

# Nelson Electricity Limited

## Pricing Methodology Disclosure

For the period beginning 1 April 2011

The following information is disclosed in accordance with the Electricity Information Disclosure Requirements 2004 – Sections 22 & 23.

The Derivation of charges is described in the following sections.

- Customer Groups
- Customer Group Statistics
- Allocation and Recovery of Network and Transmission Charges
- Cost Recovery per Load Group
- Fixed v's Variable Charges
- Price Path Threshold Implications
- Pricing Schedules

### Consumer Groups or Load Groups

Consumer Groups are based on typical load patterns, fuse size and annual kWh consumption. Consumers are grouped into 6 categories.

- **Load Group 0**  
Unmetered Load or Metered Builders Temporaries
- **Load Group 1**  
Domestic consumers Low User Option- Connections that are a domestic home that exhibit a typical domestic load profile using less than 8000kWh per year.. The connection is typically 15kVA. The Nelson Electricity Limited (NEL) Network Code allows for single phase 60amp, two phase 40 amp or three phase 30amp supplies to be classed as a domestic. A domestic type load profile not on Low User Option is typically categorized as Load Group 2.
- **Load Group 2**  
Domestic and Small Business consumers – Connections that are 150kVA or less. Domestic consumers not on Low User Option are also in this group.
- **Load Group 3**  
Time of Use consumers with supply up to 2000kVA.
- **Load Group 4**  
Time of Use consumers with supply from 2001kVA to 3000kVA.
- **Load Group 5**  
Consumers with capacity supplied of greater than 3000kVA with supply from a dedicated 11kV/400V substations.

NEL has combined groups 3 and 4 due to the numbers being low and that there is little difference between each consumer group.

## Consumer Group Statistics

Statistics are collected and analysed as per the customer groupings as described in the previous section. This information is used as a base to NEL's pricing allocations as described further in this report. Information is as follows:

- Number of Connections per group.

<b>Load Group</b>	<b>Connections</b>
<b>0</b>	54
<b>1</b>	2,200
<b>2</b>	6,764
<b>3 and 4</b>	98
<b>5</b>	1
<b>Total</b>	<b>9,117</b>

- Anytime Peak per group.

<b>Load Group</b>	<b>Peak kVA</b>
<b>0</b>	340
<b>1</b>	7,700
<b>2</b>	23,674
<b>3 and 4</b>	14,500
<b>5</b>	3,250
<b>Total</b>	<b>49,464</b>

- Winter Demand Peak per group.

<b>Load Group</b>	<b>kVA</b>		<b>CPD Allocation</b>
	<b>8:30 am - 11:30 am</b>	<b>5:00 pm - 6:00 pm</b>	
<b>0</b>	20	305	77
<b>1</b>	3,520	4,400	3,696
<b>2</b>	13,231	12,040	12,993
<b>3 and 4</b>	14,500	13,170	14,234
<b>5</b>	2,629	2,629	2,629
<b>Total</b>	<b>33,880</b>	<b>32,239</b>	<b>33,629</b>

NEL has a winter load that peaks between 8:30 am - 11:30 am and 5:00 pm - 6:00 pm. The morning load is predominantly business load and the evening peak is typically influenced by the domestic. The statistics required are to ensure the right pricing signals are sent to each group and that charges are as fair and equitable as possible to all connections. The Winter Demand is a critical part to the allocation of Transmission Costs between groups.

- GWh per group.

GWh			
Load Group	Winter	Summer	Total
0	0.79	0.80	1.59
1	5.62	5.58	11.20
2	35.74	36.60	72.34
3 and 4	21.20	26.19	47.39
5	6.35	8.16	14.51
<b>Total</b>	<b>69.70</b>	<b>77.33</b>	<b>147.03</b>

These figures are estimated consumption per Load Group with no loss allocation back to GXP. Winter months are May – September, Summer months are October – April.

- Regulatory Value of System Fixed Assets at ODV at 31 March 2010 per group allocation

Asset Group	Regulatory Value of System Fixed Assets					Total
	0	1	2	3 and 4	5	
33kV Lines	\$9,666	\$137,263	\$647,931	\$549,985	\$130,465	\$1,475,310
Zone Sub	\$6,199	\$88,028	\$415,525	\$352,711	\$83,668	\$946,131
11kV Lines	\$40,784	\$579,151	\$2,733,796	\$2,320,535	\$550,467	\$6,224,734
11kV/400V Sub	\$37,326	\$530,050	\$2,502,019	\$1,962,719	\$232,794	\$5,264,908
400V Lines	\$62,691	\$890,245	\$4,202,265	\$3,064,093	\$0	\$8,219,295
Other	\$10,330	\$146,690	\$692,426	\$587,753	\$139,424	\$1,576,623
<b>Total</b>	<b>\$166,996</b>	<b>\$2,371,428</b>	<b>\$11,193,961</b>	<b>\$8,837,797</b>	<b>\$1,136,818</b>	<b>\$23,707,000</b>

Regulatory Asset Base Valuation allocation is assessed on each load group's utilisation of assets. As an example, Group 5 does not utilise any of the 400V lines so there is no value assigned.

- Cost of Capital (After Tax)

<b>WACC = <math>R_d(1-T_c)D/V + R_eE/V</math></b>		<b>8.21%</b>
Rd	7.40%	pre-tax cost of debt
Tc	28.00%	corporate tax rate
Re	10.14%	cost of equity
D	40.00%	target debt:equity ratio
E	60.00%	target debt:equity ratio
V	100.00%	D + E
<b>Cost of Equity = <math>R_f(1-T_i) + B_eMRP</math></b>		<b>10.14%</b>
Rf	5.40%	rate of return on risk free asset
Ti	28.00%	investor tax rate
Be	0.83	equity beta
MRP	7.50%	market risk premium
Ba	0.50	asset beta

The above methodology is based on advice from Marlborough Lines Ltd, a shareholder of Nelson Electricity Ltd.

On the basis of the above input parameters, the NEL Weighted Average Cost of Capital (WACC) is 8.21% of Regulatory Asset Base = \$1,946k .

## Allocation and Recovery of Network and Transmission Charges

Network Charges are set to recover indirect operating costs, direct operating costs, depreciation and cost of capital. The setting of the charges also takes into account historical charging practices and methodologies.

The company annual revenue requirements for 2011 are:

Operating Costs (Network R&M)	\$590k
Transmission Costs	\$2,447k
Overhead Costs	\$1,735k
Depreciation	\$1,518k
Target Return (before tax)	\$2,902k

With the Nelson Electricity being a small predominantly urban network there was no need to sectionalise it into separate pricing areas.

### Cost Recovery per Load Group

Following is a table outlining the cost recoveries per load group.

Load Group	Operating	Transmission	Overhead	Depreciation	Target Return	Total
0	\$10,156	\$45,401	\$12,222	\$10,693	\$18,587	\$97,058
1	\$59,018	\$176,879	\$173,553	\$151,847	\$278,719	\$840,016
2	\$278,586	\$1,223,684	\$819,232	\$716,769	\$2,427,932	\$5,466,203
3,4	\$213,948	\$810,284	\$646,795	\$565,899	\$120,942	\$2,357,868
5	\$28,292	\$190,753	\$83,198	\$72,792	\$56,322	\$431,357
<b>Total</b>	<b>\$590,000</b>	<b>\$2,447,000</b>	<b>\$1,735,000</b>	<b>\$1,518,000</b>	<b>\$2,902,503</b>	<b>\$9,192,503</b>

The methodology used for the above cost apportionment is as follows:

- Operating Costs – Operating costs is the Operational Expenditure Budget that covers both the planned and unplanned network R&M expenditure on the network. The Operational Expenditure Budget is split into the different asset types as per the ODRC groups. The asset group expenses are then allocated to each load group according to the ODRC proportions for each asset group.
- Transmission Costs – Transmission costs are an unavoidable cost, it covers the upstream costs from our sub-transmission connection point at STK0331. The major component in transmission costs is the Interconnection charge (system peak based). Transmission peaks are typically encountered during mid winter during the weekday morning. Transmission costs are split between load groups based on their influence on these peaks.

NEL currently estimates the level of Loss Rental Rebates it expects to receive for the year and takes this into account when assessing total transmission charges for the year. If excessive Loss Rental Rebates are received through the year then NEL will assess the level of excess and pass on to electricity retailers on an annual kWh billed basis at the end of the NEL financial year.

- Overhead Costs – Are apportioned by using two measures; the number of network connections and the maximum demand of the load group. This gives a balance of spreading overhead costs between the business of selling capacity and the number of consumers connected.

- Depreciation – This is apportioned by using the assessed depreciation using the NEL Regulatory Asset Base model. The apportioning is as per the assessed Regulatory Asset Value change per load group between years 2009 and 2010.
- Target Return - This is apportioned to load groups as per the Regulatory Asset Base % split per load group. It is, however, important to note that the Regulatory Asset Base valuation for assets installed prior to 2004 still undervalues the underground network value and so the target return takes this into account.

### **Fixed v's Variable Charges**

The proportion of charges that are fixed and variable have been set based on the historical pricing methodologies. NEL has maintained a pricing mix that has been consistent for over ten years and as the previous pricing methodology was working, there was no compelling reason to change to proportions.

The only major variation has been the provision of a low daily fixed charge option for domestic consumers. This introduces a cross subsidization, which the pricing structures of previous years had been designed to remove.

Currently overall the proportions between fixed and variable line charges are 50% Fixed and 50% Variable. Groups 1 and 2 have a higher variable proportion while groups 3, 4, and 5 have a higher fixed proportion.

NEL is in the business of selling capacity and most of its costs as identified above are fixed. If the true proportion of fixed and variable costs were charged in the same proportions to all consumers, the fixed charge proportion of groups 1 and 2a consumers would increase significantly with the variable charges reduced.

- **Load Group 0 – Unmetered and Builders Temporary**

Builders Temporary (metered) - Network costs are broken down into the following:

- Fixed Daily Charge
- Variable kWh Charge.

For the average Builders Temporary, fixed charges recover approximately 60% of total network costs.

Unmetered Supply – Network costs are fully fixed with no variable.

- **Load Group 1 – Domestic Consumers (Low User)**

Network costs are broken down into the following:

- Fixed Daily Charge based on connection capacity of 15kVA
- Variable kWh Charge. This charge value depends on whether the load is controlled by ripple control or uncontrolled.

For the average Group 1 customer, fixed charges recover approximately 16% of total network costs.

- **Load Group 2 – Connections from 15kVA – 150kVA (Non Time of Use)**

Network costs are broken down into the following:

- Fixed Daily Charge. (based on fuse capacity (in kVA))
- Variable kWh Charge. This charge value depends on whether the load is controlled by ripple control or uncontrolled.

For the average Group 2 customer, fixed charges recover approximately 45% of total network costs. At 8,000kWh per year, 37% at 12,000kWh per year.

- **Load Groups 3, 4, 5. – Time of Use Consumers**

These charges are for the larger installations on the network. These sites have Time of Use metering installed. NEL can set network charges based on the individual sites configuration and usage pattern accurately. Network Costs are broken down into four categories.

- Installation Charge – This is a fixed per installation charge.
- Capacity Supply Charge – Based on the installations fuse size or transformer size.
- Winter Demand – This is the installations maximum half hour demand in the Winter Demand time zones as described earlier.
- kWh Charge – A variable charge based on the kWh consumption.
- Power factor charge for sites that have a pf < 0.95.

The overall proportion of fixed v's variable charges for Time of Use consumers varies greatly due to the differing types of consumers. This pricing methodology attempts to ensure every Time of Use consumer pays its fair share of line charges and is not subsidized by other Time of Use consumers. The average consumer will have approximately 62% charges as fixed charges.

# Pricing Schedule

## Nelson Electricity Line Prices

From 1 April 2011



Nelson Electricity Ltd is adjusting electricity line charges effective 1 April 2011.

The line charges cover the cost of local electricity distribution and national electricity transmission. Line charges form part of the total power bill you get from your electricity retailer.

Nelson Electricity distributes electricity to connections in the central Nelson city including most of the Port, Port Hills, Vanguard/St Vincent Street, Hospital, Brook, Wood and CBD areas.

Price Option	Price Description	Consumer Numbers	Unit Charges	New Line Charges from 1 April 2011			Line Charges up to 31 March 2011		
				Local Line	National Line	Total Line	Local Line	National Line	Total Line
<b>Load Group 0</b>									
<b>Builders Temporary (7kVA)</b>									
0-BT	Builders Temp - Fixed	26	cents/day	52.000	0.000	<b>52.000</b>	50.000	0.000	<b>50.000</b>
0-BT	Builders Temp - Anytime		cents/kWh	5.888	1.712	<b>7.600</b>	5.805	1.695	<b>7.500</b>
<b>Unmetered Connection (&lt; 1kW)</b>									
0-UM	Unmetered - Fixed	27	cents/day	5.069	0.000	<b>5.069</b>	4.932	0.000	<b>4.932</b>
0-UM	Maximum Demand		cents/kWh/day	56.103	31.020	<b>87.123</b>	54.932	30.000	<b>84.932</b>
<b>Streetlighting</b>									
0-SL	Streetlight	1	\$/day	206.210	36.390	<b>242.600</b>	201.144	35.496	<b>236.640</b>
<b>Load Group 1</b>									
<b>Domestic Low User (15kVA)</b>									
1-Fixed	Fixed	2200	cents/kVA/day	1.000	0.000	<b>1.000</b>	1.000	0.000	<b>1.000</b>
1-24hr	Anytime		cents/kWh	5.888	1.712	<b>7.600</b>	5.705	1.695	<b>7.400</b>
1-Water	Controlled (Hot Water)		cents/kWh	3.548	1.052	<b>4.600</b>	3.458	1.042	<b>4.500</b>
1-Night	Night Rate (11pm-7am)		cents/kWh	2.287	0.613	<b>2.900</b>	2.193	0.607	<b>2.800</b>
<b>Load Group 2 (from 15kVA to 150kVA)</b>									
<b>Domestic and Business</b>									
2-Fixed	Fixed	6764	cents/kVA/day	4.400	0.000	<b>4.400</b>	4.300	0.000	<b>4.300</b>
2-24hr	Anytime		cents/kWh	3.068	1.712	<b>4.780</b>	2.975	1.695	<b>4.670</b>
2-Water	Controlled (Hot Water)		cents/kWh	1.968	1.052	<b>3.020</b>	1.908	1.042	<b>2.950</b>
2-Night	Night Rate (11pm-7am)		cents/kWh	1.477	0.613	<b>2.090</b>	1.483	0.607	<b>2.090</b>
<b>Load Group 3 LARGE BUSINESS (up to 2400kVA)</b>									
<b>TIME OF USE</b>									
	Metered Installation	98	cents/day	110.000	0.00	<b>110.00</b>	107.50	0.00	<b>107.50</b>
	Winter Demand (kVA)		cents/kVA/day	11.684	6.236	<b>17.92</b>	11.346	6.174	<b>17.52</b>
	Energy		cents/kWh	0.749	0.891	<b>1.640</b>	0.718	0.8820	<b>1.600</b>
	Capacity Supplied								
	T-03	16kVA - 42kVA	\$/day	1.85	0.00	<b>1.85</b>	1.81	0.00	<b>1.81</b>
	T-04	43kVA - 69kVA	\$/day	3.04	0.00	<b>3.04</b>	2.97	0.00	<b>2.97</b>
	T-05	70kVA - 110kVA	\$/day	4.84	0.00	<b>4.84</b>	4.73	0.00	<b>4.73</b>
	T-06	111kVA - 138kVA	\$/day	6.07	0.00	<b>6.07</b>	5.93	0.00	<b>5.93</b>
	T-07	139kVA - 218kVA	\$/day	9.59	0.00	<b>9.59</b>	9.37	0.00	<b>9.37</b>
	T-08	219kVA - 300kVA	\$/day	13.20	0.00	<b>13.20</b>	12.90	0.00	<b>12.90</b>
	T-09	301kVA - 500kVA	\$/day	22.00	0.00	<b>22.00</b>	21.50	0.00	<b>21.50</b>
	T-10	501kVA - 750kVA	\$/day	33.00	0.00	<b>33.00</b>	32.25	0.00	<b>32.25</b>
	T-11	751kVA - 1000kVA	\$/day	44.00	0.00	<b>44.00</b>	43.00	0.00	<b>43.00</b>
	T-12	1001kVA - 1500kVA	\$/day	66.00	0.00	<b>66.00</b>	64.50	0.00	<b>64.50</b>
	T-13	1501kVA - 2000kVA	\$/day	88.00	0.00	<b>88.00</b>	86.00	0.00	<b>86.00</b>
	T-15	2400kVA	\$/day	105.60	0.00	<b>105.60</b>	103.20	0.00	<b>103.20</b>
	Power Factor <0.95		\$/kVA/mth	5.51	0.00	<b>5.51</b>	5.38	0.00	<b>5.38</b>

All prices are GST exclusive. All pricing is available on our website [www.nel.co.nz](http://www.nel.co.nz)

**Load Group 0** - Unmetered loads that meet Electricity Authority Unmetered Load Guidelines and Builders Temps. (Builders Temp > 7kVA use Load Group 2)

**Load Group 1** - Domestic households with connection capacity of 15kVA only (Low Fixed Tariff Option)

**Load Group 2** - Available to all connections with capacity from 15kVA to 150kVA.

**Load Group 1 & 2** - All current domestic households have an assessed connection capacity of 15kVA.

**Load Group 3** - Available to any connections up to 2400kVA.

Any questions about the line charges, please email us at [enquiry@nel.co.nz](mailto:enquiry@nel.co.nz), or phone (03)546-0486.