



**POWERNET LIMITED LINE PRICING  
METHODOLOGY**

**FOR THE ELECTRICITY INVERCARGILL LIMITED  
NETWORK AS AT 1 APRIL 2016**

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## 1. GLOSSARY OF TERMS

**After Diversity Maximum Demand (ADMD)** is the customer's Maximum Demand after it has been adjusted by the Diversity Factor.

**Anytime Maximum Demand (AMD)** is the Maximum Demand of the customer measured at the customer's installation during any half hour period during the year.

**Coincident Grid Maximum Demand** is the average of the 100 demand measurements of the customer which are coincident with the 100 highest demands which occur on the Transpower grid in the lower South Island region during the assessment period 1 September to 31 August which the Transpower Interconnection charges are based.

**Contract Capacity** is the capacity of a customer used for billing purposes. It is formalized by way of agreement and control can be by way of the ICP fusing or the Anytime Maximum Demand.

**Customer** refers to the person or body that is responsible for an electrical installation that is connected to Electricity Invercargill Limited's electricity network.

**Distributed Generation** or embedded generation is electricity generation that is connected directly to a distribution network.

**Diversity Factor** is the factor applied to a load or customer demand to allow for the use of electricity at different times. In theory the sum of the customer Maximum Demands after the Diversity Factors have been applied should equal the Maximum Demand measured at the GXP.

**ENA** is the Electricity Networks Association

**Grid Exit Point (GXP)** means the Grid Exit Point and is the connection point between the Transpower grid and the Electricity Invercargill Limited network

**Residential & General Customers** include most customers with a Contract Capacity up to 150 kVA.

**Half Hour Metering (HHM)** describes the metering equipment that is capable of measuring electricity consumption on a half hour basis and when the half hour readings are used for billing purposes.

**Individual Customers** are in most cases commercial or industrial customers that have a Contract Capacity equal to or in excess of 150kVA.

**Installation Control Point (ICP)** is the point of connection between the Electricity Invercargill Limited network and the Retailer's customer.

**Maximum Demand (MD)** of a customer is the maximum demand of the customer that occurs throughout the specified Peak Period Energy time periods for each GXP or if that measurement is not available it is based on the Contract Capacity.

**Optimised Depreciated Replacement Cost (ODRC)** relates to the network assets and is the current depreciated value of all the network assets based on an efficient network design using modern equivalent assets.

**Retailers** are the companies that generate and/or buy electricity and then sell this service to end use customers utilising the local electricity network.

**Time of Use (TOU)** refers to meters that are capable of providing Anytime and Maximum Demand readings and Peak, Shoulder and Low Period Energy readings for billing purposes.

**Transpower** is the State Owned Enterprise that owns the transmission network and delivers electricity to Electricity Distribution Businesses (EDBs).

## 2. CHANGES TO PRICING METHODOLOGY

There have been no material changes to EIL's pricing methodology since the previous methodology was published in March 2015. From 1 April 2016 we have made changes to pricing terminology and definitions of customers groups to align with the standards established by the ENA. For example:

- Domestic has become Residential
- Commercial has become General

A glossary of terms has been introduced to help with the understanding of the industry related terminology.

## 3. INTRODUCTION

The purpose of this document is to outline the methodology Electricity Invercargill Limited uses to economically reflect the costs of providing delivery services to the different consumer groups supplied on the network.

### 3.1 Background

PowerNet Limited (PNL) has a responsibility for the management of the network assets owned by Electricity Invercargill Limited (EIL).

The network consists of:

- 1.4km of 33kV lines and 22.1km of 33kV cable.
- Four zone substations to transform High Voltage (HV) to Medium Voltage (MV).
- Two 11kV feeders supplying the Bluff network area from The Power Company Limited's Bluff Substation.
- 22.8km of 11kV lines and 159.0km of 11kV cables.
- 442 distribution transformers.

- The low voltage (230V) has 29.7km of overhead lines and 421.3km of cable supplying 17,243 customers.

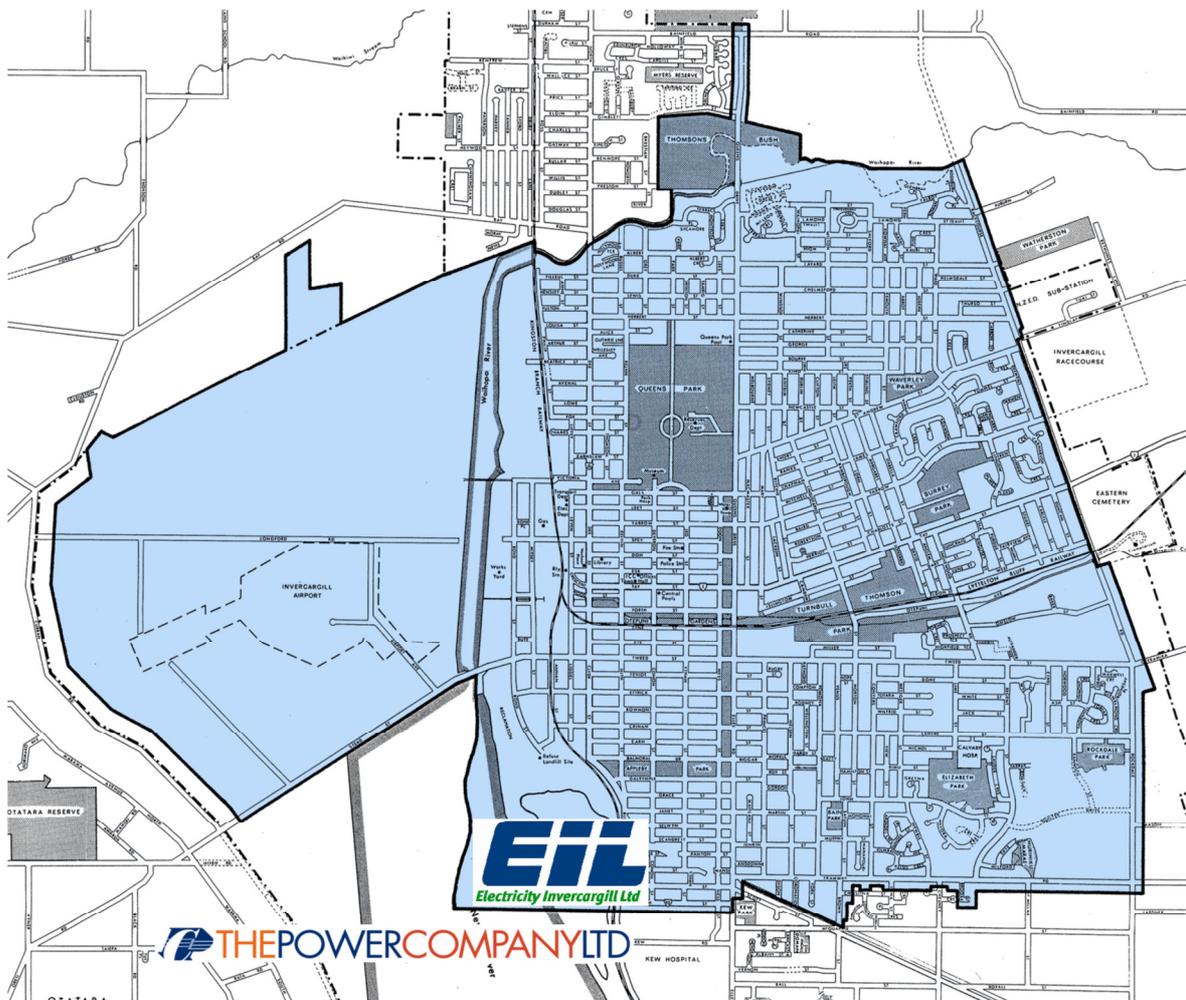


Figure 1: EIL Invercargill Distribution Area

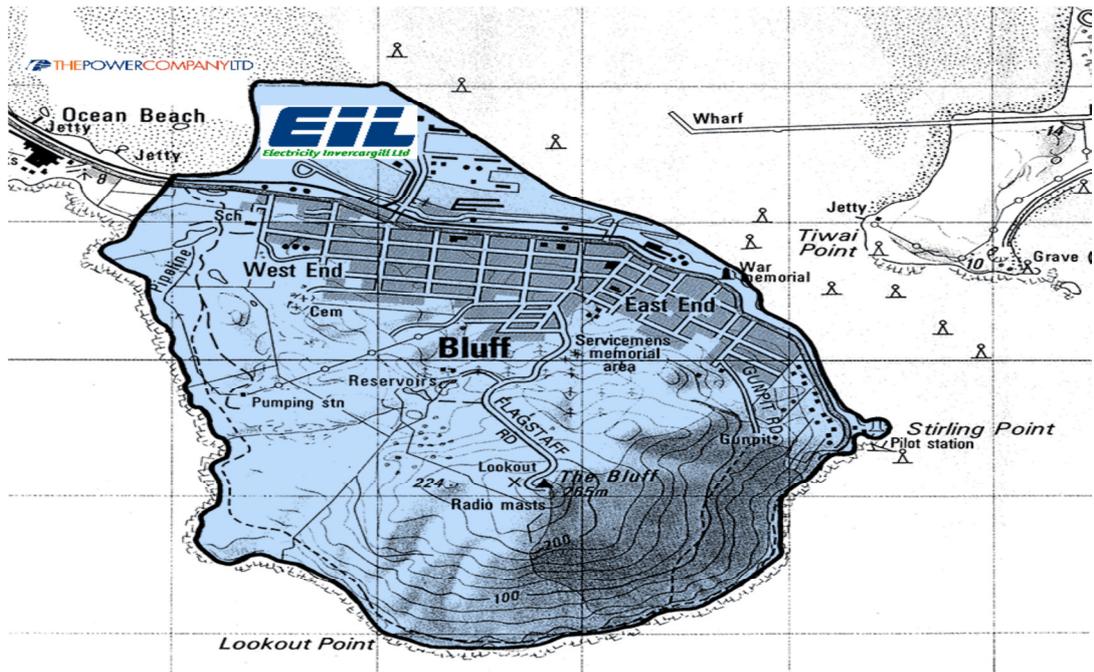


Figure 2: EIL Bluff Distribution Area

## 2.2 Compliance with Electricity Authority Information Disclosure Guidelines

This methodology has been prepared to meet the requirements of the Commerce Commission's Commerce Act (Electricity Distribution Services Information Disclosure) Determination 2012,

In addition, in February 2010 the Electricity Commission published its Distribution Pricing Principles and Information Disclosure Guidelines (2010 IDG). These contain a set of pricing principles and guidelines for information to be disclosed regarding the extent to which the pricing methodology adopted by an electricity distributor complies with those principles. The disclosure guidelines require the following disclosures (which are similar to, but not exactly the same as the 2008 IDR disclosure requirements):

- (a) Prices are to be based on a well-defined, clearly explained and published methodology, with any material revisions to the methodology notified and clearly marked.
- (b) The pricing methodology must demonstrate:
  - i. How the methodology links to the pricing principles and any noncompliance;
  - ii. Rationale for consumer groupings and method for determining the allocation of consumers to consumer groups;
  - iii. Quantification of key components of costs and revenues;
- (c) An explanation of the cost allocation methodology and the rationale for the allocation to each consumer group;
  - i. An explanation of the derivation of the tariffs to be charged to each consumer group and the rationale for the tariff design; and
  - ii. Pricing arrangements used to share the value of any deferral of investment in distribution and transmission assets, with the investors in alternatives such as distributed generation or load management; where alternatives are practicable and where network economics warrant.
- (d) The pricing methodology should also:
  - i. Employ industry standard terminology, where possible; and

- ii. where a change to the previous pricing methodology is implemented, describe the impact on consumer classes and transition arrangements implemented to introduce the new methodology.

The below table outlines the sections of this methodology which address the requirements of each of the above guidelines:

<b>Guideline</b>	<b>Methodology section addressing guideline</b>
(a).	This entire document is written to meet these standards.
(b)i.	Section 2.4
(b)ii	Section 4
(b)iii	Section 5
(b)iv	Section 6
(b)v	Section 4
(b)vi	We assess and consult with customers on an individual basis regarding these opportunities.
(c)i	We consider we use standard industry terminology.
(c)ii	N/A

### 3.3 Pricing Principles

The 2010 Electricity Commission's Distribution Pricing Principles are as follows:

- (a) Prices are to signal the economic costs of service provision, by:
  - i. Being subsidy free (equal to or greater than incremental costs, and less than or equal to stand alone costs) except where subsidies arise from compliance with legislation and/or other regulation;
  - ii. Having regard, to the extent practicable, to the level of available service capacity; and
  - iii. Signalling, to the extent practicable, the impact of additional usage on future investment costs.
- (b) Where prices based on 'efficient' incremental costs would under-recover allowed revenues, the shortfall should be made up by setting prices in a manner that has regard to consumers' demand responsiveness, to the extent practicable.
- (c) Provided that prices satisfy (a) above, prices should be responsive to the requirement and circumstances of stakeholders in order to:
  - i. Discourage uneconomic bypass;
  - ii. Allow for negotiation to better reflect the economic value of services and enable stakeholders to make price/quality trade-offs or non-standard arrangements for services; and
  - iii. Where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives (e.g.: distributed generation or demand response) and technology innovation.
- (d) Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact on stakeholders.
- (e) Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers.

We have considered each of these principles in developing our line charges to apply from 1 April 2014.

### 3.4 Electricity Authority Pricing Principles Comparison

In this section PowerNet sets out how it considers it meets the Electricity Authority's pricing principles.

#### 3.4.2 Prices are to signal the economic costs of service provision, by:

- i. Being subsidy free (equal to or greater than incremental costs, and less than or equal to stand alone costs) except where subsidies arise from compliance with legislation and/or other regulation;*
- ii. Having regard, to the extent practicable, to the level of available service capacity; and*
- iii. Signalling, to the extent practicable, the impact of additional usage on future investment costs.*

The PowerNet cost allocation model allocates costs to individual customers based on their share of the assets employed to supply them. The remaining residential & general customers have the resulting costs allocated to them on an averaged basis once the individual customers' costs have been deducted from the total costs. This method results in a cost allocation which recovers revenue in between stand-alone costs and the incremental cost of supply.

PowerNet takes subsidy free prices to mean that for each consumer group, the revenues from that group should not be below the cost of connecting that consumer group to the network (incremental costs), or, be greater than the costs of supplying that group, as if they were the only customer group (stand-alone costs). It is not easy to accurately establish the stand alone costs for most customers supplied by a common service via a meshed network. We can conclude that stand alone costs would be higher than average costs for those customers given the scale efficiencies in supplying them from a meshed network. PowerNet believes that the cost allocators used in the model are a representation of the underlying cost drivers of the business and therefore is subsidy free.

New connections to the network pay a capital contribution if the expected revenue from the line charge does not cover the capital recovery cost required, this ensures that new connections are not subsidised and that total revenue from the new customer is not less than the expected incremental costs.

PowerNet's pricing structure is based on capacity based load groups to ensure prices have regard to the level of service capacity and encourages the use of controlled energy consumption by having a price differential in the fixed charge for residential & general customers.

The day/night energy component also provides a strong signal to consumers to reduce their costs by utilising spare network capacity at night thus reducing capital investment in the network.

Individual customers have a capacity based charge along with a peak demand charge.

This is because the most significant cost driver that influences investment requirements in the network is the combined peak demand of all consumers in an

area. PowerNet designs and constructs its network to meet this peak load. This ensures that prices signal the impact of additional demand on future investment costs.

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

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

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

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

In the past PowerNet has not found it practicable to assess consumers’ demand responsiveness and set charges accordingly to recover lost revenue. These changes, including the loss of revenue from the introduction of the "Low Fixed Charges", have been addressed in future price adjustments. Revenue growth from new loads has also tended to compensate for revenue reduction from more efficient use.

PowerNet also uses tariff structures which have variable charges to recover predominately fixed charges which can differentiate different consumers’ elasticity but also results in a degree of annual revenue uncertainty due to climate and economic variations.

**3.4.4 Provided that prices satisfy (a) above, prices should be responsive to the requirement, and circumstances of stakeholders in order to:**

- i. Discourage uneconomic bypass;*
- ii. Allow for negotiation to better reflect the economic value of services and enable stakeholders to make price/quality trade-offs or non-standard arrangements for services; and*
- iii. Where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives (e.g.: distributed generation or demand response) and technology innovation.*

The main risk of bypass is that large consumers will choose to connect directly to the Transpower network. PowerNet’s individual pricing for large customers and individual account management to industrial and large commercial customers addresses the risk of bypass by negotiating arrangements that, as closely as practical, reflect the network costs incurred by each individual consumer.

PowerNet's pricing model for large individual consumers ensures that the price is cost reflective. The pricing model allows customers to own their own distribution transformers passing on the savings made by ownership.

The use of individual capacity and demands also ensures that the price is cost reflective. By these processes, PowerNet discourages uneconomic bypass of its network and allows negotiation to tailor its services to the specific needs of the consumer.

During the consultation process with customers, particularly the larger individual consumers, and often when they are extending or requiring a new supply, price/quality trade-offs are discussed and offered, these often in the form of offering the customer an (n-1) supply. Consumers who choose this level of supply will have the extra costs reflected in their individual line charge.

Each year PowerNet conducts a customer survey of 100 residential and commercial customers. Customers are asked if they would pay an extra \$10 per month in their line charge to reduce the number of outages they experienced each year, 86% stated no to this question.

PowerNet's peak times are outlined in the methodology and have encouraged individual customers to employ demand response actions such as turning on alternative generation or load shifting during these times to reduce their peak demands. Residential customers have the option to put some of their appliances on controlled tariffs to qualify for the off-peak fixed charge.

Customers are encouraged to use energy at night through the use of night store heaters, heating the hot water or using their appliances such as clothes driers, washing machines etc. during this period. The customer is then financially rewarded as the consumption does not attract any variable line charge. The "whole house day/night tariff" can reward consumers financially through prudent management of their power requirements.

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

PowerNet's current price structure has been in place since 1996 and has only seen changes to tariff options in response to customer demand or legislative requirements such as the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004.

Through the disclosure of the pricing methodology, the costs allocated to each consumer group are transparent. This allows stakeholders to make informed decisions between capacity based price categories.

PowerNet has maintained its pricing structure and differentials between peak and off-peak fixed charges and has kept night consumption free of variable charges to give stability and certainty to customers who have invested in controllable load due to the price differential and potential savings when the investment was made.

Price levels for individual consumers each year are based on the previous year's performance and projections for the current year following discussions with the consumer when required.

More efficient use of electricity by these consumers may be reflected at the time in the variable charges but will primarily be effective as the basis for calculating reduced line charges (in real terms) for the following year.

### **3.4.6 Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers.**

All retailers who use the network are subject to the same tariff schedules from PowerNet therefore, PowerNet considers that its prices are economically equivalent across all retailers.

Once the line charges have been established by the methodology, the tariff structure is straight forward, limited to a fixed daily charge and variable consumption tariff for the majority of customers. PowerNet recognises that whilst the tariff structure is simple, there are a large number of tariff options due to the peak/off-peak options available within each capacity group. The Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 requiring a low fixed charge option for each residential tariff has also greatly increased the number of options.

The issue is a compromise between simplicity and equitability of pricing. Three parameters influence the cost; the location of the premises to be supplied (governs the assets used), the load to be supplied (governs the size of assets used) and the time the load is supplied (governs the diversity and hence size and share of the assets used).

PowerNet's line charge methodology has endeavoured to incorporate these aspects and then apply in the most equitable but simple way practicable.

PowerNet uses "GXP billing" for its residential & General customer connections, this is where variable consumption charges are based on electricity volumes injected into the network at the Transpower grid exit points. Quantities are determined by the wholesale electricity market reconciliation process, which is itself governed by an Industry Participation Code. This method saves on administration costs which are transferred back into the pricing.

PowerNet also recognizes that "ICP pricing and billing" can send stronger price signals to consumers but does constrain tariff innovation by the retailers. The alternative is for a further breakdown of the GXP energy volumes into "peak" and "shoulder" rates or "congestion" and "non congestion" periods which would be differentially charged to the retailers. This would sharpen the signal to the retailers and end use consumers.

We have been awaiting a confirmed direction from the Electricity Authority before we move forward with more changes.

## **4. CUSTOMER CONSULTATION**

PowerNet seeks the views of consumers as part of the Asset Management Process (AMP) and has reflected these views in section 1.6.5 of the published AMP.

The views were obtained via the following methods:

1. A bulk phone survey of current customers including expectations on price and quality
2. A face to face survey of with key clients including expectations on price and current service
3. Consultation meetings at various locations throughout the network
4. Individual consumers are consulted as they consider supply upgrades or new connections to the network.

The views are considered in preparation of the AMP.

Quality in the form of security of supply (n versus n-1), capacity (equipment loadings) both impact on the cost of supply and subsequently prices charged. Price is able to be varied through different payment options (such as capital contributions, line charges and new investment agreements) which are discussed with large individual consumers as they consider supply upgrades or new connections to the network.

## 5. CONSUMER GROUPS

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 this 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.

Individual factors considered in cost allocations to individual line charge customers include:

- Connections having dedicated transformers.
- Low percentage use of the low voltage network
- Low diversity as capacity and demand increases
- Customer owned transformers.
- Additional security and back supplies, n-1.
- Higher importance on network maintenance

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.

### (b) Residential & General Consumers

Residential & General consumers; include all residential connections and general single and 3 phase connections up to 100kVA capacity.

General connections are split between single and three phase categories, they are then further disaggregated into load groups based on the size of the service fuse or transformer supplying them. The differentials between load groups reflect the use of the network assets for each group and the diversity each group has around peak load times.

All residential 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 residential installations. All old residential consumer installations are classed as “historic residential”.

The 8kVA residential 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.

In line with the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004, residential customers consuming less than 9000 kWh per annum are able to transfer to the Domestic Low User option tariffs. These options attract a lower fixed daily charge and a higher variable consumption charge. Retailers with customers on these tariffs must submit the monthly consumption amounts for these customers in a separate file to PowerNet.

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 or consumed between 23:00 and 07:00 hours or by an appropriate ripple controlled appliance, such as a water heater.

The consumer groups are:

Contract Capacity Group	Code
<b>Residential</b>	
Residential (8kVA 1 Phase) - All Peak *	ND08P
Residential (8kVA 1 Phase) - With Off Peak *	ND08Q
Standard Residential (20kVA 1 Phase) - All Peak	ND20P
Standard Residential (20kVA 1 Phase) - With Off Peak	ND20Q
Residential Low User (20kVA 1 Phase) - All Peak	NDL20P
Residential Low User (20kVA 1 Phase) - With Off Peak	NDL20Q
Residential Low User (8kVA 1 Phase) - All Peak*	NDL08P

Residential Low User (8kVA 1 Phase) - With Off Peak*	NDL08Q
<b>General Single Phase</b>	
Street Lights (1 Phase) per street light	NS001L
1 kVA 1 Phase - All Peak	NS001P
8 kVA 1 Phase - All Peak	NS008P
8 kVA 1 Phase - With Off Peak	NS008Q
20 kVA 1 Phase - All Peak	NS020P
20 kVA 1 Phase - With Off Peak	NS020Q
<b>General Three Phase</b>	
15 kVA 3 Phase - All Peak	NT015P
15 kVA 3 Phase - With Off Peak	NT015Q
30 kVA 3 Phase - All Peak	NT030P
30 kVA 3 Phase - With Off Peak	NT030Q
50 kVA 3 Phase - All Peak	NT050P
50 kVA 3 Phase - With Off Peak	NT050Q
75 kVA 3 Phase - All Peak	NT075P
75 kVA 3 Phase - With Off Peak	NT075Q
100 kVA 3 Phase - All Peak	NT100P
100 kVA 3 Phase - With Off Peak	NT100Q

## 6. COST ALLOCATION

### 6.1 PowerNet/Electricity Invercargill Ltd (EIL) Structure

PowerNet Limited (PowerNet) is an incorporated joint venture owned by TPCL and Electricity Invercargill Limited (EIL) and is contracted to manage the network assets of EIL in accordance with a Network Management Agreement (Agreement).

The Agreement includes provision for PowerNet to act as agent on behalf of EIL to collect revenue from line and metering charges to retailers or end consumers, pay transmission costs, incur maintenance expenditure and to pass the net amount through to EIL each month as its agent. PowerNet charges an agency fee that covers its overheads for operating the line and metering agencies for EIL.

The level of line and metering charges are set by EIL taking into account direct and indirect costs, asset depreciation and an appropriate return on investment from the assets.

### 6.2 Allocations

EIL uses a cost of supply model which uses a number of key inputs or cost drivers which can be determined and appropriately allocated between the relevant consumers and consumer groups.

The key cost drivers used within this model are:

- (a) Transmission Grid Asset Management costs (Connection and Interconnection costs)
- (b) Sub transmission network costs split into a “supply” component and a “maintenance” component – 66,000 and 33,000V line and cables and 4 zone substations.
- (c) Distribution network costs split into a “supply” component and a “maintenance” component - 11,000, 400V networks and distribution Substations.
- (d) Overhead non asset related direct costs.
- (e) Ownership costs comprising depreciation return on investment and other costs of ownership.
- (f) Pass Through Costs

Each consumer or consumer groups’ share of the use of the above assets and costs are then calculated to reflect their respective use. The objective is to reflect the share of the costs in a robust and equitable manner and the line charges be structured so that the network investment and line charges are responsive to the consumer and consumer groups’ behaviour or pattern of usage.

The following table lists the costs that we have forecast for the 2016 – 2017 year, which equates to our total target revenue.

### Total Costs

<b>Transmission</b>		<b>\$6,592,388</b>
Transpower Connection and Interconnection charges		
<b>Pass-through &amp; Recoverable Costs</b>		<b>\$141,078</b>
Network rates, industry levies and Capex wash-up, less Pass-through balance 2016/17		
<b>Administration</b>		<b>\$2,217,962</b>
Administration - non asset related direct costs. Maintenance - costs directly related to network assets		
<b>Operation and Maintenance</b>		<b>\$1,989,259</b>
Field services operation and maintenance costs		
<b>Ownership and Governance</b>		<b>\$11,357,229</b>
Asset Value (average carrying value of regulatory investment asset) - $(\$82,292,904 + \$82,032,304) / 2$	\$82,162,604	
EIL applicable WACC (after tax) 6.66%		\$5,472,029
Taxation		\$ 2,128,011
Depreciation and write offs		\$ 3,757,189
<b>Costs to be Recovered</b>		<b>\$22,297,916</b>
<b>Under recovery of costs to meet DPP requirement</b>		<b>(2,043,863)</b>
<b>Costs Allowed to be Recovered (Total Target Revenue)</b>		<b>\$20,254,053</b>

### 6.3 Customer Profiles

The derivation of the line charges is based on seven consumer profile parameters. They are:

- The Contract Capacity kVA (kW) of the installation
- The Winter Peak demand kVA (kW) (0700-1100 hours and 1700-2100 hours, each weekday between June and August inclusive)
- The Winter Peak energy MWh (0700-1100 hours and 1700-2100 hours, each weekday between May and September inclusive)
- The Winter Day energy MWh (0700-2300 hours, May to September inclusive)
- The Summer Day energy MWh (0700-2300 hours, October to April inclusive)
- The Total energy for the 12 month period MWh.
- Coincident Peak demand with Transpowers 100 highest peaks for the lower South Island (kVA), half hour metered customers only

### 6.4 Transpower and Subtransmission costs

The basis of allocation of Transpower and subtransmission 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, subtransmission 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.

## 6.5 Winter Peak

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 21kVA = 17%

Between 21kVA and 110kVA = ramp function from 17% - 37.5%

Between 110kVA and 2,000kVA = ramp function from 37.5% - 75%

Above 2000kVA = 75%.

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

## 6.6 Contract Capacities

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

For connections up to 16kVA = 25%

For connections between 16kVA and 100kVA = ramp function from 25% - 33%

For connections between 101kVA and 2,000kVA = ramp function from 33% - 70%

For connections above 2,000kVA = 70%.

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.

## 6.7 Subtransmission and Distribution split

The costs of the subtransmission and distribution components of the line charges are split into two categories:

### (a) Supply

The “supply” part is based on the depreciation of the network assets, other ownership costs and required return on the assets, the latter using the companies weighted average cost of capital.

**(b) Maintenance**

The “maintenance” part is based on the Maintenance Works Programme for the current year.

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

**The profile parameters for determining the line charges for the individual customers, grouped by capacity are:**

Contract Capacity kVA	Number of Connections	Coincident Peak Demand Reading kVA	Peak Demand Reading kVA	Total Energy Reading MWh	Peak Reading MWh	Winter Day Reading MWh	Summer Day Reading MWh
30	2	22	55	126	17	47	62
50	9	125	345	1180	132	346	450
75	14	287	800	1980	298	745	856
100	13	292	801	1822	239	597	687
150	41	777	3749	8021	1212	2915	3052
200	40	1466	4695	11584	1638	4111	4738
300	31	2140	4992	13556	1885	4785	5523
500	22	3588	6689	21327	2850	7318	8642
750	7	1207	2157	9440	999	2684	3777
1,000	2	503	1114	3410	380	871	1177
1,750	1	905	1446	6576	688	1830	2654

The profile parameters for determining the line charges for the Residential & General customers are:

Consumer Capacity	Code	Number of Connections	After Diversity Peak 'Demand kW	Total Energy Group MWh	Winter Peak Group MWh	Winter Day Group MWh	Summer Day Group MWh
<b>Residential</b>							
Residential (8kVA 1 Phase) - All Peak *	ND08P	17	24	94	18	39	35
Residential (8kVA 1 Phase) - With Off Peak *	ND08Q	134	162	741	104	278	272
Standard Residential (20kVA 1 Phase) - All Peak	ND20P	685	1945	7580	1421	3159	2841
Standard Residential (20kVA 1 Phase) - With Off Peak	ND20Q	9737	23496	107746	15144	40418	39570
Residential Low User (20kVA 1 Phase) - All Peak	NDL20P	440	1249	2254	422	939	845
Residential Low User (20kVA 1 Phase) - With Off Peak	NDL20Q	4139	9988	20567	2891	7715	7553
Residential Low User (8kVA 1 Phase) - All Peak*	NDL08P	11	16	54	10	23	20
Residential Low User (8kVA 1 Phase) - With Off Peak*	NDL08Q	76	92	374	53	140	137
<b>General Single Phase</b>							
Street Lights (1 Phase) per street light	NS001L	4724	567	1733	325	722	649
1 kVA 1 Phase - All Peak	NS001P	50	50	459	86	191	172
8 kVA 1 Phase - All Peak	NS008P	174	247	963	180	401	361
8 kVA 1 Phase - With Off Peak	NS008Q	12	14	66	9	25	24
20 kVA 1 Phase - All Peak	NS020P	291	826	3220	603	1342	1207
20 kVA 1 Phase - With Off Peak	NS020Q	108	261	1195	168	448	439
<b>General Three Phase</b>							

15 kVA 3 Phase - All Peak	NT015P	62	165	643	121	268	241
15 kVA 3 Phase - With Off Peak	NT015Q	11	25	114	16	43	42
30 kVA 3 Phase - All Peak	NT030P	560	3385	9382	1758	3910	3516
30 kVA 3 Phase - With Off Peak	NT030Q	136	699	2278	320	855	837
50 kVA 3 Phase - All Peak	NT050P	298	3718	12883	2414	5370	4828
50 kVA 3 Phase - With Off Peak	NT050Q	76	806	3286	462	1233	1207
75 kVA 3 Phase - All Peak	NT075P	120	2787	7725	1448	3220	2895
75 kVA 3 Phase - With Off Peak	NT075Q	13	257	837	118	314	307
100 kVA 3 Phase - All Peak	NT100P	61	2256	6252	1172	2606	2343
100 kVA 3 Phase - With Off Peak	NT100Q	9	283	922	130	346	339

## 7. COST ALLOCATION TO CAPACITY GROUPS

### 7.1 Transmission Charges

Transmission charges reflect the Transpower grid asset management costs incurred by Electricity Invercargill Limited based on the Invercargill point of supply.

Transpower transmission charges have two components:

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

#### 7.1.1 Connection Charge

The Transpower connection charge is based on the Transpower 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 is connected to the transmission grid there.

The total connection charge for Invercargill is \$1,050,640. Electricity Invercargill's share of the connection charge is \$675,618.

The connection charges which include the Transpower new investment 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:

- (a) \$7.43 per kVA Peak Demand.
- (b) \$3.35 per Winter Peak MWh.
- (c) \$1.11 per Winter Day MWh

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

- (a) \$7.14 per kVA Peak Demand
- (b) \$3.70 per Winter Peak MWh
- (c) \$1.23 per Winter Day MWh

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.

## 7.1.2 Interconnection Charge

This charge is based on the average of the coincident 100 highest peak demands recorded for Transpower's lower south island region during the assessment period 1 September to 31 August each year at the Invercargill grid exit point.

Electricity Invercargill's share of the Invercargill interconnection charge of \$9,108,607 is \$5,916,770.

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

### Half Hour Metered:

Coincident peak with lower south island region 100%

### Non Half Hour Metered:

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

For individual non half hour metered customers this equates to the following charges:

- (a) \$55.78 per kVA Winter Peak Demand.
- (b) \$44.07 per Winter Peak MWh.
- (c) \$9.70 per Winter Day MWh.

For individual Half Hour Metered customers this equates to the following charges:

Point of Supply	Per kVA Coincident Peak Demand
Invercargill	\$114.64

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

	Per kVA Peak Demand	Per Winter Peak MWh	Per Winter Day MWh
Electricity Invercargill	\$49.92	\$45.28	\$10.28

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

### 7.1.3 Transpower Revenue for Individual Customers

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

Consumer Capacity kVA	Number of Connections	Transpower Revenue per Consumer Group	Average Line Charge
30	2	\$2,731.59	\$1,365.80
50	9	\$19,203.35	\$2,133.71
75	14	\$44,196.00	\$3,156.86
100	13	\$40,693.90	\$3,130.30
150	41	\$180,724.26	\$4,407.91
200	40	\$250,379.17	\$6,259.48
300	31	\$303,070.87	\$9,776.48
500	22	\$448,007.70	\$20,363.99
750	7	\$150,650.86	\$21,521.55
1000	2	\$62,233.12	\$31,116.56
1750	1	\$114,366.29	\$114,366.29
30	2	\$2,731.59	\$1,365.80

### 7.1.4 Transpower Revenue for Residential & General Customers

The total Transpower revenue for residential & general customers is shown in the following table.

Consumer Capacity	Code	Number of Connections	Transpower Charge	Transpower Revenue per Consumer Group
<b>Residential</b>				
Residential (8kVA 1 Phase) - All Peak *	ND08P	17	\$292.16	\$2,483.34
Residential (8kVA 1 Phase) - With Off Peak *	ND08Q	134	\$243.11	\$16,288.20
Standard Residential (20kVA 1 Phase) - All Peak	ND20P	685	\$584.32	\$200,128.33
Standard Residential (20kVA 1 Phase) - With Off Peak	ND20Q	9737	\$486.21	\$2,367,136.79
Residential Low User (20kVA 1 Phase) - All Peak	NDL20P	440	\$454.16	\$97,790.33
Residential Low User (20kVA 1 Phase) - With Off Peak	NDL20Q	4139	\$380.81	\$765,869.49
Residential Low User (8kVA 1 Phase) - All Peak*	NDL08P	11	\$277.70	\$1,527.33
Residential Low User (8kVA 1 Phase) - With Off Peak*	NDL08Q	76	\$231.40	\$8,793.05
<b>General Single Phase</b>				
Street Lights (1 Phase) per street light	NS001L	4724	\$22.33	\$52,733.77
1 kVA 1 Phase - All Peak	NS001P	50	\$329.88	\$8,247.00
8 kVA 1 Phase - All Peak	NS008P	174	\$292.16	\$25,417.76
8 kVA 1 Phase - With Off Peak	NS008Q	12	\$243.11	\$1,458.64
20 kVA 1 Phase - All Peak	NS020P	291	\$584.32	\$85,018.02
20 kVA 1 Phase - With Off Peak	NS020Q	108	\$486.21	\$26,255.60

<b>General Three Phase</b>				
15 kVA 3 Phase - All Peak	NT015P	62	\$547.80	\$16,981.69
15 kVA 3 Phase - With Off Peak	NT015Q	11	\$455.83	\$2,507.05
30 kVA 3 Phase - All Peak	NT030P	560	\$1,083.94	\$303,501.93
30 kVA 3 Phase - With Off Peak	NT030Q	136	\$905.52	\$61,575.21
50 kVA 3 Phase - All Peak	NT050P	298	\$2,441.09	\$363,722.26
50 kVA 3 Phase - With Off Peak	NT050Q	76	\$2,034.08	\$77,295.15
75 kVA 3 Phase - All Peak	NT075P	120	\$4,164.92	\$249,895.07
75 kVA 3 Phase - With Off Peak	NT075Q	13	\$3,479.37	\$22,615.87
100 kVA 3 Phase - All Peak	NT100P	61	\$6,631.06	\$202,247.34
100 kVA 3 Phase - With Off Peak	NT100Q	9	\$5,539.58	\$24,928.09

## 7.2 Subtransmission Charges

Subtransmission charges are based on the subtransmission costs (66kV and 33kV network) and the zone substation costs.

There are two components making up the subtransmission charges:

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

### 7.2.1 Supply Charge

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

All the costs of the subtransmission network and zone substations are averaged and allocated on the basis of the relative asset value compared to the total network asset value.

The supply charge for the EIL city area zone substations is \$1,044,865 and for the 33kV line and cables is \$474,939 giving a total supply charge for EIL City of \$1,519,804

As EIL also supplies power to Bluff through The Power Company Limited 33kV line and Bluff zone substation there is a supply charge of \$399,387 for this zone substation and subtransmission lines.

The supply charge totalling \$1,519,804 for EIL City and \$399,387 for EIL Bluff is allocated across all customers on the following basis:

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

### 7.2.2 Maintenance Charge

The maintenance charges for the EIL city zone substations and subtransmission system total \$377,959 and for EIL Bluff total \$93,443

The total subtransmission maintenance charges of \$471,403 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 residential customers of 1.5:1. 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 components, i.e. 50% of the cost.

### 7.2.3 Subtransmission Charges for Individual Customers above 100 kVA

#### ***EIL City***

(a)	Subtransmission Supply charge	\$17.91 per kVA Winter Peak Demand
(b)	Subtransmission Supply charge	\$8.15 per Winter Peak MWh
(c)	Subtransmission Supply charge	\$2.71 per Winter Day MWh
(e)	Subtransmission Maintenance charge	\$0.76 per Commercial Total MWh
(f)	Subtransmission Maintenance charge	\$3.18 per kVA Winter Peak Demand

#### ***EIL Bluff***

(a)	Subtransmission Supply charge	\$65.82 per kVA Winter Peak Demand
(b)	Subtransmission Supply charge	\$25.71 per Winter Peak MWh
(c)	Subtransmission Supply charge	\$7.32 per Winter Day MWh
(e)	Subtransmission Maintenance charge	\$2.77 per Commercial Total MWh
(f)	Subtransmission Maintenance charge	\$11.55 per kVA Winter Peak Demand

### 7.2.4 Subtransmission Charges for Residential & General Customers

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

#### ***EIL City***

(a)	Subtransmission Supply charge	\$16.44 per kVA Winter Peak Demand
(b)	Subtransmission Supply charge	\$8.47 per Winter Peak MWh
(c)	Subtransmission Supply charge	\$2.83 per Winter Day MWh
(d)	Subtransmission Maintenance charge	\$0.80 per Residential Total MWh
(e)	Subtransmission Maintenance charge	\$0.80 per Commercial Total MWh
(f)	Subtransmission Maintenance charge	\$2.96 per kVA Winter Peak Demand

#### ***EIL Bluff***

(a)	Subtransmission Supply charge	\$66.04 per kVA Winter Peak Demand
(b)	Subtransmission Supply charge	\$29.04 per Winter Peak MWh
(c)	Subtransmission Supply charge	\$9.27 per Winter Day MWh
(d)	Subtransmission Maintenance charge	\$1.43 per Residential Total MWh
(e)	Subtransmission Maintenance charge	\$1.43 per Commercial Total MWh
(f)	Subtransmission Maintenance charge	\$6.89 per kVA Winter Peak Demand

## 7.3 Distribution Charges

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

There are three components making up the distribution charges

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

In calculating the distribution charges an allowance is made for the fact that customers above 150kVA have normally 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 distribution charges are multiplied by a factor of 60% for both EIL City and EIL Bluff.

### 7.3.1 Supply Charge

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

All the costs of the distribution network are averaged and the supply charge is allocated on the basis of the relative asset value compared to the total network asset value.

The supply charges are as follows:

- (a) Overhead lines, Underground Cables & Distribution Substations

EIL City	\$6,852,869
EIL Bluff	\$285,536

- (b) The supply charge is allocated across all customers on the following basis:

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

### 7.3.2 Maintenance Charge

The maintenance charges are as follows:

- (a) Overhead lines, Underground Cables & Distribution Substations

EIL City	\$1,005,358
EIL Bluff	\$158,741

- (b) The maintenance portion is allocated across all customers on the following basis:

Total Energy	50%
Contract Capacity	50%

With respect to the maintenance charges, the commercial customers incur a weighting compared to residential customers of 1.5:1. This reflects a higher level of importance for commercial customers of the maintenance to the network. This weighted ratio only applies to the total energy components, i.e. 50% of the cost.

### 7.3.3 Distribution Transformers

- (a) The transformer charges are as follows:

EIL Supply	\$856,609
EIL Maintenance	\$264,568

- (b) The transformer portion of the distribution charges is allocated across consumers on the following basis:

Number of transformers and transformer capacity 100%.

### 7.3.4 Distribution Charges for Individual Customers

#### ***EIL City***

(a) Distribution Supply charge	\$37.11 per kVA Contract Capacity
(b) Distribution Supply charge	\$36.67 per Winter Peak MWh
(c) Distribution Supply charge	\$7.32 per Winter Day MWh
(d) Distribution Maintenance charge	\$2.28 per Commercial Total MWh
(e) Distribution Maintenance charge	\$4.39 per kVA Contract Capacity

#### ***EIL Bluff***

(a) Distribution Supply charge	\$22.26 per kVA Contract Capacity
(b) Distribution Supply charge	\$19.16 per Winter Peak MWh
(c) Distribution Supply charge	\$3.71 per Winter Day MWh
(d) Distribution Maintenance charge	\$3.70 per Commercial Total MWh
(e) Distribution Maintenance charge	\$9.95 per kVA Contract Capacity

#### Transformer Charges

(a) Distribution Transformer supply charge	\$351.00 per Transformer
(b) Distribution Transformer maintenance charge	\$676.62 per Transformer

The Transformer charge of \$351.00 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
1,000kVA Transformer	9.96
1,250kVA Transformer	13.20
1,500kVA Transformer	15.60

### 7.3.5 Distribution Charges for Residential & General Customers

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

#### ***EIL City***

(a)	Distribution Supply charge	\$39.08 per kVA Contract Capacity
(b)	Distribution Supply charge	\$44.56 per Winter Peak MWh
(c)	Distribution Supply charge	\$14.65 per Winter Day MWh
(d)	Distribution Maintenance charge	\$2.75 per Residential Total MWh
(e)	Distribution Maintenance charge	\$2.75 per Commercial Total MWh
(f)	Distribution Maintenance charge	\$4.49 per kVA Contract Capacity
(g)	Distribution Transformer charge	\$6.44 per kVA Contract Capacity

#### ***EIL Bluff***

(a)	Distribution Supply charge	\$22.95 per kVA Contract Capacity
(b)	Distribution Supply charge	\$25.07 per Winter Peak MWh
(c)	Distribution Supply charge	\$8.51 per Winter Day MWh
(d)	Distribution Maintenance charge	\$5.74 per Residential Total MWh
(e)	Distribution Maintenance charge	\$5.74 per Commercial Total MWh
(f)	Distribution Maintenance charge	\$9.50 per kVA Contract Capacity
(g)	Distribution Transformer charge	\$6.44 per kVA Contract Capacity

The model applies a 2.5% discount for the single phase residential & general customers compared to three phase customers of similar size. This is to reflect the reduced investment in network assets for single phase customers.

## 7.4 Non asset related Overheads

The 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, etc.

These charges are split equally over the total customer base.

The total overhead costs are \$1,539,724.

The charge per customer is \$88.49.

## 7.5 Powernet Charges

### 7.5.1 PowerNet Revenue for Individual Customers

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

Consumer Capacity kVA	Subtransmission Charge	Distribution Charge	Overhead Charge	Total PowerNet Charge
30	\$549.47	\$2,513.77	\$176.99	\$3,240.23
50	\$4,266.48	\$19,759.53	\$796.45	\$24,822.47
75	\$9,499.79	\$44,402.67	\$1,238.93	\$55,141.39
100	\$10,318.65	\$34,838.12	\$1,150.43	\$46,307.21
150	\$68,667.83	\$168,603.59	\$3,628.29	\$240,899.71
200	\$78,353.49	\$229,330.74	\$3,539.80	\$311,224.03
300	\$77,291.93	\$252,553.55	\$2,743.34	\$332,588.82
500	\$136,511.50	\$323,433.52	\$1,946.89	\$461,891.90
750	\$65,497.16	\$148,909.88	\$619.46	\$215,026.51
1000	\$14,987.75	\$63,317.86	\$176.99	\$78,482.60
1750	\$117,171.89	\$55,791.29	\$88.49	\$173,051.67

## 7.5.2 PowerNet Revenue for Residential & General Customers

The total PowerNet revenue for residential & general customers is shown in the following table.

Consumer Capacity	Code	Number of Connections	Sub transmission Charge	Distribution Charge	Overheads	Total PowerNet Revenue
<b>Residential</b>						
Residential (8kVA 1 Phase) - All Peak *	ND08P	17	\$1,078.18	\$4,058.47	\$1,504.41	\$6,641.07
Residential (8kVA 1 Phase) - With Off Peak *	ND08Q	134	\$5,565.09	\$28,098.64	\$11,858.33	\$45,522.06
Standard Residential (20kVA 1 Phase) - All Peak	ND20P	685	\$84,494.50	\$329,178.85	\$60,619.06	\$474,292.41
Standard Residential (20kVA 1 Phase) - With Off Peak	ND20Q	9737	\$832,881.66	\$4,073,382.92	\$861,675.53	\$5,767,940.11
Residential Low User (20kVA 1 Phase) - All Peak	NDL20P	440	\$44,747.76	\$173,476.60	\$38,937.79	\$257,162.16
Residential Low User (20kVA 1 Phase) - With Off Peak	NDL20Q	4139	\$275,846.27	\$1,421,459.19	\$366,280.68	\$2,063,586.14
Residential Low User (8kVA 1 Phase) - All Peak*	NDL08P	11	\$884.86	\$2,432.50	\$642.87	\$3,960.24
Residential Low User (8kVA 1 Phase) - With Off Peak*	NDL08Q	76	\$3,569.25	\$15,124.30	\$5,979.12	\$24,672.67
<b>General Single Phase</b>						
Street Lights (1 Phase) per street light	NS001L	4724	\$19,549.19	\$94,397.03	\$265.48	\$114,211.71
1 kVA 1 Phase - All Peak	NS001P	50	\$2,578.02	\$9,072.54	\$4,424.75	\$16,075.30
8 kVA 1 Phase - All Peak	NS008P	174	\$8,800.14	\$42,554.79	\$15,398.12	\$66,753.06
8 kVA 1 Phase - With Off Peak	NS008Q	12	\$457.36	\$2,533.55	\$1,061.94	\$4,052.85
20 kVA 1 Phase - All Peak	NS020P	291	\$32,085.55	\$141,134.75	\$25,752.04	\$198,972.33
20 kVA 1 Phase - With Off Peak	NS020Q	108	\$8,598.85	\$45,449.74	\$9,557.46	\$63,606.05
<b>General Three Phase</b>						

15 kVA 3 Phase - All Peak	NT015P	62	\$6,170.24	\$28,298.93	\$5,486.69	\$39,955.86
15 kVA 3 Phase - With Off Peak	NT015Q	11	\$957.79	\$4,282.30	\$973.44	\$6,213.53
30 kVA 3 Phase - All Peak	NT030P	560	\$107,655.55	\$495,424.38	\$49,557.18	\$652,637.12
30 kVA 3 Phase - With Off Peak	NT030Q	136	\$21,752.04	\$102,950.15	\$12,035.32	\$136,737.51
50 kVA 3 Phase - All Peak	NT050P	298	\$123,265.12	\$530,863.87	\$26,371.50	\$680,500.49
50 kVA 3 Phase - With Off Peak	NT050Q	76	\$27,485.37	\$115,478.58	\$6,725.62	\$149,689.56
75 kVA 3 Phase - All Peak	NT075P	120	\$90,482.81	\$336,925.73	\$10,619.40	\$438,027.94
75 kVA 3 Phase - With Off Peak	NT075Q	13	\$8,572.64	\$31,424.53	\$1,150.43	\$41,147.60
100 kVA 3 Phase - All Peak	NT100P	61	\$70,492.87	\$198,293.42	\$5,398.19	\$274,184.48
100 kVA 3 Phase - With Off Peak	NT100Q	9	\$10,119.19	\$24,790.81	\$796.45	\$35,706.46

## 7.6 Pass-Through Costs

Pass-through costs are costs relating to rates on network fixed assets charged to EIL by local authorities and industry levies imposed by the Commerce Act, the Electricity Authority and the Electricity and Gas Complaints Commissioner Scheme. Deducted from the estimated pass-through costs is the pass-through balance, which is the difference in the 2015 -16 year estimated pass-through costs and the actual 2015 -16 pass-through costs

The total estimated Pass-through costs for 2016 -17 are \$64,078

Pass-through costs are recovered by \$3.68 per ICP

### 7.6.1 Recoverable costs

Capex wash-up – an additional recoverable cost has been allocated to EIL due to the amount of capital work completed over the past 12 months. The total capex-wash-up amount is \$77,000, this is allocated to the customer groups on the same methodology basis as the supply costs of the sub-transmission and distribution costs outlined in section 7.2.1 & 7.3.1 above

## 7.7 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 is applied.

## 7.8 Target Revenue Requirement Summary

The below is a summary of our projected revenue for the Transmission costs, recoverable and pass-through costs and the PowerNet distribution costs, broken down by the two customer group categories for the 2016 -17 year. We also outline the change in revenue compared with the previous year:

Year 2016-17	Residential & General Individual		Total
Distribution	\$11,588,578	\$1,932,009	\$13,520,587
Pass-through costs	\$63,408	\$670	\$64,078
Recoverable costs	\$64,618	\$12,382	\$77,000
Transmission	\$ 4,976,131,	\$1,616,257	\$6,592,388
<b>Total</b>	<b>\$16,692,735</b>	<b>\$ 3,561,318</b>	<b>\$20,254,053</b>

### Revenue from previous year

Distribution	\$11,515,140	\$1,905,807	\$13,420,947
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Pass-through costs	\$194,657	\$2,027	\$196,684
Recoverable costs	\$0	\$0	\$0
Transmission	\$ 4,497,916,	\$1,477,289	\$5,975,205
<b>Total</b>	<b>\$16,207,713</b>	<b>\$ 3,385,123</b>	<b>\$19,592,836</b>

2016-17 is the second year of a five year reset period under the Commerce Commission's Default Price-Quality Path. Under this regulation EIL is allowed to increase its distribution charges by CPI. Other factors that impact on the allocation of costs relate to changes to chargeable quantities and individual customers profile changes along with contractual changes.

Pass-through & recoverable costs have now been itemised out, as this is now a requirement of the Default Price-Quality Path.

Transmission changes relate to an increase in Transpower's interconnection charge rate and an increase in the interconnection charges peak demand.

### 7.8.1 Line Charge Revenue for Individual Customers

The line charge 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	2	\$5,998.87	\$2,999.44
50	9	\$44,213.38	\$4,912.60
75	14	\$99,735.37	\$7,123.96
100	13	\$87,339.21	\$6,718.40
150	41	\$423,299.89	\$10,324.39
200	40	\$563,727.98	\$14,093.20
300	31	\$637,893.76	\$20,577.22
500	22	\$912,936.66	\$41,497.12
750	7	\$367,081.12	\$52,440.16
1000	2	\$141,226.35	\$70,613.18
1750	1	\$288,533.26	\$288,533.26
30	2	\$5,998.87	\$2,999.44

### 7.8.2 Line Charge Revenue for Residential & General Customers

The line charge revenue for residential & general customers is shown in the following table.

Consumer Capacity	Code	Number of Connections	Fixed Charge per Day	Variable Charge per Day MWh Purchases	Line Charge Revenue per Consumer Group
<b>Residential</b>					
Residential (8kVA 1 Phase) - All Peak *	ND08P	17	\$0.6703	\$71.86	\$9,220
Residential (8kVA 1 Phase) - With Off Peak *	ND08Q	134	\$0.4662	\$71.86	\$62,520
Standard Residential (20kVA 1 Phase) - All Peak	ND20P	685	\$1.2386	\$71.86	\$678,475
Standard Residential (20kVA 1 Phase) - With Off Peak	ND20Q	9737	\$0.8601	\$71.86	\$8,202,469
Residential Low User (20kVA 1 Phase) - All Peak	NDL20P	440	\$0.1500	\$116.27	\$357,975
Residential Low User (20kVA 1 Phase) - With Off Peak	NDL20Q	4139	\$0.0000	\$116.27	\$2,855,607
Residential Low User (8kVA 1 Phase) - All Peak*	NDL08P	11	\$0.1500	\$95.93	\$5,880
Residential Low User (8kVA 1 Phase) - With Off Peak*	NDL08Q	76	\$0.0000	\$95.93	\$34,612
<b>General Single Phase</b>					

Street Lights (1 Phase) per street light	NS001L	4724	\$0.1025	\$71.86	\$167,708
1 kVA 1 Phase - All Peak	NS001P	50	\$0.4809	\$71.86	\$24,581
8 kVA 1 Phase - All Peak	NS008P	174	\$0.6703	\$71.86	\$93,142
8 kVA 1 Phase - With Off Peak	NS008Q	12	\$0.4662	\$71.86	\$5,575
20 kVA 1 Phase - All Peak	NS020P	291	\$1.2386	\$71.86	\$286,175
20 kVA 1 Phase - With Off Peak	NS020Q	108	\$0.8601	\$71.86	\$90,607
<b>General Three Phase</b>					
15 kVA 3 Phase - All Peak	NT015P	62	\$1.0352	\$71.86	\$57,387
15 kVA 3 Phase - With Off Peak	NT015Q	11	\$0.6703	\$71.86	\$8,795
30 kVA 3 Phase - All Peak	NT030P	560	\$1.7343	\$71.86	\$962,077
30 kVA 3 Phase - With Off Peak	NT030Q	136	\$1.1803	\$71.86	\$199,615
50 kVA 3 Phase - All Peak	NT050P	298	\$3.5411	\$71.86	\$1,049,524
50 kVA 3 Phase - With Off Peak	NT050Q	76	\$2.4046	\$71.86	\$228,183
75 kVA 3 Phase - All Peak	NT075P	120	\$7.2718	\$71.86	\$691,112
75 kVA 3 Phase - With Off Peak	NT075Q	13	\$5.2900	\$71.86	\$63,769
100 kVA 3 Phase - All Peak	NT100P	61	\$8.8456	\$71.86	\$478,384
100 kVA 3 Phase - With Off Peak	NT100Q	9	\$6.4121	\$71.86	\$60,892

## 8. FIXED AND VARIABLE CHARGES

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:

- (a) 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.
- (b) 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 residential consumers besides the existing All Peak and With Off Peak categories.
- (c) It is important to note that the variable charge is on daytime energy only, so residential 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.
- (d) Retailers may directly pass through a totally fixed charge to consumers.
- (e) 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.
- (f) Consumers also have the opportunity to shift load to night time to receive immediate benefits.
- (g) 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 residential & general 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.

## **9. NON- STANDARD CONTRACTS**

PowerNet has a standard methodology for the determination of line charges for large customers, these line charges are charged to the customer via an interposed basis with the energy retailer.

In rare cases the standard methodology may not fully recover the return and operating costs of the large capital expenditure required in supplying these customers. These customers may also have enhanced security arrangements. In these situations where customers have significant capital contributions, robust commercial contracts incorporating prudential requirements are prudent to mitigate the risk of these assets being stranded. These contracts can also assist in avoiding uneconomic by-pass of the network when negotiating commercial arrangements and encourage growth within the network.

There are currently no ICP's on non-standard contracts.

### **Line Services Interruptions**

Customers on non-standard contracts can contract to have an N-1 security arrangement, this is where the customer has an alternative supply to their site from the substation should their normal supply route be interrupted, this can be an automatic or manual change over process. Should customers choose to have the additional security of supply, their line charges will reflect the additional cost.

Customers on non-standard contracts who have standard security arrangements are subject to the same restoration arrangements as customers on standard contracts.

## 10. DISTRIBUTED GENERATION

PowerNet’s line pricing methodology and Part 6 of the Electricity Industry Participation Code 2010 applies to Distributed Generation connected to the electricity network for varying capacities. Currently there is no Distributed Generation connected to the network.

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

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

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

### Financial Transactions with Distributed Generators

An application fee based on the capacity of connection is payable by the party making application to connect Distributed Generation to the network.

Financial transactions that can occur when Distributed Generation is connected to the electricity network are:

Transaction Types	Capacity
Normal off take Line Charge (paid by the Distributed Generator to PowerNet)	All capacities
Capital Contribution (paid by the Distributed Generator to PowerNet)	All capacities where incremental costs are incurred by the network
New Investment Agreement charge (paid by the Distributed Generator to PowerNet)	For capacities > 500kW
Recovery of High Voltage Direct Current (HVDC) Transmission Charges (paid by the Distributed Generator to PowerNet)	Where the Distributed Generation is injected into the Transmission Network

Avoided Transmission Charges (paid by PowerNet to the Distributed Generator)	Where the Distributed Generation reduces Interconnection Charges at peak times

**Capital Contributions**

Capital Contributions are calculated in accordance with the published Capital Contribution policy.

**New Investment Agreement and / or Delivery Services Agreement Charges**

New Investment Agreement and / or Delivery Services Agreement charges are negotiated with each customer and depend on factors including length of contract, asset lives, sunk costs, recoverable costs, maintenance costs, return on investment and prudential security provided.

**HVDC Transmission Charges**

HVDC Transmission Charges are recovered from Distributed Generators based on their share of the injection demand into the Transmission Network at the grid exit point they inject into.

**Avoided Transmission Charge revenue**

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

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

The revenue paid to Distributed Generators is based on the annual interconnection rate set by Transpower under the TPM. The Avoided Transmission Charge revenue allocation to Distributed Generators is subject to change in the TPM. Currently there are no Distributed Generators receiving this payment.

## 11. COMMERCE COMMISSION INFORMATION DISCLOSURE REQUIREMENTS

In the below table we describe the relevant sections of this methodology where we demonstrate compliance with the key sections of the Commerce Commission’s Electricity Distribution Information Disclosure Determination 2012 requirements:

<b>IDD Section</b>	<b>Key sections of methodology demonstrating compliance</b>
2.4.1 (1)	Sections 2 - 8
2.4.1 (2)	Section 6.7
2.4.1 (3)	Sections 8&9
2.4.1 (4)	Section 3
2.4.2	No changes to the methodology
2.4.3 (1)	Sections 5 & 6
2.4.3 (2)	Section 2
2.4.3 (3)	Sections 6.7
2.4.3 (4)	Section 5 & 6
2.4.3 (5) (a) , (b)	Section 4
2.4.3 (6)	Section 6
2.4.3 (7)	Section 6
2.4.3 (8)	Section 11
2.4.4 (1-3)	N/A
2.4.5 (1) (a) to (c)	Section 8
2.4.5 (2) (a) & (b)	Section 8
2.4.5 (3) (a) & (b)	Section 9

## 12. LINE CHARGE TABLES

### 12.1 Line Charge Breakdown for Individual Customers

ICP Number	Contract Capacity kVA	Trans Power Charge	Subtransmission Charge	Distribution Charge	Overhead Charge	Pass Through Costs	Total Line Charge	Fixed Charge per annum	Variable Charge per Day MWh
880323NV-EBD	150	\$8,287.98	\$1,950.70	\$5,237.03	\$88.49	\$49.88	\$15,614.08	\$7,807.04	\$28.77
9003081NV-OFF	200	\$7,587.61	\$1,590.80	\$5,969.06	\$88.49	\$52.27	\$15,288.23	\$7,644.12	\$30.30
8803298NV-3CC	500	\$16,453.05	\$4,251.42	\$13,129.78	\$88.49	\$115.39	\$34,038.14	\$17,019.07	\$32.95
740649NV-C13	75	\$3,350.56	\$587.41	\$3,014.01	\$88.49	\$26.83	\$7,067.31	\$3,533.65	\$36.44
900390NV-B86	300	\$9,021.46	\$2,787.92	\$6,965.76	\$88.49	\$66.37	\$18,930.00	\$6,929.86	\$71.86
880327NV-FB7	300	\$23,556.19	\$5,348.79	\$11,566.52	\$88.49	\$112.40	\$40,672.39	\$20,336.19	\$23.88
836598NV-F14	150	\$5,443.87	\$1,643.11	\$5,175.89	\$88.49	\$47.51	\$12,398.86	(\$9,825.41)	\$71.86
8102959NV-5D5	300	\$14,196.50	\$2,857.17	\$9,327.61	\$88.49	\$81.99	\$26,551.76	\$13,275.88	\$31.50
900350NV-C69	100	\$4,661.64	\$955.04	\$2,998.78	\$88.49	\$29.09	\$8,733.04	\$4,366.52	\$32.22
810201NV-DAD	150	\$3,457.95	\$718.18	\$3,878.54	\$88.49	\$33.23	\$8,176.39	\$4,088.19	\$42.25
7341266NV-3A6	150	\$120.62	\$84.52	\$3,052.96	\$88.49	\$23.85	\$3,370.45	\$1,685.22	\$337.59
734802NV-A50	150	\$6,837.02	\$1,536.66	\$4,599.23	\$88.49	\$43.12	\$13,104.52	\$6,552.26	\$34.46
734355NV-C9C	300	\$2,463.96	\$754.93	\$6,169.31	\$88.49	\$48.18	\$9,524.87	\$4,652.85	\$71.86
850948NV-9C2	30	\$1,475.94	\$278.69	\$1,402.94	\$88.49	\$14.49	\$3,260.56	\$1,630.28	\$25.74
900327NV-4FE	50	\$3,406.82	\$661.48	\$2,881.00	\$88.49	\$26.45	\$7,064.24	\$3,532.12	\$22.68
8803283NV-7B5	150	\$8,979.54	\$2,246.18	\$5,331.97	\$88.49	\$52.39	\$16,698.57	\$8,349.28	\$23.67
740385NV-DE7	200	\$7,890.87	\$1,650.08	\$6,039.19	\$88.49	\$53.10	\$15,721.74	\$7,860.87	\$25.15
9003503NV-035	200	\$8,141.23	\$1,651.72	\$6,047.67	\$88.49	\$53.17	\$15,982.29	\$7,991.14	\$39.65
8509006NV-D55	150	\$6,320.78	\$1,148.46	\$4,769.41	\$88.49	\$41.72	\$12,368.87	\$6,184.43	\$24.04
880344NV-C87	300	\$12,398.68	\$3,687.55	\$10,467.08	\$88.49	\$94.65	\$26,736.46	(\$19,624.26)	\$71.86

7433294NV-FC6	150	\$2,754.88	\$863.89	\$3,421.72	\$88.49	\$31.23	\$7,160.22	\$3,656.02	\$71.86
743331NV-CBF	150	\$3,561.43	\$1,068.83	\$3,879.59	\$88.49	\$35.49	\$8,633.83	\$1,072.15	\$71.86
900330NV-399	500	\$35,576.22	\$8,253.13	\$20,064.41	\$88.49	\$185.68	\$64,167.93	\$32,083.97	\$21.31
740373NV-C7F	200	\$6,230.05	\$1,555.26	\$5,467.87	\$88.49	\$48.82	\$13,390.49	\$6,695.25	\$38.38
721862NV-A61	50	\$5,589.17	\$1,214.69	\$4,018.21	\$88.49	\$37.31	\$10,947.88	\$5,473.94	\$20.99
8803601NV-E7B	150	\$7,641.00	\$2,253.70	\$5,317.95	\$88.49	\$52.35	\$15,353.49	(\$3,358.35)	\$71.86
8548111NV-903	75	\$4,722.93	\$817.82	\$3,301.14	\$88.49	\$30.16	\$8,960.54	\$4,480.27	\$38.48
734326NV-501	200	\$5,613.96	\$1,516.34	\$6,255.64	\$88.49	\$53.63	\$13,528.07	\$408.34	\$71.86
734325NV-9C1	150	\$1,338.94	\$380.66	\$3,498.04	\$88.49	\$28.61	\$5,334.75	\$1,154.30	\$71.86
7227954NV-421	100	\$2,231.74	\$681.20	\$2,410.06	\$88.49	\$23.55	\$5,435.05	\$1,241.62	\$71.86
9003114NV-B53	50	\$1,035.45	\$208.98	\$1,627.40	\$88.49	\$15.49	\$2,975.82	\$1,487.91	\$29.13
734165NV-163	750	\$19,666.86	\$4,783.54	\$20,122.66	\$88.49	\$163.75	\$44,825.31	\$22,412.65	\$27.04
8541431NV-DF3	150	\$3,850.12	\$1,231.67	\$3,459.32	\$88.49	\$33.83	\$8,663.43	\$4,769.74	\$71.86
722703NV-43B	200	\$6,954.99	\$1,417.16	\$5,998.52	\$88.49	\$51.34	\$14,510.50	\$7,255.25	\$26.30
90030815NV-060	500	\$2,427.54	\$671.59	\$10,437.89	\$88.49	\$75.08	\$13,700.60	\$6,850.30	\$70.99
734846NV-9FF	50	\$551.26	\$218.15	\$1,308.35	\$88.49	\$13.49	\$2,179.75	\$1,424.31	\$71.86
900356NV-DE6	300	\$6,103.25	\$1,956.30	\$7,242.92	\$88.49	\$62.81	\$15,453.77	(\$114.40)	\$71.86
8665558NV-6AF	200	\$3,940.86	\$1,023.90	\$5,195.17	\$88.49	\$43.65	\$10,292.08	\$5,146.04	\$36.11
8803767NV-900	50	\$1,648.84	\$482.65	\$2,227.62	\$88.49	\$21.10	\$4,468.72	(\$1,788.95)	\$71.86
740394NV-B0F	200	\$5,097.00	\$1,564.05	\$5,484.10	\$88.49	\$48.98	\$12,282.62	\$73.29	\$71.86
9003071NV-0E8	500	\$28,964.68	\$7,286.99	\$16,756.37	\$88.49	\$158.21	\$53,254.74	\$26,627.37	\$23.56
8509026NV-000	500	\$11,734.64	\$2,634.79	\$12,341.22	\$88.49	\$99.93	\$26,899.07	\$13,449.54	\$30.04
7551948NV-7E0	300	\$12,008.65	\$2,746.74	\$8,624.48	\$88.49	\$76.76	\$23,545.14	\$11,772.57	\$34.69
9003385NV-2F6	150	\$7,653.72	\$1,466.14	\$4,945.25	\$88.49	\$44.89	\$14,198.50	\$7,099.25	\$26.98
734424NV-A86	100	\$1,862.66	\$343.74	\$2,427.69	\$88.49	\$21.49	\$4,744.08	\$2,372.04	\$39.03
835871NV-C17	500	\$24,586.64	\$5,003.12	\$13,657.53	\$88.49	\$123.61	\$43,459.40	\$21,729.70	\$38.87
9003117NV-793	300	\$25,411.53	\$5,371.66	\$11,275.37	\$88.49	\$110.67	\$42,257.73	\$21,128.87	\$28.05
900305NV-92E	750	\$11,255.61	\$3,128.52	\$18,650.15	\$88.49	\$143.65	\$33,266.43	\$16,633.22	\$44.21

900306NV-5EE	750	\$6,886.77	\$2,900.93	\$17,083.94	\$88.49	\$132.12	\$27,092.25	\$13,546.13	\$52.56
744103NV-5A5	750	\$19,330.61	\$4,323.59	\$20,301.27	\$88.49	\$161.94	\$44,205.92	\$22,102.96	\$26.68
734318NV-162	300	\$3,116.61	\$731.89	\$6,688.12	\$88.49	\$51.37	\$10,676.48	\$5,338.24	\$35.56
734470NV-384	300	\$2,198.20	\$614.81	\$6,523.08	\$88.49	\$49.56	\$9,474.15	\$1,755.01	\$71.86
754696NV-0EE	200	\$7,233.46	\$2,898.40	\$6,461.60	\$88.49	\$63.84	\$16,745.79	\$8,372.89	\$34.14
831121NV-B96	300	\$2,429.55	\$769.21	\$6,266.47	\$88.49	\$48.90	\$9,602.62	\$4,801.31	\$53.89
755825NV-937	200	\$4,522.58	\$1,468.70	\$4,687.19	\$88.49	\$43.25	\$10,810.21	\$5,252.45	\$71.86
9003083NV-07A	500	\$18,856.29	\$4,488.49	\$14,208.47	\$88.49	\$123.85	\$37,765.59	\$18,882.80	\$27.81
880314NV-48F	300	\$5,869.49	\$2,039.25	\$7,098.02	\$88.49	\$62.41	\$15,157.66	\$7,578.83	\$41.17
880363NV-C18	200	\$4,222.38	\$936.96	\$5,403.03	\$88.49	\$44.43	\$10,695.30	\$5,347.65	\$31.31
880302NV-FAD	150	\$5,633.44	\$1,291.87	\$4,795.82	\$88.49	\$42.81	\$11,852.43	\$5,926.22	\$21.06
8803047NV-B57	150	\$2,509.61	\$540.83	\$3,624.47	\$88.49	\$30.45	\$6,793.86	\$3,396.93	\$45.62
73015753NV-A0E	150	\$5,506.09	\$1,396.21	\$4,653.53	\$88.49	\$42.56	\$11,686.89	\$5,843.44	\$25.47
7301164NV-BB5	150	\$4,852.80	\$1,023.38	\$4,468.82	\$88.49	\$38.98	\$10,472.49	\$5,236.24	\$25.49
8803625NV-224	200	\$9,926.55	\$2,222.95	\$6,851.88	\$88.49	\$62.01	\$19,151.88	\$9,575.94	\$24.84
9003212NV-9DF	100	\$3,939.82	\$798.54	\$3,054.37	\$88.49	\$28.45	\$7,909.67	\$3,954.83	\$25.24
7301102NV-5CA	100	\$8.37	\$16.53	\$1,967.31	\$88.49	\$16.43	\$2,097.14	\$2,097.14	\$0.00
7301908NV-756	75	\$3,784.22	\$785.27	\$3,686.66	\$88.49	\$32.42	\$8,377.07	\$4,188.54	\$24.41
880308NV-D3C	75	\$3,963.46	\$1,004.77	\$3,919.29	\$88.49	\$35.33	\$9,011.34	\$4,505.67	\$22.44
7301973NV-CDF	75	\$4,565.52	\$911.70	\$3,913.69	\$88.49	\$34.70	\$9,514.10	\$4,757.05	\$25.03
8803164NV-3C6	75	\$5,527.45	\$997.77	\$4,068.26	\$88.49	\$36.24	\$10,718.21	\$5,359.10	\$29.27
8803165NV-F83	50	\$2,933.88	\$575.91	\$2,372.29	\$88.49	\$22.63	\$5,993.21	\$2,996.60	\$28.65
9003143NV-E91	200	\$1,903.80	\$484.31	\$4,764.78	\$88.49	\$37.42	\$7,278.80	\$3,639.40	\$41.30
744611NV-08F	300	\$8,596.04	\$2,091.72	\$7,897.14	\$88.49	\$67.88	\$18,741.27	\$9,370.63	\$32.43
9003603NV-336	300	\$21,278.85	\$5,295.63	\$13,744.42	\$88.49	\$126.05	\$40,533.44	\$20,266.72	\$27.61
9003051NV-DBD	300	\$18,816.64	\$4,390.87	\$10,038.56	\$88.49	\$96.42	\$33,430.99	\$16,715.50	\$27.57
7757907NV-783	500	\$16,023.83	\$4,533.18	\$13,522.53	\$88.49	\$119.73	\$34,287.76	\$17,143.88	\$34.38
7757994NV-4A4	200	\$6,742.64	\$2,022.43	\$5,586.29	\$88.49	\$52.58	\$14,492.44	\$7,246.22	\$43.81

880336NV-95F	500	\$19,161.69	\$6,226.36	\$16,504.73	\$88.49	\$149.77	\$42,131.05	\$21,065.52	\$23.33
8803031NV-F85	200	\$11,170.66	\$2,429.13	\$7,158.31	\$88.49	\$65.30	\$20,911.90	\$10,455.95	\$23.23
880321NV-E38	200	\$8,316.45	\$1,909.14	\$6,385.00	\$88.49	\$56.99	\$16,756.07	\$8,378.04	\$24.27
8665382NV-F7A	200	\$9,247.65	\$2,768.51	\$6,553.75	\$88.49	\$63.60	\$18,722.01	(\$2,760.89)	\$71.86
721876NV-1C6	200	\$2,581.31	\$443.85	\$4,723.36	\$88.49	\$36.89	\$7,873.92	\$3,936.96	\$60.51
750191NV-4A6	150	\$5,408.03	\$1,597.58	\$4,479.03	\$88.49	\$42.74	\$11,615.87	(\$752.26)	\$71.86
733395NV-F13	200	\$1,699.64	\$468.37	\$4,842.81	\$88.49	\$37.82	\$7,137.13	\$2,173.15	\$71.86
880317NV-84F	300	\$1,162.95	\$251.69	\$5,892.94	\$88.49	\$43.17	\$7,439.25	\$3,719.62	\$92.88
8365737NV-155	300	\$18,174.14	\$3,570.94	\$8,623.72	\$88.49	\$82.06	\$30,539.36	\$15,269.68	\$34.67
9003244NV-058	300	\$12,447.73	\$2,956.00	\$9,432.39	\$88.49	\$83.30	\$25,007.91	\$12,503.96	\$21.96
8509245NV-937	200	\$11,635.07	\$2,865.05	\$7,800.34	\$88.49	\$72.23	\$22,461.19	\$11,230.59	\$20.68
7447592NV-D72	150	\$1,282.82	\$357.33	\$3,523.31	\$88.49	\$28.62	\$5,280.57	\$854.29	\$71.86
8665408NV-7A3	150	\$3,404.73	\$1,076.37	\$3,491.40	\$88.49	\$33.04	\$8,094.04	\$4,197.38	\$71.86
9003243NV-D92	200	\$9,046.65	\$3,187.88	\$7,794.70	\$88.49	\$74.27	\$20,191.99	\$10,095.99	\$23.52
880361NV-C9D	500	\$33,584.80	\$7,079.26	\$18,436.92	\$88.49	\$167.67	\$59,357.15	\$29,678.58	\$23.09
744655NV-320	200	\$5,385.50	\$1,093.06	\$5,700.66	\$88.49	\$47.35	\$12,315.06	\$6,157.53	\$29.42
7341276NV-90B	200	\$3,846.95	\$813.25	\$5,180.34	\$88.49	\$42.20	\$9,971.24	\$4,985.62	\$31.43
7341272NV-801	150	\$4,431.15	\$838.74	\$4,116.19	\$88.49	\$35.53	\$9,510.11	\$4,755.05	\$36.09
733399NV-C0D	150	\$82.57	\$118.87	\$3,070.17	\$88.49	\$24.18	\$3,384.29	\$1,692.15	\$88.31
880316NV-40A	300	\$6,857.70	\$1,513.31	\$7,323.24	\$88.49	\$60.47	\$15,843.22	\$7,921.61	\$48.96
7447142NV-C31	200	\$7,303.77	\$1,302.73	\$5,382.10	\$88.49	\$46.65	\$14,123.74	\$7,061.87	\$42.29
7344583NV-C71	150	\$115.05	\$31.79	\$3,058.47	\$88.49	\$23.54	\$3,317.35	\$2,416.81	\$71.86
900325NV-47B	500	\$43,176.60	\$9,825.83	\$22,098.18	\$88.49	\$208.86	\$75,397.96	\$37,698.98	\$20.38
8509962NV-AA6	75	\$1,488.17	\$311.81	\$2,527.14	\$88.49	\$21.93	\$4,437.54	\$2,218.77	\$31.56
7317032NV-617	200	\$8,393.41	\$1,915.97	\$6,060.90	\$88.49	\$54.95	\$16,513.73	\$8,256.87	\$31.39
9003573NV-568	200	\$8,545.58	\$2,587.64	\$5,998.36	\$88.49	\$58.86	\$17,278.93	(\$1,188.18)	\$71.86
880375NV-73A	300	\$5,659.30	\$1,839.35	\$6,247.20	\$88.49	\$55.65	\$13,889.99	\$5,536.76	\$71.86
880309NV-179	300	\$8,273.86	\$1,790.89	\$7,896.06	\$88.49	\$65.94	\$18,115.25	\$9,057.62	\$27.77

8144266NV-0A8	200	\$9,072.36	\$1,809.83	\$6,605.33	\$88.49	\$57.77	\$17,633.77	\$8,816.89	\$28.66
880329NV-C2C	1000	\$56,512.01	\$13,810.35	\$39,511.65	\$88.49	\$346.38	\$110,268.88	\$55,134.44	\$29.62
7406951NV-064	50	\$2,346.83	\$401.99	\$2,167.75	\$88.49	\$20.20	\$5,025.27	\$2,512.63	\$34.45
7205085NV-6A2	100	\$3,442.38	\$782.44	\$2,948.67	\$88.49	\$27.66	\$7,289.65	\$3,644.83	\$27.57
8305967NV-D0E	500	\$5,713.20	\$4,441.23	\$10,454.35	\$88.49	\$99.42	\$20,796.69	\$10,398.35	\$84.35
730158NV-F40	50	\$275.47	\$75.75	\$1,313.78	\$88.49	\$12.61	\$1,766.11	\$868.37	\$71.86
7501996NV-A4D	150	\$1,937.02	\$590.62	\$3,985.94	\$88.49	\$33.10	\$6,635.17	(\$3,519.55)	\$71.86
7341792NV-7BE	200	\$5,972.57	\$1,191.66	\$5,626.19	\$88.49	\$47.50	\$12,926.41	\$6,463.21	\$27.74
9003235NV-940	500	\$29,370.68	\$6,552.87	\$16,946.23	\$88.49	\$154.71	\$53,112.99	\$26,556.49	\$27.76
7229001NV-0AF	100	\$2,818.48	\$748.32	\$2,621.64	\$88.49	\$25.34	\$6,302.27	\$3,151.14	\$36.69
880397NV-D05	500	\$13,330.47	\$4,341.76	\$16,358.48	\$88.49	\$136.72	\$34,255.93	\$17,127.96	\$27.27
880398NV-2DB	200	\$2,578.74	\$861.54	\$4,842.80	\$88.49	\$40.34	\$8,411.91	\$4,205.96	\$36.67
722709NV-6AA	30	\$1,255.65	\$270.78	\$1,110.83	\$88.49	\$12.56	\$2,738.32	\$1,369.16	\$30.02
724187NV-3BD	150	\$7,062.13	\$2,041.79	\$5,109.57	\$88.49	\$49.64	\$14,351.63	(\$5,044.10)	\$71.86
760737NV-A1C	500	\$13,288.10	\$4,254.94	\$12,518.80	\$88.49	\$111.49	\$30,261.81	\$15,130.91	\$42.94
9003082NV-C3F	75	\$4,993.17	\$975.30	\$3,714.79	\$88.49	\$33.83	\$9,805.58	\$4,902.79	\$30.96
7227011NV-2C2	300	\$3,500.53	\$773.09	\$6,275.27	\$88.49	\$48.98	\$10,686.36	\$5,343.18	\$52.06
9003995NV-251	300	\$9,988.56	\$2,211.13	\$8,199.60	\$88.49	\$70.59	\$20,558.38	\$10,279.19	\$35.73
82029943NV-B5B	150	\$2,989.45	\$879.41	\$3,481.24	\$88.49	\$31.71	\$7,470.30	\$5,460.82	\$71.86
835083NV-C88	300	\$2,097.07	\$1,098.56	\$6,065.18	\$88.49	\$49.72	\$9,399.02	\$4,699.51	\$177.66
825292NV-886	500	\$24,514.17	\$5,941.77	\$16,296.83	\$88.49	\$146.61	\$46,987.87	\$23,493.93	\$27.18
740340NV-747	150	\$5,610.59	\$1,614.80	\$5,129.72	\$88.49	\$47.03	\$12,490.63	(\$5,499.36)	\$71.86
7433753NV-0E6	150	\$7,045.67	\$1,952.37	\$5,234.57	\$88.49	\$49.87	\$14,370.98	(\$861.07)	\$71.86
900384NV-021	500	\$32,109.93	\$7,805.06	\$17,338.85	\$88.49	\$165.28	\$57,507.62	\$28,753.81	\$28.75
7302313NV-BC5	75	\$1,119.80	\$167.71	\$2,184.17	\$88.49	\$18.80	\$3,578.97	\$1,789.49	\$61.75
7302304NV-CA2	150	\$2,689.95	\$800.72	\$3,764.71	\$88.49	\$33.02	\$7,376.91	\$1,745.57	\$71.86
900383NV-DEB	500	\$7,354.96	\$2,023.62	\$10,978.78	\$88.49	\$87.25	\$20,533.10	\$10,266.55	\$55.03
730262NV-92A	100	\$2,437.90	\$878.36	\$2,336.37	\$88.49	\$24.34	\$5,765.46	\$3,888.35	\$71.86

900313NV-20C	300	\$4,245.05	\$986.34	\$6,935.07	\$88.49	\$54.59	\$12,309.54	\$6,154.77	\$38.30
7350005NV-3D0	75	\$2,339.11	\$697.18	\$2,844.59	\$88.49	\$26.45	\$5,995.83	\$786.62	\$71.86
734360NV-62B	75	\$2,371.81	\$748.54	\$3,000.05	\$88.49	\$27.77	\$6,236.68	(\$1,986.92)	\$71.86
735249NV-D8B	200	\$6,597.32	\$2,041.95	\$5,529.49	\$88.49	\$52.34	\$14,309.59	\$2,810.30	\$71.86
9003053NV-D38	100	\$5,324.16	\$955.57	\$3,240.15	\$88.49	\$30.65	\$9,639.02	\$4,819.51	\$26.69
850908NV-B67	750	\$34,117.13	\$7,640.88	\$24,962.67	\$88.49	\$213.22	\$67,022.40	\$33,511.20	\$23.00
734110NV-971	300	\$8,286.27	\$1,950.65	\$7,481.77	\$88.49	\$64.30	\$17,871.50	\$8,935.75	\$31.93
7501257NV-2E9	150	\$2,384.62	\$680.00	\$3,740.36	\$88.49	\$32.09	\$6,925.58	\$1,440.96	\$71.86
7350693NV-BBE	75	\$1,564.78	\$435.10	\$2,528.85	\$88.49	\$22.73	\$4,639.96	\$888.71	\$71.86
7447181NV-71E	75	\$1,589.14	\$285.12	\$2,540.46	\$88.49	\$21.84	\$4,525.05	\$2,262.53	\$32.36
900358NV-E7D	200	\$6,125.83	\$1,911.24	\$5,088.10	\$88.49	\$48.67	\$13,262.34	\$3,455.41	\$71.86
734460NV-929	200	\$10,178.45	\$2,211.16	\$6,993.58	\$88.49	\$62.84	\$19,534.54	\$9,767.27	\$27.33
724179NV-031	100	\$843.63	\$184.87	\$2,176.89	\$88.49	\$18.86	\$3,312.74	\$1,656.37	\$54.31
8425758NV-FE5	150	\$9,502.01	\$2,217.13	\$5,568.91	\$88.49	\$53.72	\$17,430.27	\$8,715.14	\$27.81
7302953NV-36A	300	\$5,416.21	\$1,249.24	\$7,042.54	\$88.49	\$56.97	\$13,853.45	\$6,926.72	\$35.43
900351NV-02C	200	\$11,622.06	\$2,761.56	\$8,079.48	\$88.49	\$73.36	\$22,624.95	\$11,312.48	\$19.21
7341793NV-BFB	100	\$4,797.33	\$840.49	\$3,020.30	\$88.49	\$28.50	\$8,775.11	\$4,387.56	\$28.15
734188NV-482	300	\$20,411.71	\$4,399.78	\$11,236.55	\$88.49	\$104.18	\$36,240.70	\$18,120.35	\$21.24
800449NV-3FB	75	\$2,815.88	\$774.27	\$3,159.57	\$88.49	\$28.97	\$6,867.19	\$477.56	\$71.86
900308NV-675	750	\$22,047.89	\$6,799.98	\$24,951.69	\$88.49	\$207.75	\$54,095.80	\$27,047.90	\$34.31
8305981NV-63B	500	\$22,644.90	\$5,728.37	\$14,666.54	\$88.49	\$134.76	\$43,263.07	\$21,631.53	\$37.25
832431NV-6DE	1000	\$5,721.11	\$1,177.41	\$23,806.21	\$88.49	\$164.25	\$30,957.47	\$15,478.73	\$82.87
8305375NV-D2C	50	\$1,415.62	\$426.87	\$1,843.14	\$88.49	\$18.27	\$3,792.40	\$416.57	\$71.86
760735NV-A99	150	\$4,415.24	\$1,173.08	\$4,046.63	\$88.49	\$37.23	\$9,760.68	\$4,880.34	\$38.73
900319NV-09D	200	\$3,980.97	\$1,144.03	\$5,133.83	\$88.49	\$44.03	\$10,391.36	\$2,807.22	\$71.86
740630NV-71F	150	\$7,766.84	\$1,807.24	\$4,773.77	\$88.49	\$45.98	\$14,482.33	\$7,241.17	\$33.63
7433292NV-E49	500	\$13,035.71	\$4,271.53	\$12,663.10	\$88.49	\$112.52	\$30,171.35	\$15,085.68	\$35.39
744592NV-A06	200	\$1,282.82	\$357.33	\$4,634.65	\$88.49	\$35.77	\$6,399.06	\$1,972.78	\$71.86

731881NV-4FA	200	\$6,273.10	\$1,901.18	\$5,113.25	\$88.49	\$48.76	\$13,424.79	\$5,552.82	\$71.86
8509025NV-CC0	300	\$17,303.28	\$3,689.97	\$9,966.29	\$88.49	\$91.45	\$31,139.49	\$15,569.74	\$25.07
8803032NV-345	150	\$5,140.45	\$832.71	\$4,246.28	\$88.49	\$36.33	\$10,344.25	\$5,172.13	\$34.53
900342NV-641	100	\$6,333.62	\$1,546.71	\$3,487.79	\$88.49	\$36.04	\$11,492.66	\$5,746.33	\$28.63
744608NV-473	300	\$9,499.55	\$2,877.32	\$8,143.30	\$88.49	\$74.51	\$20,683.18	\$10,341.59	\$31.38
933534NV-759	200	\$2,419.19	\$5,965.01	\$4,775.39	\$88.49	\$72.71	\$13,320.79	\$6,660.40	\$22.72
931777NV-07B	750	\$37,345.98	\$35,919.71	\$22,837.51	\$88.49	\$381.31	\$96,573.01	\$48,286.50	\$25.11
931749NV-418	300	\$2,281.37	\$4,689.23	\$5,897.59	\$88.49	\$71.72	\$13,028.40	\$6,514.20	\$28.53
931775NV-0FE	150	\$3,411.54	\$3,934.26	\$2,975.29	\$88.49	\$48.09	\$10,457.67	\$6,869.67	\$71.86
930503NV-F8B	100	\$1,992.16	\$1,586.86	\$2,148.10	\$88.49	\$27.69	\$5,843.30	\$2,921.65	\$45.51
930505NV-E04	150	\$4,315.13	\$5,386.98	\$3,770.43	\$88.49	\$62.54	\$13,623.57	\$7,331.94	\$71.86
920755NV-4EA	150	\$4,628.58	\$6,413.05	\$4,255.19	\$88.49	\$72.25	\$15,457.57	\$7,728.78	\$26.94
931776NV-C3E	150	\$3,760.44	\$4,337.40	\$3,066.00	\$88.49	\$51.26	\$11,303.59	\$7,187.33	\$71.86
930921NV-E57	200	\$3,749.79	\$4,081.01	\$4,332.09	\$88.49	\$57.75	\$12,309.14	\$4,897.19	\$71.86
931326NV-837	150	\$2,289.04	\$2,495.08	\$3,046.26	\$88.49	\$39.30	\$7,958.17	\$5,043.86	\$71.86
9406013NV-102	500	\$11,519.37	\$10,546.62	\$10,287.88	\$88.49	\$137.58	\$32,579.96	\$16,289.98	\$44.20
9406011NV-187	500	\$24,580.21	\$20,349.58	\$13,765.65	\$88.49	\$222.94	\$59,006.87	\$29,503.44	\$29.46
931746NV-BC6	200	\$5,470.68	\$6,012.06	\$4,599.40	\$88.49	\$71.88	\$16,242.52	\$4,282.54	\$71.86
9408016NV-48D	1750	\$114,366.29	\$117,171.89	\$55,791.29	\$88.49	\$1,115.30	\$288,533.26	\$144,266.63	\$32.18

## 12.2 Line Charge Breakdown for Residential & General Customers

Capacity	Code	Number of Connections	TransPower Charge	Sub transmission Charge	Distribution Charge	Overheads	Pass through Costs	Fixed Charge per Day	Variable Charge per Day MWh Purchases
<b>Residential</b>									
Residential (8kVA 1 Phase) - All Peak *	ND08P	17	\$2,483.34	\$1,078.18	\$4,058.47	\$1,504.41	\$95.62	\$0.67	\$71.86
Residential (8kVA 1 Phase) - With Off Peak *	ND08Q	134	\$16,288.20	\$5,565.09	\$28,098.64	\$11,858.33	\$709.86	\$0.47	\$71.86
Standard Residential (20kVA 1 Phase) - All Peak	ND20P	685	\$200,128.33	\$84,494.50	\$329,178.85	\$60,619.06	\$5,174.20	\$1.24	\$71.86
Standard Residential (20kVA 1 Phase) - With Off Peak	ND20Q	9737	\$2,367,136.79	\$832,881.66	\$4,073,382.92	\$861,675.53	\$67,392.11	\$0.86	\$71.86
Residential Low User (20kVA 1 Phase) - All Peak	NDL20P	440	\$97,790.33	\$44,747.76	\$173,476.60	\$38,937.79	\$3,022.97	\$0.15	\$116.27
Residential Low User (20kVA 1 Phase) - With Off Peak	NDL20Q	4139	\$765,869.49	\$275,846.27	\$1,421,459.19	\$366,280.68	\$26,151.78	\$0.00	\$116.27
Residential Low User (8kVA 1 Phase) - All Peak*	NDL08P	11	\$1,527.33	\$884.86	\$2,432.50	\$642.87	\$53.15	\$0.15	\$95.93
Residential Low User (8kVA 1 Phase) - With Off Peak*	NDL08Q	76	\$8,793.05	\$3,569.25	\$15,124.30	\$5,979.12	\$383.22	\$0.00	\$95.93
<b>General Single Phase</b>									

Street Lights (1 Phase) per street light	NS001L	4724	\$52,733.77	\$19,549.19	\$94,397.03	\$265.48	\$762.34	\$0.10	\$71.86
1 kVA 1 Phase - All Peak	NS001P	50	\$8,247.00	\$2,578.02	\$9,072.54	\$4,424.75	\$259.02	\$0.48	\$71.86
8 kVA 1 Phase - All Peak	NS008P	174	\$25,417.76	\$8,800.14	\$42,554.79	\$15,398.12	\$970.87	\$0.67	\$71.86
8 kVA 1 Phase - With Off Peak	NS008Q	12	\$1,458.64	\$457.36	\$2,533.55	\$1,061.94	\$63.42	\$0.47	\$71.86
20 kVA 1 Phase - All Peak	NS020P	291	\$85,018.02	\$32,085.55	\$141,134.75	\$25,752.04	\$2,184.98	\$1.24	\$71.86
20 kVA 1 Phase - With Off Peak	NS020Q	108	\$26,255.60	\$8,598.85	\$45,449.74	\$9,557.46	\$745.11	\$0.86	\$71.86
<b>General Three Phase</b>									
15 kVA 3 Phase - All Peak	NT015P	62	\$16,981.69	\$6,170.24	\$28,298.93	\$5,486.69	\$449.87	\$1.04	\$71.86
15 kVA 3 Phase - With Off Peak	NT015Q	11	\$2,507.05	\$957.79	\$4,282.30	\$973.44	\$74.19	\$0.67	\$71.86
30 kVA 3 Phase - All Peak	NT030P	560	\$303,501.93	\$107,655.55	\$495,424.38	\$49,557.18	\$5,938.34	\$1.73	\$71.86
30 kVA 3 Phase - With Off Peak	NT030Q	136	\$61,575.21	\$21,752.04	\$102,950.15	\$12,035.32	\$1,302.32	\$1.18	\$71.86
50 kVA 3 Phase - All Peak	NT050P	298	\$363,722.26	\$123,265.12	\$530,863.87	\$26,371.50	\$5,301.52	\$3.54	\$71.86
50 kVA 3 Phase - With Off Peak	NT050Q	76	\$77,295.15	\$27,485.37	\$115,478.58	\$6,725.62	\$1,198.71	\$2.40	\$71.86
75 kVA 3 Phase - All Peak	NT075P	120	\$249,895.07	\$90,482.81	\$336,925.73	\$10,619.40	\$3,188.86	\$7.27	\$71.86
75 kVA 3 Phase - With Off Peak	NT075Q	13	\$22,615.87	\$8,572.64	\$31,424.53	\$1,150.43	\$303.02	\$5.29	\$71.86
100 kVA 3 Phase - All Peak	NT100P	61	\$202,247.34	\$70,492.87	\$198,293.42	\$5,398.19	\$1,952.12	\$8.85	\$71.86
100 kVA 3 Phase - With Off Peak	NT100Q	9	\$24,928.09	\$10,119.19	\$24,790.81	\$796.45	\$257.51	\$6.41	\$71.86