

**POWERNET  
LINE PRICING METHODOLOGY  
FOR THE POWER COMPANY LIMITED NETWORK  
AS AT 1 APRIL 2005**

**1. INTRODUCTION**

- 1.1 PowerNet Limited (PNL) has a responsibility for the management of the network assets owned by The Power Company Limited (TPCL).
- 1.2 The total line charge is based on the following components:
- (a) Transmission Grid Asset Management costs (Trans Power)
  - (b) Sub transmission costs – 66,000 and 33,000V line and cables and 30 zone substations
  - (c) Distribution costs - 11,000, 400V networks and distribution substations
  - (d) PowerNet overheads, Board costs, and System Control costs
- 1.3 The derivation of the line charges is based on six consumer profile parameters. They are:
- (a) The Contract Capacity kVA (kW) of the installation
  - (b) The Winter Peak demand kVA (kW) (0700-1100 hours and 1700-2100 hours, each week day between June and August inclusive)
  - (c) The Winter Peak energy MWh (0700-1100 hours and 1700-2100 hours, each week day between May and September inclusive)
  - (d) The Winter Day energy MWh (0700-2300 hours, May to September inclusive)
  - (e) The Summer Day energy MWh (0700-2300 hours, October to April inclusive)
  - (f) The Total energy for the 12 month period MWh
- 1.4 The basis of allocation of Transpower and sub transmission costs is on the after diversity maximum demand for each customer during the periods of network maximum demand. Similarly the allocation of the distribution costs is on an after diversity distribution capacity of the customer's installation.

The PowerNet methodology takes into account the duration that the customer impacts on the peak loading hours of the network. This is achieved by allocating some of the Transmission, sub transmission and distribution costs based on the Winter Peak energy and the Winter Day energy.

This in effect reduces the charges for a customer who incurs just one half hour peak for the whole winter or is only impacting on the peak hours for part of the winter and increases the charges for those customers who are impacting regularly on the peak periods during the whole winter.

It has the effect of integrating the peak demand over a longer period.

- 1.5 The Winter Peak demands for the various customers and customer groups have a diversity factor applied to them which reflects to some extent their impact on the total after diversity maximum demand on the network. These diversity factors, based on their peak demands, are as follows:

Up to 110kVA = 36%  
Between 110kVA and 3000kVA = ramp function from 40% - 95%  
Above 3000kVA = 95%.

These diversity factors reflect the increased diversity of a large number of smaller customers compared to less diversity for the larger customers.

- 1.6 Similarly diversity factors are applied to the contract capacities of the various customers. These diversity factors are as follows:

For connections up to 50kVA = 30%

For connections between 51kVA and 100kVA = 30% - 75%

For connections between 101kVA and 2500kVA = ramp function from 75% - 95%

For connections above 2500kVA = 95%.

These diversities reflect the differing impacts of the different sized customers on the local capacity of the reticulation system. There is an increased diversity between the smaller customers than with the large customers with respect to the capital investment in the local distribution network.

- 1.7 There are two defined types of consumers. They are as follows:

**(a) Individual Consumers**

These consumers have half-hour or time-of-use meters, including kVA maximum demand registers.

In most cases these installations have contract capacities in excess of 100kVA. Due to their size, these consumers have a higher impact on the network design and operation and therefore their geographic location is taken into account when calculating their individual line charges. This also provides a signal for future investment and through the correct pricing discourages network by-pass. In the case of these consumers, there are also individual calculated or estimated loss factors.

These consumers, through the half-hour or time-of-use metering, have individual profiles which are used to calculate the line charges. Metering of these consumers includes kVA demand metering which provides the winter or seasonal peak demand and also the anytime peak demand. The latter figures are used in the calculation of line charges and to determine the contract capacity. For these consumers, the contract capacity is based on the next highest standard transformer size above their anytime demand or, alternatively, as per the original contract if growth is predicted and the network has been designed and built to supply the increased level.

**Irrigation Installations and Embedded Networks**

Irrigation installations and embedded networks are a sub group of individual consumers. An "Irrigation Installation" is a connected customer's installation, which is used solely for pumping water commercially for irrigating farmland. An "Embedded Network" is an electricity distribution network that is owned by someone other than The Power Company Limited and is connected to The Power Company's network via a registered Network Supply Point. The embedded network must be metered with a compliant half hour meter at the NSP. Due to the uncertain nature of electricity consumption in both irrigation installations and embedded networks this sub group of installations will have their line charges calculated in the same way as individual customers, but will have the total line charge recovered with a fully fixed line charge.

**(b) Group Consumers**

For Group consumers, their individual meter readings or locations do not determine the initial line charges.

The bases for the different consumer groups are contract capacity and whether there is significant controllable load on the premises. The latter point qualifies the consumer for either an "all peak" or "with off peak" line charge. Different consumer groups are based on practical fuse sizes. The eligibility for a "with off peak" line charge is determined on the basis that at least 25% of the total energy consumption has to be separately metered and consumed between 23:00 and 07:00 hours or by an appropriate ripple controlled appliance, such as a water heater.

All domestic consumers are classed as single-phase irrespective of whether they are supplied two-phase or three-phase. This is due to the fact that for many of the consumers there was no choice in their method of supply and there are many older multi-phase domestic installations. All old domestic consumer installations are classed as "historic domestic".

The 8kVA domestic consumer requires a 32-amp circuit breaker to be installed on the main switchboard to control the complete installation. This capacity is only allowed for single-phase installations. This customer group is now closed to all domestic ICP's.

The group consumer segments are divided into two areas taking into account the types of reticulation involved in their supply. These distinct groupings are classed as urban and rural.

The urban areas are defined areas within Southland including all the small townships and city areas.

The remaining areas are classified as rural and there is a price cap on the fixed charge component of the line charge.

### **Rate of Return**

- 1.8 The costs of the sub transmission and distribution components of the line charges are split into two categories:

- 1) Supply
- 2) Maintenance

The "supply" part is based on the depreciation (based on last years actual) of the network assets and the cost of capital required to fund the assets. The Power Company Limited requires a "Use Charge (lease charge) for its assets from PowerNet (the asset manager). This Use Charge includes the allowance for depreciation for its assets and its required gross return. This is not the net return on investment but the gross return before expenses and tax. As it is a consumer trust, the required gross return is presently comparatively low as most of the consumer shareholders receive an implicit benefit in the way of reduced line charges.

To avoid distortion, to allow a consistent cross subsidization benefiting rural consumers and to ensure the correct signals are sent to the larger industrial and commercial customers, the latter's' line charges are based on a Use Charge which reflects the depreciation and a more commercial gross return on the assets used to supply those installations. The gross return in this case is 10.77% for the line charges. For all other smaller consumer groups the implicit benefit is higher and hence the gross return is significantly lower.

The ODV for The Power Company network is \$217 million. The overall Use Charge which is made up of depreciation and gross return is \$15.64 million. The \$15.64 million is split \$9.48million depreciation and a gross return of \$6.16million, the latter equating to an overall ROI for The Power Company of 2.5%.

The Power Company requires a commercial return from the individual customers therefore the Use Charge used to calculate their line charges is based on a gross return of 10.77% before expenses and tax. This is made up of depreciation of \$6.92 million on the assets used by this group of customers (\$156.42 million ODV) and an associated gross return of \$16.85 million.

The Power Company requires a lesser gross return from the group customers, the use charge used to calculate their line charges is \$15.64 million. This use charge is made up of \$9.48 million depreciation and a gross return of \$6.16 million.

### **Asset Impairment and Future Pricing**

The Power Company Limited Directors recognise that the present levels of return are unsustainably low and that the ability of the Company to fund investment in the network, maintain the quality of supply and preserve the value of the assets may be jeopardized. Continuation of existing prices and levels of return would see the depreciated replacement cost valuation used for financial reporting purposes impaired and assets written down. This is due to the valuation not able to be supported by the cash flows generated from the assets.

The Directors have consulted with Trustees and industry experts regarding these issues and have no alternative other than moving away from implicit discounts and towards achieving a return which begins to approach the Company's weighted average cost of capital. Planned price increases in excess of the CPI-X Commerce Commission price path threshold will be required in subsequent years to support the financial reporting valuation otherwise an impairment write down will be required.

The "maintenance" part is based on the Works Programme for the current year.

Management costs for capital and maintenance work are allocated to Supply and Maintenance respectively.

- 1.9 The application of fixed and variable charges is not based on the derivation of the line charge but is an application of the line charge to the end-use consumer. The objectives behind the fixed and variable charges are as follows:
1. The 50:50 fixed:variable line charge is a compromise between a totally fixed charge which would benefit the large consumer within a load group and a totally variable charge which would benefit the small consumer within a load group. Due to the uncertain and variable consumption levels of irrigation supplies and embedded networks, the line charges for these consumer groups are recovered by a 100% fixed line charge.
  2. As stated above, the fixed and variable charge allows the larger consumer in a load group to pay more which reflects to some extent their reduced diversity on the maximum demands seen at sub transmission and transmission level. Although the distribution network in the vicinity of the premises has to have enough capacity to supply the full capacity of the installation, the remainder of the network is designed to take into account the diversity between consumer demands. As a general rule, the less energy a consumer uses, the greater the diversity, hence the less capital investment required to supply. A totally fixed line charge does not take this into account so there would need to be more load sub-groups such as very small, small, medium, large and very large domestic consumers besides the existing All Peak and With Off Peak categories.
  3. It is important to note that the variable charge is on daytime energy only, so domestic consumers with large night loads, such as storage or water heating, do not pay extra as this consumption is utilising network assets, the capacity of which is designed on the basis of and costs recovered by the peak load in daytime hours. This encourages better utilisation of the network and less capital investment.
  4. Retailers may directly pass through a totally fixed charge to consumers.
  5. It is a means whereby the line owner can share the risk of climatic variations and be responsive to changes in the local economy. It has been well received in the commercial market that when a consumer has a production downturn or invests in energy conservation measures, there is an immediate response through a reduction in the variable charges.

6. Consumers also have the opportunity to shift load to night time to receive immediate benefits.
7. If a consumer is expanding the business, the variable charges mean that the line owner can receive some immediate extra revenue and it can also cushion the increase in line charges for the following year.

The practical application of a variable component of the line charge for the group consumers resulted in a necessity for a uniform variable charge and individual fixed charges for each segment.

The variable charge component is based on daytime energy usage, i.e. between 07:00 and 23:00 hours. Hence, night time consumption does not contribute directly to the line charge account.

**The profile parameters for determining the line charges for the individual customers are:**

ICP Number	Contract Capacity kVA	Peak Demand Reading kVA	Total Energy Reading MWh	Winter Peak Reading MWh	Winter Day Reading MWh	Summer Day Reading MWh
396516TP-CB8	300	162	133	31	60	71
396517TP-0FD	200	146	401	50	132	156
800105TP-315	10,000	11,017	37,962	4,036	8,581	18,628
800116TP-578	6,000	1,983	8,510	877	2,710	3,736
800134TP-8A8	5,000	4,932	17,057	1,433	3,805	8,341
8001365TP-9E5	750	573	2,578	259	809	1,137
800127TP-EC5	500	136	483	61	196	149
800139TP-7F3	300	259	476	61	157	241
800107TP-390	200	198	690	40	119	377
800118TP-6E3	150	150	270	36	81	162
800128TP-11B	100	100	209	40	87	121
8001281TP-B51	100	90	79	14	27	32
8001275TP-A4C	75	75	446	85	192	174
118447TP-ECC	150	135	196	20	51	96
800146TP-D70	22,000	16,000	58,416	4,306	9,330	28,598
502013TP-4D1	150	135	37	7	16	21
304798TP-4EA	300	164	96	15	54	49
800186TP-A9F	750	753	1,550	62	339	975
8001708TP-54F	500	253	156	12	56	98
1819183TP-528	150	61	152	28	71	62
333040TP-1F2	200	150	375	3	5	261
482021TP-8E5	150	150	212	35	116	96
100109TP-F16	100	104	153	27	79	55
800158TP-446	3,500	2,685	7,345	942	2,903	3,191
8001315TP-CB8	1,500	885	4,495	363	1,108	2,299
437074TP-48B	1,000	782	2,113	419	1,034	994
437078TP-795	1,000	486	2,976	350	1,161	1,014

4370715TP-029	500	303	483	88	237	233
800155TP-B1D	300	318	2,468	247	840	941
8001875TP-046	200	13	1	1	0	1
5678995TP-502	200	129	366	27	106	102
800133TP-562	4,500	94	255	41	124	55
141326TP-DAF	200	124	529	46	166	233
800163TP-D6A	300	141	509	57	160	227
444030TP-F7D	200	189	397	66	159	133
549615TP-72D	150	82	335	45	118	113
800124TP-205	1,000	852	4,807	559	1,601	1,826
556470TP-E14	300	266	1,198	140	401	455
556472TP-E91	150	123	20	5	10	8
240526TP-6BD	150	123	378	58	129	165
8001505TP-013	300	122	232	28	73	88
5290993TP-D4F	150	90	119	25	50	45
221318TP-720	150	135	114	22	49	44
8001815TP-FB6	1,000	700	2,973	451	1,039	1,227
8001801TP-411	1,000	916	5,085	527	1,781	1,918
800181TP-755	500	278	846	138	329	328
579155TP-BA6	150	135	123	31	95	16
314914TP-C54	200	200	254	48	109	99
4004001TP-401	150	53	92	11	29	33
5672985TP-1EF	100	85	85	10	27	44
141806TP-3F4	150	150	375	3	5	261
313732TP-2E5	200	171	303	17	59	194
362484TP-9C2	200	209	397	64	193	184
404955TP-F5E	100	63	95	16	40	36
405545TP-85F	150	100	180	15	30	90
405508TP-5A1	200	106	341	38	107	132
405350TP-9BB	150	86	294	27	70	142
800153TP-A92	500	137	79	12	38	30
8001305TP-615	30	44	145	19	51	55
116195TP-ECE	150	150	257	36	100	157
5791985TP-A1E	150	135	104	15	51	52
110146TP-A8C	200	87	105	14	39	57
241126TP-B1C	150	150	189	20	45	35
166724TP-C86	300	377	1,750	197	625	642
690224TP-CD4	150	41	206	21	68	79
250351TP-0CD	300	142	525	74	184	193
177096TP-8F2	150	160	309	54	151	115
800151TP-A17	100	48	159	18	46	74
181105TP-28D	150	135	40	10	24	16
240375TP-473	150	135	289	45	111	160
8001245TP-DB4	500	569	280	26	104	197

517704TP-375	150	135	104	20	48	56
637250TP-A0B	750	200	853	11	30	650
1819179TP-7AE	150	109	304	44	143	155
625837TP-99A	150	144	140	26	65	72
800114TP-5FD	500	240	1,666	164	545	665
556467TP-973	500	321	1,309	136	454	543
800103TP-29A	300	74	470	48	147	195
569640TP-BA7	200	104	119	13	41	46
800130TP-9A2	300	452	1,572	203	633	644
568791TP-204	100	65	272	30	107	114
521003TP-551	75	60	276	31	104	125
564570TP-57C	50	33	89	9	35	38
5791016TP-030	50	36	128	14	50	55
181975TP-7DD	150	106	402	50	181	194
400440TP-B34	100	46	138	14	34	50
418284TP-E36	500	429	399	85	222	205
4182832TP-1BD	200	192	427	61	140	178
4182836TP-0B7	150	189	867	90	256	330
530906TP-856	300	190	421	54	133	145
800164TP-0A0	500	205	899	95	280	449
405190TP-453	150	105	238	26	67	122
319736TP-DAF	200	101	86	2	3	60
180710TP-2C9	150	150	32	3	8	24
8001695TP-CF7	500	423	2,098	259	755	891
800147TP-135	150	112	502	69	191	212
800150TP-652	100	90	111	17	47	63
142817TP-7FC	150	135	92	14	41	36
589190TP-49A	150	138	176	33	88	65
116167TP-E5C	150	45	149	22	58	50
118468TP-C47	100	88	230	32	80	92
1015827TP-5C5	150	98	132	27	61	70
190101TP-AC6	150	135	255	36	90	101
800169TP-FFB	150	122	519	52	167	226
249945TP-521	150	67	220	15	57	122
364828TP-B0F	150	32	46	6	20	16
110197TP-B8B	150	132	242	28	75	147
426599TP-D2E	500	194	816	91	304	361
192544TP-A6D	300	201	942	108	290	403
657599TP-EEF	100	50	70	15	35	30
192519TP-D3E	150	120	190	5	11	10
1186119TP-9E7	200	297	291	50	134	148
118615TP-C46	200	215	452	59	165	157
1186118TP-5A2	200	98	470	53	176	167
543645TP-165	200	190	35	4	9	9

6204408TP-3FB	750	565	2,133	302	868	778
6204407TP-C25	500	392	1,490	191	556	542
6204405TP-CA0	300	137	187	31	84	82
6204404TP-0E5	1,000	654	1,656	313	732	670
8001320TP-60F	300	182	188	34	75	84
620456TP-103	200	150	150	25	60	70
204735TP-7C2	50	90	134	22	66	48
525441TP-DF0	150	135	28	5	10	12
633604TP-988	200	57	111	7	26	56
3330513TP-914	150	150	375	3	5	261
333049TP-FA3	150	150	375	3	5	261
615269TP-92F	300	271	307	56	149	142
800152TP-6D7	1,000	951	3,617	258	893	1,958
800170TP-B07	750	496	1,645	183	517	650
642956TP-513	200	45	158	15	53	63
800104TP-F50	500	454	2,006	228	675	892
8001045TP-7B3	500	346	1,371	174	465	627
5791226TP-DCF	300	87	467	37	98	122
549325TP-5D0	500	190	653	80	225	225
643847TP-B5F	500	181	247	50	130	107
6438485TP-221	200	70	73	14	31	28
6438465TP-89B	500	333	480	81	207	188
157641TP-7B1	150	135	64	13	26	38
800132TP-927	100	29	212	21	70	83
632751TP-46B	150	43	87	15	39	25
800113TP-837	100	91	263	34	95	81
331280TP-F5A	150	100	375	3	5	261
579184TP-AA1	100	89	232	12	32	27
568266TP-ADC	500	396	1,481	130	418	412
5682737TP-04F	300	105	192	8	26	23
300360TP-C68	75	20	6	1	2	3
405769TP-C13	200	100	224	20	62	161
617670TP-292	750	392	766	129	351	326
112267TP-BDF	150	135	101	15	20	68
800171TP-742	1,500	357	839	102	288	388
632798TP-DD5	100	55	84	6	27	42
634528TP-0A0	30	6	36	4	10	17
176643TP-F59	150	150	15	3	8	7
800121TP-F4A	2,000	1,317	6,038	731	2,316	2,521
569934TP-OFF	150	150	144	25	60	77
482074TP-DA2	200	78	103	19	57	54
800125TP-E40	2,000	1,902	5,532	620	1,736	2,804
8001011TP-EB1	300	292	573	69	235	222
400495TP-B39	200	99	364	37	97	170

800120TP-30F	30	20	11	1	3	2
595728TP-15B	500	256	130	22	45	70
184621TP-6F0	50	45	77	15	33	30
5791154TP-B14	150	135	215	40	95	121
482070TP-CA8	300	300	117	30	68	49
656382TP-D30	100	10	0	0	0	0
800131TP-5E7	2,500	1,066	3,268	558	1,323	1,222
520373TP-2AF	1,500	530	248	24	72	164
184687TP-F60	150	135	147	28	75	72
150931TP-983	200	200	498	95	214	194
150925TP-224	150	150	441	69	170	160
405386TP-576	150	120	107	18	52	46
389997TP-83A	200	68	193	14	33	110
389990TP-5F0	150	77	253	18	43	140
389999TP-BA1	300	83	197	18	53	92
800167TP-C60	150	100	405	48	133	198
800161TP-DEF	500	146	661	84	226	277
8001611TP-8B7	30	26	81	9	25	30
143131TP-38F	200	196	290	61	148	136
181911TP-927	75	115	603	35	113	136
235545TP-814	200	123	458	65	191	181
150910TP-893	500	263	1,287	93	355	581
150912TP-816	750	159	402	47	136	114
624649TP-8F7	500	19	372	18	44	180
141990TP-498	150	150	375	3	5	261
800166TP-025	200	119	422	36	121	199
416731TP-C0E	150	94	118	22	50	47
624606TP-58C	150	150	165	25	63	102
1164012TP-00A	300	100	339	47	141	103
424510TP-575	500	355	576	83	280	311
4245295TP-206	150	150	207	40	89	98
800149TP-2AE	300	276	1,371	177	550	543
8001015TP-FBB	300	259	1,095	133	440	456

The profile parameters for determining the line charges for the Group customers are:

Consumer	Code	Number of	After Diversity	Total Energy	Winter Peak	Winter Day	Summer Day
----------	------	-----------	-----------------	--------------	-------------	------------	------------

Capacity		Connections	Peak Demand kW	Group MWh	Group MWh	Group MWh	Group MWh
<b>TPC Urban</b>							
<b>Domestic</b>							
Small Domestic (8kVA 1 Phase) - All Peak - Closed *	UD08P	36	26	146	20	47	59
Small Domestic (8kVA 1 Phase) - With Off Peak - Closed *	UD08Q	377	231	1,531	158	447	607
Standard Domestic (20kVA 1 Phase) - All Peak	UD20P	993	1,787	10,080	1,385	3,270	4,079
Standard Domestic (20kVA 1 Phase) - With Off Peak	UD20Q	12455	19,049	126,432	13,030	36,910	50,136
10% Fixed Charge Option - All Peak	UDL20P	129	232	727	100	236	294
10%Fixed Charge Option - With Off Peak	UDL20Q	471	720	2,656	274	775	1,053
<b>Non-Domestic Single Phase</b>							
Street Lights (1 Phase)	US001L	4,326	1,103	4,881	671	1,583	1,975
1 kVA 1 Phase - All Peak	US001P	26	26	192	26	62	78
8 kVA 1 Phase - All Peak	US008P	168	121	682	94	221	276
8 kVA 1 Phase - With Off Peak	US008Q	38	23	154	16	45	61
20 kVA 1 Phase - All Peak	US020P	373	671	3,786	520	1,228	1,532
20 kVA 1 Phase - With Off Peak	US020Q	156	239	1,584	163	462	628
<b>Non-Domestic Three Phase</b>							
15 kVA 3 Phase - All Peak	UT015P	43	58	327	45	106	132
15 kVA 3 Phase - With Off Peak	UT015Q	19	22	145	15	42	57
30 kVA 3 Phase - All Peak	UT030P	566	1,838	7,373	1,013	2,392	2,983
30 kVA 3 Phase - With Off Peak	UT030Q	121	334	1,576	162	460	625
50 kVA 3 Phase - All Peak	UT050P	263	1,904	9,547	1,312	3,097	3,863
50 kVA 3 Phase - With Off Peak	UT050Q	98	603	3,558	367	1,039	1,411
75 kVA 3 Phase - All Peak	UT075P	93	1,328	5,330	732	1,729	2,157
75 kVA 3 Phase - With Off Peak	UT075Q	25	304	1,433	148	418	568
100 kVA 3 Phase - All Peak	UT100P	7	165	663	91	215	268
100 kVA 3 Phase - With Off Peak	UT100Q	2	40	189	20	55	75
<b>TPC Rural</b>							
<b>Domestic</b>							
Small Domestic (8kVA 1 Phase) - All Peak - Closed *	RD08P	50	36	203	28	66	82
Small Domestic (8kVA 1 Phase) - With Off Peak - Closed *	RD08Q	300	184	1,218	126	356	483
Standard Domestic (20kVA 1 Phase) - All Peak	RD20P	1002	1,803	10,171	1,398	3,299	4,116
Standard Domestic (20kVA 1 Phase) - With Off Peak	RD20Q	6896	10,547	70,002	7,214	20,436	27,759
10% Fixed Charge Option - All Peak	RDL20P	83	149	468	64	152	189
10%Fixed Charge Option - With Off Peak	RDL20Q	141	216	795	82	232	315

<b>Non-Domestic Single Phase &amp; Holiday Homes</b>							
Street Lights (1 Phase)	RS001L	588	150	663	91	215	58
1 kVA 1 Phase - All Peak	RS001P	127	127	937	129	304	379
8 kVA 1 Phase - All Peak	RS008P	671	483	2,725	374	884	1,102
8 kVA 1 Phase - With Off Peak	RS008Q	93	57	378	39	110	150
20 kVA 1 Phase - All Peak	RS020P	2,112	3,800	21,439	2,946	6,954	8,675
20 kVA 1 Phase - With Off Peak	RS020Q	266	407	2,700	278	788	1,071
<b>Non-Domestic Three Phase</b>							
15 kVA 3 Phase - All Peak	RT015P	158	213	1,203	165	390	487
15 kVA 3 Phase - With Off Peak	RT015Q	22	25	167	17	49	66
30 kVA 3 Phase - All Peak	RT030P	2,453	7,965	31,955	4,391	10,365	12,930
30 kVA 3 Phase - With Off Peak	RT030Q	366	1,010	4,768	491	1,392	1,891
50 kVA 3 Phase - All Peak	RT050P	327	2,367	11,871	1,631	3,851	4,803
50 kVA 3 Phase - With Off Peak	RT050Q	439	2,701	15,937	1,642	4,653	6,320
75 kVA 3 Phase - All Peak	RT075P	57	814	3,266	449	1,060	1,322
75 kVA 3 Phase - With Off Peak	RT075Q	13	158	745	77	217	295
100 kVA 3 Phase - All Peak	RT100P	18	425	1,705	234	553	690
100 kVA 3 Phase - With Off Peak	RT100Q	1	20	95	10	28	38

## 2. TRANSMISSION CHARGES

Transmission charges reflect the Trans Power grid asset management costs incurred by The Power Company Ltd based on the five points of supply and also include the equivalent costs of the Pioneer Generation point of supply at Monowai Power Station in Western Southland.

The five points of supply are:

- (a) Gore
- (b) Edendale
- (c) Invercargill
- (d) North Makarewa
- (f) Monowai

Trans Power transmission charges have two components:

- (a) Connection charge
- (b) Interconnection charge

### 2.1 Connection Charge

The Trans Power connection charge is based on the Trans Power local assets utilised to provide the supply.

In the case of the Invercargill point of supply the connection charge is split between The Power Company Limited and Electricity Invercargill Limited, each network connected to the transmission grid there.

The total connection charges which includes Transpowers EVA credits for each point of supply are:

(a)	Gore	\$51,104
(b)	Edendale	\$343,191
(c)	Invercargill	\$75,885
(d)	North Makarewa	\$316,320
(f)	Monowai	\$29,784

The total connection charge for Invercargill is \$75,885. The Power Company's share is \$31,530.

The connection charges are applied to customers on the basis of the following allocation:

Winter Peak Demand	70%
Winter Peak Energy	20%
Winter Day Energy	10%

For individual customers this equates to:

Point of Supply	Per kVA Peak	Per Winter Peak	Per Winter Day
	Demand	MWh	MWh
Gore	\$1.03	\$0.48	\$0.16
Edendale	\$12.85	\$10.70	\$3.52
Invercargill (TPCL)	\$0.76	\$0.33	\$0.11
North Makarewa	\$4.33	\$2.34	\$0.76
Monowai	\$4.33	\$2.34	\$0.76

After the revenue from the individual customers has been subtracted from the total the remaining group customer charges are as follows:

	Per kVA Peak	Per Winter Peak	Per Winter Day
	Demand	MWh	MWh
All Points of Supply	\$1.22	\$0.61	\$0.21

The difference in the two sets of rates above reflects the difference in losses and diversity factors between the large individual customers and the smaller customer groups.

## 2.2 Interconnection Charge

This charge is based on the average of the 12 highest peak demands at each point of supply on a rolling 12 month basis.

The total interconnection charges for each point of supply are:

(a)	Gore	\$1,690,592
(b)	Edendale	\$997,116
(c)	Invercargill	\$4,381,969
(d)	North Makarewa	\$2,050,897
(f)	Monowai	\$290,160

The Power Company's share of the Invercargill interconnection charge of \$4,381,969 is \$1,474,372.

The interconnection charges are applied to customers on the basis of the following allocation:

Winter Peak Demand	60%
Winter Peak Energy	30%
Winter Day Energy	10%

For individual customers this equates to the following charges:

Point of Supply	Per kVA Peak	Per Winter Peak	Per Winter Day
	Demand	MWh	MWh
Gore	\$29.18	\$24.03	\$5.26
Edendale	\$31.99	\$46.65	\$10.24
Invercargill (TPCL)	\$30.33	\$22.92	\$5.11
North Makarewa	\$24.04	\$22.76	\$4.94
Monowai	\$24.04	\$22.76	\$4.94

After the revenue from the individual customers has been subtracted from the total the remaining group customer charges are as follows:

	Per kVA Peak	Per Winter Peak	Per Winter Day
	Demand	MWh	MWh
All Points of Supply	\$31.20	\$27.17	\$6.16

The differences in the above rates reflect the differences in losses and diversity factors between the large individual customers and the small customer groups.

## 2.4 Trans Power Revenue for Individual Customers

The total Trans Power revenue for individual customers grouped by capacity is shown in the following table:

Consumer Capacity kVA	Number of Connections	Line Charge Revenue per Consumer Group	Average Line Charge
30	4	\$2,026	\$507
50	4	\$4,366	\$1,091
75	4	\$9,511	\$2,378
100	16	\$24,128	\$1,508
150	59	\$145,066	\$2,459
200	31	\$91,855	\$2,963
300	24	\$136,567	\$5,690
500	24	\$182,553	\$7,606
750	7	\$85,089	\$12,156
1000	7	\$193,336	\$27,619
1500	3	\$72,300	\$24,100
1750	0	\$0	\$0
2000	2	\$119,055	\$59,527
2300	0	\$0	\$0
2500	1	\$37,699	\$37,699
3500	1	\$108,129	\$108,129
4500	1	\$2,528	\$2,528
5000	1	\$220,214	\$220,214
6000	1	\$78,324	\$78,324
10000	1	\$490,742	\$490,742
22000	1	\$1,044,592	\$1,044,592

## 2.5 Trans Power Revenue for Group Customers

The total Trans Power revenue for group customers is shown in the following table.

Consumer Capacity	Code	Number of Connections	TransPower Charge	TransPower Revenue per Consumer Group
<b>TPC Urban</b>				
<b>Domestic</b>				
Small Domestic (8kVA 1 Phase) - All Peak - Closed *	UD08P	36	\$44	\$1,572
Small Domestic (8kVA 1 Phase) - With Off Peak - Closed *	UD08Q	377	\$36	\$13,702
Standard Domestic (20kVA 1 Phase) - All Peak	UD20P	993	\$109	\$108,415
Standard Domestic (20kVA 1 Phase) - With Off Peak	UD20Q	12,455	\$91	\$1,131,695
10% Fixed Charge Option - All Peak	UDL20P	129	\$87	\$11,170
10%Fixed Charge Option - With Off Peak	UDL20Q	471	\$73	\$34,158
<b>Non-Domestic Single Phase</b>				
Street Lights (1 Phase)	US001L	4,326	\$14	\$60,214
1 kVA 1 Phase - All Peak	US001P	26	\$69	\$1,803
8 kVA 1 Phase - All Peak	US008P	168	\$44	\$7,337
8 kVA 1 Phase - With Off Peak	US008Q	38	\$36	\$1,381
20 kVA 1 Phase - All Peak	US020P	373	\$109	\$40,724
20 kVA 1 Phase - With Off Peak	US020Q	156	\$91	\$14,175
<b>Non-Domestic Three Phase</b>				
15 kVA 3 Phase - All Peak	UT015P	43	\$82	\$3,521
15 kVA 3 Phase - With Off Peak	UT015Q	19	\$68	\$1,295
30 kVA 3 Phase - All Peak	UT030P	566	\$171	\$96,520
30 kVA 3 Phase - With Off Peak	UT030Q	121	\$142	\$17,238
50 kVA 3 Phase - All Peak	UT050P	263	\$417	\$109,547
50 kVA 3 Phase - With Off Peak	UT050Q	98	\$347	\$34,017
75 kVA 3 Phase - All Peak	UT075P	93	\$750	\$69,767
75 kVA 3 Phase - With Off Peak	UT075Q	25	\$627	\$15,668
100 kVA 3 Phase - All Peak	UT100P	7	\$1,240	\$8,681
100 kVA 3 Phase - With Off Peak	UT100Q	2	\$1,036	\$2,072
<b>TPC Rural</b>				
<b>Domestic</b>				

Small Domestic (8kVA 1 Phase) - All Peak - Closed *	RD08P	50	\$44	\$2,184
Small Domestic (8kVA 1 Phase) - With Off Peak - Closed *	RD08Q	300	\$36	\$10,904
Standard Domestic (20kVA 1 Phase) - All Peak	RD20P	1,002	\$109	\$109,397
Standard Domestic (20kVA 1 Phase) - With Off Peak	RD20Q	6,896	\$91	\$626,589
10% Fixed Charge Option - All Peak	RDL20P	83	\$87	\$7,187
10%Fixed Charge Option - With Off Peak	RDL20Q	141	\$73	\$10,226
<b>Non-Domestic Single Phase &amp; Holiday Homes</b>				
Street Lights (1 Phase)	RS001L	588	\$14	\$8,184
1 kVA 1 Phase - All Peak	RS001P	127	\$69	\$8,808
8 kVA 1 Phase - All Peak	RS008P	671	\$44	\$29,304
8 kVA 1 Phase - With Off Peak	RS008Q	93	\$36	\$3,380
20 kVA 1 Phase - All Peak	RS020P	2,112	\$109	\$230,586
20 kVA 1 Phase - With Off Peak	RS020Q	266	\$91	\$24,169
<b>Non-Domestic Three Phase</b>				
15 kVA 3 Phase - All Peak	RT015P	158	\$82	\$12,938
15 kVA 3 Phase - With Off Peak	RT015Q	22	\$68	\$1,499
30 kVA 3 Phase - All Peak	RT030P	2,453	\$171	\$418,311
30 kVA 3 Phase - With Off Peak	RT030Q	366	\$142	\$52,141
50 kVA 3 Phase - All Peak	RT050P	327	\$417	\$136,205
50 kVA 3 Phase - With Off Peak	RT050Q	439	\$347	\$152,383
75 kVA 3 Phase - All Peak	RT075P	57	\$750	\$42,760
75 kVA 3 Phase - With Off Peak	RT075Q	13	\$627	\$8,147
100 kVA 3 Phase - All Peak	RT100P	18	\$1,240	\$22,322
100 kVA 3 Phase - With Off Peak	RT100Q	1	\$1,036	\$1,036

### 3. SUBTRANSMISSION CHARGES

Sub transmission charges are based on the sub transmission costs (66kV and 33kV network) and the zone substation costs.

There are two components making up the sub transmission charges:

- (a) Supply charge
- (b) Maintenance charge

#### 3.1 Supply Charge

The sub transmission network was broken up into its constituent components including every line and every zone substation. These components were categorised, i.e. 66,000 and 33,000V, indoor and outdoor, size, number of transformers, circuit breakers, length of line etc.

Values for these sub transmission network components were based on the replacement value costs. These values were then amended by the ratio of the overall replacement cost to the asset value of the network. The appropriate share of the supply charge was allocated to each zone substation on this basis.

The share of the sub transmission lines by each zone substation was determined using the superposition theorem and calculating load flows through the interconnected mesh network.

The total supply charge for all the TPCL zone substations is \$7,247,963.

The supply charge for TPCL is allocated across all customers connected to each zone substation on the following basis:

Winter Peak Demand	70%
Winter Peak Energy	20%
Winter Day Energy	10%

#### 3.2 Maintenance Charge

The sub transmission maintenance charges for TPC total \$1,565,518.

These maintenance charges are allocated across the customers on the following basis:

Total Energy	50%
Winter Peak Demand	50%

In this case the commercial customers incur a weighting compared to domestic customers of 2:1. This reflects the higher level of importance for commercial customers of the maintenance to the network. This weighted ratio only applies to the total energy component, i.e. 50% of the cost.

### 3.3 Total Sub transmission Charges

The total sub transmission charges allocated to each zone substation are shown in the following table.

<b>Zone Substation</b>	<b>Total Supply Charge</b>	<b>Total Maintenance Charge</b>
Awarua	\$75,193	\$15,655
Bluff	\$278,025	\$65,040
Centre Bush	\$176,622	\$36,773
Conical Hills	\$224,321	\$49,163
Dipton	\$100,956	\$21,019
Edendale	\$187,677	\$39,075
Glenham	\$99,767	\$20,772
Gorge Road	\$121,279	\$25,251
Hillside	\$228,284	\$47,530
Kelso	\$246,997	\$51,426
Kennington	\$113,757	\$23,685
Lumsden	\$363,177	\$75,615
Makarewa	\$196,576	\$40,928
Manapouri	\$190,608	\$39,685
Mataura	\$272,861	\$56,811
Monowai	\$72,612	\$15,118
Mossburn	\$240,142	\$55,554
NZMP	\$270,993	\$39,515
North Gore	\$135,794	\$35,341
Ohai	\$340,465	\$83,395
Orawia	\$390,939	\$90,439
Otatara	\$122,876	\$25,583
Otautau	\$370,359	\$77,110
Pullar	\$0	\$0
Riversdale	\$258,438	\$53,808
Riverton	\$353,900	\$73,683
Seaward Bush	\$237,532	\$49,455
South Gore	\$159,878	\$33,287
Te Anau	\$465,005	\$138,308
Tokanui	\$169,140	\$35,216
Underwood	\$373,346	\$64,777
Waikiwi	\$196,072	\$40,823
Waikaka	\$0	\$0
Winton	\$206,674	\$43,030
ICC46	\$7,697	\$2,648

### 3.4 Sub transmission Charges for Individual Customers above 100 kVA

The sub transmission charges relating to each zone substation are shown in the following table.

<b>Zone Substation</b>	<b>Supply Charge per kVA Winter Peak Demand</b>	<b>Supply Charge per Winter Peak MWh</b>	<b>Supply Charge per Winter Day MWh</b>	<b>Maintenance Charge per Domestic Total MWh</b>	<b>Maintenance Charge per Commercial Total MWh</b>	<b>Maintenance Charge per kVA Winter Peak Demand</b>
Awarua	\$42.84	\$147.44	\$71.61	\$9.77	\$19.54	\$6.37
Bluff	\$37.03	\$12.75	\$6.32	\$0.91	\$1.81	\$6.19
Centre Bush	\$51.19	\$26.60	\$15.14	\$1.72	\$3.44	\$7.61
Conical Hills	\$48.87	\$25.87	\$10.11	\$1.26	\$2.52	\$7.65
Dipton	\$83.09	\$41.03	\$12.96	\$2.36	\$4.71	\$12.36
Edendale	\$30.89	\$7.36	\$3.57	\$0.57	\$1.14	\$4.59
Glenham	\$57.38	\$29.91	\$17.05	\$2.28	\$4.57	\$8.53
Gorge Road	\$66.55	\$28.75	\$8.81	\$1.67	\$3.35	\$9.90
Hillside	\$338.20	\$260.71	\$79.92	\$15.17	\$30.35	\$50.30
Kelso	\$43.59	\$15.20	\$8.44	\$1.10	\$2.19	\$6.48
Kennington	\$24.08	\$9.98	\$3.51	\$0.40	\$0.80	\$3.58
Lumsden	\$100.72	\$39.08	\$21.56	\$2.80	\$5.60	\$14.98
Makarewa	\$30.64	\$10.87	\$5.82	\$0.56	\$1.13	\$4.56
Manapouri	\$156.88	\$109.54	\$33.58	\$6.38	\$12.75	\$23.33
Mataura	\$24.15	\$10.45	\$5.41	\$0.49	\$0.97	\$3.59
Monowai	\$268.93	\$148.82	\$45.62	\$8.66	\$17.32	\$40.00
Mossburn	\$149.36	\$58.06	\$32.06	\$3.34	\$6.69	\$24.68
NZMP	\$14.34	\$12.34	\$5.15	\$0.17	\$0.33	\$1.49
North Gore	\$11.18	\$5.16	\$1.73	\$0.35	\$0.69	\$2.08
Ohai	\$109.51	\$53.84	\$16.90	\$3.59	\$7.18	\$19.16
Orawia	\$107.73	\$36.76	\$19.61	\$2.83	\$5.66	\$17.80
Otatara	\$28.21	\$10.61	\$6.28	\$0.93	\$1.86	\$4.19
Otautau	\$68.59	\$33.63	\$12.19	\$1.67	\$3.34	\$10.20
Pullar	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Riversdale	\$71.56	\$25.42	\$7.78	\$1.38	\$2.76	\$10.64
Riverton	\$74.90	\$24.46	\$7.74	\$1.37	\$2.75	\$11.14
Seaward Bush	\$19.55	\$9.31	\$3.16	\$0.41	\$0.82	\$2.91
South Gore	\$13.39	\$5.40	\$2.85	\$0.34	\$0.68	\$1.99
Te Anau	\$67.54	\$27.75	\$8.55	\$1.90	\$3.80	\$14.35
Tokanui	\$136.63	\$87.75	\$26.90	\$5.11	\$10.21	\$20.32
Underwood	\$19.21	\$13.25	\$7.01	\$0.37	\$0.75	\$2.38
Waikiwi	\$15.64	\$6.99	\$2.17	\$0.33	\$0.67	\$2.33
Waikaka	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Winton	\$18.01	\$8.86	\$2.85	\$0.40	\$0.79	\$2.68

### 3.5 Sub transmission Charges for Group Customers

After the revenue from the individual customers has been subtracted from the total the remaining group customer charges are as follows:

	Supply Charge per kVA Winter Peak Demand	Supply Charge per Winter Peak MWh	Supply Charge per Winter Day MWh	Maintenance Charge per Domestic Total MWh	Maintenance Charge per Commercial Total MWh	Maintenance Charge per kVA Winter Peak Demand
Group Consumers	\$45.18	\$18.94	\$9.19	\$1.08	\$2.16	\$6.44

## 4. DISTRIBUTION CHARGES

Distribution charges are based on the distribution costs which include 11,000 and 400V line and cables and distribution substations and transformers.

All individual customers have location based distribution charges. These customers pay their distribution charges based on four factors - the radial distance from the zone substation, the contract capacity of the installation and the number and size of transformers used to supply them.

The group customers have non locational distribution charges. For these customers the costs of the distribution network are averaged. These customers are identified as belonging to one of two groups, Urban and Rural.

The urban customers are located in the following areas:

- (a) Invercargill
- (b) Gore
- (c) Te Anau
- (d) Winton
- (e) Matura
- (f) Riverton
- (g) Otatau
- (h) Tuatapere
- (i) Ohai
- (j) Nightcaps
- (k) Mossburn
- (l) Lumsden
- (m) Riversdale
- (n) Manapouri
- (o) Tapanui
- (p) Edendale
- (q) Wyndham
- (r) Wallacetown
- (s) Otatara

The remaining customers are classified as rural.

There are three components making up the distribution charges

- (a) Supply charge
- (b) Maintenance charge
- (c) Transformer charge

#### 4.1 Supply Charge

The supply charge is based on the use charge which is the required return on the assets by the shareholder and depreciation.

The total supply charge for TPCL totals \$12,840,195.

The non locational supply charges are allocated across customers on the following basis:

Contract Capacity	70%
Winter Peak Energy	20%
Winter Day Energy	10%

#### 4.2 Maintenance Charge

The maintenance charges for TPCL total \$2,685,754.

The maintenance portion of the non-locational distribution charges is allocated across customers on the following basis:

Total Energy	50%
Contract Capacity	50%

#### 4.3 Transformer Charge

The transformer charges for TPCL total \$3,566,721.

The transformer portion of the distribution charges is allocated across consumers on the following basis:

Number of transformers and transformer capacity	100%.
---	-------

#### 4.4 Locational Individual Distribution Charges

(a) Distribution Supply charge	\$2.27 per kVAkm Urban
(b) Distribution Supply charge	\$0.50 per kVAkm Rural
(c) Distribution Transformer charge	\$271 per Transformer
(d) Distribution Maintenance charge	\$1,068 per km Urban
(e) Distribution Maintenance charge	\$441 per km Rural
(f) Distribution Transformer charge	\$448 per Transformer for capacity $\geq 75\text{kVA}$
(g) Distribution Transformer charge	\$28 per Transformer for capacity $< 75\text{kVA}$

The Transformer charge of \$271 per transformer is multiplied by a price ratio depending on the size of the transformer. The ratios for the different sized transformers are shown below.

Transformer Size	Ratio applied
15kVA Transformer	1.00
30kVA Transformer	1.44
50kVA Transformer	1.88
75kVA Transformer	2.30
100kVA Transformer	2.80
150kVA Transformer	3.50
200kVA Transformer	4.40
300kVA Transformer	5.16
500kVA Transformer	7.20
750kVA Transformer	8.80

1000kVA Transformer	9.96
1250kVA Transformer	13.20
1500kVA Transformer	15.60

In calculating the distribution maintenance charges an allowance is made for the fact that customers above 150kVA have less use of the 400V network than smaller customers, i.e. they often have their own local transformer or exclusive supply cables from a transformer. The line portion of the distribution maintenance charges is multiplied by a factor of 70%.

Individual commercial customers incur a weighting on the transformer portion of the maintenance charge of 5:1. This reflects the importance of the maintenance to the network for commercial customers.

#### 4.4 Distribution Charges for Group Customers

After the revenue from the individual customers has been subtracted from the total the remaining group customer charges are as follows:

##### *TPC Urban*

(a)	Distribution Supply charge	\$9.64 per kVA Contract Capacity
(b)	Distribution Supply charge	\$22.44 per Winter Peak MWh
(c)	Distribution Supply charge	\$6.62 per Winter Day MWh
(d)	Distribution Maintenance charge	\$0.61 per Domestic Total MWh
(e)	Distribution Maintenance charge	\$1.22 per Commercial Total MWh
(f)	Distribution Maintenance charge	\$0.80 per kVA Contract Capacity
(g)	Distribution Transformer charge	\$13.06 per kVA AD Transformer capacity

##### *TPC Rural*

(a)	Distribution Supply charge	\$56.86 per kVA Contract Capacity
(b)	Distribution Supply charge	\$95.71 per Winter Peak MWh
(c)	Distribution Supply charge	\$30.42 per Winter Day MWh
(d)	Distribution Maintenance charge	\$4.64 per Domestic Total MWh
(e)	Distribution Maintenance charge	\$9.28 per Commercial Total MWh
(f)	Distribution Maintenance charge	\$9.27 per kVA Contract Capacity
(g)	Distribution Transformer charge	\$13.06 per kVA AD Transformer capacity

The model applies an 8% discount for rural single phase group customers and a 10% discount for urban single phase group customers compared to three phase customers of similar size. This is to reflect the reduced investment in network assets for single phase customers.

With respect to the maintenance charges for group customers the commercial customers incur a weighting to domestic customers of 2:1. This represents a higher level of importance for commercial customers of the maintenance to the network. This weighted ratio only applies to the total energy component i.e. 50% of the charge.

## 5. POWERNET OVERHEADS

The PowerNet overhead charges are based on those costs which cannot be allocated directly to either capital or maintenance.

These costs include the following:

- (a) Executive Management
- (b) Directors Fees
- (c) System Control

(d) Miscellaneous overheads, e.g. buildings, rates, etc.

These charges are split equally over the total customer base.

The total overhead costs are \$1,219,741

The charge per customer is \$38.23

## 6. POWERNET CHARGES

### 6.1 PowerNet Revenue for Individual Customers

The total PowerNet revenue for individual customers grouped by capacity is shown in the following table.

<b>Consumer Capacity kVA</b>	<b>Sub transmission Charge</b>	<b>Distribution Charge</b>	<b>PowerNet Overhead Charge</b>	<b>Total PowerNet Revenue</b>
<b>30</b>	\$2,892	\$4,224	\$153	\$7,269
<b>50</b>	\$6,265	\$2,801	\$153	\$9,218
<b>75</b>	\$13,833	\$3,687	\$153	\$17,673
<b>100</b>	\$35,226	\$23,586	\$612	\$59,423
<b>150</b>	\$163,689	\$112,960	\$2,103	\$278,752
<b>200</b>	\$142,001	\$66,044	\$1,109	\$209,154
<b>300</b>	\$106,440	\$54,151	\$803	\$161,394
<b>500</b>	\$198,432	\$71,152	\$803	\$270,387
<b>750</b>	\$149,111	\$22,967	\$229	\$172,308
<b>1000</b>	\$213,854	\$36,322	\$268	\$250,443
<b>1500</b>	\$91,506	\$12,758	\$115	\$104,379
<b>1750</b>	\$0	\$0	\$0	\$0
<b>2000</b>	\$85,052	\$25,676	\$76	\$110,804
<b>2500</b>	\$29,550	\$10	\$38	\$29,598
<b>3500</b>	\$206,436	\$683	\$38	\$207,157
<b>4500</b>	\$2,137	\$1,138	\$38	\$3,314
<b>5000</b>	\$180,953	\$1,896	\$38	\$182,888
<b>6000</b>	\$85,633	\$1,242	\$38	\$86,913
<b>10000</b>	\$351,830	\$3,134	\$38	\$355,002
<b>22000</b>	\$320,151	\$366	\$38	\$320,556

## 6.2 PowerNet Revenue for Group Customers

The total PowerNet revenue for group customers is shown in the following table.

Consumer Capacity	Code	Number of Connections	Sub transmission Charge	Distribution Charge	PowerNet Overheads	Total PowerNet Revenue
<b>TPC Urban</b>						
<b>Domestic</b>						
Small Domestic (8kVA 1 Phase) - All Peak - Closed *	UD08P	36	\$2,127	\$6,209	\$1,376	\$9,713
Small Domestic (8kVA 1 Phase) - With Off Peak - Closed *	UD08Q	377	\$19,209	\$46,017	\$14,414	\$79,640
Standard Domestic (20kVA 1 Phase) - All Peak	UD20P	993	\$146,705	\$367,325	\$37,965	\$551,995
Standard Domestic (20kVA 1 Phase) - With Off Peak	UD20Q	12455	\$1,586,526	\$3,583,024	\$476,185	\$5,645,735
10% Fixed Charge Option - All Peak	UDL20P	129	\$15,914	\$16,155	\$4,932	\$37,001
10% Fixed Charge Option - With Off Peak	UDL20Q	471	\$49,860	\$39,720	\$18,007	\$107,588
<b>Non-Domestic Single Phase</b>						
Street Lights (1 Phase)	US001L	4,326	\$88,605	\$120,238	\$3,308	\$212,150
1 kVA 1 Phase - All Peak	US001P	26	\$2,586	\$4,296	\$994	\$7,875
8 kVA 1 Phase - All Peak	US008P	168	\$9,928	\$28,976	\$6,423	\$45,327
8 kVA 1 Phase - With Off Peak	US008Q	38	\$1,936	\$4,638	\$1,453	\$8,027
20 kVA 1 Phase - All Peak	US020P	373	\$55,107	\$137,978	\$14,261	\$207,346
20 kVA 1 Phase - With Off Peak	US020Q	156	\$19,871	\$44,878	\$5,964	\$70,713
<b>Non-Domestic Three Phase</b>						
15 kVA 3 Phase - All Peak	UT015P	43	\$5,119	\$12,185	\$1,644	\$18,948
15 kVA 3 Phase - With Off Peak	UT015Q	19	\$1,972	\$3,935	\$726	\$6,633
30 kVA 3 Phase - All Peak	UT030P	566	\$142,700	\$243,907	\$21,640	\$408,247
30 kVA 3 Phase - With Off Peak	UT030Q	121	\$26,466	\$38,124	\$4,626	\$69,217
50 kVA 3 Phase - All Peak	UT050P	263	\$160,207	\$281,530	\$10,055	\$451,792
50 kVA 3 Phase - With Off Peak	UT050Q	98	\$51,952	\$83,921	\$3,747	\$139,620
75 kVA 3 Phase - All Peak	UT075P	93	\$103,147	\$210,354	\$3,556	\$317,056
75 kVA 3 Phase - With Off Peak	UT075Q	25	\$24,055	\$42,233	\$956	\$67,244
100 kVA 3 Phase - All Peak	UT100P	7	\$12,834	\$29,510	\$268	\$42,612
100 kVA 3 Phase - With Off Peak	UT100Q	2	\$3,181	\$6,414	\$76	\$9,671
<b>TPC Rural</b>						
<b>Domestic</b>						
Small Domestic (8kVA 1 Phase) - All Peak - Closed *	RD08P	50	\$2,955	\$9,901	\$1,912	\$14,768
Small Domestic (8kVA 1 Phase) - With Off Peak - Closed *	RD08Q	300	\$15,286	\$42,093	\$11,470	\$68,849
Standard Domestic (20kVA 1 Phase) - All Peak	RD20P	1002	\$148,035	\$418,199	\$38,309	\$604,543
Standard Domestic (20kVA 1 Phase) - With Off Peak	RD20Q	6896	\$878,417	\$2,210,358	\$263,651	\$3,352,426
10% Fixed Charge Option - All Peak	RDL20P	83	\$10,239	\$10,394	\$3,173	\$23,807

10%Fixed Charge Option - With Off Peak	RDL20Q	141	\$14,926	\$11,891	\$5,391	\$32,208
<b>Non-Domestic Single Phase &amp; Holiday Homes</b>						
Street Lights (1 Phase)	RS001L	588	\$12,043	\$18,489	\$450	\$30,982
1 kVA 1 Phase - All Peak	RS001P	127	\$12,630	\$20,983	\$4,856	\$38,469
8 kVA 1 Phase - All Peak	RS008P	671	\$39,653	\$132,876	\$25,654	\$198,183
8 kVA 1 Phase - With Off Peak	RS008Q	93	\$4,739	\$13,049	\$3,556	\$21,343
20 kVA 1 Phase - All Peak	RS020P	2,112	\$312,025	\$881,474	\$80,747	\$1,274,246
20 kVA 1 Phase - With Off Peak	RS020Q	266	\$33,883	\$85,260	\$10,170	\$129,313
<b>Non-Domestic Three Phase</b>						
15 kVA 3 Phase - All Peak	RT015P	158	\$18,809	\$50,539	\$6,041	\$75,388
15 kVA 3 Phase - With Off Peak	RT015Q	22	\$2,283	\$5,198	\$841	\$8,322
30 kVA 3 Phase - All Peak	RT030P	2,453	\$618,451	\$1,218,237	\$93,784	\$1,930,472
30 kVA 3 Phase - With Off Peak	RT030Q	366	\$80,055	\$134,021	\$13,993	\$228,069
50 kVA 3 Phase - All Peak	RT050P	327	\$199,193	\$394,201	\$12,502	\$605,895
50 kVA 3 Phase - With Off Peak	RT050Q	439	\$232,722	\$417,594	\$16,784	\$667,100
75 kVA 3 Phase - All Peak	RT075P	57	\$63,219	\$154,725	\$2,179	\$220,123
75 kVA 3 Phase - With Off Peak	RT075Q	13	\$12,509	\$25,899	\$497	\$38,905
100 kVA 3 Phase - All Peak	RT100P	18	\$33,003	\$90,993	\$688	\$124,684
100 kVA 3 Phase - With Off Peak	RT100Q	1	\$1,591	\$3,791	\$38	\$5,420

## **7. TRANSMISSION GRID OPERATOR SERVICES COSTS**

These costs which relate to frequency, voltage support and black start on the National Grid are for security of energy supply and not to transmission. Accordingly they are excluded from the transmission charges and are allocated each month to the retailers on the basis of each Retailer's total energy consumption for that month.

## **8. Loss Constraint Excess Payment**

Loss Constraint Excess Payments are credits rebated by Transpower as a result of money received from the Clearing Manager for the Wholesale Electricity Market and are excluded from the Transmission Charges. The payments are allocated each month to the retailers on the basis of total energy consumption for the month in which the rebate applied.

## 9. TOTAL LINE CHARGE REVENUE

### 9.1 Fixed, Variable and Metering Charges

The total line charge is charged as a split fixed and variable charge. This allows PowerNet to share some of the risk with the Energy Trader. The fixed/variable split is approximately 50:50.

For the installations with ½ hour metering the total line charge is halved to establish the fixed charge per annum. The variable charge is calculated as the remaining charge divided by the number of Day MWh in the customer energy profile to give a variable charge in dollars per Day MWh.

In the case of all other installations the variable charge is a standard charge of \$52.23 per Day MWh. The fixed charge is then calculated as the difference between the total charge and the number of Day MWh for the installation times \$52.23. This method of calculating the fixed charge accounts for the fact that some installations have negative fixed charges.

The Variable Charge of \$52.23 per MWh of daytime sales equates to \$45.48per MWh of daytime purchases at the grid exit point.

For rural group customers with capacities less than 75kVA the fixed line charge is capped at 15% higher than the equivalent urban charge, for capacities greater than or equal to 75kVA the cap is set at 20%.

### 9.2 Line Charge Revenue for Individual Customers

The line charge revenue for individual customers grouped by capacity is shown in the following table.

<b>Consumer Capacity kVA</b>	<b>Number of Connections</b>	<b>Line Charge Revenue per Consumer Group</b>	<b>Average Line Charge</b>
30	4	\$9,293	\$2,323
50	4	\$13,581	\$3,395
75	4	\$27,173	\$6,793
100	16	\$83,532	\$5,221
150	59	\$449,579	\$7,620
200	31	\$315,285	\$10,170
300	24	\$315,985	\$13,166
500	24	\$482,768	\$20,115
750	7	\$267,801	\$38,257
1000	7	\$443,779	\$63,397
1500	3	\$176,679	\$58,893
1750	0	\$0	\$0
2000	2	\$229,859	\$114,930
2500	1	\$67,298	\$67,298
3500	1	\$315,286	\$315,286
4500	1	\$5,842	\$5,842
5000	1	\$403,102	\$403,102

<b>6000</b>	1	\$165,236	\$165,236
<b>10000</b>	1	\$845,744	\$845,744
<b>22000</b>	1	\$1,365,148	\$1,365,148

### 9.3 Line Charge Revenue for Group Customers

The line charge revenue for group customers is shown in the following table.

Consumer Capacity	Code	Number of Connections	Fixed Charge per Day	Variable Charge per Day MWh Sales	Line Charge Revenue per Consumer Group
<b>TPC Urban</b>					
<b>Domestic</b>					
Small Domestic (8kVA 1 Phase) - All Peak - Closed *	UD08P	36	\$0.49	\$52.23	\$11,285
Small Domestic (8kVA 1 Phase) - With Off Peak - Closed *	UD08Q	377	\$0.33	\$52.23	\$93,342
Standard Domestic (20kVA 1 Phase) - All Peak	UD20P	993	\$0.90	\$52.23	\$660,410
Standard Domestic (20kVA 1 Phase) - With Off Peak	UD20Q	12455	\$0.62	\$52.23	\$6,777,430
10% Fixed Charge Option - All Peak	UDL20P	129	\$0.15	\$89.01	\$48,170
10% Fixed Charge Option - With Off Peak	UDL20Q	471	\$0.00	\$89.01	\$141,747
<b>Non-Domestic Single Phase &amp; Holiday Homes</b>					
Street Lights (1 Phase)	US001L	13	\$0.07	\$52.23	\$272,364
1 kVA 1 Phase - All Peak	US001P	26	\$0.35	\$52.23	\$9,679
8 kVA 1 Phase - All Peak	US008P	170	\$0.49	\$52.23	\$53,291
8 kVA 1 Phase - With Off Peak	US008Q	35	\$0.33	\$52.23	\$8,666
20 kVA 1 Phase - All Peak	US020P	358	\$0.90	\$52.23	\$238,093
20 kVA 1 Phase - With Off Peak	US020Q	152	\$0.61	\$52.23	\$82,711
<b>Non-Domestic Three Phase</b>					
15 kVA 3 Phase - All Peak	UT015P	43	\$0.74	\$52.23	\$22,468
15 kVA 3 Phase - With Off Peak	UT015Q	19	\$0.49	\$52.23	\$7,927
30 kVA 3 Phase - All Peak	UT030P	566	\$1.26	\$52.23	\$504,766
30 kVA 3 Phase - With Off Peak	UT030Q	121	\$0.84	\$52.23	\$86,454
50 kVA 3 Phase - All Peak	UT050P	263	\$2.55	\$52.23	\$561,339
50 kVA 3 Phase - With Off Peak	UT050Q	98	\$1.74	\$52.23	\$173,636
75 kVA 3 Phase - All Peak	UT075P	93	\$6.19	\$52.23	\$386,823
75 kVA 3 Phase - With Off Peak	UT075Q	25	\$4.17	\$52.23	\$82,911
100 kVA 3 Phase - All Peak	UT100P	7	\$11.47	\$52.23	\$51,292
100 kVA 3 Phase - With Off Peak	UT100Q	2	\$7.96	\$52.23	\$11,743
<b>TPC Rural</b>					
<b>Domestic</b>					

Small Domestic (8kVA 1 Phase) - All Peak - Closed *	RD08P	50	\$0.56	\$52.23	\$16,951
Small Domestic (8kVA 1 Phase) - With Off Peak - Closed *	RD08Q	300	\$0.38	\$52.23	\$79,752
Standard Domestic (20kVA 1 Phase) - All Peak	RD20P	1002	\$1.03	\$52.23	\$713,940
Standard Domestic (20kVA 1 Phase) - With Off Peak	RD20Q	6896	\$0.71	\$52.23	\$3,979,015
10% Fixed Charge Option - All Peak	RDL20P	83	\$0.15	\$89.01	\$30,993
10% Fixed Charge Option - With Off Peak	RDL20Q	141	\$0.05	\$89.01	\$42,433
<b>Non-Domestic Single Phase &amp; Holiday Homes</b>					
Street Lights (1 Phase)	RS001L	14	\$0.08	\$52.23	\$47,276
1 kVA 1 Phase - All Peak	RS001P	130	\$0.35	\$52.23	\$71,202
8 kVA 1 Phase - All Peak	RS008P	667	\$0.56	\$52.23	\$226,130
8 kVA 1 Phase - With Off Peak	RS008Q	80	\$0.38	\$52.23	\$21,267
20 kVA 1 Phase - All Peak	RS020P	2059	\$1.03	\$52.23	\$1,467,068
20 kVA 1 Phase - With Off Peak	RS020Q	274	\$0.71	\$52.23	\$158,098
<b>Non-Domestic Three Phase</b>					
15 kVA 3 Phase - All Peak	RT015P	169	\$0.84	\$52.23	\$88,325
15 kVA 3 Phase - With Off Peak	RT015Q	22	\$0.57	\$52.23	\$9,821
30 kVA 3 Phase - All Peak	RT030P	2390	\$1.44	\$52.23	\$2,348,782
30 kVA 3 Phase - With Off Peak	RT030Q	367	\$0.98	\$52.23	\$280,21
50 kVA 3 Phase - All Peak	RT050P	341	\$2.92	\$52.23	\$742,100
50 kVA 3 Phase - With Off Peak	RT050Q	433	\$2.00	\$52.23	\$819,482
75 kVA 3 Phase - All Peak	RT075P	54	\$7.43	\$52.23	\$262,883
75 kVA 3 Phase - With Off Peak	RT075Q	16	\$5.00	\$52.23	\$47,052
100 kVA 3 Phase - All Peak	RT100P	29	\$13.77	\$52.23	\$147,006
100 kVA 3 Phase - With Off Peak	RT100Q	1	\$9.56	\$52.23	\$6,455

## 10. LINE CHARGE TABLES

### 10.1 Line Charge Breakdown for Individual Customers

ICP Number	Contract Capacity kVA	Trans Power Charge	Sub transmission Charge	Distribution Charge	PowerNet Overhead Charge	Total Line Charge	Fixed Charge per annum	Variable Charge per Day MWh
396516TP-CB8	300	\$3,012	\$11,501	\$2,934	\$38	\$17,486	\$10,631	\$45.48
396517TP-0FD	200	\$3,760	\$14,476	\$2,375	\$38	\$20,650	\$5,580	\$45.48
800105TP-315	10000	\$490,742	\$351,830	\$3,134	\$38	\$845,744	\$422,872	\$15.54
800116TP-578	6000	\$78,324	\$85,633	\$1,242	\$38	\$165,236	\$82,618	\$12.82
800134TP-8A8	5000	\$220,214	\$180,953	\$1,896	\$38	\$403,102	\$201,551	\$16.59
8001365TP-9E5	750	\$18,398	\$16,790	\$243	\$38	\$35,470	\$17,735	\$9.11
800127TP-EC5	500	\$4,002	\$5,180	\$2,856	\$38	\$12,076	\$6,038	\$17.50
800139TP-7F3	300	\$5,497	\$4,901	\$1,976	\$38	\$12,412	\$6,206	\$15.59
800107TP-390	200	\$3,880	\$3,549	\$2,204	\$38	\$9,672	\$4,836	\$9.75
800118TP-6E3	150	\$3,127	\$3,354	\$1,772	\$38	\$8,291	(\$4,349)	\$45.48
800128TP-11B	100	\$2,862	\$3,890	\$1,752	\$38	\$8,542	(\$2,321)	\$45.48
8001281TP-B51	100	\$1,536	\$2,251	\$1,726	\$38	\$5,551	\$2,464	\$45.48
8001275TP-A4C	75	\$4,348	\$5,436	\$1,290	\$38	\$11,112	(\$8,064)	\$45.48
118447TP-ECC	150	\$2,452	\$2,235	\$1,754	\$38	\$6,480	(\$1,172)	\$45.48
800146TP-D70	22000	\$1,044,592	\$320,151	\$366	\$38	\$1,365,148	\$1,365,148	\$0.00
502013TP-4D1	150	\$1,947	\$1,024	\$1,757	\$38	\$4,767	\$2,860	\$45.48
304798TP-4EA	300	\$2,579	\$1,789	\$3,338	\$38	\$7,743	\$3,872	\$37.59
800186TP-A9F	750	\$14,690	\$11,203	\$6,268	\$38	\$32,200	\$16,100	\$12.25
8001708TP-54F	500	\$3,847	\$10,292	\$4,810	\$38	\$18,987	\$9,494	\$61.65
1819183TP-528	150	\$1,470	\$567	\$3,421	\$38	\$5,496	\$2,748	\$20.66
482021TP-8E5	200	\$1,831	\$9,704	\$2,670	\$38	\$14,243	\$14,243	\$0.00
100109TP-F16	150	\$3,400	\$3,568	\$1,959	\$38	\$8,965	(\$2,175)	\$45.48
800158TP-446	100	\$2,461	\$3,535	\$2,415	\$38	\$8,449	\$4,225	\$31.53
8001315TP-CB8	3500	\$108,129	\$206,436	\$683	\$38	\$315,285	\$157,643	\$25.87

437074TP-48B	1500	\$55,133	\$29,040	\$12,249	\$38	\$96,460	\$48,230	\$14.16
437078TP-795	1000	\$26,771	\$64,716	\$6,966	\$38	\$98,492	\$49,246	\$24.28
4370715TP-029	1000	\$20,923	\$53,080	\$8,313	\$38	\$82,354	\$41,177	\$18.93
800155TP-B1D	500	\$7,040	\$17,683	\$4,536	\$38	\$29,297	\$14,649	\$31.17
8001875TP-046	300	\$14,589	\$7,468	\$3,899	\$38	\$25,995	\$12,997	\$7.30
5678995TP-502	200	\$75	\$47	\$2,372	\$38	\$2,531	\$2,469	\$45.48
800133TP-562	200	\$2,885	\$1,686	\$1,747	\$38	\$6,356	(\$4,554)	\$45.48
141326TP-DAF	4500	\$2,528	\$2,137	\$1,138	\$38	\$5,842	\$2,921	\$16.32
800163TP-D6A	200	\$3,669	\$5,999	\$2,335	\$38	\$12,041	\$6,020	\$15.09
444030TP-F7D	300	\$3,832	\$9,651	\$2,886	\$38	\$16,407	\$8,204	\$21.20
549615TP-72D	200	\$4,854	\$3,070	\$2,122	\$38	\$10,084	(\$5,258)	\$45.48
800124TP-205	150	\$2,393	\$1,239	\$1,539	\$38	\$5,210	(\$6,908)	\$45.48
556470TP-E14	1000	\$34,764	\$24,490	\$4,103	\$38	\$63,395	\$31,698	\$9.25
556472TP-E91	300	\$8,669	\$6,101	\$1,999	\$38	\$16,808	\$8,404	\$9.82
240526TP-6BD	150	\$1,696	\$1,227	\$1,801	\$38	\$4,762	\$2,381	\$132.27
8001505TP-013	150	\$3,664	\$1,493	\$3,392	\$38	\$8,587	(\$6,783)	\$45.48
5290993TP-D4F	300	\$2,604	\$1,125	\$4,852	\$38	\$8,619	\$197	\$45.48
221318TP-720	150	\$1,784	\$924	\$1,621	\$38	\$4,368	(\$619)	\$45.48
8001815TP-FB6	150	\$2,466	\$1,029	\$2,427	\$38	\$5,960	\$1,054	\$45.48
8001801TP-411	1000	\$26,361	\$16,554	\$6,233	\$38	\$49,187	\$27,037	\$10.85
800181TP-755	1000	\$37,010	\$24,460	\$6,233	\$38	\$67,741	\$33,870	\$9.16
579155TP-BA6	500	\$8,433	\$5,268	\$3,961	\$38	\$17,700	\$8,850	\$13.47
314914TP-C54	150	\$2,975	\$1,542	\$1,875	\$38	\$6,430	\$512	\$45.48
4004001TP-401	200	\$4,238	\$12,950	\$2,669	\$38	\$19,895	\$8,963	\$45.48
5672985TP-1EF	150	\$750	\$1,837	\$1,809	\$38	\$4,435	\$1,189	\$45.48
313732TP-2E5	100	\$1,345	\$2,070	\$1,104	\$38	\$4,557	\$855	\$45.48
362484TP-9C2	150	\$1,937	\$6,430	\$1,990	\$38	\$10,395	\$10,395	\$0.00
404955TP-F5E	200	\$2,805	\$6,772	\$2,175	\$38	\$11,790	(\$1,307)	\$45.48
405545TP-85F	200	\$5,314	\$3,375	\$2,873	\$38	\$11,601	\$5,800	\$15.39
405508TP-5A1	100	\$1,246	\$1,739	\$1,474	\$38	\$4,497	\$497	\$45.48

405350TP-9BB	150	\$1,577	\$4,479	\$1,939	\$38	\$8,033	\$1,816	\$45.48
800153TP-A92	200	\$2,591	\$6,381	\$2,127	\$38	\$11,137	(\$1,362)	\$45.48
8001305TP-615	150	\$1,779	\$4,637	\$1,755	\$38	\$8,210	(\$2,816)	\$45.48
116195TP-ECE	500	\$2,154	\$932	\$5,643	\$38	\$8,768	\$4,384	\$64.47
5791985TP-A1E	30	\$1,174	\$1,640	\$1,357	\$38	\$4,208	(\$1,359)	\$45.48
110146TP-A8C	150	\$3,331	\$1,403	\$2,741	\$38	\$7,513	(\$5,891)	\$45.48
241126TP-B1C	150	\$2,350	\$1,313	\$1,777	\$38	\$5,479	\$80	\$45.48
166724TP-C86	200	\$1,431	\$1,266	\$2,615	\$38	\$5,350	\$339	\$45.48
690224TP-CD4	150	\$2,599	\$1,328	\$2,695	\$38	\$6,659	\$2,453	\$45.48
250351TP-0CD	300	\$12,978	\$6,502	\$2,119	\$38	\$21,637	\$10,819	\$8.54
177096TP-8F2	150	\$1,088	\$476	\$1,623	\$38	\$3,224	\$1,612	\$10.97
800151TP-A17	300	\$4,635	\$1,905	\$3,519	\$38	\$10,096	(\$9,648)	\$45.48
181105TP-28D	150	\$4,005	\$1,891	\$1,981	\$38	\$7,915	\$3,957	\$14.88
240375TP-473	100	\$1,152	\$1,677	\$1,687	\$38	\$4,555	(\$1,702)	\$45.48
8001245TP-DB4	150	\$2,037	\$867	\$2,613	\$38	\$5,555	\$3,448	\$45.48
517704TP-375	150	\$3,409	\$1,615	\$2,115	\$38	\$7,177	(\$6,971)	\$45.48
637250TP-A0B	500	\$9,726	\$13,736	\$3,649	\$38	\$27,150	\$13,575	\$45.10
1819179TP-7AE	150	\$2,434	\$1,333	\$1,820	\$38	\$5,625	\$182	\$45.48
625837TP-99A	750	\$4,689	\$4,228	\$4,545	\$38	\$13,501	\$6,750	\$9.93
800114TP-5FD	150	\$3,044	\$1,246	\$3,402	\$38	\$7,730	\$3,865	\$12.97
556467TP-973	150	\$2,713	\$2,170	\$1,745	\$38	\$6,667	(\$507)	\$45.48
800103TP-29A	500	\$9,855	\$10,210	\$609	\$38	\$20,712	\$10,356	\$8.56
569640TP-BA7	500	\$9,750	\$6,986	\$2,673	\$38	\$19,447	\$9,724	\$9.75
800130TP-9A2	300	\$2,354	\$1,290	\$194	\$38	\$3,876	\$1,938	\$5.67
568791TP-204	200	\$1,695	\$968	\$371	\$38	\$3,073	\$1,536	\$17.66
521003TP-551	300	\$13,799	\$6,921	\$2,055	\$38	\$22,813	\$11,407	\$8.93
564570TP-57C	100	\$1,926	\$2,831	\$993	\$38	\$5,787	\$2,894	\$13.09
5791016TP-030	75	\$1,931	\$2,823	\$831	\$38	\$5,623	\$2,811	\$12.28
181975TP-7DD	50	\$612	\$918	\$501	\$38	\$2,070	\$1,035	\$14.18
400440TP-B34	50	\$892	\$1,312	\$474	\$38	\$2,717	\$1,358	\$12.94