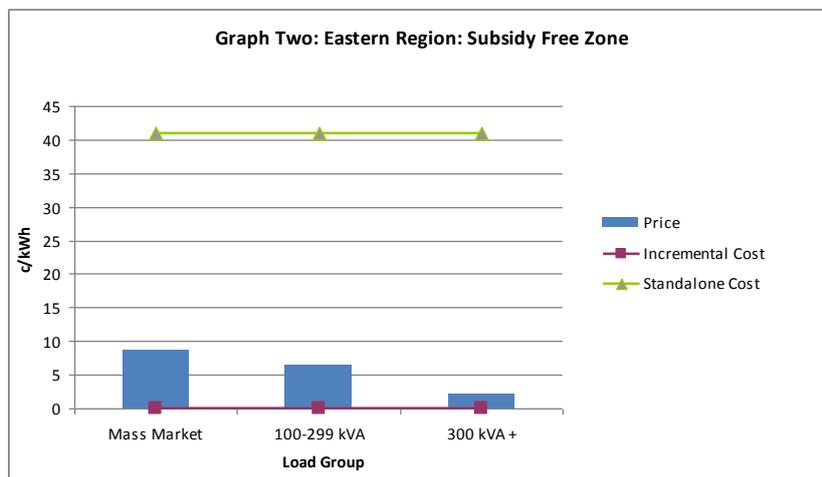
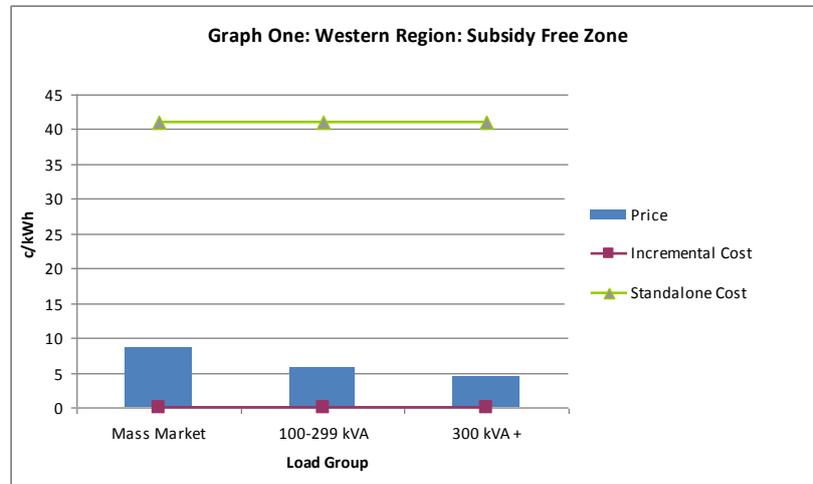
67. Cross subsidisation exists when customers pay more for a service than the costs another firm would incur if it served those customers on a stand-alone basis. Standalone cost (SAC) is also a difficult figure to calculate for each load group on Powerco's network. Powerco has calculated the SAC for each tariff group by considering the costs of alternative power supply. A Ministry of Economic Development Report provided c/kWh estimates for different power systems. We have used the lowest of these costs, 41c/kWh for a stirling engine, as the SAC across the network.<sup>5</sup> This cost is likely to reduce for larger customers, but as the cost is so far above the line charge, we have not completed this analysis.

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<sup>5</sup> See [http://www.med.govt.nz/templates/MultipageDocumentPage\\_29599.aspx](http://www.med.govt.nz/templates/MultipageDocumentPage_29599.aspx)

## SUBSIDY FREE ZONE

68. Graphs One and Two below show that pricing is within the subsidy free zone for each of Powerco's tariff group.



69. A large number of assumptions have been made in determining IC and SAC, and as only part of pricing is by volume, the graphs should be considered illustrative. Powerco's use of a cost of supply model provides additional reassurance that prices are in the subsidy free zone.

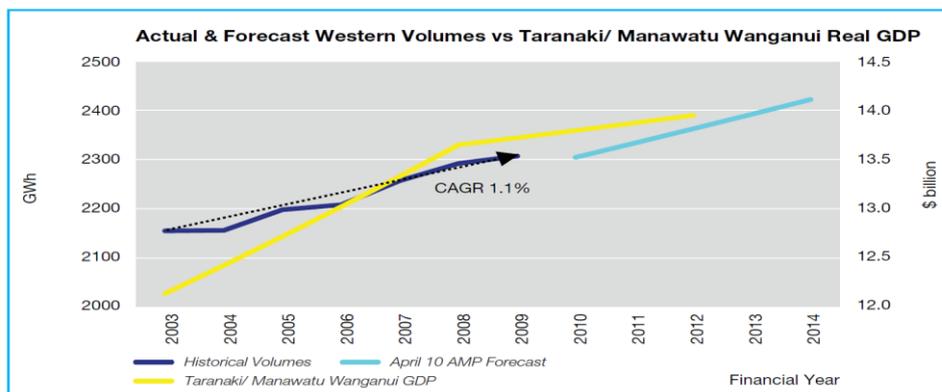
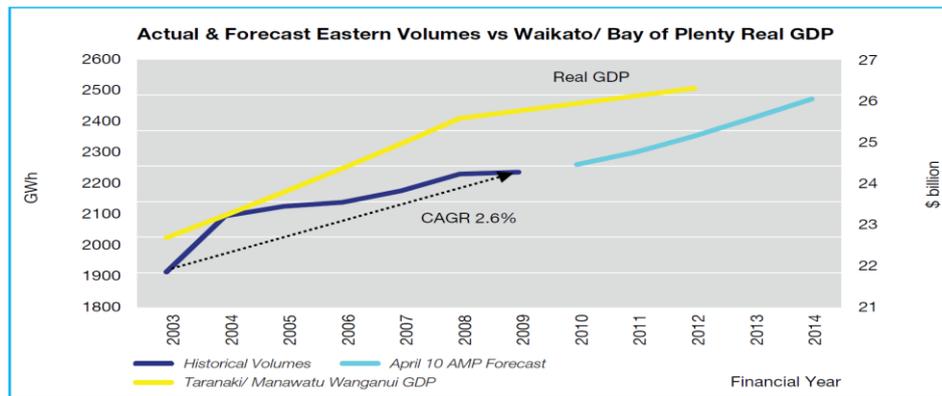
**a) ii) Prices are to signal the economic costs of service provision, by having regard, to the extent practicable, to the level of available service capacity.**

**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.**

70. These two principles are opposite sides of the same coin, where prices should look to the future and be based on long run marginal costs. This principle requires that prices should be low where future investment is low (and spare capacity exists); and prices should be high where capacity is constrained and investment is needed.

- 71. Transmission costs are a function of transmission capacity and signal the economic costs of service provision on the Transpower network. These costs represent around 25% of distribution prices, so also work to ensure distribution prices meet this principle.
- 72. Powerco has a demand charge in the Western region. This is because the most significant cost driver that influences investment requirements in the network is the combined peak demand of all consumers in an area. Powerco designs and constructs its network to meet this peak load.
- 73. Powerco has been experiencing faster growth in its Eastern Region (2.6%), compared to its Western Region (1.1%), as shown in the graphs three and four.<sup>6</sup>

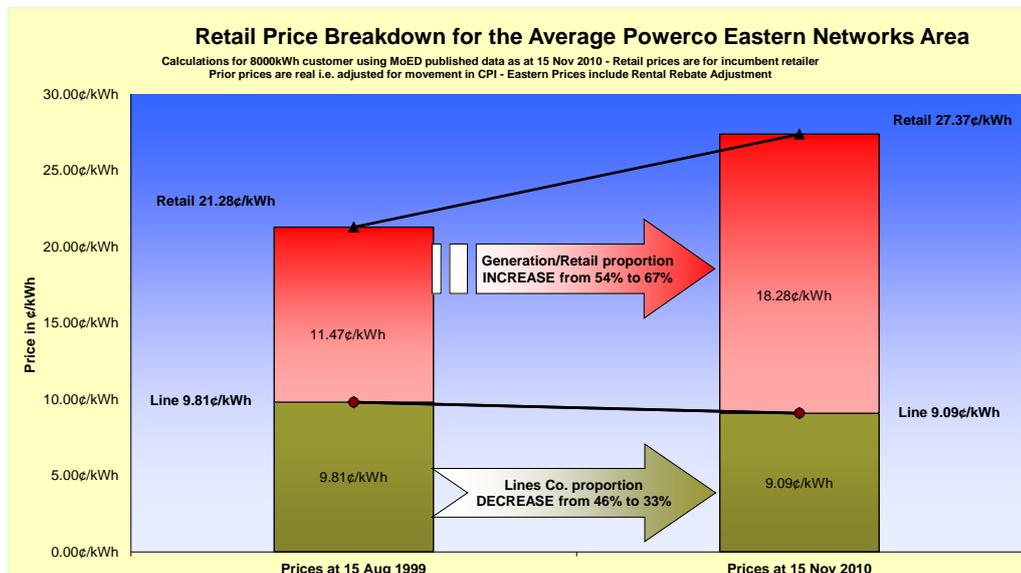
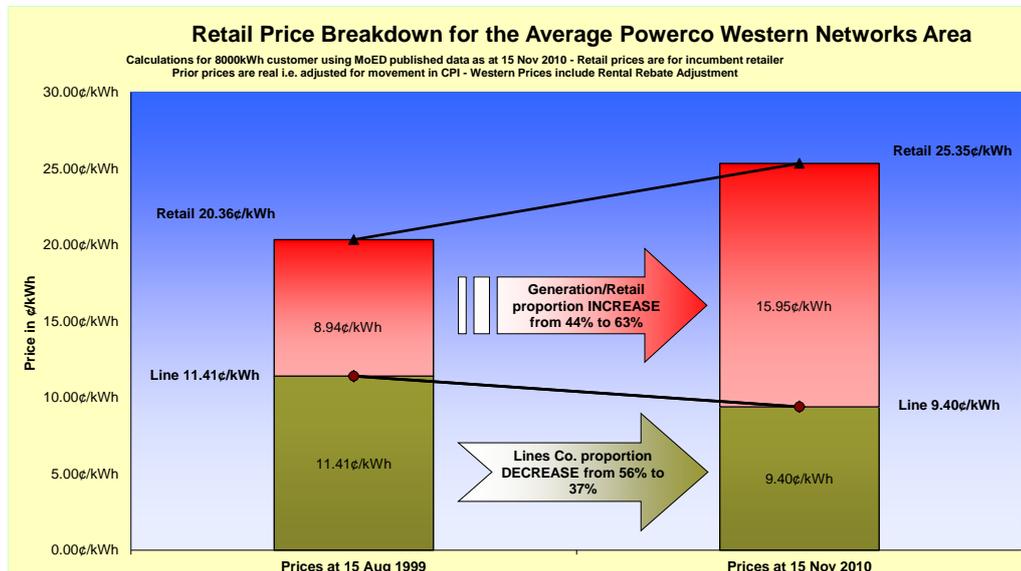
**Graphs Three and Four: Growth on Powerco's Network**



<sup>6</sup> Powerco, Asset Management Plan 2010, 1 April 2010.

74. Graphs five and six show price changes for different Powerco regions. Between 1999 and 2010 the distribution price reduction has been less for the Eastern region (13%), compared to the Western Region (19%). This reflects the faster growth rate in the Eastern Region and the signalling of the level of service capacity and additional usage on future investment costs.

**Graphs Five and Six: Price change 1999-2010**



75. In addition, Powerco offers discounted charges for customers who opt for load control tariffs. Configured well, load control systems are highly effective at reducing demands at peak times by deferring non-time-critical power usage. The benefits of load-control systems include more predictable peak demand magnitudes, fewer peaking generation plants and deferred transmission and distribution capacity augmentations. The benefits accrue across the entire electricity sector.

***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.***

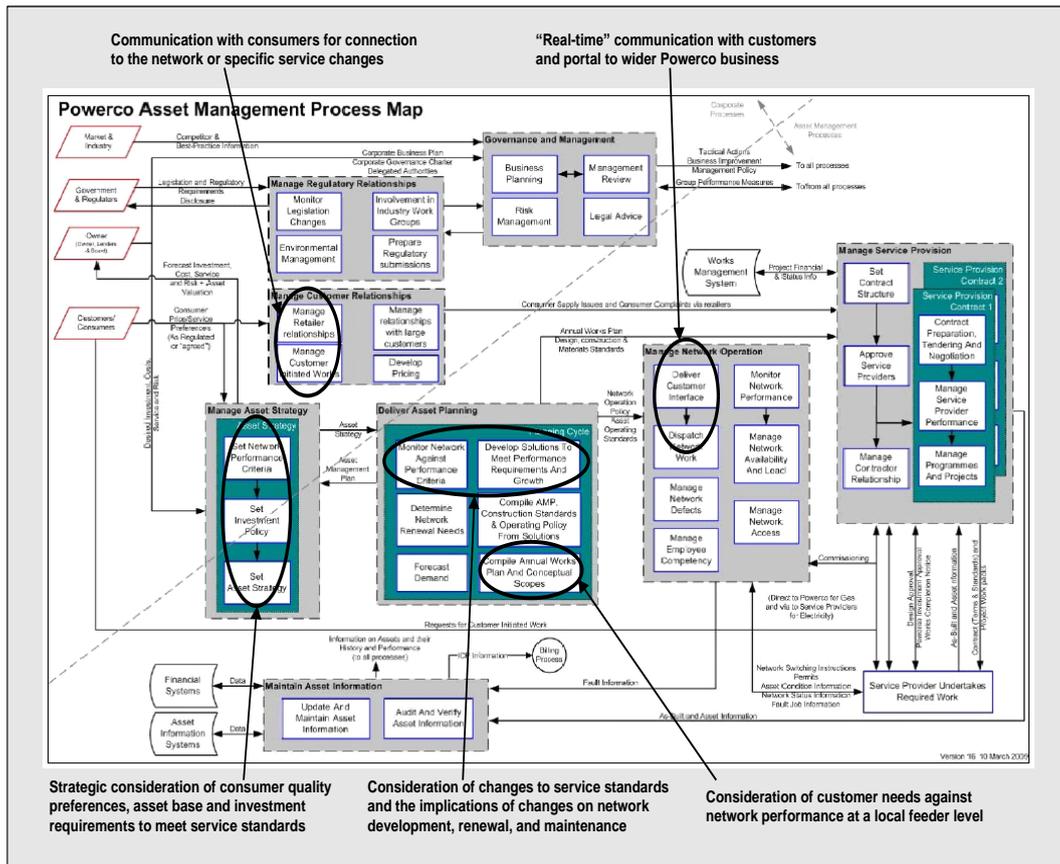
76. Setting prices on a precise definition of price responsiveness, or price elasticity, is difficult for electricity distribution for a number of reasons. Firstly, there is limited information on the price elasticity of electricity in New Zealand. Secondly, retailers re-bundle distribution prices into a final retail price for their consumers. In many cases, the structure of distributors' prices (ie the extent to which prices are charges 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.
77. 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 were 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.
78. Graphs three and four on page 23 show that as consumers' capacity increases, the c/kWh charge reduces. This is inline with larger consumers being more price elastic. They are likely to have more interest and resources in reducing their electricity bill. For example, by shifting use to consumer at lower cost periods of the day or by changing to other energy sources (eg gas).

***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.***

79. The main risk of bypass is that large consumers will choose to connect directly to the Transpower's network. Powerco's practice is to offer non standard pricing and individual account management to industrial and large commercial customers to address the risk of bypass and to enable arrangements that are tailored to customers' needs. Paragraph 40 describes Powerco's approach to non-standard pricing, which includes taking into account customers' individual capacity and demand to ensure the price is cost reflective. By these processes, Powerco discourages uneconomic bypass of its network and allows negotiation to tailor its services to the specific needs of the business.

***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.***

80. Mass market customers are generally not able to choose the quality of service they receive. For example, Powerco can not offer one person a higher quality and higher price than their neighbour. Powerco has an extensive consultation programme to understand the general preferences of consumers and this is reflected in our asset management planning process. The diagram below demonstrates how consumer consultation is taken into account in this process.



**Diagram 1: How consumer consultation feeds into AMP process**

81. At the community level, Powerco has considered the price quality trade-off. Powerco recently undertook a consultation process with the Taihape community. The substation supplying the town and surrounding area only has one transformer. If this fails around 3,800 consumers will lose supply. Powerco consulted with the community as to 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.
82. For non-standard customers, Powerco is able to offer a service more tailored to their requirements, Powerco continues to consult with these customers through one-to-one liaison with key account managers, as per the Parson Brinckerhoff Associates best practice recommendations.<sup>7</sup> This works well as large customers are usually familiar with the issues involved in price/quality trade-offs and strong relationships provide firm ground for discussing all aspects of quality and price.

**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 (e.g. distributed generation or demand response) and technology innovation**

83. As explained in paragraph 66, the recent changes in the Electricity Industry Act 2010 allow Powerco to work with consumers to install alternative energy supply. An

<sup>7</sup> Refer "PBA –Commerce Commission AMP and Consumer Engagement Review, section 6.4.2.2".

example of this is Powerco's "BASEPOWER" product which provides a continuous and reliable supply of electricity, like or better than grid supply. **BASEPOWER** is a modular system with a generator, energy storage and innovative energy management system combined with renewable supplies from PV solar panels, micro hydro and, potentially, wind turbines. See paragraphs 48-49 and 60-61 for how Powerco provides other incentives.

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

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## TRANSPARENCY

84. Powerco's prices for 2011 are available in a wide number of locations for customers to view:
- two adverts each year in the Wairarapa Times Age, Manawatu Standard, Wanganui Chronicle, Taranaki Daily News, Bay of Plenty Times and Waikato Times;
  - pricing schedules are sent to all retailers with whom Powerco has a use of system agreement;
  - Powerco's website; and
  - available to view on request or at our offices by appointment.
85. This pricing methodology is also published on Powerco's website.

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## PRICE STABILITY, CERTAINTY AND IMPACT ON CUSTOMERS

86. The impact on customers is a central consideration in the pricing process. This is the reason that Powerco has moved away from the pricing it inherited from UNL very cautiously, as described in paragraph 21. The price change allowed by the price path is low at 1.7% (CPI-X, where X=0). Paragraph 23 explains how the CPI adjustment of 1.7% has been distributed across price categories.

***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.***

87. Fourteen retailers operate on Powerco's network and we have a detailed consultation process, generally with three rounds of consultation on prices with retailers. The pricing methodology has not changed from last year, therefore there is no change to transactions costs.
88. The regard to impact on consumers is discussed in paragraph 86. Powerco also takes the impact of the following stakeholders into account when setting prices:
- Transpower
  - Commerce Commission
  - Ministry of Economic Development and Ministry of Consumer Affairs

- Electricity Authority
- Electricity and Gas Complaints Commission.

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## ECONOMIC EQUIVALENCY ACROSS RETAILERS

89. Powerco's pricing methodology and applicable prices are identical across all retailers and does not discriminate in regards to the available tariff options, applicable charges and/or calculation methodology. Therefore we consider our prices to be economically equivalent across retailers. Powerco's annual consultation process with retailers also allows them to raise any concerns over pricing at an early stage of the pricing process.

## 9. SUMMARY OF COMPLIANCE WITH INFORMATION DISCLOSURE GUIDELINES

Information Disclosure Guidelines	How compliance has been shown
(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"> <li>• Powerco seeks to make all its communications clear and understandable to interested parties.</li> <li>• This methodology will be published on <a href="http://www.powerco.co.nz">www.powerco.co.nz</a> from 1 April 2011.</li> <li>• No revisions have been made to the method of determining prices, although the pricing methodology document has been substantially revised. This is to provide more information on compliance with the Electricity Authority's pricing principles. These changes are not considered material revisions to the methodology so have not been marked-up.</li> </ul>
(b) The pricing methodology disclosed should demonstrate:	
(i) How the methodology links to the pricing principles and any non-compliance;	<ul style="list-style-type: none"> <li>• Paragraphs 62-89 demonstrate how the methodology links to the pricing principles. There are no areas of non-compliance.</li> </ul>
(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"> <li>• Paragraphs 33-34 and 50-51 provide the rationale for consumer groupings.</li> <li>• Paragraphs 35-36 and 52 provide the method for determining the allocation of consumers to consumer groupings.</li> </ul>
(iii) Quantification of key components of costs and revenues;	<ul style="list-style-type: none"> <li>• This is provided in paragraphs 25-32, 42 and 55.</li> </ul>
(iv) An explanation of the cost allocation methodology and the rationale for the allocation to each consumer grouping;	<ul style="list-style-type: none"> <li>• Paragraphs 24, 35-40 and 52-54 provide an explanation of the cost allocation methodology.</li> <li>• Paragraphs 38, 40 and 54 provide the rationale for the allocation to each consumer grouping.</li> </ul>
(v) An explanation of the derivation of the tariffs to be charged to each consumer group and the rationale for the tariff design; and	<ul style="list-style-type: none"> <li>• Paragraphs 38, 40 and 54 provide an explanation of the derivation of the tariffs to be charged to each consumer group.</li> <li>• Paragraphs 3-15 provide the rationale for the tariff design.</li> </ul>

<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"> <li>• This is discussed in paragraphs 48, 49, 60, 61 and 83.</li> </ul>
<p>(c) The pricing methodology should:</p>	
<p>(vii) Employ industry standard terminology, where possible; and</p>	<ul style="list-style-type: none"> <li>• Through on-going consultation with retailers, Powerco continuously reviews its terms and definitions to align to industry standards.</li> <li>• Powerco is also continuing to align use of system agreements across retailers to the Model Use of System Agreement.</li> <li>• Powerco follows the EIEP formats in billing and reconciliation.</li> </ul>
<p>(viii) 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"> <li>• There are no changes to the previous pricing methodology, therefore no requirement to describe the impact on consumer classes.</li> <li>• A description of how prices have changed between 2010 and 2011 is in paragraph 23.</li> </ul>

**10. STATUTORY DECLARATION IN RESPECT OF STATEMENTS AND INFORMATION SUPPLIED TO THE COMMERCE COMMISSION**

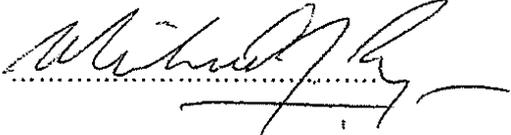
I, Michael Cummings, of 47 Mount Street, Sydney, being a director of Powerco Limited, solemnly and sincerely declare that, having made all reasonable enquiry, to the best of my knowledge, the information attached to this declaration is a true copy of information made available to the public by Powerco Limited pursuant to the Commerce Commission's Electricity Information Disclosure Requirements 2004.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the Oaths and Declarations Act 1957.

Signed by: 

Declared at Sydney, Australia

this 31<sup>st</sup> day of March 2011

Witness 

**MICHAEL JOHN RYAN**  
Justice of the Peace (or Solicitor  
or other person authorised to take a statutory declaration)