

Analysis of Tariff Signals for Managed Load

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Analysis of tariff signals for managed load

Introduction

1. The Electricity Commission (Commission) requested Neil Walbran Consulting to undertake an analysis of the pricing incentives various industry parties provide for domestic managed load, and how the tariff signals are passed down the value chain. The aim of this analysis is to fulfil outcome I in the Existing Capabilities Working Panel (ECWP) terms of reference, which states:

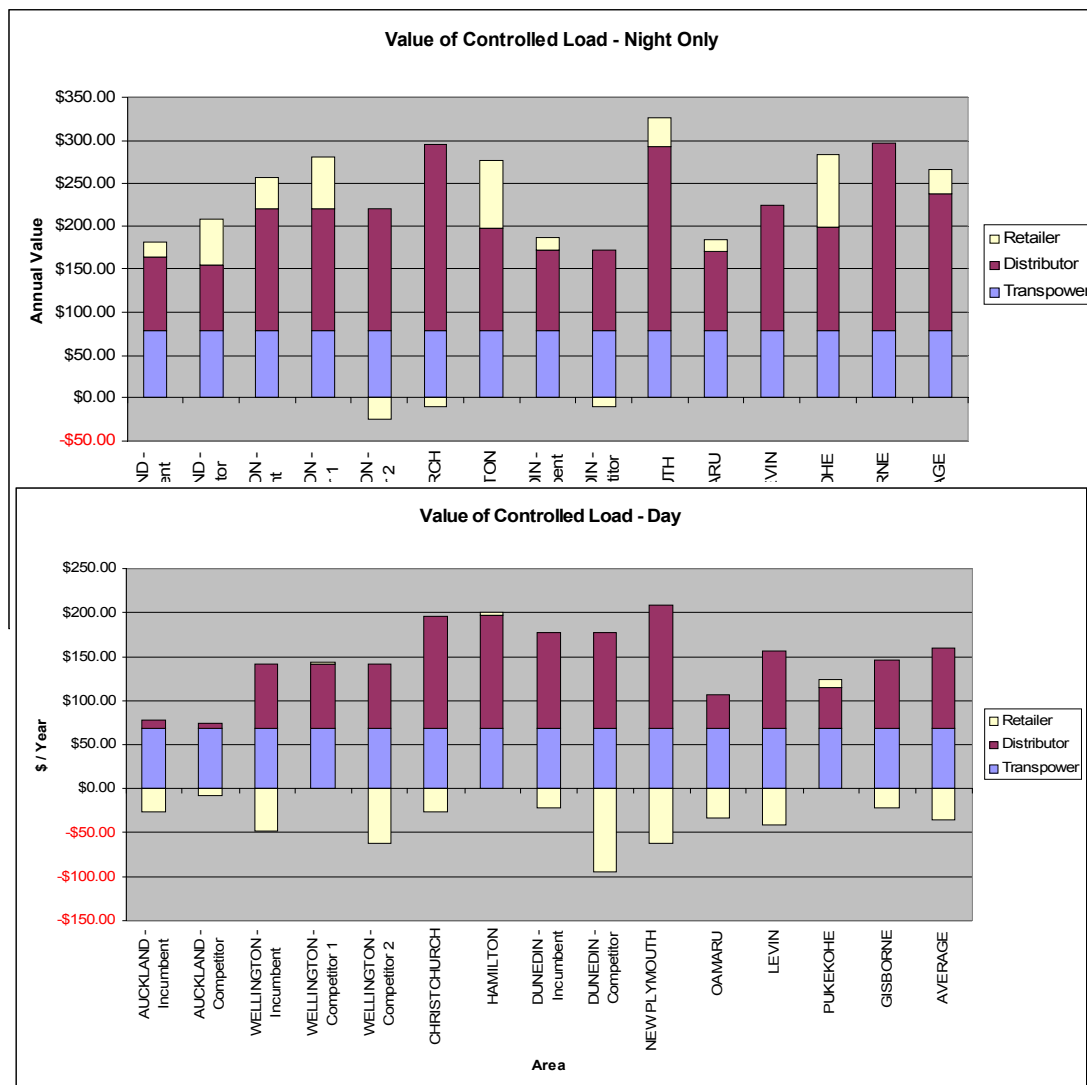
“Report on tariff signals sent by distributors in their areas (including how Transpower’s tariff signals are passed on) and how different retailers are choosing to pass these tariffs on to end users.”

2. This report presents the results of analysing how tariff signals are passed on.

Executive Summary

3. Transpower provides a strong tariff signal for the value of managed load in charging for interconnection services. This is primarily via a peak charge. Transpower indirectly signals the value of managed load via charging for new connection services directly to the connected party. This signals a value for managed load, as managed load can delay the need for new connection investments.
4. In general, distributors are passing on tariff signals representing the value of managed load to both themselves and Transpower. The strongest tariff signals are provided by Orion and Powerco, which include a peak charge as well as a differential energy charge. The signals attempt to provide an indication of the long run incremental cost of new transmission and distribution investment. The weakest signal is provided by Vector, which provides a relatively low differential energy tariff. Vector’s signal may reflect the fact that its customer base has a significant summer air conditioning peak, which is less impacted by controllable water heating load than a winter peak.

- Retailers pass these tariff signals on, but without significantly adding to the signal. On average retailers, slightly mute the signal for the value of day time managed load and only add slightly to the night only managed load. Competing retailers are slightly more inclined to mute the tariff signals than incumbent retailers. Investigation of the impact of the managed load on the wholesale market value suggests that this may be quite low and retailers may simply be reflecting this in their lack of signals. It is noted that night only managed load is slightly more valuable to retailers than day time managed load as it more reliably avoids any price peaks.
- The charts below summarise the total annual value of the tariff signals provided by various distributors and retailers.



Methodology

7. The methodology adopted is largely as per that suggested by the ECWP project scope. The approach, assumptions and process is outlined below. A copy of the ECWP project scope document is included in appendix one for reference.

Defining applicable price date

8. A pricing date of 1 June 2006 was selected as it captures the most recent changes in charging regimes.

Selecting pricing areas

9. As suggested by the ECWP scope, the five major network areas of Auckland, Hamilton, Wellington, Christchurch, and Dunedin were selected. In addition New Plymouth, Oamaru, Levin, Pukekohe and Gisborne were chosen to give a mixture of urban and rural distribution areas. The dominant GXP and incumbent retailers were selected in each area as per the table below:

RESIDENTIAL TARIFF			
AREA	NETWORK COMPANY	INCUMBENT RETAILER	GXP
AUCKLAND	VECTOR	MIGHTY RIVER POWER	Hepburn Rd
WELLINGTON	UNITED NETWORKS	GENESIS	Wilton
CHRISTCHURCH	ORION	MERIDIAN	Papanui
HAMILTON	WEL NETWORKS	GENESIS	Hamilton
DUNEDIN	AURORA	CONTACT ENERGY	Halfway Bush
NEW PLYMOUTH	POWERCO	GENESIS	Carrington St
OAMARU	NETWORK WAITAKI	MERIDIAN	Oamaru
LEVIN	ELECTRA	CONTACT ENERGY	Mangahou
PUKEKOHE	COUNTIES POWER	CONTACT ENERGY	Takanini
GISBORNE	EASTLAND NETWORK	CONTACT ENERGY	Gisborne

10. As requested by the ECWP a second, competing, retailer was also selected in Auckland and Wellington. In addition a competing retailer in Dunedin and a second competing retailer in Wellington have been included.
11. Transpower, distributor and retailer charges were gathered for all these locations.

Transpower charges

12. Only the Transpower interconnection charge was considered in examining Transpower's charges.
13. The author does not consider the HVDC relevant as it is charged to South Island generators, not loads.
14. The loss and constraint rental rebates and ancillary service charges are also not considered as these are allocated on a per kWh basis that does not distinguish between different types of load. They are small relative to the interconnection charges.
15. The connection charges were not considered directly relevant as they are charged as a straight dollar amount at the connection point and do not differentiate by the type of load at that connection point in the short term. However, it is noted that in the longer term, these charges can differentiate by load type as managed load can help delay the need for new connection investment. Orion and Powerco appear to be accounting for this by translating the overall Transpower charge into a long run incremental cost of transmission signal.

Electricity Commission levies

16. The Commission levies have been included, but it is noted that these are allocated on a per kWh basis and do not differentiate between types of load.

GST and prompt payment discounts

17. All charges are exclusive of GST and include any prompt payment discounts.

Defining typical customer profiles

18. The assumed typical profile for each class of customer is set out in the table below:

Customer Profile		Summer		Winter		Peak (kW)	
		4000		4000			
		3120	880	3120	880		
		Day	Night	Day	Night		
Uncontrolled	Controlled	0	0	0	0	3.35	
	Uncontrolled	3120	880	3120	880		
Controlled	Controlled	800	800	800	800	2.3	
	Uncontrolled	1872	528	1872	528		
Night Only	Controlled	0	1600	0	1600	2.15	
	Uncontrolled	1872	528	1872	528		

19. An explanation of how this profile was derived is detailed below. The sensitivity of the results to variations in the assumed profile was tested, and this is referred to in the sensitivity analysis section.

Common profiles over all areas

20. As suggested by the ECWP project scope, a single typical customer profile for each class of customer for all locations was determined. It is noted that this profile may not perfectly match actual customer profiles in some locations. For example, the unmanaged load profile may differ between regions due to factors such as air-conditioning load or differences in space heating load. The impact of differences in customer profile is tested further under the sensitivity analysis below. It is noted that changes in customer profile did not significantly affect the results or conclusions, with the minor exception of the Auckland area, where air-conditioning contribution to the summer peak may affect distributor tariff signals.

Energy usage assumptions as per MED quarterly price survey

21. The total kWh value and overall shape of the three different customer profiles was based on the same assumptions used by the Ministry of Economic Development (MED) in determining their quarterly survey of domestic electricity prices¹.

These assumptions are summarised below:

¹ The assistance of Laurie Boyce of MED in advising the underlying assumptions used in their calculations is gratefully acknowledged.

Uncontrolled Day Night Split			
Day	78%	Night	22%
Summer	50%	Winter	50%
Controlled	40%	Uncontrolled	60%
Controlled Day Night Split			
Day	50%	Night	50%
Night Only Day Night Split			
Day	0%	Night	100%
Total kWh			8000

22. It is noted that 'summer' is defined as October to April and 'winter' as May to September. This seven month / five month split accounts for the higher average per month usage in winter. Similarly, 'night' is defined as 11 pm till 7 am. It is also noted that for the purposes of this analysis the night only is derived from the water heating load percentage. In practice this may be inaccurate in some areas as other controlled load, such as storage heaters, may also be on a night only control.

Calculating charge contributions

23. In deriving the charge contributions it was necessary to:
- Examine different tariff structures;
 - Determine a charge template that fitted all charging methods;
 - Calculate different charge contributions for each class of end customer;
 - Derive marginal contribution from managed load; and
 - Separate out components of managed load tariff by Transpower, distributors and retailers.
24. The sections below summarise the calculations behind each step and illustrate with extracts from the calculation spreadsheet. The illustration tables are for the Dunedin area. The calculation spreadsheet and original input data sources are attached as appendix two.

Tariff Structures

25. The Transpower interconnection tariff is based on a peak demand charge.
26. Different distributors charge differently for their services with peak, fixed daily and variable energy charge components. Within the energy components, variations include day / night, winter / summer, and controlled / uncontrolled variations. The charge calculation method needs to be able to account for all these different charging approaches. Details of the different tariff structures are contained in the separately provided spreadsheet attached as appendix two.

Charge template

27. As distributors and retailers use different methods to apply their charges, it was necessary to derive a profile for each customer class that accounted for the different distributor charge approaches. That is, that accounted for different night and day charges, different summer winter charges, and distributor peak charges where necessary.
28. The table below summarises the how different charges were accounted for:

Transpower						\$/kW
Uncontrolled						\$65.20
Controlled						\$65.20
Night Only						\$65.20
Distributor			Winter		Summer	
			Day	Night	Day	Night
Uncontrolled	Controlled		8.42	8.42	5.6	5.6
	Uncontrolled		8.42	8.42	5.6	5.6
Controlled	Controlled		5.78	5.78	3.82	3.82
	Uncontrolled		5.78	5.78	3.82	3.82
Night Only	Night only		8.98	1.62	5.73	1.62
	Controlled					
	Uncontrolled		8.42	8.42	5.6	5.6
Peak						\$/kVA

Retailer		Fixed (c/day)	Variable (c/kWh)			
			Winter		Summer	
			Day	Night	Day	Night
Uncontrolled	Controlled	57.70	14.97	14.97	14.97	14.97
	Uncontrolled		14.97	14.97	14.97	14.97
Controlled	Controlled	64.10	12.735	12.735	12.735	12.735
	Uncontrolled		12.735	12.735	12.735	12.735
Night Only	Night only	68.697	7.8561	7.8561	7.8561	7.8561
	Controlled					
	Uncontrolled		14.9697	14.9697	14.9697	14.9697

Charge contributions to annual costs

29. The calculation method was to determine the annual cost of each class of consumer. This included the separate peak, fixed, and energy charge components of this cost and was based on the consumers' contribution to the peak, fixed and energy profiles. The table below summarises the calculation of each customer profiles contribution to different charges:

Annual Costs					
Customer		Total	Fixed	Peak	Energy
Uncontrolled	TP Charge	\$218.42		\$218.42	
	Distributor Charge	\$615.53	\$54.73		\$560.80
	Retailer Charge	\$1,408.18	\$210.60		\$1,197.58
	Total	\$2,242.13	\$265.33	\$218.42	\$1,758.38
Controlled	TP Charge	\$149.96		\$149.96	
	Distributor Charge	\$438.73	\$54.73		\$384.00
	Retailer Charge	\$1,252.76	\$233.96		\$1,018.80
	Total	\$1,841.45	\$288.69	\$149.96	\$1,402.80
Night Only	TP Charge	\$140.18		\$140.18	
	Distributor Charge	\$443.05	\$54.73		\$388.32
	Retailer Charge	\$1,220.68	\$250.74		\$969.94
	Total	\$1,759.91	\$305.47	\$140.18	\$1,314.26

Managed load contribution

30. To separate the extent to which managed load contributes to the annual costs for each class of customer it was necessary to establish the difference that each type of managed load made. That is, the difference in annual costs between a customer with no managed load to a customer with managed load and a customer with night only managed load. These differences represent the value of managed load that is reflected in each tariff. The table below summarises how these differences were calculated:

Differentials in Annual Costs					
		Total	Fixed	Peak	Energy
Uncontrolled - Controlled	Transpower	\$68.46	\$0.00	\$68.46	\$0.00
	Distributor	\$176.80	\$0.00	\$0.00	\$176.80
	Retailer	\$155.42	-\$23.36	\$0.00	\$178.78
	Total	\$400.68	-\$23.36	\$68.46	\$355.58
Uncontrolled - Night Only	Transpower	\$78.24	\$0.00	\$78.24	\$0.00
	Distributor	\$172.48	\$0.00	\$0.00	\$172.48
	Retailer	\$187.49	-\$40.14	\$0.00	\$227.64
	Total	\$438.21	-\$40.14	\$78.24	\$400.12

31. It is noted that Dunedin has a negative value for the retailer fixed charge portion of the value of managed load. The negative value of the night only is even greater. This is unusual, and is due to the incumbent retailer (Contact) having higher fixed daily charges for night only and controlled loads than it has for uncontrolled load.

Components of managed load contribution

32. The above calculates the total differences in cost at each step of the process. To derive the contribution of each party it is necessary to look at the marginal change in price at each step. Subtracting the costs of the previous step for each point allows the contribution of each party to be separately calculated. The table below summarises this step.

Components		
Uncontrolled - Controlled	Transpower	\$68.46
	Distributor	\$108.34
	Retailer	-\$21.38
	Total	\$155.42
Uncontrolled - Night Only	Transpower	\$78.24
	Distributor	\$94.24
	Retailer	\$15.01
	Total	\$187.49

Sensitivity analysis

33. As noted in paragraphs 19 to 23 above, the calculations of the annual value of managed load are based on certain assumptions about the load profile and contribution to GXP peaks. To determine if the results are sensitive to the accuracy of these assumptions, a sensitivity analysis was carried out:

Peak contribution

- 33 a) The difference in reduction to peak contribution for each class of managed load was reduced by 30%, i.e. a peak contribution of 2.6 kW for managed load and 2.5 kW for night only load was tested.

Energy profile

- 33 b) A few tests suggest that the greatest sensitivity for the energy profile is in the total kWh annual consumption and the controlled / uncontrolled split. The total kWh was varied between 7,000 and 10,000 kWh and the controlled / uncontrolled was varied between 50 / 50 and 70 / 30 as a sensitivity test.

Wholesale market value of managed load

34. To further investigate the value of managed load to retailers, a simple analysis of the impact on wholesale market price of managed load was undertaken. This simplified analysis only looked at the difference in average price for managed and unmanaged load and ignored the potential for managed load to reduce the overall price.
35. For the day time managed load analysis, the Orion network was taken as an example, as it has data on when load management was undertaken (peak charging periods). The average energy price over all trading periods and the average price over periods when load management was not operating were calculated. This assumes managed load was reduced or shed in the peak charging periods. These two different average prices were then separately multiplied by the controlled and uncontrolled customer profiles to derive an approximate annual value to a retailer of managed load in terms of wholesale market cost savings, as illustrated below:

Wholesale Price Profile		Average wholesale energy price (c/kWh)			
		Summer		Winter	
		Day	Night	Day	Night
Uncontrolled	Controlled	6.513	6.513	6.513	6.513
	Uncontrolled	6.687	6.687	6.687	6.687
Controlled	Controlled	6.513	6.513	6.513	6.513
	Uncontrolled	6.687	6.687	6.687	6.687
Night Only	Controlled	6.513	6.513	6.513	6.513
	Uncontrolled	6.687	6.687	6.687	6.687

Wholesale Value – Controlled Load		
Wholesale cost of energy purchase		
\$ 534.96		
\$ 529.39	\$ 5.57	Savings from
\$ 529.39		Controlled

36. For the night only managed load, an average of the day and night prices over all the 10 GXP's surveyed was taken. These day and night average prices were then multiplied by the load profiles for the uncontrolled and night only customer types, as illustrated below:

Wholesale Price Profile		Average wholesale energy price (c/kWh)			
		Summer		Winter	
		Day	Night	Day	Night
		Uncontrolled	Controlled	4.26	3.57
	Uncontrolled	4.26	3.57	4.26	3.57
Controlled	Controlled	4.26	3.57	4.26	3.57
	Uncontrolled	4.26	3.57	4.26	3.57
Night Only	Controlled	4.26	3.57	4.26	3.57
	Uncontrolled	4.26	3.57	4.26	3.57

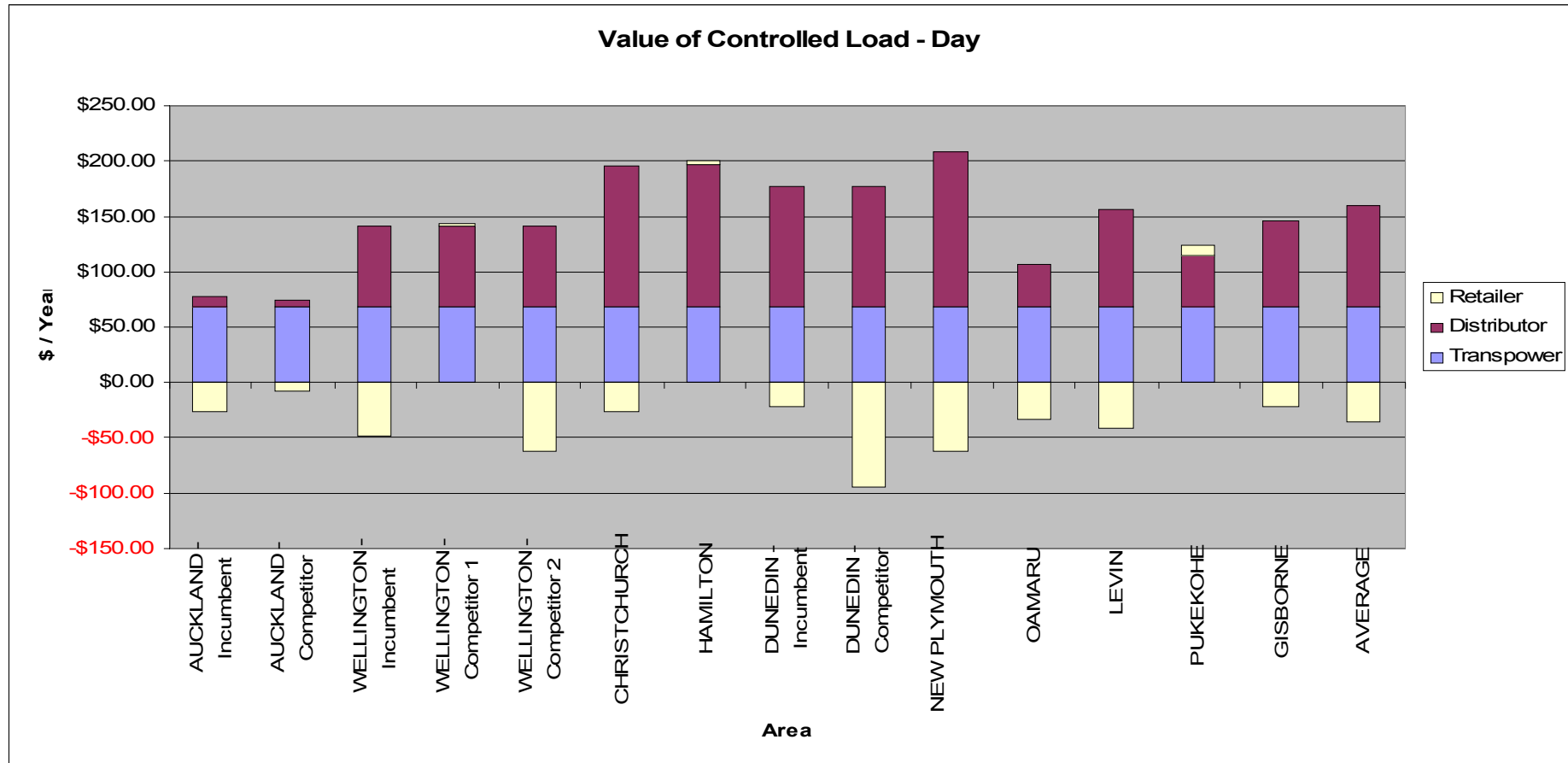
Wholesale Value – Night Only		
Wholesale cost of energy purchase		
\$ 328.66		
\$ 322.47		Savings from
\$ 311.43	\$ 17.22	Night only load

37. A simple check of these values was also carried out assessing the value of managed load to reduce the overall wholesale price. That is, the ability of the managed load to act as price sensitive load in the wholesale market. This was carried out using a replica of the Scheduling Pricing and Dispatch (SPD) software used in the wholesale market and a database of historic metering data and offers and simulated the impact of 100MW of price sensitive managed load on the wholesale market.

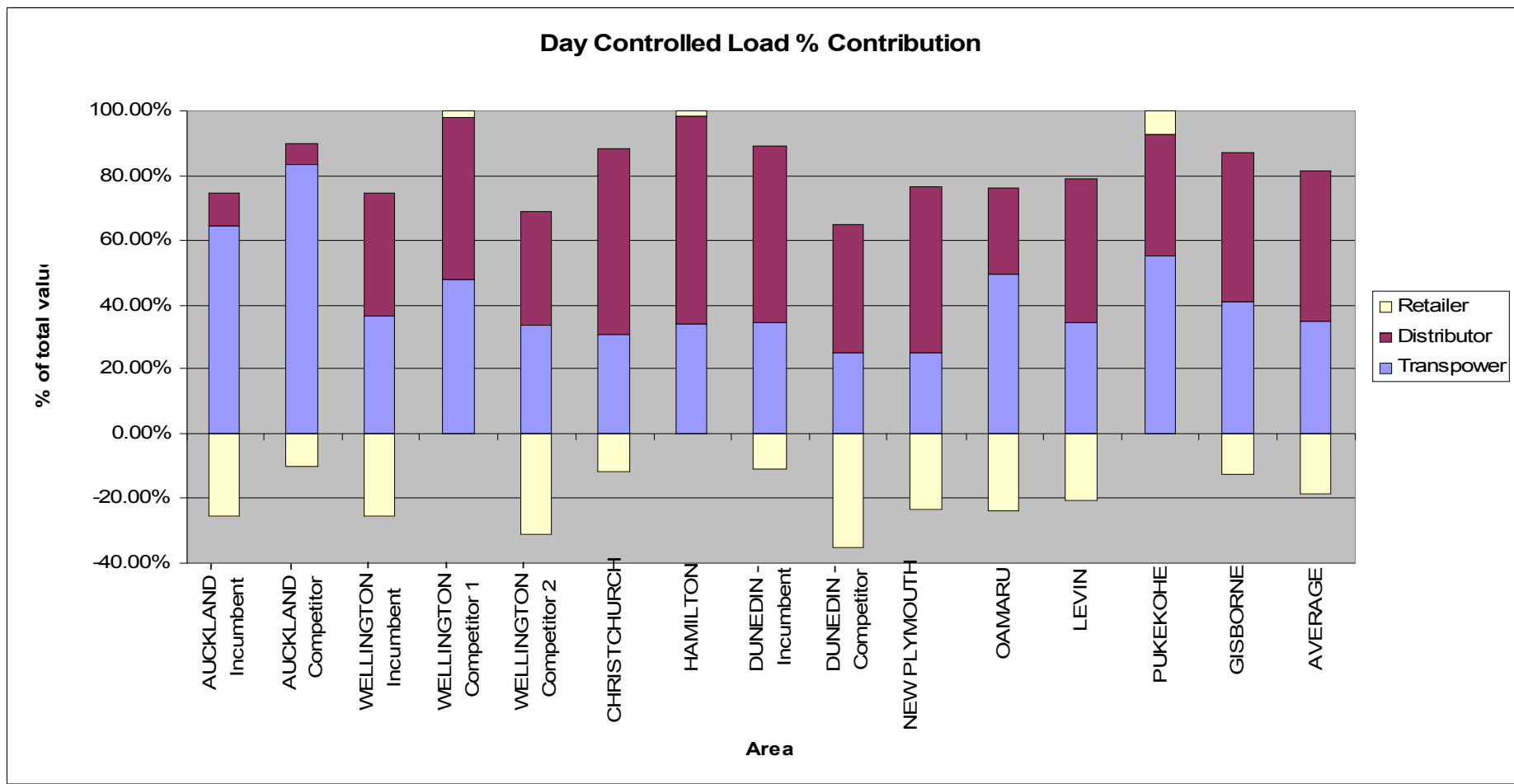
Results

38. The annual value of each type of managed load (any time and night only) and as signalled by the tariff structures of Transpower, distributors and retailers, as calculated using the above methodology is as follows:

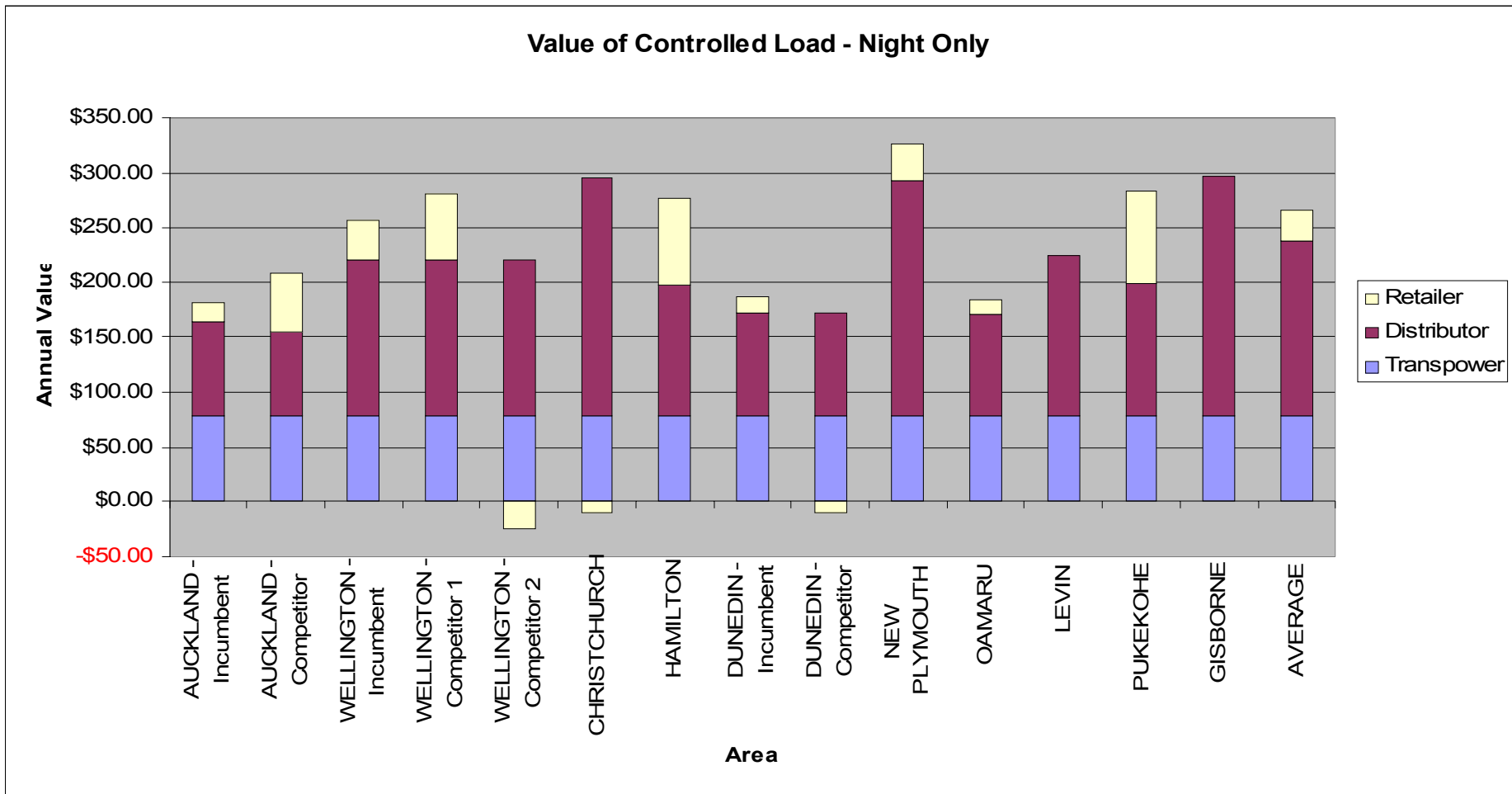
Results for Standard Profile



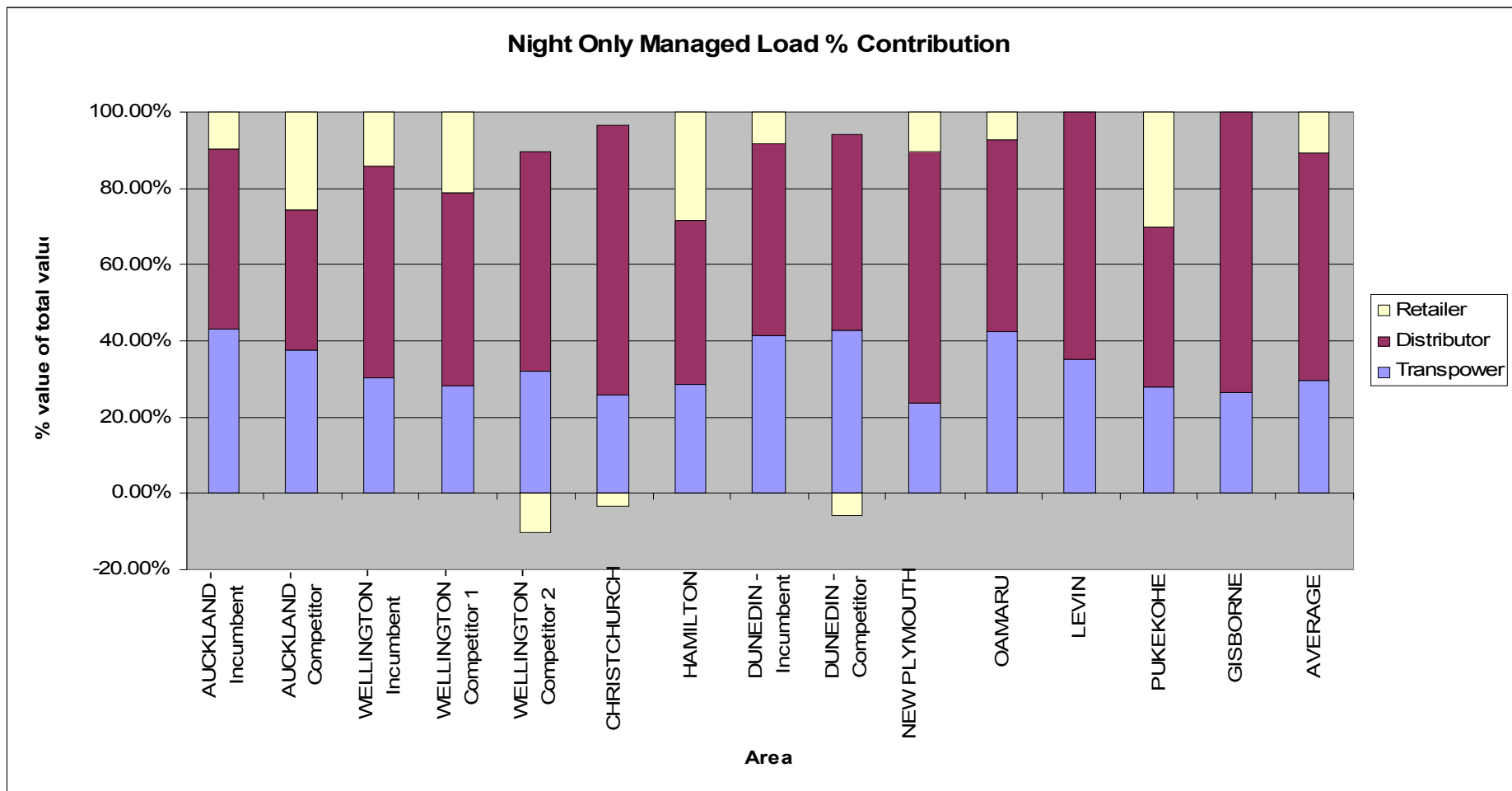
NB Incumbent retailer in Wellington has not updated tariff to reflect latest distributor tariff.



NB Incumbent retailer in Wellington has not updated tariff to reflect latest distributor tariff.



NB Incumbent retailer in Gisborne does not have a night only tariff.



NB Incumbent retailer in Gisborne does not have a night only tariff.

Incumbent versus competing retailers

39. It is noted that there is little to distinguish between incumbent and competing retailers as to how they value the managed load. The case of the Wellington incumbent (Genesis) was investigated further as it appeared to undervalue the day time managed load. Genesis advised that this was partly due to a timing issue, as it had not yet updated its retail tariffs to reflect changed distributor tariffs. Taking this into account, it would seem incumbent retailers place a slightly higher value on managed load than competitors.

Sensitivity analysis results

40. The sensitivity analysis results are presented for the impact on the average contribution of each party to the value of managed load only. Full details of the impact on each area are available in the separately provided spreadsheet attached as appendix three.

Variation in peak contribution

41. As outlined in paragraph 34, the peak contribution of controlled and night only load was increased (reduced savings) to 2.6 and 2.5 kW respectively.

		Peak Saving Contribution Variation		
		Transpower	Distributor	Retailer
Day	Average – Standard Peak	\$68.46	\$76.28	-\$23.03
	Average - Reduced Peak Saving	\$48.90	\$88.50	-\$15.69
Night	Average – Standard Peak	\$78.24	\$142.68	\$28.26
	Average - Reduced Peak Saving	\$55.42	\$156.94	\$36.83

42. It can be seen from above table that changing the peak contribution of the managed load reduces the Transpower portion of the value, increases the average distributor contribution, and transfers some of the average retailer value from the day to night only managed load. However, overall these variations do not significantly affect the results, and confirm the conclusions are not overly sensitive to minor variations in input assumptions.

Energy profile variations

43. As outlined in paragraph 35, the energy profile input assumptions were varied between 7000 kWh and 10,000 kWh and the uncontrolled / controlled split between 50 / 50 and 70 / 30.

	Day			Night		
	Transpower	Distributor	Retailer	Transpower	Distributor	Retailer
Energy Profile Variations						
8,000 kWhs - Standard	\$68.46	\$76.28	-\$23.03	\$78.24	\$142.68	\$28.26
7000 kWhs	\$68.46	\$62.36	-\$24.67	\$78.24	\$119.70	\$19.79
10,000 kWhs	\$68.46	\$104.10	-\$19.75	\$78.24	\$188.64	\$45.22
Uncontrolled / Controlled Split Variations						
60 / 40 Split - Standard	\$68.46	\$76.28	-\$23.03	\$78.24	\$142.68	\$28.26
50 / 50 Controlled	\$68.46	\$97.15	-\$21.59	\$78.24	\$187.11	\$46.42
70 / 30 Split	\$68.46	\$55.40	-\$24.47	\$78.24	\$98.25	\$10.11

44. It can be seen from the above table that increasing the total amount of energy profiled increases the average retailer and distributor value of the managed load, but does not affect the Transpower value. Increasing the controlled portion of the energy increases average distributor and retailer value of the managed load but does not affect the Transpower portion. However, overall these variations do not significantly affect the results and confirm the conclusions are not overly sensitive to minor variations in input assumptions.

Wholesale market value of managed load

45. The wholesale market value of managed load, using the method outlined in paragraphs 36 to 39, was calculated as approximately \$5.57 per customer per year for day time managed load and \$17.22 for night only managed load. It is noted that these values do not reflect the ability of price sensitive managed load to reduce the overall wholesale price for a retailer. The SPD modelling undertaken takes this into account and estimates a value per customer of \$9.03 for day time managed load. The overall managed load value to retailers is still relatively low. These relatively low values may explain why retailers are not significantly reinforcing the tariff signals they receive from distributors.

Conclusions

46. Overall, Transpower and distributors provide fairly strong signals for the value of managed load and these accumulate through the value chain up to the retailer. However, incumbent retailers tend to mute this signal in passing it on to end consumers.
47. Of the distributors, Orion and Powerco provided the strongest signals for the value of managed load, and Vector provided the weakest.
48. Orion and Powerco's signals were provided mainly by the inclusion of a "peak" charge that mirrors and reinforces Transpower's interconnection charge. It is

understood, from discussions with Orion, that this charge is intended to signal the long run incremental cost of new network investment including connection asset upgrades from Transpower and their own network investment needs.

49. Most of the retailers investigated only marginally added to the tariff signal for the value of managed load. In the case of the day time managed load, the average signal was actually muted slightly from that received from the distributor. This effect may partly be due to timing issues, as Genesis, for example, advised that the retail tariffs for Wellington had not yet been re-aligned to the new United Networks tariff structure. This may also be due, in some cases, to the cost of separate metering for managed load. That is, where separate metering is provided for managed load, the costs of this are reflected in the fixed portion of the tariff but the energy cost savings do not fully compensate for the increased fixed cost. However, the overall impact remains that incumbent retailers do not significantly add to the tariff signals received from distributors for the value of managed load.
50. Analysis of competing versus incumbent retailers' tariffs suggests that incumbent and competing retailers do treat managed load differently but with no consistent pattern. On average, there appears to be no significant difference between them with incumbents possibly valuing managed load slightly higher.
51. It appears this lack of tariff signals from retailers may reflect the relatively low value to retailers of managed load in the wholesale market. This could be a reflection of reality as New Zealand, with its abundant hydro resource and generation large capacity margin, does not have significant peaking plant costs in energy. The cost of supplying load peaks is largely in the cost of the provision of adequate transmission and distribution capacity. The relative values placed on managed load by different parties may align reasonably well, on average, with the relative values to each section of the value chain. However, the wide variations in how different distributors value managed load may be worth further consideration.

Appendix One – ECWP Project Scope

Existing Capabilities Working Panel

Analysis of tariff signals for managed load - project scope

Lindsay McLennan & Alex Nisbet
for ECWP
24 March 2006

Introduction

This document provides a framework for establishing or estimating the tariff or pricing incentive that industry parties provide for managed load. Arguably, all industry parties benefit from managed load, and ideally the pricing incentive from each party should accumulate within the end retail charges that consumers pay. That is:

1. Transpower charges to distributors include a pricing incentive reflecting the load management benefits to transmission,
2. Distributor charges to retailers include Transpower's pricing incentive, plus a pricing incentive reflecting the load management benefits to distribution, and
3. Retailer charges to customers include transmission and distribution incentives, plus a pricing incentive reflecting the benefits in the energy market.

Specifically, the aim of this analysis is to fulfil outcome I in the Existing Capabilities Working Panel (ECWP) Terms of Reference, which states:

“I. Report on the tariff signals sent by distributors in their areas (including how Transpower tariff signals are passed on) and how the different retailers are choosing to pass these tariffs on to end users.”

The ECWP has resolved to provide for this outcome through empirical analysis of price differentials in Transpower's, distributors' and retailers' pricing for typical customers.

Simplification

There are many hundreds of different retail electricity tariffs in New Zealand. The analysis can be simplified and still provide a suitable result. The following simplifications are to be incorporated:

Customer type - the vast majority of managed load is provided by residential customers, and the analysis is to be limited to residential customer tariffs (i.e. excluding business and commercial tariffs).

Typical customer - every customer's electricity usage differs through natural variation, use of different appliances, use of different energy sources and climatic variations. As the vast majority of managed load is provided by storage hot water cylinders, this analysis is to focus on residential customers with controlled storage type electric hot water heating and uncontrolled storage type electric hot water heating (differences in space heating should be ignored).

Network areas - there are 28 different distribution areas with 44 different pricing areas (according to the MED's² quarterly survey of domestic electricity prices). It will be sufficient to analyse prices in the 5 major centres of Auckland, Hamilton, Wellington, Christchurch and Dunedin, plus a representative selection of 5 other pricing areas.

Retail pricing - multiple retailers operate in each pricing area but in most cases the different retailers maintain similar price structures and generally similar price levels. It will be sufficient to analyse only the incumbent retailer within each selected network pricing area.

Comparing tariffs - In meeting the aim defined above, this analysis is to focus on simple *charge* differentials, and not attempt to compare the relatively more complex *price* differentials. Prices are only given perspective when multiplied against appropriate chargeable quantities. See definitions below.

Definitions

In order to assist understanding of this project scope and the resulting analysis, it is useful to define some terms:

Tariff refers to a pricing option or pricing plan that includes a valid combination or set of pricing components.

Price is cost/value per unit or item. Prices are usually fixed per time period (e.g. \$/year, \$/kW/year³ or ¢/day) or variable per quantity of electricity used (e.g. ¢/kWh, \$/kW/year² or \$/kVA/year).

Chargeable quantity is the number of units or items.

² Ministry of Economic Development

³ A price in \$/kW/year can be considered as a *fixed* price if it is based on a fixed (eg fused) capacity, or *variable* if it is based on a measured electrical volume.

Charge is the price multiplied by the chargeable quantity.

Project steps

- Define applicable price date (prices effective post 1 April 2006 where available)
- Select pricing areas to consider and gather pricing information
- Define typical customer profiles
- Calculate the typical customers' contributions to Transpower and Distributor charges, and the final retail charges.
- Summarise the results

Further detail on these steps is provided below.

Select pricing areas

10 areas should be selected, including Auckland, Hamilton, Wellington, Christchurch and Dunedin. The remaining 5 areas should be selected from around NZ and should include a mixture of rural and smaller urban centres. It may be appropriate to select areas where pricing information is more readily available. Within each pricing area, the GXP which provides the dominant residential load should be selected (for the purpose of determining Transpower charges).

Transpower prices differ by GXP area and are generally not published - it is available from Transpower or distributors. Depending on how Transpower's charges are to be allocated, it may be necessary to establish the number of connections supplied by each of these GXPs. Transpower's prices for Orion are included in Attachment A (although this does not detail ancillary service charges or loss rental rebates, and the HVDC rate is not applied).

Distribution charges should be based on the total delivery/line prices available on distributors' websites. Distributors are required to separately disclose the portion of line prices that relates to transmission, but because this component may not accurately reflect Transpower's pricing structure, it should be ignored (i.e. the total should be used).

Retail pricing information is not necessarily available on websites and may need to be gathered directly from retailers.

Define typical customer profiles.

For the purpose of establishing appropriate chargeable quantities, three customer profiles must be defined:

Uncontrolled - a residential customer with electric hot water heating that is not controlled.

Controlled - a residential customer with electric hot water heating that is dynamically controlled (usually by the distributor via ripple receiver).

Night Only - a residential customer with electric hot water heating that is turned on by ripple receiver for the night period (in most pricing areas, this customer will be on a day/night tariff (with dual register meter), but in some areas this option is normally provided by a dedicated hot water meter and an anytime meter.

The typical attributes of each customer profile must be sufficiently defined to enable the calculation of charges (or contribution to). The MED's quarterly survey of domestic electricity prices provides a suitable definition of a "controlled" customer which can be expanded for this exercise - see Attachment B (and the MED's calculations may prove useful also). Other customer profiles must represent identical customers (except for their hot water load which will be assumed to be uncontrolled, or night only).

To calculate each customer's contribution to Transpower's interconnection charges, an assessment of average contribution to each grid exit point's top 12 peaks is required. For consistency across NZ, the following loading contributions are to be assumed:

Customer profile	Contribution to chargeable GXP peaks
Uncontrolled	3.35kW
Controlled	2.30kW
Night only	2.15kW

These loading contributions are based on the parameters noted below. It would be an advantage to ask distributors (in areas considered) to comment on these assumptions. Sensitivity analysis can then be carried out on the results using any suggested variations. The assumptions are:

Average hot water cylinder element size	2.2kW
Base load ADMD (after diversity maximum demand) excluding water heating load, during 12 peaks	2.0kW
Distribution loss factor at peak load times	1.08
Water heating diversity for uncontrolled load at peak load times	½ on
Water heating diversity for controlled load at peak times	1/20 th on
GXP peaks occur	during the day, when night-rate water heating is off

For Transpower’s other charges (connection, EV adjustment, loss rental rebates, ancillary service charges and new investment agreements), the analysis should consider different methods of allocating these to the typical customer profiles above. It may be appropriate to do this on a simple customer numbers basis. In any case, the allocation to each customer profile should be the same.

Other attributes will be required for different distributors’ and retail pricing structures. It is important that the assumptions are consistent between the different customer profiles. Specifically, the total volume used for water heating and the total volumes (kWh) should be identical across the three customer profiles.

Calculate charges

Transpower, distribution and retail charges should be calculated for each customer profile in each pricing area using the chargeable quantities and prices determined above.

The working in the spreadsheet for the MED’s quarterly survey of domestic electricity prices may be useful in determining distribution charges.

Some sensitivity analysis should be carried out on the loading attributes used to set the chargeable quantities.

Distributors and retailers should be asked to confirm that pricing structures have been interpreted correctly.

Summary/analysis

The analysis should focus on the charge differences between customer profiles within each pricing area considered and for each part of the industry - Transpower, distributor and retailer (i.e. the charge difference between like customer profiles in different pricing areas is not relevant). Both the absolute and relative differentials are of interest.

Attachment A - Transpower's prices/charges for Orion

POSTED TERMS FOR CONNECTION TO GRID ASSETS
Effective 1 April 2006



Grid Charges Schedule

1. Grid Charges Payable by the Customer

1.1 Grid Charges:

The monthly Grid Charges for each substation are:

(a) Connection Charge:

a Connection Charge as detailed in clause 1.2; plus

(b) Interconnection Charge:

where the substation details in clause 1.2 include an interconnection rate, an interconnection charge calculated as one twelfth of the interconnection rate multiplied by the average of the Customer's 12 highest demands at that substation in the immediately preceding 12 month period up to and including the month for which the charge is being calculated; plus

(c) HVDC Charge:

where the substation details in clause 1.2 include an HVDC rate, an HVDC charge calculated as one twelfth of the HVDC rate multiplied by the maximum of the anytime maximum injection specified for the substation and the maximum injection level recorded from 1 September 2005 to the last day of the month for which the charge is being calculated.

(d) Economic Value Adjustment:

an Economic Value Adjustment as detailed in clause 1.2.

1.2 Charges and Rates for each Substation:

The charges and rates for a substation are:

Substation	Connection Charge (\$)	Interconnection Rate (\$/kW)	HVDC Rate (\$/kW)	Economic Value Adjustment (\$)	Anytime Maximum Injection
Addington	225,971.87	65.20	25.06	(124,012.53)	
Arthurs Pass	4,135.54	65.20	25.06	(582.53)	
Bromley	128,283.48	65.20	25.06	(98,203.40)	
Castle Hill	5,269.71	65.20	25.06	(812.22)	
Coleridge	4,393.44	65.20	25.06	(607.78)	
Hororata	31,151.82	65.20	25.06	(23,514.09)	
Islington	93,316.44	65.20	25.06	(83,644.97)	
Papanui	127,305.69	65.20	25.06	(65,564.30)	
Springston	79,137.99	65.20	25.06	(31,530.33)	

Attachment B - Notes to the MED's quarterly electricity price survey

Copied on 17 March 2006 from www.med.govt.nz/templates/StandardSummary___12626.aspx

Notes

[Page Last Reviewed On 30 January 2006]

1. The information in the Schedule is ordered by geographical region. Each network area is listed in bold. Below each network area there follows a list of all retailers offering electricity to domestic customers on that network. The first listed retailer is the incumbent retailer.
2. The line charge figures in the "Line" columns are based on official disclosures under the Electricity Information Disclosure Requirements 2004. They represent the component of the retail charge which can be attributed to transmission and distribution. All line charge figures have been checked and verified with the line company concerned.
3. Retail prices are based on information provided by the retail companies. All retail figures have been checked with those companies. Consumers pay the retail charge only, not the sum of the line charge and the retail charge.
4. In some cases figures in the schedule for previous quarters have been revised. These revisions reflect a small improvement in the calculation methodology and in some cases the correction of errors.
5. The charges shown in the table are average charges in cents per kilowatt-hour. They combine both the fixed (daily) charge and variable (c/kWh) charges into a single figure. To produce an average charge, the total bill for a 30 day month is calculated for an average domestic customer. This total is then divided by the number of units consumed.
6. Calculations are based on an average domestic customer consuming 8000 kWh per annum. GST and prompt payment discounts are included, but not direct debit discounts or rebates. The tariff rates used in the calculations are those available to new customers.
7. Dual meter charges are based on the assumption that 60% of power use is at an uncontrolled (continuous supply) rate and 40% is at a controlled (hot water) rate.
8. In some cases a line or retail company uses separate tariffs for day and night time, or summer and winter. In these cases the companies have provided an estimate of the weight to give to each of these tariffs in the calculations.
9. Where the retail charge depends on the capacity of the connection, the most common capacity for typical domestic customers is used, provided this capacity is not less than 10 kVA. Where the retail charge depends on the location of the customer, the customer is assumed to be in a large

urban centre close to a substation. Tariffs available under loyalty schemes (e.g. TrustPower's "Friends") are used in this analysis, provided they are available to new customers.

10. Caution must be exercised when comparing line charges across different network areas. Some line companies provide more services or better quality services than other line companies. For example, some line companies pass on Transpower's AC loss-rental rebates directly to the retailers while others return it indirectly through lower line charges. Since the line charges include the cost of Transpower's transmission charges, local line companies which face higher transmission costs may have higher line charges.
11. The customer numbers used in this schedule have been updated to estimates provided by line companies as at 15 August 2005 (rounded to the nearest 100). This results in slight changes to the national weighted averages reported prior to August 2005 (in the *Total New Zealand* section of the table) which are based on customer numbers as at 15 August 2003.

Appendix B: Tariffs

DISTRIBUTOR	AURORA						
AREA	Dunedin						
Transpower			\$/kW				
	\$65.20					\$65.20	
	\$65.20					\$65.20	
	\$65.20					\$65.20	
Distributor			Day	Winter Night	Day	Summer Night	
Controlled				8.42	8.42	5.6	
Uncontrolled				8.42	8.42	5.6	
Controlled				5.78	5.78	3.82	
Uncontrolled				5.78	5.78	3.82	
Night only Controlled				8.98	1.62	5.73	
Uncontrolled				8.42	8.42	5.6	
						\$/kVA	
						\$ -	
Retailer			Fixed (c/day)	Variable (c/kWh)			
				Day	Winter Night	Day	Summer Night
Controlled	Incumbent	Contact	57.70	14.97	14.97	14.97	14.97
Uncontrolled				14.97	14.97	14.97	14.97
Controlled			64.10	12.74	12.74	12.74	12.74
Uncontrolled				12.74	12.74	12.74	12.74
Night only Controlled			68.70	7.86	7.86	7.86	7.86
Uncontrolled				14.97	14.97	14.97	14.97

DISTRIBUTOR	AURORA						
AREA	Dunedin						
Transpower			\$/kW				
	\$65.20					\$65.20	
	\$65.20					\$65.20	
	\$65.20					\$65.20	
Distributor			Day	Winter Night	Day	Summer Night	
Controlled				8.42	8.42	5.6	
Uncontrolled				8.42	8.42	5.6	
Controlled				5.78	5.78	3.82	
Uncontrolled				5.78	5.78	3.82	
Night only Controlled				8.98	1.62	5.73	
Uncontrolled				8.42	8.42	5.6	
						\$/kVA	
						\$ -	
Retailer			Fixed (c/day)	Variable (c/kWh)			
				Day	Winter Night	Day	Summer Night
Controlled	Competitor	Meridian	71.62	15.99	7.96	11.98	7.03
Uncontrolled				15.99	7.96	11.98	7.03
Controlled			71.62	12.88	12.88	10.184	10.184
Uncontrolled				12.88	12.88	10.184	10.184
Night only Controlled			71.62	7.96	7.96	7.032	7.032
Uncontrolled				15.99	7.96	11.98	7.03

DISTRIBUTOR		ORION																																												
AREA		Christchurch region																																												
Transpower						\$/kW \$65.20 \$65.20 \$65.20																																								
Distributor						<table border="1"> <thead> <tr> <th></th> <th colspan="2">Winter</th> <th colspan="2">Summer</th> </tr> <tr> <th>Day</th> <th>Night</th> <th>Day</th> <th>Night</th> <th></th> </tr> </thead> <tbody> <tr> <td>Controlled</td> <td>5.57</td> <td>0.7</td> <td>5.57</td> <td>0.7</td> </tr> <tr> <td>Uncontrolled</td> <td>5.57</td> <td>0.7</td> <td>5.57</td> <td>0.7</td> </tr> <tr> <td>Controlled</td> <td>5.57</td> <td>0.7</td> <td>5.57</td> <td>0.7</td> </tr> <tr> <td>Uncontrolled</td> <td>5.57</td> <td>0.7</td> <td>5.57</td> <td>0.7</td> </tr> <tr> <td>Night only Controlled</td> <td>5.57</td> <td>0.7</td> <td>5.57</td> <td>0.7</td> </tr> <tr> <td>Uncontrolled</td> <td>5.57</td> <td>0.7</td> <td>5.57</td> <td>0.7</td> </tr> </tbody> </table>		Winter		Summer		Day	Night	Day	Night		Controlled	5.57	0.7	5.57	0.7	Uncontrolled	5.57	0.7	5.57	0.7	Controlled	5.57	0.7	5.57	0.7	Uncontrolled	5.57	0.7	5.57	0.7	Night only Controlled	5.57	0.7	5.57	0.7	Uncontrolled	5.57	0.7	5.57	0.7
	Winter		Summer																																											
Day	Night	Day	Night																																											
Controlled	5.57	0.7	5.57	0.7																																										
Uncontrolled	5.57	0.7	5.57	0.7																																										
Controlled	5.57	0.7	5.57	0.7																																										
Uncontrolled	5.57	0.7	5.57	0.7																																										
Night only Controlled	5.57	0.7	5.57	0.7																																										
Uncontrolled	5.57	0.7	5.57	0.7																																										
Retailer						\$/kVA \$ 145.00																																								
		Fixed (c/day)	Variable (c/kWh)																																											
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	Winter		Summer																																											
Day	Night	Day	Night																																											
Controlled	15.98	15.98	15.98	15.98																																										
Uncontrolled	15.98	15.98	15.98	15.98																																										
Controlled	13.86	13.86	13.86	13.86																																										
Uncontrolled	13.86	13.86	13.86	13.86																																										
Night only Controlled	7.06	7.06	7.06	7.06																																										
Uncontrolled	15.98	15.98	15.98	15.98																																										
	Incumbent Meridian	51.10																																												
		51.10																																												
		51.10																																												

DISTRIBUTOR		VECTOR																																												
AREA		Auckland region																																												
Transpower						\$/kW \$65.20 \$65.20 \$65.20																																								
Distributor						<table border="1"> <thead> <tr> <th></th> <th colspan="2">Winter</th> <th colspan="2">Summer</th> </tr> <tr> <th>Day</th> <th>Night</th> <th>Day</th> <th>Night</th> <th></th> </tr> </thead> <tbody> <tr> <td>Controlled</td> <td>6.39</td> <td>6.39</td> <td>6.39</td> <td>6.39</td> </tr> <tr> <td>Uncontrolled</td> <td>6.39</td> <td>6.39</td> <td>6.39</td> <td>6.39</td> </tr> <tr> <td>Controlled</td> <td>4.08</td> <td>4.08</td> <td>4.08</td> <td>4.08</td> </tr> <tr> <td>Uncontrolled</td> <td>6.39</td> <td>6.39</td> <td>6.39</td> <td>6.39</td> </tr> <tr> <td>Night only Controlled</td> <td>1.413</td> <td>1.413</td> <td>1.413</td> <td>1.413</td> </tr> <tr> <td>Uncontrolled</td> <td>6.39</td> <td>6.39</td> <td>6.39</td> <td>6.39</td> </tr> </tbody> </table>		Winter		Summer		Day	Night	Day	Night		Controlled	6.39	6.39	6.39	6.39	Uncontrolled	6.39	6.39	6.39	6.39	Controlled	4.08	4.08	4.08	4.08	Uncontrolled	6.39	6.39	6.39	6.39	Night only Controlled	1.413	1.413	1.413	1.413	Uncontrolled	6.39	6.39	6.39	6.39
	Winter		Summer																																											
Day	Night	Day	Night																																											
Controlled	6.39	6.39	6.39	6.39																																										
Uncontrolled	6.39	6.39	6.39	6.39																																										
Controlled	4.08	4.08	4.08	4.08																																										
Uncontrolled	6.39	6.39	6.39	6.39																																										
Night only Controlled	1.413	1.413	1.413	1.413																																										
Uncontrolled	6.39	6.39	6.39	6.39																																										
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		Fixed (c/day)	Variable (c/kWh)																																											
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	Winter		Summer																																											
Day	Night	Day	Night																																											
Controlled	14.355	14.355	14.355	14.355																																										
Uncontrolled	14.355	14.355	14.355	14.355																																										
Controlled	13.437	13.437	13.437	13.437																																										
Uncontrolled	13.437	13.437	13.437	13.437																																										
Night only Controlled	8.298	8.298	8.298	8.298																																										
Uncontrolled	14.157	14.157	14.157	14.157																																										
	Incumbent MRP	65.03																																												
		71.03																																												
		71.03																																												

DISTRIBUTOR		VECTOR					
AREA		Auckland region					
Transpower						\$/kW	
						\$65.20	
						\$65.20	
						\$65.20	
Distributor		Winter		Summer			
		Day	Night	Day	Night		
Controlled		6.39	6.39	6.39	6.39		
Uncontrolled		6.39	6.39	6.39	6.39		
Controlled		4.077	4.077	4.077	4.077		
Uncontrolled		6.39	6.39	6.39	6.39		
Night only Controlled		1.57	1.57	1.57	1.57		
Uncontrolled		6.39	6.39	6.39	6.39		
						\$/kVA	
						\$ -	
Retailer		Fixed (c/day)		Variable (c/kWh)			
				Winter		Summer	
				Day	Night	Day	Night
Controlled	Competitor Genesis	59.508	12.82	12.82	12.82	12.82	12.82
Uncontrolled			12.82	12.82	12.82	12.82	12.82
Controlled		59.508	10.76	10.76	10.76	10.76	10.76
Uncontrolled			12.82	12.82	12.82	12.82	12.82
Night only Controlled		59.508	6.32	6.32	6.32	6.32	6.32
Uncontrolled			12.82	12.82	12.82	12.82	12.82

DISTRIBUTOR		UNITED NETWORKS					
AREA		Wellington					
Transpower						\$/kW	
						\$65.20	
						\$65.20	
						\$65.20	
Distributor		Winter		Summer			
		Day	Night	Day	Night		
Controlled		8.29	8.29	8.29	8.29		
Uncontrolled		8.29	8.29	8.29	8.29		
Controlled		3.89	3.89	3.89	3.89		
Uncontrolled		8.29	8.29	8.29	8.29		
Night only Controlled		1.41	1.41	1.41	1.41		
Uncontrolled		8.29	8.29	8.29	8.29		
						\$/kVA	
						\$ -	
Retailer		Fixed (c/day)		Variable (c/kWh)			
				Winter		Summer	
				Day	Night	Day	Night
Controlled	Incumbent Genesis	63.00	15.24	15.24	15.24	15.24	15.24
Uncontrolled			15.24	15.24	15.24	15.24	15.24
Controlled		63.00	12.36	12.36	12.36	12.36	12.36
Uncontrolled			15.24	15.24	15.24	15.24	15.24
Night only Controlled		63.00	7.22	7.22	7.22	7.22	7.22
Uncontrolled			15.24	15.24	15.24	15.24	15.24

DISTRIBUTOR AREA	UNITED NETWORKS Wellington							
Transpower					\$/kW			
					\$65.20			
					\$65.20			
					\$65.20			
Distributor					Winter		Summer	
					Day	Night	Day	Night
Controlled					8.29	8.29	8.29	8.29
Uncontrolled					8.29	8.29	8.29	8.29
Controlled					3.89	3.89	3.89	3.89
Uncontrolled					8.29	8.29	8.29	8.29
Night only Controlled					1.41	1.41	1.41	1.41
Uncontrolled					8.29	8.29	8.29	8.29
					\$/kVA			
					\$ -			
Retailer			Fixed (c/d)	Variable (c/kWh)				
				Winter		Summer		
				Day	Night	Day	Night	
Controlled	Competitor	Contact	64.575	16.43	16.43	16.43	16.43	
Uncontrolled				16.43	16.43	16.43	16.43	
Controlled			64.575	11.95	11.95	11.95	11.95	
Uncontrolled				16.43	16.43	16.43	16.43	
Night only Controlled			64.575	7.68	7.68	7.68	7.68	
Uncontrolled				16.43	16.43	16.43	16.43	

DISTRIBUTOR AREA	UNITED NETWORKS Wellington							
Transpower					\$/kW			
					\$65.20			
					\$65.20			
					\$65.20			
Distributor					Winter		Summer	
					Day	Night	Day	Night
Controlled					8.29	8.29	8.29	8.29
Uncontrolled					8.29	8.29	8.29	8.29
Controlled					3.89	3.89	3.89	3.89
Uncontrolled					8.29	8.29	8.29	8.29
Night only Controlled					1.41	1.41	1.41	1.41
Uncontrolled					8.29	8.29	8.29	8.29
					\$/kVA			
					\$ -			
Retailer			Fixed (c/d)	Variable (c/kWh)				
				Winter		Summer		
				Day	Night	Day	Night	
Controlled	Competitor	Meridian	75.576	13.82	13.82	13.82	13.82	
Uncontrolled				13.82	13.82	13.82	13.82	
Controlled			75.576	11.40	11.40	11.40	11.40	
Uncontrolled				13.82	13.82	13.82	13.82	
Night only Controlled			75.576	7.74	7.74	7.74	7.74	
Uncontrolled				13.82	13.82	13.82	13.82	

DISTRIBUTOR		POWERCO																																																								
AREA		New Plymouth																																																								
Transpower							\$/kW \$65.20 \$65.20 \$65.20																																																			
Distributor							<table border="1"> <thead> <tr> <th colspan="2">Winter</th> <th colspan="2">Summer</th> </tr> <tr> <th>Day</th> <th>Night</th> <th>Day</th> <th>Night</th> </tr> </thead> <tbody> <tr> <td>Controlled</td> <td>4.8132</td> <td>0.9626</td> <td>4.8132</td> <td>0.9626</td> </tr> <tr> <td>Uncontrolled</td> <td>4.8132</td> <td>0.9626</td> <td>4.8132</td> <td>0.9626</td> </tr> <tr> <td>Controlled</td> <td>4.8132</td> <td>0.9626</td> <td>4.8132</td> <td>0.9626</td> </tr> <tr> <td>Uncontrolled</td> <td>4.8132</td> <td>0.9626</td> <td>4.8132</td> <td>0.9626</td> </tr> <tr> <td>Night only Controlled</td> <td>4.8132</td> <td>0.9626</td> <td>4.8132</td> <td>0.9626</td> </tr> <tr> <td>Uncontrolled</td> <td>4.8132</td> <td>0.9626</td> <td>4.8132</td> <td>0.9626</td> </tr> </tbody> </table>	Winter		Summer		Day	Night	Day	Night	Controlled	4.8132	0.9626	4.8132	0.9626	Uncontrolled	4.8132	0.9626	4.8132	0.9626	Controlled	4.8132	0.9626	4.8132	0.9626	Uncontrolled	4.8132	0.9626	4.8132	0.9626	Night only Controlled	4.8132	0.9626	4.8132	0.9626	Uncontrolled	4.8132	0.9626	4.8132	0.9626													
Winter		Summer																																																								
Day	Night	Day	Night																																																							
Controlled	4.8132	0.9626	4.8132	0.9626																																																						
Uncontrolled	4.8132	0.9626	4.8132	0.9626																																																						
Controlled	4.8132	0.9626	4.8132	0.9626																																																						
Uncontrolled	4.8132	0.9626	4.8132	0.9626																																																						
Night only Controlled	4.8132	0.9626	4.8132	0.9626																																																						
Uncontrolled	4.8132	0.9626	4.8132	0.9626																																																						
Retailer							\$/kVA \$ 148.56																																																			
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Fixed (c/day)	Variable (c/kWh)																																																									
	Winter		Summer																																																							
	Day	Night	Day	Night																																																						
Controlled	63.00	17.17	17.17	17.17	17.17																																																					
Uncontrolled		17.17	17.17	17.17	17.17																																																					
Controlled	63.00	12.62	12.62	12.62	12.62																																																					
Uncontrolled		17.17	17.17	17.17	17.17																																																					
Night only Controlled	63.00	6.99	6.99	6.99	6.99																																																					
Uncontrolled		17.17	17.17	17.17	17.17																																																					
	Incumbent	Genesis																																																								

DISTRIBUTOR		NETWORK WAITAKI																																																								
AREA		Omaru																																																								
Transpower							\$/kW \$65.20 \$65.20 \$65.20																																																			
Distributor							<table border="1"> <thead> <tr> <th colspan="2">Winter</th> <th colspan="2">Summer</th> </tr> <tr> <th>Day</th> <th>Night</th> <th>Day</th> <th>Night</th> </tr> </thead> <tbody> <tr> <td>Controlled</td> <td>4.488</td> <td>0.463</td> <td>4.488</td> <td>0.463</td> </tr> <tr> <td>Uncontrolled</td> <td>4.488</td> <td>0.463</td> <td>4.488</td> <td>0.463</td> </tr> <tr> <td>Controlled</td> <td>4.488</td> <td>0.463</td> <td>4.488</td> <td>0.463</td> </tr> <tr> <td>Uncontrolled</td> <td>4.488</td> <td>0.463</td> <td>4.488</td> <td>0.463</td> </tr> <tr> <td>Night only Controlled</td> <td>4.488</td> <td>0.463</td> <td>4.488</td> <td>0.463</td> </tr> <tr> <td>Uncontrolled</td> <td>4.488</td> <td>0.463</td> <td>4.488</td> <td>0.463</td> </tr> </tbody> </table>	Winter		Summer		Day	Night	Day	Night	Controlled	4.488	0.463	4.488	0.463	Uncontrolled	4.488	0.463	4.488	0.463	Controlled	4.488	0.463	4.488	0.463	Uncontrolled	4.488	0.463	4.488	0.463	Night only Controlled	4.488	0.463	4.488	0.463	Uncontrolled	4.488	0.463	4.488	0.463													
Winter		Summer																																																								
Day	Night	Day	Night																																																							
Controlled	4.488	0.463	4.488	0.463																																																						
Uncontrolled	4.488	0.463	4.488	0.463																																																						
Controlled	4.488	0.463	4.488	0.463																																																						
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Fixed (c/day)	Variable (c/kWh)																																																									
	Winter		Summer																																																							
	Day	Night	Day	Night																																																						
Controlled	119.312	10.936	10.936	10.936	10.936																																																					
Uncontrolled		10.936	10.936	10.936	10.936																																																					
Controlled	99.272	10.936	10.936	10.936	10.936																																																					
Uncontrolled		10.936	10.936	10.936	10.936																																																					
Night only Controlled	99.272	7.464	7.464	7.464	7.464																																																					
Uncontrolled		10.936	10.936	10.936	10.936																																																					
	Incumbent	Meridian																																																								

DISTRIBUTOR		COUNTIES POWER					
AREA		Pukekohe					
Transpower						\$/kW	
						\$65.20	
						\$65.20	
						\$65.20	
Distributor		Winter		Summer			
		Day	Night	Day	Night		
Controlled		7.17	7.17	7.17	7.17		
Uncontrolled		7.17	7.17	7.17	7.17		
Controlled		3.57	3.57	3.57	3.57		
Uncontrolled		7.17	7.17	7.17	7.17		
Night only Controlled		0.95	0.95	0.95	0.95		
Uncontrolled		7.17	7.17	7.17	7.17		
						\$/kVA	
						\$ -	
Retailer		Fixed (c/day)		Variable (c/kWh)			
				Winter		Summer	
				Day	Night	Day	Night
Controlled		Incumbent	Contact	65.10	17.59	17.59	17.59
Uncontrolled					17.59	17.59	17.59
Controlled				65.10	13.72	13.72	13.72
Uncontrolled					17.59	17.59	17.59
Night only Controlled				65.10	8.72	8.72	8.72
Uncontrolled					17.59	17.59	17.59

DISTRIBUTOR		WEL NETWORKS					
AREA		Hamilton					
Transpower						\$/kW	
						\$65.20	
						\$65.20	
						\$65.20	
Distributor		Winter		Summer			
		Day	Night	Day	Night		
Controlled		8.08	8.08	8.08	8.08		
Uncontrolled		8.08	8.08	8.08	8.08		
Controlled		1.92	1.92	1.92	1.92		
Uncontrolled		8.08	8.08	8.08	8.08		
Night only Controlled		1.92	1.92	1.92	1.92		
Uncontrolled		8.08	8.08	8.08	8.08		
						\$/kVA	
						\$ -	
Retailer		Fixed (c/day)		Variable (c/kWh)			
				Winter		Summer	
				Day	Night	Day	Night
Controlled		Incumbent	Genesis	60	16.32	16.32	16.32
Uncontrolled					16.32	16.32	16.32
Controlled				60	10.071	10.071	10.071
Uncontrolled					16.32	16.32	16.32
Night only Controlled				60	7.69	7.69	7.69
Uncontrolled					16.32	16.32	16.32