
# POWERNET LIMITED LINE PRICING METHODOLOGY

## FOR THE POWER COMPANY LIMITED NETWORK
## AS AT 1 APRIL 2020

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## GLOSSARY

**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 formalised 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 The Power Company 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 Power Company Limited's network

**Group 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 Power Company 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).

## EXECUTIVE SUMMARY

This pricing methodology document describes the approach used by The Power Company Limited (TPCL) to set prices for the 12 months commencing 1 April 2020. It has been prepared to meet the requirements of the Commerce Commission's NZCC 22/2012 Electricity Distribution Information Disclosure Determination 1 October 2012. It also assesses TPCL's methodology against the recently revised Distribution Pricing Principles that were issued by the Electricity Authority in 2019.

This 2020 pricing methodology does not vary significantly from the previous year, either in terms of the methodology used to determine the target revenue for customer groups and individual customers, or in terms of pricing structures used. The determination of target revenue for each customer group and individual larger customers is carried out using a detailed cost of supply model that links charges to cost drivers and allocates costs to customers based on network usage and capacity requirements.

For the period 1 April 2020 to 31 March 2021, TPCL's target revenue is $63.4 million, which is an increase of approximately $1.7m from the previous year. For an average residential customer, lines charges will increase by 2.33%, or around $2.14 per month. Changes in charges for individual customers will vary according to their usage profiles.

The component of TPCL's revenue that relates to transmission has decreased as a result of reductions in Transpower's charges. The component of revenue that relates to TPCL's distribution network has increased to reflect the level of planned investment in TPCL's network, as described in our 2020 Asset Management Plan.

At 31 March 2019, the value of TPCL's regulatory asset base was $385 million. Over the next 5 years, TPCL plans capital expenditure of approximately $95 million. Over half of that ($57 million) relates to asset replacement and renewal. A further $14.4 million is planned for upgrading assets that are at or approaching capacity (including a number of zone substations) and addressing expected growth. Investment decisions are reviewed according to how load develops over time.

The way in which prices are structured is a tool that distributors can use to signal times of day when networks are closest to capacity, allowing customers to choose whether to respond. Where customers are able to shift load and opt to do so (or allow the network to control a portion of load), those customers are rewarded with lower lines charges.

TPCL already has a form of time-of-day pricing, and only charges for network use during the hours of 7am-11pm. It is looking to refine these pricing signals so that peak prices are targeted at a much narrower set of busy network periods (eg, during the morning and evening peak periods). Having pricing structures in place that signal peak periods may help defer distribution network investment, particularly in the context of possible future growth in electric vehicles. As noted in our AMP, two of the four Transmission Grid Exit Points that supply TPCL's network are approaching load constraints. While load control is currently used to manage GXP loads, price signals can also aid with deferring the point at which upgrades are triggered. Looking forward, potential growth from electric vehicles means that it is even more important to have peak price structures in place to effectively manage network loadings.

The prices that TPCL sets are charged to electricity retailers. Electricity retailers determine how to package these charges together with the energy, metering and other retail costs when setting the retail prices that appear in consumers' power accounts. This means that TPCL's pricing structures are not necessary reflected in retail prices. However, collaborative industry engagement has seen progress in the implementation of time-of-use pricing by retailers.

# 1. INTRODUCTION

As a consumer Trust owned company, TPCL is not subject to Commerce Commission revenue cap regulation. However, it does face regulatory disclosure regulations. This document discloses information required under section 2.4 of the Information Disclosure Determination relating to how TPCL determines its target revenue and sets prices. It also assesses how our pricing compares with the Electricity Authority's Distribution Pricing Principles.

We first provide contextual information about the TPCL network (section 2), then present an overview of our prices and how they are set (section 3). We then assess our pricing against the Authority's Distribution Pricing Principles (section 4). This is followed by a more detailed discussion of how overall target revenue is determined, how that revenue is allocated to customer groups, and the methodology used to convert the revenue requirement into prices (sections 5 to 9). Charges for generators connected to TPCL's network are described (section 10). Finally, we discuss our forward pricing strategy (section 11).

# 2. CONTEXTUAL INFORMATION ABOUT TPCL

## 2.1 The TPCL Network

The Power Company Limited (TPCL) is an electricity network asset company formed in 1991. It owns the electricity network assets in the Southland area, excluding parts of Invercargill City and the Bluff township area. TPCL is owned by owned by the consumers connected to the network and the Southland Electric Power Supply Consumer Trust exercises the ownership rights on behalf of those consumers.


TPCL supplies around 36,000 residential, commercial, and industrial customer connections. Key industries within TPCL's network area include sheep, beef and dairy farming, meat processing, black and brown coal mining, forestry, timber processing, and tourism. At 4 ICPs per $km^2$, TPCL has the second lowest line density of NZ's 29 electricity distribution networks.

Energy transmitted on TPCL's network is supplied by four Transmission Grid Exit Points (GXPs) at Invercargill, North Makarewa, Gore, and Edendale. In addition, up to 72MW of generation is injected from Meridian's White Hill wind farm, Pioneer Generation's Monowai hydro station and Southern Generation Limited Partnership's Flat Hill wind farm.

From those points of supply, TPCL's sub-transmission network, including 440km of 66kV lines and 455km of 33kV lines and underground cables, connects to its 37 zone substations which transform High Voltage (HV) to Medium Voltage (MV). TPCL's distribution network consists of approximately 6,650 km of 11kV lines and 120km of 11kV underground cables. Around 10,500 distribution transformers connect the Low Voltage (230V) network, which has 840 km of lines and 200km of underground cable.

## 2.2 Upcoming investment in network capacity

As at end March 2019, the value of TPCL's network assets in its Regulatory Asset Base was $385m. Over the next 5 years TPCL intends to invest $95m in its network, including $14.4m specifically relating to addressing system growth.

Of relevance to pricing decisions is the extent of network capacity constraints, and the potential for these to be signalled to customers. As is detailed in TPCL's Asset Management Plan (AMP):

- 8 of the TPCL's 37 zone substations are at or approaching maximum capacity. Upgrades (and in some cases load transfers) are planned for a number of these, with load being reviewed annually.
- Two GXPs, Gore and North Makarewa, are approaching capacity with load control currently in use to keep loads under capacity limits. These would need to be upsized when load control is no longer sufficient to keep demand within capacity limits.
- MV line upgrades may be required to support subdivision developments in Athol and Kingston, depending on growth in those areas.
- The extent of dairy conversions and growth could also contribute to whether new substations and line upgrades are required in some locations.
- A number of MV transformers are near full capacity and will be monitored to determine where upgrades or relocations are needed.

## 2.3 Uptake of evolving technologies

A number of technologies have the potential to change the way electricity is used and generated. Pricing has a role to play in providing efficient signals about the economic costs of using electricity networks. In that context, we provide a brief summary of existing and expected uptake of a number of these technologies: solar, electric vehicles and battery storage.

***Solar (Photovoltaic) connections***

As at end February 2019, TPCL had 362 solar connections to its network, equivalent to 1% of all TPCL ICPs. This rate is slightly below the national average, and significantly below the rate of 2.5-3% occurring in the highest uptake EDB areas. There is no apparent acceleration in uptake on TPCL's network: the average number of new solar connections per month over the 12 months to February 2020 was 3.1, as compared with 3.6 for the prior 12 months.

The potential for growth in solar uptake and impact on the network is explored in the AMP, which finds that while reducing costs are likely to increase the number of households for which a solar installation is cost-neutral, solar uptake is not expected to be widespread on the TPCL network within the planning period for a number of reasons, including that: (1) it appear that the majority of customers either cannot afford a solar installation, are unable to install solar (e.g. rental), or prefer to dispose of their income elsewhere; and (2) energy cost reduction options such as home insulation and electric vehicles now also receiving increased attention and generally offering a superior return.

Total energy consumption is likely to be reduced to some extent by solar installations within the AMP planning period. While energy consumption levels do not tend to affect network planning, which focuses on providing capacity for peak demand periods, it does affect price levels, to the extent that some component of price is set based on energy consumption (kWh). This is relevant to the development of our forward pricing strategy.

***Electric vehicles***

There are approximately 150 electric vehicles registered in the TPCL area – an uptake rate per connection of 0.4%. As is explained in our AMP, EVs have the potential to have large impact on network demand with sufficient adoption. Prices are an important means for signalling peak periods, and enabling customers to choose whether to charge off-peak, or pay a premium and charge during peak periods.

If consumers choose not to charge off-peak in response to price signals, electric vehicle charging may exacerbate peak demand, triggering greater investment. This effect will be greatest on the suburban LV network in built up urban and semi-urban areas as the upstream MV network generally has sufficient capacity to allow for the forecast increases in load from electric vehicles.

Having pricing structures in place before EV uptake reaches widespread levels will enable a degree customer education before load shifting is required from a network capacity perspective. It will also allow networks to understand the effectiveness of price signals in managing EV loads before load capacity is reached.

***Energy storage***

As is explained in our AMP, energy storage could have a large impact on network demand especially if used in combination with distributed generation installations. However there is significant uncertainty in this area around the viability of alternative battery chemistries and the timing of their introduction; the regulatory environment and the extent to which electricity distribution businesses will be able to promote/utilise/market storage services; and the level of responsiveness of the public to load-driven pricing signals.

Under the status quo this technology is not economic except in exceptional circumstances, and it is not expected that there will be major developments in this area for the next five years. TPCL has been engaged in pilot studies to explore how consumers may use energy storage to respond to price signals.

## 2.4 PowerNet / The Power Company Ltd (TPCL) 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 TPCL in accordance with a Network Management Agreement (Agreement).

The Agreement includes provision for PowerNet to act as agent on behalf of TPCL 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 TPCL each month as its agent. PowerNet charges an agency fee that covers its overheads for operating the line and metering agencies for TPCL.

# 3. TPCL PRICING OVERVIEW

TPCL's prices are used to charge electricity retailers for the cost of its local electricity distribution network, pass-through costs (such as industry levies) and the costs associated with national grid transmission. As highlighted above, electricity retailers determine how to package these charges together with the energy, metering and other retail costs when setting the retail prices that appear in consumers' power accounts.

PowerNet uses "GXP billing" for its residential & general connections. This means that variable consumption charges are based on electricity volumes injected into the network at the Transpower grid exit points, rather than based on the usage at individual customer connection 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 ultimately transferred back into the pricing.

## 3.1 Consumer load groups used for pricing

There are two defined types of consumers: Residential & General consumers; and Individual Consumers (for which prices are connection-specific).

### *3.1.1 Individual Consumers*

There are 279 consumers for whom TPCL calculates a connection-specific lines charges. These consumers are referred to as "Individual Consumers," and are required to have half-hour or time-of-use meters, including kVA maximum demand registers.

In most cases, these installations have contract capacities in excess of 100kVA. Due to their size, these consumers have a higher impact on the network design and operation and therefore their geographic location is taken into account when calculating their individual line charges. Customers who are supplied closer to zone substations and Grid Exit Points use less of the network; individual line charges can reflect this. 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.

In the case of these consumers, there are also individually calculated or estimated loss factors.

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

contract if growth is predicted and the network has been designed and built to supply the increased level.

**Irrigation Installations and Embedded Networks**

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

### *3.1.2 Residential & General customers*

The Residential & General category includes all residential connections and general single and 3 phase connections up to 100kVA capacity. Prices for these customers include a daily charge and a kWh price applied to energy used during the Day period, which is defined as 7am to 11pm. Energy usage during the Night period (11pm to 7am) does not attract any charge.

Prices for Residential & General consumers vary according to:

- **Connection density (Urban or Rural):** The urban areas are defined as where the transformer capacity density of the 11kV line or cables is at least 120kVA/km and where there is a prevalence of transformers in excess of 100kVA per unit and consists of at least 50 customers within a continuous boundary and within 20 km of a zone substation.

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

- **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 size of 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.

    Residential connections are either 8 kVA or 15 kVA. 8kVA residential connections require 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.

  - Different consumer groups are based on practical fuse sizes. For pricing purposes, 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".

- **Control:** Whether there is significant controllable load on the premises. If so, the connection qualifies for a "with off peak" line charge, which is lower than the "all peak" prices that apply connections without significant controllable load. The eligibility for a "with off peak" line charge is determined on the basis that at least 25% of the total annual energy consumption is separately metered on a ripple controlled tariff, such as a water heater or consumed between 23:00 and 07:00 hours.

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 Residential Low User option tariffs. To be eligible for the Low Fixed Charge Tariff Option the connection must meet the residential definition of "*a residential consumer is where the consumer's metered point of connection to the network is for the purposes of supplying a home (the principle place of residence of the consumer), not normally used for any business activity and not used as a holiday home. The connection must meet the definition of "Domestic premises" under Section 5 of the Electricity Industry Act 2010*".

These options attract a lower fixed daily charge and a higher variable consumption charge. Retailers with customers on these pricing plans must submit the monthly consumption amounts for these customers in a separate file to PowerNet.

The consumer specific pricing options available for Residential & General consumers are as follows:

| | Code | |
|---|---|---|
| **Residential Standard** | **Urban** | **Rural** |
| Small Residential (8kVA 1 Phase) - All Peak | UD08P | RD08P |
| Small Residential (8kVA 1 Phase) - With Off Peak | UD08Q | RD08Q |
| Residential (15kVA 1 Phase) - All Peak | UD20P | RD20P |
| Residential (15kVA 1 Phase) - With Off Peak | UD20Q | RD20Q |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak | UDL08P | RDL08P |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak | UDL08Q | RDL08Q |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak | UDL20P | RDL20P |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak | UDL20Q | RDL20Q |
| **General Single Phase** | **Urban** | **Rural** |
| Street Lights (1 Phase) | US001L | RS001L |
| 1 kVA 1 Phase - All Peak | US001P | RS001P |
| 8 kVA 1 Phase - All Peak | US008P | RS008P |
| 8 kVA 1 Phase - With Off Peak | US008Q | RS008Q |
| 15 kVA 1 Phase - All Peak | US020P | RS020P |
| 15 kVA 1 Phase - With Off Peak | US020Q | RS020Q |
| General Three Phase | | |
| 15 kVA 3 Phase - All Peak | UT015P | RT015P |
| 15 kVA 3 Phase - With Off Peak | UT015Q | RT015Q |
| 30 kVA 3 Phase - All Peak | UT030P | RT030P |
| 30 kVA 3 Phase - With Off Peak | UT030Q | RT030Q |
| 50 kVA 3 Phase - All Peak | UT050P | RT050P |
| 50 kVA 3 Phase - With Off Peak | UT050Q | RT050Q |
| 75 kVA 3 Phase - All Peak | UT075P | RT075P |

| | | |
|---|---|---|
| 75 kVA 3 Phase - With Off Peak | UT075Q | RT075Q |
| 100 kVA 3 Phase - All Peak | UT100P | RT100P |
| 100 kVA 3 Phase - With Off Peak | UT100Q | RT100Q |

## 3.2 Summary of target revenue and pricing changes

TPCL has not made any significant change to its pricing structure for the 12 months from 1 April 2020. Refinements made to TPCL's pricing definitions are:

- a new tariff has been created for an export charge for residential and general customers exporting distributed generation into the network. This requirement will allow TPCL visibility of the amount of kWh being supplied by solar generation. The price is set at zero, so does not result in any change in charges to consumers.
- the description for residential and general 20kVA price codes will now state 15kVA to reflect that 63amp fuses are used for this customer group. This is considered a more accurate means for rounding and will bring consistency with other lines companies. This does not have any impact on customers or their electricity supply.

Target revenue for 2020/21 is calculated at $64.2 million, increasing from $61.7 million the previous year. Below is a summary revenue for both transmission costs and distribution price components broken down by the two customer group categories for the 2020-21 year. We also outline the change in revenue compared with the previous year:

| | Group customers | Individual customers | Total |
|---|---|---|---|
| **2020-21 Revenue** | | | |
| **Distribution** | $45,381,359 | $6,947,464 | $52,328,823 |
| **Transmission** | $7,462,274 | $4,414,903 | $11,877,177 |
| **Total** | **$52,073,633** | **$11,362,367** | **$64,206,000** |
| **Previous year** | | | |
| **Distribution** | $42,274,460 | $6,583,054 | $48,857,514 |
| **Transmission** | $ 8,172,865 | $4,650,991 | $12,823,856 |
| **Total** | **$50,447,325** | **$11,234,045** | **$61,681,370** |

The changes in revenues are based on changes to our costs and our allocation of these costs to the customer groups. Other factors that impact on the allocation of costs relate to changes in quantities and individual customers profile changes as well as contractual changes.

Transmission changes relate to a decrease in Transpower's interconnection peak demand rate of 10% and decreased ACOT payments to distributed generators.

Distribution revenue changes reflect changes in operation and maintenance costs and capital investment requirements.

For the average residential consumer, the total TPCL price (including distribution and transmission) will increase by approximately $2.14 (including GST) per month. Residential customer pricing is as follows:

| Daily prices | | 2019/20 | 2020/21 |
|---|---|---|---|
| **Domestic – urban** | $/day | 1.2100 | **1.2367** |
| **Domestic – rural** | $/day | 1.3600 | **1.3969** |
| **Variable Charges** | | | |
| **All except low user – Day** | c/kWh | 8.796 | **9.001** |
| | | | |
| **Low User - Day** | **c/kWh** | **14.209** | **14.543** |

We note that discounts are now included in our pricing schedule. The methodology on how these discounts are determined is available on our website. These discounts are provided to consumers as an annual rebate on their bill via their electricity retailer.

## 3.3 Customer Consultation

Where significant changes in pricing structure are considered, PowerNet consults with customers. While the pricing to apply 1 April 2020 does not involve any significant changes, PowerNet does anticipate consulting over the next 12 months on the potential to introduce Time-of-Use pricing.

Even in the absence of significant pricing change, PowerNet seeks the views of consumers as part of the Asset Management Process (AMP) and has reflected these views in the published AMP. This included A face to face survey with key clients including expectations on price and current service

1. A bulk phone survey of current customers including expectations on price and quality
2. Consultation meetings at various locations throughout the network
3. 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.

# 4. PRICING PRINCIPLES ASSESSMENT

The Electricity Authority has recently revised its distribution pricing principles and provided clarification of how the principles should be applied in practice.

**The 2019 Distribution Pricing Principles:**

(a) Prices are to signal the economic costs of service provision, including by:

(i) being subsidy free (equal to or greater than avoidable costs, and less than or equal to standalone costs);

(ii) reflecting the impacts of network use on economic costs;

(iii) reflecting differences in network service provided to (or by) consumers; and

(iv) encouraging efficient network alternatives.

(b) Where prices that signal economic costs would under-recover target revenues, the shortfall should be made up by prices that least distort network use.

(c) Prices should be responsive to the requirements and circumstances of end users by allowing negotiation to:

(i) reflect the economic value of services; and

(ii) enable price/quality trade-offs.

(d) Development of prices should be transparent and have regard to transaction costs, consumer impacts, and uptake incentives.

We have considered each of these principles in developing our line prices.

## 4.1 Prices are to signal the economic costs of service provision

***By being subsidy-free (equal to or greater than avoidable costs, and less than or equal to standalone costs)***

The PowerNet cost of supply model allocates costs to individual customers based on their geographical location and taking into account their share of the actual assets employed to supply them. The remaining group customers have the resulting costs allocated to them on an averaged basis once the individual customers' costs have been deducted from the total costs. It is not easy to accurately establish the stand-alone costs for most customers supplied by a common service via a meshed network. However 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.

Although the methodology attempts to minimise cross subsidisation between the larger individual consumers and between consumer load groups, there may be some degree of cross subsidisation between, for instance, urban and rural consumers within the same consumer group. This was recognised 15 years ago when a capped differential of 15% was introduced between rural and

urban consumers in the same consumer group. Legislation precluded further steps to reduce this cross subsidisation even if the network owner had resolved to reduce the cross subsidisation.

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.

***Reflecting the impacts of network use on economic costs***

TPCL's pricing structure uses 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 group customers. Load control is utilised to keep charges down by: (1) minimising Transpower charges by controlling the network load during the LSI peaks; (2) managing GXP load when maximum demand reaches the capacity of that GXP; and (3) managing load on feeders during temporary arrangements to manage constraints.

The day/night energy component of charges to residential and general customers also provides a strong signal to consumers to utilise spare network capacity at night thus reducing capital investment in the network. As discussed above in section 2.2, there are some assets in the TPCL's network that are at or approaching capacity limits (eg, a number of zone substations), as well as two GXPs. A time-of-day pricing structure assists in deferring network upgrades. The move to TOU pricing that is being contemplated by TPCL would serve to refine and improve the signals of the existing day/night structure. Looking to the future, and the potential for developments such as electric vehicles, to bring network assets closer to capacity limits, a forward-looking approach to having structures in place and understanding/developing the responsiveness of customers to signals before they need to be relied upon has merit.

With regard to charges for individual customers, these are determined annually through a method which incorporates allocation of a portion of charges through peak demand measures. 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. The use of a more sophisticated charging arrangement for individual customers reflects that they typically have greater capacity to manage and respond to demand-driven charges than smaller customers.

TPCL'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.

The network has a number of embedded generators connected to it. These generators receive avoided transmission payments if they have been generating during Transpowers top 100 peak times for the lower South Island. These payments are also offered to any new investors in distributed generation. PowerNet's peak demand component of the line charge provides a large reward to customers who invest in distribution alternatives.

***Reflecting differences in network service provided to (or by) consumers***

Different levels of daily charges for residential and general consumers with controlled as compared with uncontrolled connections reflect that controlled load has different service availability than uncontrolled load.

For individual customers, pricing reflects that different assets are used by different customers, which could also be associated with different service levels.

***Encouraging efficient network alternatives***

The locational specific pricing that is incorporated into Individual Customer charges assists in providing signals on the cost of network provision in particular locations that can then be compared against network alternatives to encourage efficient decision-making by consumers. The use of at least some geographic pricing for residential and general customers, through the distinction between rural and urban connections, also assists in this regard.

Signalling when the network is likely to be at its busiest or when capacity is available also provides signals on when network alternatives can aid in meeting peak loads or in smoothing peaks through load shifting. Day/night pricing will assist with this to a degree – for example, by encouraging EV charging overnight. However it is envisaged that TOU pricing will allow more accurate signalling of network busy times than the broad day/night periods that are currently in use. For individual customers, charges reflect demand during peak periods which would encourage efficient decision-making on customer investment in and use of network alternatives.

## 4.2 Where prices that signal economic costs would under-recover target revenues, the shortfall should be made up by prices that least distort network use

TPCL uses capacity charges to recover costs that are not recovered through peak demand charges (Individual Customer) or Day kWh charges (Residential & General) charges. These types of charges would have less distortionary impacts in recovering sunk costs than kWh or demand charges would, but arguably fairer than a single fixed charge for each and every ICPs. However, there are limitations on the proportion of costs that can be recovered through capacity or daily charges as a result of the Low Fixed Charge Regulations, as well as fairness considerations.

TPCL also notes that while the recovery of sunk or fixed costs from variable charges will distort usage to some extent, reasonably low uptake of evolving technologies (PV, EVs) on TPCL's network area for the foreseeable future (as discussed in section 2.3) likely means that there will be limited adverse consequences from variable charges.

Another interpretation of prices that least distort network use is Ramsey pricing, where those consumers with inelastic demand face higher charges as their consumption is least likely to be distorted as a result. However, 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.

## 4.3 Prices should be responsive to the requirements and circumstances of end users by allowing negotiation to: (i) reflect the economic value of services; and (ii) enable price/quality trade-offs

As is discussed in section 9, in some cases non-standard prices and contracts are appropriate. This may be the case where, for example, a customer has enhanced security arrangements. In situations where customers have significant capital contributions or new investment agreements, 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. TPCL'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 is practical, reflect the network costs incurred by each individual consumer.

TPCL's pricing model for large individual consumers ensures that the price is cost reflective and takes into consideration a distance factor from the customer's premises to the local zone substation, thus relating their line charges to the assets used for their supply. The closer to the zone substation the lower the distribution cost component. This component also allows for the shared use of those assets.

The pricing model allows customers to own their own distribution transformers passing on the savings made by ownership.

Each zone substation has individual costs allocated to it based on the substation assets and the share of the use of the sub transmission network as determined by load flow analysis. These individual zone substation costs are allocated to the individual consumers based on their respective load profiles and share of the use of the zone substation.

The use of individual capacity and demands also ensures that the price is cost reflective. By these processes, TPCL 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 consumers, 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 400 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, 82% stated no to this question.

## 4.4 Development of prices should be transparent and have regard to transaction costs, consumer impacts, and uptake incentives.

TPCL'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.

TPCL 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.

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 pricing structure is straight forward, limited to a fixed daily charge and variable consumption tariff for the majority of customers. PowerNet recognises that whilst the pricing structure is simple, there are a large number of options due to the urban/rural and 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).

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

TPCL uses "GXP billing" for its residential & general connections, which saves on administration costs, and ultimately should result in lower costs and prices.

TPCL also recognises that "ICP pricing and billing" can potentially 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 and is currently being contemplated in a potential move to TOU pricing.

With regard to uptake incentives, because pricing is at a GXP level for residential and general customers, TPCL's pricing structure (eg, Day/Night) is necessarily applied for all customers at a wholesale level. Whether TPCL's pricing structure is passed on to end consumers or repackaged is a decision made by retailers.

TPCL's pricing from 1 April 2020 does not incorporate structural changes and as a result, consumer impacts of the change in price levels are likely to be predictable. However, if TPCL implements a significant change in pricing structures, such as TOU implementation or follows a government-led LFC transition, we would anticipate that consumer impact analysis would be much more relevant.

# 5. REVENUE REQUIREMENT

TPCL is an electricity distribution business (EDB) that is exempt from the price quality provisions of the Commerce Act due to its trust ownership structure. As a result, TPCL's revenue is not reset by the Commerce Commission from 1 April 2020 under the Commerce Commission's Electricity Distribution Services Default Price-Quality Path Determination 2020 (the Determination).

The Commission's Determination is based on a variety of Input Methodologies that determines the inputs into the calculation of the Weighted Average Cost of Capital (WACC) used in the Commerce Commissions price reset calculations.

TPCL's view is the inputs into the Commission's WACC calculation include out-of-date tax-adjusted market risk premium and narrow time bands for calculations of interest costs used in the WACC calculation and in the reset calculation non-independent use of inflation assumptions from parties with vested interests in a mid-range inflation outcome.

The inputs have resulted in lower price reset outcomes, which cause concern for non-exempt EDBs. TPCL as an exempt EDB has calculated its WACC based on its actual cost of debt and a more current tax adjusted market risk premium as proposed by the Commissions consultants for fibre input methodologies.

TPCL's WACC is materially above the Commission's WACC used in the reset. It has been applied to the Return of Capital calculation.

***Posted Discount***

TPCL has for a number of years credited a discount to its consumers on the qualifying date of 31 August each year.

This year TPCL has made a further commitment by posting the discount alongside its prices schedules effective from 1 April each year.

The discount is a credit for a portion of the lines charges paid for electricity distribution services in the preceding 12 months period from 1 August to 31 July. Discounts are paid to each consumers' electricity retailer in September and the amount is then credited to their account.

***Determining Each Component of the Revenue Requirement***

This Disclosure is required to outline the costs of the EDB that are targeted to be recovered through charges for electricity distribution services.

- The estimated costs of operating TPCL's EDB for the year from 1 April 2020 to 31 March 2021 are grouped into the categories of:
- Direct network costs, including operational and maintenance cost and direct overheads.
- Indirect network costs which includes indirect overheads and administration costs
- Transmission costs, including Transpower, other distributors and distributed generators
- Regulatory depreciation (return of capital)
- Return on capital made up of TPCL's WACC return on the regulated asset base
- Regulatory taxation

| Revenue Requirement for the year ended 31 March 2021 | $000 |
|---|---|
| **Direct network costs** | 11,565 |
| **Indirect network costs** | 6,779 |
| **Transmission costs** | 11,877 |
| **Depreciation (RAB)** | 13,762 |
| **Return of capital (WACC x RAB)** | 21,549 |
| **Regulatory Taxation** | 3,301 |
| **Total Revenue Requirement Before Discount** | **68,833** |
| **Posted Discount** | 7,700 |
| **Total Revenue Requirement** | **61,133** |

Capital contribution revenue is excluded from the revenue requirement as the revenue is netted off against the cost of the regulatory assets the contribution relates to.

Total budgeted line charge revenue before the posted discount is $64,206,000. This results in an implicit discount of $4,627,000 below the total revenue requirement (before the posted discount) of $68,886,000.

# 6. METHOD FOR COST ALLOCATION

The costs from each of the categories used to calculate the Revenue Requirement are allocated between the relevant consumers and consumer groups. Each consumer or consumer groups' share of the use of the assets and costs are 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.

## 6.1 Customer Profiles

The derivation of the line charges is based on seven profile parameters relating to the customer group, or individual customer. They are:

(a) The Contract Capacity kVA (kW) of the installation

(b) The Peak demand kVA. (kW) (0700-1100 hours and 1700-2100 hours, each week day during sub-transmission peak months of individual grid exit points)

(c) The Peak energy MWh. (0700-1100 hours and 1700-2100 hours, each week day during sub-transmission peak months)

(d) The Winter Day energy MWh. (0700-2300 hours, May to September inclusive)

(e) The Summer Day energy MWh. (0700-2300 hours, October to April inclusive)

(f) The Total energy for the 12 month period MWh.

(g) Coincident Peak demand with Transpower's 100 highest peaks for the lower South Island (kVA), half hour metered customers only.

## 6.2 Transpower and Sub transmission Costs

The basis of allocation of Transpower connection charges and sub transmission costs is on the after diversity maximum demand for each customer during the periods of network maximum demand. Similarly the allocation of the distribution costs is on an after diversity distribution capacity of the customer's installation.

The PowerNet methodology takes into account the duration that the customer impacts on the peak loading hours of the network. This is achieved by allocating some of the Transmission, sub transmission and distribution costs based on the 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 peak period or is only impacting on the peak hours for part of the peak period and increases the charges for those customers who are impacting regularly on the peak periods.

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

## 6.3 Peak Demand

The 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:

1kVA = 100%

2kVA to 110kVA = ramp function from 13.75% to 39%

Between 110kVA and 3,000kVA = ramp function from 40% - 95%

Above 3,000kVA = 95%.

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

## 6.4 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 50kVA = 30%

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

For connections between 101kVA and 2,500kVA = ramp function from 75% - 95%

For connections above 2,500kVA = 95%.

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

## 6.5 Sub transmission and Distribution Split

The costs of the sub transmission 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 the cost of capital required to fund the assets. As the company is owned by a consumer trust, the required gross return is presently comparatively low as most of the consumer shareholders receive an implicit benefit in the way of reduced line charges.

**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 | 5 | 23 | 128 | 319 | 35 | 94 | 143 |
| 50 | 19 | 389 | 856 | 2792 | 312 | 809 | 1169 |
| 75 | 8 | 124 | 342 | 1018 | 105 | 264 | 469 |
| 100 | 34 | 342 | 1833 | 3868 | 500 | 1146 | 1698 |
| 150 | 64 | 1030 | 6117 | 10592 | 1384 | 3346 | 4625 |
| 200 | 54 | 1296 | 6129 | 12006 | 1585 | 3394 | 5739 |
| 300 | 37 | 2781 | 6134 | 18478 | 2294 | 5743 | 7385 |
| 500 | 24 | 2826 | 10051 | 17474 | 2020 | 5160 | 7453 |
| 750 | 10 | 1591 | 3087 | 11929 | 1267 | 3199 | 5102 |
| 1000 | 6 | 2769 | 4436 | 17519 | 2183 | 5321 | 6872 |
| 1250 | 2 | 611 | 1872 | 5093 | 629 | 1232 | 2552 |
| 1500 | 4 | 1073 | 2527 | 6574 | 922 | 1800 | 3028 |
| 1800 | 1 | 697 | 1399 | 5098 | 651 | 1121 | 2459 |
| 2000 | 2 | 1633 | 2823 | 11182 | 1333 | 3268 | 5207 |
| 3000 | 1 | 262 | 463 | 2450 | 263 | 622 | 1038 |
| 3500 | 1 | 911 | 2377 | 9096 | 795 | 1989 | 4316 |
| 4000 | 1 | 1094 | 3340 | 15689 | 1058 | 3031 | 7679 |
| 4500 | 1 | 57 | 226 | 32 | 3 | 7 | 13 |
| 5000 | 1 | 1442 | 2512 | 11089 | 1053 | 2519 | 5212 |
| 6000 | 1 | 986 | 3509 | 18095 | 998 | 2822 | 9496 |
| 10000 | 1 | 5165 | 9997 | 41307 | 6241 | 9588 | 18988 |
| 13000 | 1 | 1.00 | 20.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 30200 | 1 | 6926 | 22718 | 99658 | 15319 | 15745 | 50175 |

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 |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| TPC Urban | | | | | | | |
| Residential Standard | | | | | | | |
| **Small Residential (8kVA 1 Phase) - All Peak** | UD08P | 83 | 68 | 377 | 48 | 132 | 158 |
| **Small Residential (8kVA 1 Phase) - With Off Peak** | UD08Q | 183 | 127 | 828 | 79 | 262 | 340 |
| **Residential (15kVA 1 Phase) - All Peak** | UD20P | 1,726 | 3512 | 19528 | 2495 | 6850 | 8170 |
| **Residential (15kVA 1 Phase) - With Off Peak** | UD20Q | 6,873 | 11890 | 77782 | 7452 | 24554 | 31891 |
| **Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak** | UDL20P | 1,756 | 3573 | 11038 | 1410 | 3871 | 4618 |
| **Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak** | UDL20Q | 5,714 | 9886 | 35928 | 3442 | 11342 | 14731 |
| **Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak** | UDL08P | 70 | 57 | 282 | 27 | 99 | 118 |
| **Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak** | UDL08Q | 152 | 105 | 611 | 59 | 193 | 250 |
| | | | | | | | |
| General Single Phase | | | | | | | |
| **Street Lights (1 Phase)** | US001L | 5,438 | 1387 | 6047 | 772 | 2121 | 2530 |
| **1 kVA 1 Phase - All Peak** | US001P | 27 | 27 | 353 | 45 | 124 | 148 |
| **8 kVA 1 Phase - All Peak** | US008P | 232 | 189 | 1049 | 134 | 368 | 439 |
| **8 kVA 1 Phase - With Off Peak** | US008Q | 14 | 10 | 63 | 6 | 20 | 26 |
| **15 kVA 1 Phase - All Peak** | US020P | 376 | 764 | 4250 | 543 | 1491 | 1778 |
| **15 kVA 1 Phase - With Off Peak** | US020Q | 101 | 175 | 1143 | 110 | 361 | 469 |
| | | | | | | | |
| General Three Phase | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **15 kVA 3 Phase - All Peak** | UT015P | 112 | 171 | 949 | 121 | 333 | 397 |
| **15 kVA 3 Phase - With Off Peak** | UT015Q | 11 | 14 | 91 | 9 | 29 | 37 |
| **30 kVA 3 Phase - All Peak** | UT030P | 547 | 2009 | 7944 | 1015 | 2787 | 3324 |
| **30 kVA 3 Phase - With Off Peak** | UT030Q | 100 | 311 | 1445 | 138 | 456 | 593 |
| **50 kVA 3 Phase - All Peak** | UT050P | 317 | 2592 | 12810 | 1636 | 4493 | 5359 |
| **50 kVA 3 Phase - With Off Peak** | UT050Q | 79 | 552 | 3208 | 307 | 1013 | 1315 |
| **75 kVA 3 Phase - All Peak** | UT075P | 96 | 1551 | 6134 | 783 | 2151 | 2566 |
| **75 kVA 3 Phase - With Off Peak** | UT075Q | 19 | 264 | 1230 | 118 | 388 | 504 |
| **100 kVA 3 Phase - All Peak** | UT100P | 20 | 521 | 2060 | 263 | 722 | 862 |
| **100 kVA 3 Phase - With Off Peak** | UT100Q | 3 | 68 | 317 | 30 | 100 | 130 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| TPC Rural | | | | | | | |
| Residential | | | | | | | |
| **Small Residential (8kVA 1 Phase) - All Peak** | RD08P | 104 | 85 | 472 | 60 | 166 | 197 |
| **Small Residential (8kVA 1 Phase) - With Off Peak** | RD08Q | 89 | 61 | 402 | 38 | 127 | 165 |
| **Residential (15kVA 1 Phase) - All Peak** | RD20P | 1,963 | 3994 | 22210 | 2837 | 7790 | 9292 |
| **Residential (15kVA 1 Phase) - With Off Peak** | RD20Q | 5,281 | 9136 | 59764 | 5726 | 18866 | 24504 |
| **Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak** | RDL20P | 936 | 1906 | 5887 | 752 | 2065 | 2463 |
| **Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak** | RDL20Q | 2,055 | 3555 | 12919 | 1238 | 4078 | 5297 |
| **Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak** | RDL08P | 39 | 32 | 156 | 15 | 55 | 65 |
| **Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak** | RDL08Q | 33 | 23 | 132 | 13 | 42 | 54 |
| | | | | | | | |
| General Single Phase | | | | | | | |
| **Street Lights (1 Phase)** | RS001L | 835 | 213 | 929 | 119 | 326 | 388 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1 kVA 1 Phase - All Peak** | RS001P | 125 | 125 | 1629 | 208 | 571 | 681 |
| **8 kVA 1 Phase - All Peak** | RS008P | 1,081 | 880 | 4891 | 625 | 1716 | 2046 |
| **8 kVA 1 Phase - With Off Peak** | RS008Q | 26 | 18 | 118 | 11 | 37 | 48 |
| **15 kVA 1 Phase - All Peak** | RS020P | 1,645 | 3349 | 18620 | 2379 | 6531 | 7790 |
| **15 kVA 1 Phase - With Off Peak** | RS020Q | 342 | 592 | 3871 | 371 | 1222 | 1587 |
| | | | | | | | |
| General Three Phase | | | | | | | |
| **15 kVA 3 Phase - All Peak** | RT015P | 337 | 514 | 2858 | 365 | 1003 | 1196 |
| **15 kVA 3 Phase - With Off Peak** | RT015Q | 12 | 15 | 98 | 9 | 31 | 40 |
| **30 kVA 3 Phase - All Peak** | RT030P | 1,841 | 6761 | 26734 | 3415 | 9377 | 11185 |
| **30 kVA 3 Phase - With Off Peak** | RT030Q | 432 | 1349 | 6274 | 601 | 1981 | 2572 |
| **50 kVA 3 Phase - All Peak** | RT050P | 652 | 5335 | 26368 | 3368 | 9249 | 11032 |
| **50 kVA 3 Phase - With Off Peak** | RT050Q | 513 | 3571 | 20763 | 1989 | 6554 | 8513 |
| **75 kVA 3 Phase - All Peak** | RT075P | 94 | 1515 | 5990 | 765 | 2101 | 2506 |
| **75 kVA 3 Phase - With Off Peak** | RT075Q | 42 | 570 | 2651 | 254 | 837 | 1087 |
| **100 kVA 3 Phase - All Peak** | RT100P | 28 | 748 | 2957 | 378 | 1037 | 1237 |
| **100 kVA 3 Phase - With Off Peak** | RT100Q | 9 | 204 | 951 | 91 | 300 | 390 |

# 7. COST ALLOCATION TO CAPACITY GROUPS

This section describes the cost allocations to each capacity group and individual customers using the methodology described above.

## 7.1 Transmission Charges

Transmission charges reflect the Transpower grid asset management costs incurred by The Power Company Ltd based on the four points of supply and also include the equivalent costs of the embedded generation supplied by the Southern Generation point of supply at Flatt Hill wind generation at Bluff, and the Mataura Industrial Park Hydro generation at Mataura.

The five points of supply are:

(a) Gore

(b) Edendale

(c) Invercargill

(d) North Makarewa

(e) Mataura, Flat Hill

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 and includes Transpower new investment charges.

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 charges for each point of supply are:

| | | |
|---|---|---|
| (a) | Gore | $519,557 |
| (b) | Edendale | $260,068 |
| (c) | Invercargill | $329,883 |
| (d) | North Makarewa | $727,876 |

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

| | |
|---|---|
| Peak Demand | 70% |
| Peak Energy | 20% |

Winter Day Energy 10%

For individual customers this equates to:

| Point of Supply | Per kVA Peak Demand | Per Winter Peak MWh | Per Winter Day MWh |
|---|---|---|---|
| Gore | $10.82 | $5.10 | $1.69 |
| Edendale | $5.86 | $2.40 | $3.50 |
| Invercargill | $6.49 | $2.92 | $0.99 |
| North Makarewa | $9.16 | $5.14 | $1.29 |

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 Peak MWh | Per Winter Day MWh |
|---|---|---|---|
| All Points of Supply | $8.62 | $4.45 | $1.11 |

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 100 highest coincident peak demands at each point of supply with that recorded for Transpower's lower South Island region during the period 1 September to 31 August each year.

The total interconnection charges for each point of supply are:

| | | |
|---|---|---|
| (a) | Gore | $2,428,461.98 |
| (b) | Edendale | $1,071,270.32 |
| (c) | Invercargill | $2,789,619.87 |
| (d) | North Makarewa | $3,346,440.68 |
| (e) | Flat Hill, Mataura | $203,647.00 |

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

**Half Hour Metered**:

Coincident peak with lower South Island region top 100 peaks - 100%

**Non Half Hour Metered**:

Peak Demand 60%

Peak Energy 30%

Winter Day Energy 10%

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

| Point of Supply | Per kVA Peak Demand | Per Peak MWh | Per Winter Day MWh |
|---|---|---|---|
| Gore | $44.04 | $36.36 | $8.02 |
| Edendale | $24.15 | $17.33 | $16.82 |
| Invercargill (TPCL) | $49.80 | $39.29 | $8.87 |
| North Makarewa | $38.31 | $35.47 | $5.95 |

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

| Point of Supply | Per kVA Coincident Peak Demand |
|---|---|
| Gore | $98.39 |
| Edendale | $98.39 |
| Invercargill (TPCL) | $98.39 |
| North Makarewa | $98.39 |

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 |
|---|---|---|---|
| All Points of Supply | $45.69 | $41.30 | $6.86 |

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 | 5 | $4,836 | $967 |
| 50 | 19 | $45,139 | $2,376 |
| 75 | 8 | $13,786 | $1,723 |
| 100 | 34 | $60,631 | $1,783 |
| 150 | 64 | $220,181 | $3,440 |
| 200 | 54 | $215,485 | $3,990 |
| 300 | 37 | $325,685 | $8,802 |
| 500 | 24 | $314,965 | $13,124 |
| 750 | 10 | $176,353 | $17,635 |
| 1000 | 6 | $304,050 | $50,675 |
| 1250 | 2 | $75,255 | $37,628 |
| 1500 | 4 | $118,815 | $29,704 |
| 1800 | 1 | $77,298 | $77,298 |
| 2000 | 2 | $179,134 | $89,567 |
| 3000 | 1 | $29,621 | $29,621 |
| 3500 | 1 | $106,100 | $106,100 |
| 4000 | 1 | $150,760 | $150,760 |
| 4500 | 1 | $6,697 | $6,697 |
| 5000 | 1 | $174,665 | $174,665 |
| 6000 | 1 | $127,890 | $127,890 |
| 10000 | 1 | $632,991 | $632,991 |
| 13000 | 1 | $164,231 | $164,231 |
| 30200 | 1 | $890,335 | $890,335 |

### *7.1.4 Transpower Revenue for Group Customers*

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

| Consumer Capacity | Code | Number of Connections | TransPower Charge | TransPower Revenue per Consumer Group |
|---|---|---|---|---|
| **TPC Urban** | | | | |
| **Residential Standard** | | | | |
| Small Residential (8kVA 1 Phase) - All Peak | UD08P | 83 | $79 | $6,534 |
| Small Residential (8kVA 1 Phase) - With Off Peak | UD08Q | 183 | $65 | $11,961 |
| Residential (15kVA 1 Phase) - All Peak | UD20P | 1,725 | $197 | $339,486 |
| Residential (15kVA 1 Phase) - With Off Peak | UD20Q | 6,873 | $163 | $1,123,068 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak | UDL20P | 1,756 | $158 | $278,267 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak | UDL20Q | 5,714 | $133 | $757,339 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak | UDL08P | 70 | $70 | $4,902 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak | UDL08Q | 152 | $62 | $9,466 |
| **General Single Phase** | | | | |
| Street Lights (1 Phase) | US001L | 5,438 | $22 | $121,404 |
| 1 kVA 1 Phase - All Peak | US001P | 27 | $154 | $4,159 |
| 8 kVA 1 Phase - All Peak | US008P | 232 | $79 | $18,263 |
| 8 kVA 1 Phase - With Off Peak | US008Q | 14 | $65 | $915 |
| 15 kVA 1 Phase - All Peak | US020P | 376 | $197 | $73,998 |

| | | | | |
|---|---|---|---|---|
| 15 kVA 1 Phase - With Off Peak | US020Q | 101 | $163 | $16,504 |
| **General Three Phase** | | | | |
| 15 kVA 3 Phase - All Peak | UT015P | 112 | $148 | $16,531 |
| 15 kVA 3 Phase - With Off Peak | UT015Q | 11 | $123 | $1,348 |
| 30 kVA 3 Phase - All Peak | UT030P | 547 | $310 | $169,674 |
| 30 kVA 3 Phase - With Off Peak | UT030Q | 100 | $259 | $25,868 |
| 50 kVA 3 Phase - All Peak | UT050P | 317 | $753 | $238,771 |
| 50 kVA 3 Phase - With Off Peak | UT050Q | 79 | $626 | $49,483 |
| 75 kVA 3 Phase - All Peak | UT075P | 96 | $1,365 | $130,998 |
| 75 kVA 3 Phase - With Off Peak | UT075Q | 19 | $1,138 | $21,621 |
| 100 kVA 3 Phase - All Peak | UT100P | 20 | $2,256 | $43,988 |
| 100 kVA 3 Phase - With Off Peak | UT100Q | 3 | $1,881 | $5,644 |
| **TPC Rural** | | | | |
| **Residential** | | | | |
| Small Residential (8kVA 1 Phase) - All Peak | RD08P | 104 | $79 | $8,187 |
| Small Residential (8kVA 1 Phase) - With Off Peak | RD08Q | 89 | $65 | $5,817 |
| Residential (15kVA 1 Phase) - All Peak | RD20P | 1,963 | $197 | $386,325 |
| Residential (15kVA 1 Phase) - With Off Peak | RD20Q | 5,281 | $163 | $862,930 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak | RDL20P | 936 | $158 | $148,325 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak | RDL20Q | 2,054 | $133 | $272,239 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak | RDL08P | 39 | $70 | $2,731 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak | RDL08Q | 33 | $62 | $2,055 |
| **General Single Phase** | | | | |

| | | | | |
|---|---|---|---|---|
| Street Lights (1 Phase) | RS001L | 835 | $22 | $18,641 |
| 1 kVA 1 Phase - All Peak | RS001P | 125 | $154 | $19,253 |
| 8 kVA 1 Phase - All Peak | RS008P | 1,081 | $79 | $85,098 |
| 8 kVA 1 Phase - With Off Peak | RS008Q | 26 | $65 | $1,699 |
| 15 kVA 1 Phase - All Peak | RS020P | 1,645 | $197 | $323,741 |
| 15 kVA 1 Phase - With Off Peak | RS020Q | 342 | $163 | $55,884 |
| **General Three Phase** | | | | |
| 15 kVA 3 Phase - All Peak | RT015P | 337 | $148 | $49,742 |
| 15 kVA 3 Phase - With Off Peak | RT015Q | 12 | $123 | $1,471 |
| 30 kVA 3 Phase - All Peak | RT030P | 1,841 | $310 | $571,059 |
| 30 kVA 3 Phase - With Off Peak | RT030Q | 432 | $259 | $111,751 |
| 50 kVA 3 Phase - All Peak | RT050P | 652 | $753 | $491,101 |
| 50 kVA 3 Phase - With Off Peak | RT050Q | 513 | $626 | $321,324 |
| 75 kVA 3 Phase - All Peak | RT075P | 94 | $1,365 | $128,269 |
| 75 kVA 3 Phase - With Off Peak | RT075Q | 42 | $1,138 | $47,795 |
| 100 kVA 3 Phase - All Peak | RT100P | 28 | $2,256 | $63,162 |
| 100 kVA 3 Phase - With Off Peak | RT100Q | 9 | $1,881 | $16,931 |

## 7.2 Sub-transmission Charges

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

There are two components making up the sub transmission charges:

(a) Supply charge

(b) Maintenance charge

### *7.2.1 Supply Charge*

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

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

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

The total supply charge for all the TPCL zone substations is $14,796,725.

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

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

### *7.2.2 Maintenance Charge*

The sub transmission maintenance charges for TPC total $3,654,163

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

| | |
|---|---|
| Total Energy | 50% |
| Peak Demand | 50% |

### *7.2.3 Total Sub-transmission Charges*

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

| Zone Substation | Total Supply Charge | Total Maintenance Charge |
|---|---|---|
| **Awarua** | $172,725 | $42,654 |
| **Bluff** | $419,661 | $103,635 |
| **Centre Bush** | $364,553 | $90,026 |
| **Conical Hills** | $306,047 | $75,578 |
| **Dipton** | $307,222 | $75,868 |
| **Edendale** | $299,112 | $82,073 |
| **Glenham** | $236,957 | $58,517 |
| **Gorge Road** | $334,086 | $82,502 |
| **Hillside** | $259,542 | $64,094 |
| **Kelso** | $519,760 | $128,355 |
| **Kennington** | $202,258 | $49,947 |
| **Lumsden** | $624,406 | $154,197 |
| **Makarewa** | $328,028 | $81,006 |
| **Athol** | $654,581 | $161,649 |
| **Mataura** | $325,270 | $80,325 |
| **Monowai** | $153,345 | $37,869 |
| **Mossburn** | $688,233 | $178,904 |
| **NZMP** | $361,223 | $93,899 |
| **North Gore** | $247,404 | $61,096 |
| **Ohai** | $466,789 | $102,923 |
| **Orawia** | $575,168 | $129,125 |
| **Otatara** | $272,717 | $67,347 |
| **Otautau** | $367,239 | $82,445 |
| **White Hill** | $71,165 | $17,574 |
| **Riversdale** | $488,114 | $120,540 |
| **Riverton** | $432,090 | $106,705 |
| **Seaward Bush** | $259,186 | $64,006 |
| **South Gore** | $220,906 | $54,553 |
| **Te Anau** | $1,306,448 | $322,627 |
| **Tokanui** | $350,136 | $86,466 |
| **Underwood** | $453,196 | $111,917 |
| **Waikiwi** | $501,653 | $123,883 |
| **Waikaka** | $297,621 | $73,498 |
| **Winton** | $685,995 | $169,406 |

| | | |
|---|---|---|
| **Colyer RD** | $481,448 | $118,894 |
| **Hedgehope** | $450,913 | $111,353 |
| **Isla Bank** | $359,202 | $88,705 |
| **ICC46** | $40,334 | $8,673 |

### *7.2.4 Sub transmission Charges for Individual Customers above 100 kVA*

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

| Zone Substation | Supply Charge per kVA Winter Peak Demand | Supply Charge per Winter Peak MWh | Supply Charge per Winter Day MWh | Maintenance Charge per Commercial Total MWh | Maintenance Charge per kVA Winter Peak Demand |
|---|---|---|---|---|---|
| **Awarua** | $70.96 | $23.77 | $7.43 | $1.16 | $12.52 |
| **Bluff** | $76.62 | $29.45 | $8.31 | $2.05 | $13.52 |
| **Centre Bush** | $74.88 | $66.38 | $20.18 | $4.45 | $13.21 |
| **Conical Hills** | $251.45 | $32.90 | $10.12 | $2.96 | $44.35 |
| **Dipton** | $132.85 | $190.69 | $53.97 | $13.53 | $23.43 |
| **Edendale** | $37.12 | $23.49 | $7.14 | $1.60 | $7.27 |
| **Glenham** | $169.73 | $94.93 | $29.19 | $7.20 | $29.94 |
| **Gorge Road** | $141.12 | $102.91 | $31.41 | $6.75 | $24.89 |
| **Hillside** | $326.06 | $136.28 | $40.73 | $9.84 | $57.51 |
| **Kelso** | $94.90 | $47.99 | $14.81 | $3.78 | $16.74 |
| **Kennington** | $30.21 | $16.56 | $7.45 | $1.49 | $5.33 |
| **Lumsden** | $145.74 | $82.59 | $24.61 | $5.79 | $25.71 |
| **Makarewa** | $49.00 | $25.53 | $7.77 | $1.80 | $8.64 |
| **Athol** | $604.28 | $398.93 | $112.17 | $28.96 | $106.59 |
| **Mataura** | $31.54 | $23.71 | $7.40 | $1.46 | $5.56 |
| **Monowai** | $314.97 | $279.69 | $82.85 | $21.10 | $55.56 |
| **Mossburn** | $316.60 | $200.43 | $60.73 | $15.64 | $58.79 |
| **NZMP** | $12.65 | $5.15 | $10.03 | $0.43 | $2.35 |
| **North Gore** | $25.11 | $9.94 | $3.00 | $0.79 | $4.43 |
| **Ohai** | $164.46 | $77.34 | $23.26 | $5.10 | $25.90 |
| **Orawia** | $162.06 | $82.88 | $25.66 | $5.94 | $25.99 |
| **Otatara** | $55.95 | $27.96 | $8.89 | $2.49 | $9.87 |
| **Otautau** | $75.43 | $30.95 | $9.71 | $2.13 | $12.10 |
| **White Hill** | $97.45 | $389.41 | $72.28 | $18.75 | $17.19 |
| **Riversdale** | $90.94 | $52.29 | $15.76 | $3.54 | $16.04 |
| **Riverton** | $72.13 | $32.18 | $9.77 | $2.45 | $12.72 |
| **Seaward Bush** | $32.51 | $9.13 | $2.67 | $0.68 | $5.73 |
| **South Gore** | $16.10 | $8.55 | $2.54 | $0.59 | $2.84 |
| **Te Anau** | $227.41 | $80.25 | $23.71 | $5.91 | $40.11 |
| **Tokanui** | $265.38 | $192.62 | $54.16 | $13.99 | $46.81 |
| **Underwood** | $31.05 | $18.89 | $5.75 | $1.07 | $5.48 |
| **Waikiwi** | $31.92 | $13.69 | $4.26 | $1.12 | $5.63 |
| **Waikaka** | $222.30 | $150.94 | $65.88 | $13.70 | $39.21 |
| **Winton** | $44.27 | $19.89 | $7.59 | $1.66 | $7.81 |

| | | | | | |
|---|---|---|---|---|---|
| **Colyer RD** | $71.76 | $49.05 | $10.10 | $1.96 | $12.66 |
| **Hedgehope** | $185.24 | $187.52 | $42.34 | $21.82 | $32.67 |
| **Isla Bank** | $295.12 | $373.45 | $111.24 | $43.45 | $52.06 |
| | | | | | |

### *7.2.5 Sub transmission Charges for Group Customers*

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

| | Supply Charge per kVA Peak Demand | Supply Charge per Peak MWh | Supply Charge per Winter Day MWh | Maintenance Charge per Domestic Total MWh | Maintenance Charge per kVA Winter Peak Demand |
|---|---|---|---|---|---|
| **Residential & General** | $83.29 | $42.43 | $10.65 | $3.15 | $15.98 |

## 7.3 Distribution charges

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

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

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

Urban customers are located in the following areas:

| | |
|---|---|
| Invercargill | Mossburn |
| Gore | Lumsden |
| Te Anau | Riversdale |
| Winton | Manapouri |
| Mataura | Tapanui |
| Riverton | Edendale |
| Otautau | Wyndham |
| Tuatapere | Wallaceton |
| Ohai | Otatara |
| Nightcaps | |

The remaining customers are classified as rural.

There are three components making up the distribution charges

(a) Supply charge

(b) Maintenance charge

(c) Transformer charge

### *7.3.1 Supply Charge*

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

The total supply charge for TPCL totals $15,721,920.

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

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

### *7.3.2 Maintenance Charge*

The maintenance charges for TPCL total $6,533,340.

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

| | |
|---|---|
| Total Energy | 50% |
| Contract Capacity | 50% |

### *7.3.3 Transformer Charge*

The supply and maintenance transformer charges for TPCL total $5,843,878.

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 Locational Individual Distribution Charges*

| | | |
|---|---|---|
| (a) | Distribution Supply charge | $3.15 per kVA km Urban |
| (b) | Distribution Supply charge | $0.69 per kVA km Rural |
| (c) | Distribution Transformer charge | $295.89 per Transformer |
| (d) | Distribution Maintenance charge | $2,482 per km Urban |
| (e) | Distribution Maintenance charge | $1,066 per km Rural |

| | | |
|---|---|---|
| (f) | Maintenance Transformer charge | $1,050 per Transformer for capacity >=75kVA |
| (g) | Maintenance Transformer charge | $59.77 per Transformer for capacity <75kVA |

The Transformer charge of $295.89 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 |

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

### *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:

*TPC Urban*

| | | |
|---|---|---|
| (a) | Distribution Supply charge | $7.18 per kVA Contract Capacity |
| (b) | Distribution Supply charge | $25.05 per Winter Peak MWh |
| (c) | Distribution Supply charge | $6.10 per Winter Day MWh |
| (d) | Distribution Maintenance charge | $1.58 per Domestic Total MWh |
| (e) | Distribution Maintenance charge | $1.58 per Commercial Total MWh |
| (f) | Distribution Maintenance charge | $1.20 per kVA Contract Capacity |
| (g) | Distribution Transformer charge | $11.30 per kVA AD Transformer capacity |

*TPC Rural*

| | | |
|---|---|---|
| (a) | Distribution Supply charge | $42.37 per kVA Contract Capacity |
| (b) | Distribution Supply charge | $96.20 per Winter Peak MWh |
| (c) | Distribution Supply charge | $24.44 per Winter Day MWh |
| (d) | Distribution Maintenance charge | $12.38 per Domestic Total MWh |
| (e) | Distribution Maintenance charge | $12.38 per Commercial Total MWh |

| | | |
|---|---|---|
| (f) | Distribution Maintenance charge | $13.84 per kVA Contract Capacity |
| (g) | Distribution Transformer charge | $11.30 per kVA AD Transformer capacity |

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

## 7.4 Overheads

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

These costs include the following:

(a) Executive Management

(b) Directors Fees

(c) System Control

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

These charges are split equally over the total customer base.

The total overhead costs are $4,240,634

The charge per customer is $116.46

## 7.5 Power Factor Charge

All charges assume a power factor of not less than 0.95 lagging.

Individual and general customers may have a data logger installed to assess their power factor. If a customer has a power factor of less than 0.95 lagging and after a period of notice has not been corrected then an annual power factor charge of $80 per kVA will be applied.

The kVA is based on the total kVA less kVA at 0.95 power factor. The kVA will be assessed on the average of the 12 highest kWh half hour periods during the assessment period.

## 7.6 Powernet Charges

### *7.6.1 PowerNet Revenue for Individual Customers*

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

| Consumer Capacity kVA | Sub transmission Charge | Distribution Charge | Overhead Charge | Total PowerNet Charge |
|---|---|---|---|---|
| 30 | $5,740.70 | $5,294.76 | $582.30 | $11,617.75 |
| 50 | $51,853.45 | $19,682.66 | $2,212.73 | $73,748.84 |
| 75 | $17,987.88 | $10,813.27 | $931.68 | $29,732.83 |
| 100 | $91,246.75 | $90,323.95 | $3,959.62 | $185,530.32 |
| 150 | $237,183.07 | $195,755.74 | $7,453.41 | $440,392.22 |
| 200 | $409,245.86 | $186,567.17 | $6,288.81 | $602,101.84 |
| 300 | $326,915.50 | $141,555.90 | $4,309.00 | $472,780.40 |
| 500 | $1,473,133.68 | $106,568.02 | $2,678.57 | $1,582,380.28 |
| 750 | $117,428.86 | $42,475.60 | $1,164.59 | $161,069.06 |
| 1000 | $191,848.40 | $35,253.59 | $698.76 | $227,800.75 |
| 1250 | $51,719.59 | $16,684.12 | $232.92 | $68,636.64 |
| 1500 | $147,767.07 | $44,101.29 | $465.84 | $192,334.20 |
| 1800 | $68,741.98 | $20,614.95 | $116.46 | $89,473.39 |
| 2000 | $98,670.35 | $37,016.51 | $232.92 | $135,919.78 |
| 3000 | $26,882.34 | $1,050.84 | $116.46 | $28,049.64 |
| 3500 | $238,419.07 | $14,019.74 | $116.46 | $252,555.26 |
| 4000 | $83,619.11 | $636,604.00 | $116.46 | $720,339.57 |
| 4500 | $3,696.62 | $1,641.09 | $116.46 | $5,454.17 |
| 5000 | $138,703.14 | $2,733.73 | $116.46 | $141,553.32 |
| 6000 | $444,560.70 | $31,451.97 | $116.46 | $476,129.13 |
| 10000 | $534,690.86 | $4,504.23 | $116.46 | $539,311.56 |
| 13000 | $130,905.00 | $0.00 | $0.00 | $130,905.00 |
| 30200 | $379,647.70 | $0.00 | $0.00 | $379,647.70 |

### *7.6.2 PowerNet Revenue for Group Customers*

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

| Consumer Capacity | Code | Number of Connections | Sub transmission Charge | Distribution Charge | Overheads | Total PowerNet Revenue |
|---|---|---|---|---|---|---|
| **TPC Urban** | | | | | | |
| **Residential Standard** | | | | | | |
| Small Residential (8kVA 1 Phase) - All Peak | UD08P | 83 | $10,823.00 | $10,312.66 | $9,666.14 | $30,801.80 |
| Small Residential (8kVA 1 Phase) - With Off Peak | UD08Q | 183 | $20,493.73 | $19,411.30 | $21,312.08 | $61,217.11 |
| Residential (15kVA 1 Phase) - All Peak | UD20P | 1,725 | $562,339.68 | $535,823.35 | $200,892.58 | $1,299,055.62 |
| Residential (15kVA 1 Phase) - With Off Peak | UD20Q | 6,873 | $1,924,226.63 | $1,822,593.62 | $800,425.93 | $4,547,246.18 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak | UDL20P | 1,756 | $475,729.19 | $491,230.35 | $204,502.83 | $1,171,462.37 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak | UDL20Q | 5,714 | $1,324,937.32 | $1,362,347.74 | $665,449.41 | $3,352,734.47 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak | UDL08P | 70 | $8,456.43 | $8,310.84 | $8,152.16 | $24,919.43 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak | UDL08Q | 152 | $16,291.09 | $15,716.31 | $17,701.84 | $49,709.24 |
| **General Single Phase** | | | | | | |
| Street Lights (1 Phase) | US001L | 5,438 | $203,885.01 | $109,329.94 | $12,666.13 | $325,881.08 |
| 1 kVA 1 Phase - All Peak | US001P | 27 | $6,548.45 | $3,363.53 | $3,144.41 | $13,056.38 |
| 8 kVA 1 Phase - All Peak | US008P | 232 | $30,252.24 | $28,825.74 | $27,018.60 | $86,096.58 |
| 8 kVA 1 Phase - With Off Peak | US008Q | 14 | $1,567.83 | $1,485.02 | $1,630.43 | $4,683.28 |
| 15 kVA 1 Phase - All Peak | US020P | 376 | $122,573.75 | $116,793.96 | $43,788.76 | $283,156.47 |
| 15 kVA 1 Phase - With Off Peak | US020Q | 101 | $28,276.86 | $26,783.35 | $11,762.41 | $66,822.62 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **General Three Phase** | | | | | | |
| 15 kVA 3 Phase - All Peak | UT015P | 112 | $27,383.50 | $26,092.27 | $13,043.46 | $66,519.23 |
| 15 kVA 3 Phase - With Off Peak | UT015Q | 11 | $2,309.74 | $2,187.75 | $1,281.05 | $5,778.55 |
| 30 kVA 3 Phase - All Peak | UT030P | 547 | $286,461.46 | $283,729.05 | $63,703.33 | $633,893.84 |
| 30 kVA 3 Phase - With Off Peak | UT030Q | 100 | $44,882.95 | $44,237.46 | $11,645.95 | $100,766.35 |
| 50 kVA 3 Phase - All Peak | UT050P | 317 | $398,198.11 | $377,368.41 | $36,917.65 | $812,484.16 |
| 50 kVA 3 Phase - With Off Peak | UT050Q | 79 | $85,162.14 | $80,263.50 | $9,200.30 | $174,625.93 |
| 75 kVA 3 Phase - All Peak | UT075P | 96 | $221,164.54 | $213,991.19 | $11,180.11 | $446,335.84 |
| 75 kVA 3 Phase - With Off Peak | UT075Q | 19 | $37,514.60 | $36,123.21 | $2,212.73 | $75,850.54 |
| 100 kVA 3 Phase - All Peak | UT100P | 20 | $74,264.57 | $71,422.85 | $2,270.96 | $147,958.39 |
| 100 kVA 3 Phase - With Off Peak | UT100Q | 3 | $9,791.99 | $9,372.19 | $349.38 | $19,513.55 |
| **TPC Rural** | | | | | | |
| **Residential** | | | | | | |
| Small Residential (8kVA 1 Phase) - All Peak | RD08P | 104 | $13,561.35 | $41,582.58 | $12,111.78 | $67,255.72 |
| Small Residential (8kVA 1 Phase) - With Off Peak | RD08Q | 89 | $9,966.89 | $30,798.66 | $10,364.89 | $51,130.45 |
| Residential (15kVA 1 Phase) - All Peak | RD20P | 1,963 | $639,926.26 | $1,962,177.96 | $228,609.94 | $2,830,714.16 |
| Residential (15kVA 1 Phase) - With Off Peak | RD20Q | 5,281 | $1,478,516.05 | $4,568,756.97 | $615,022.46 | $6,662,295.48 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak | RDL20P | 936 | $253,577.75 | $793,819.14 | $109,006.06 | $1,156,402.95 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak | RDL20Q | 2,054 | $476,272.53 | $1,498,365.57 | $239,207.75 | $2,213,845.86 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak | RDL08P | 39 | $4,711.44 | $14,643.03 | $4,541.92 | $23,896.39 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak | RDL08Q | 33 | $3,536.88 | $10,972.10 | $3,843.16 | $18,352.15 |
| **General Single Phase** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Street Lights (1 Phase) | RS001L | 835 | $31,306.36 | $65,982.83 | $1,944.87 | $99,234.07 |
| 1 kVA 1 Phase - All Peak | RS001P | 125 | $30,316.90 | $68,222.49 | $14,557.43 | $113,096.83 |
| 8 kVA 1 Phase - All Peak | RS008P | 1,081 | $140,959.81 | $432,218.93 | $125,892.69 | $699,071.43 |
| 8 kVA 1 Phase - With Off Peak | RS008Q | 26 | $2,911.68 | $8,997.36 | $3,027.95 | $14,936.99 |
| 15 kVA 1 Phase - All Peak | RS020P | 1,645 | $536,260.16 | $1,644,311.13 | $191,575.83 | $2,372,147.12 |
| 15 kVA 1 Phase - With Off Peak | RS020Q | 342 | $95,749.38 | $295,874.81 | $39,829.14 | $431,453.33 |
| | | | | | | |
| **General Three Phase** | | | | | | |
| 15 kVA 3 Phase - All Peak | RT015P | 337 | $82,394.99 | $252,644.16 | $39,246.84 | $374,285.99 |
| 15 kVA 3 Phase - With Off Peak | RT015Q | 12 | $2,519.72 | $7,786.18 | $1,397.51 | $11,703.41 |
| 30 kVA 3 Phase - All Peak | RT030P | 1,841 | $964,123.50 | $2,965,453.02 | $214,401.88 | $4,143,978.40 |
| 30 kVA 3 Phase - With Off Peak | RT030Q | 432 | $193,894.33 | $600,065.59 | $50,310.49 | $844,270.41 |
| 50 kVA 3 Phase - All Peak | RT050P | 652 | $819,006.83 | $2,472,459.69 | $75,931.57 | $3,367,398.10 |
| 50 kVA 3 Phase - With Off Peak | RT050Q | 513 | $553,014.89 | $1,681,964.39 | $59,743.71 | $2,294,722.99 |
| 75 kVA 3 Phase - All Peak | RT075P | 94 | $216,556.95 | $652,541.69 | $10,947.19 | $880,045.82 |
| 75 kVA 3 Phase - With Off Peak | RT075Q | 42 | $82,927.02 | $251,499.06 | $4,891.30 | $339,317.38 |
| 100 kVA 3 Phase - All Peak | RT100P | 28 | $106,636.31 | $319,624.20 | $3,260.87 | $429,521.38 |
| 100 kVA 3 Phase - With Off Peak | RT100Q | 9 | $29,375.96 | $88,626.68 | $1,048.14 | $119,050.78 |

## 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 applied.

## 7.8 Target Revenue Requirement Summary

Below is a summary of our projected revenue for both Transmission costs and distribution price components broken down by the two customer group categories for the 2020-21 year. We also outline the change in revenue compared with the previous year:

| | Group customers | Individual customers | Total |
|---|---|---|---|
| **2020-21 Revenue** | | | |
| **Distribution** | $44,608,063 | $6,947,464 | $51,555,527 |
| **Transmission** | $ 7,465,570 | $4,414,903 | $11,880,473 |
| **Total** | **$52,073,633** | **$11,362,367** | **$63,436,000** |
| **Previous year** | | | |
| **Distribution** | $42,274,460 | $6,583,054 | $48,857,514 |
| **Transmission** | $ 8,172,865 | $4,650,991 | $12,823,856 |
| **Total** | **$50,447,325** | **$11,234,045** | **$61,681,370** |

The changes in revenues are based on changes to our costs and our allocation of these costs to the customer groups. Other factors that impact on the allocation of costs relate to changes in quantities and individual customers profile changes as well as contractual changes.

Transmission changes relate to a decrease in Transpower's interconnection peak demand rate of 10% and decreased ACOT payments to distributed generators.

Distribution revenue changes reflect changes in operation and maintenance costs and an increased return.

**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 | 5 | $16,454 | $3,291 |
| | | | |
| 50 | 19 | $118,888 | $6,257 |
| 75 | 8 | $43,519 | $5,440 |
| 100 | 34 | $246,161 | $7,240 |
| 150 | 64 | $661,773 | $10,340 |
| 200 | 54 | $817,999 | $15,148 |
| 300 | 37 | $798,465 | $21,580 |
| 500 | 24 | $1,897,345 | $79,056 |
| 750 | 10 | $337,422 | $33,742 |
| 1000 | 6 | $531,850 | $88,642 |
| 1250 | 2 | $143,892 | $71,946 |
| 1500 | 4 | $311,149 | $77,787 |
| 1800 | 1 | $166,772 | $166,772 |
| 2000 | 2 | $315,054 | $157,527 |
| 3000 | 1 | $57,670 | $57,670 |
| 3500 | 1 | $358,656 | $358,656 |
| 4000 | 1 | $1,049,768 | $1,049,768 |
| 4500 | 1 | $12,151 | $12,151 |
| 5000 | 1 | $316,219 | $316,219 |
| 6000 | 1 | $1,088,761 | $1,088,761 |
| 10000 | 1 | $1,172,303 | $1,172,303 |
| 13000 | 1 | $295,136 | $295,136 |
| 30200 | 1 | $1,269,983 | $1,269,983 |

### *7.8.1 Line Charge Revenue for Group Customers*

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

| Consumer Capacity | Code | Number of Connections | Fixed Charge per Day | Variable Charge per Day kWh Purchases | Line Charge Revenue per Consumer Group |
|---|---|---|---|---|---|
| **TPC Urban** | | | | | |
| **Residential Standard** | | | | | |
| Small Residential (8kVA 1 Phase) - All Peak | UD08P | 83 | $0.98560 | $0.09001 | $37,336 |
| Small Residential (8kVA 1 Phase) - With Off Peak | UD08Q | 183 | $0.64470 | $0.09001 | $73,178 |
| Residential (15kVA 1 Phase) - All Peak | UD20P | 1,725 | $1.77270 | $0.09001 | $1,638,541 |
| Residential (15kVA 1 Phase) - With Off Peak | UD20Q | 6,873 | $1.23670 | $0.09001 | $5,670,314 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak | UDL20P | 1,756 | $0.15000 | $0.14543 | $1,449,729 |
| Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak | UDL20Q | 5,714 | $0.10000 | $0.14543 | $4,110,073 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak | UDL08P | 70 | $0.15000 | $0.11657 | $29,822 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak | UDL08Q | 152 | $0.10000 | $0.11657 | $59,175 |
| **General Single Phase** | | | | | |
| Street Lights (1 Phase) | US001L | 5,438 | $0.14310 | $0.09001 | $447,285 |
| 1 kVA 1 Phase - All Peak | US001P | 27 | $0.69830 | $0.09001 | $17,215 |
| 8 kVA 1 Phase - All Peak | US008P | 232 | $0.98540 | $0.09001 | $104,360 |
| 8 kVA 1 Phase - With Off Peak | US008Q | 14 | $0.64450 | $0.09001 | $5,598 |
| 15 kVA 1 Phase - All Peak | US020P | 376 | $1.77260 | $0.09001 | $357,154 |
| 15 kVA 1 Phase - With Off Peak | US020Q | 101 | $1.23650 | $0.09001 | $83,326 |
| **General Three Phase** | | | | | |
| 15 kVA 3 Phase - All Peak | UT015P | 112 | $1.68530 | $0.09001 | $83,051 |
| 15 kVA 3 Phase - With Off Peak | UT015Q | 11 | $1.14580 | $0.09001 | $7,127 |
| 30 kVA 3 Phase - All Peak | UT030P | 547 | $2.69290 | $0.09001 | $803,568 |
| 30 kVA 3 Phase - With Off Peak | UT030Q | 100 | $1.80180 | $0.09001 | $126,635 |
| 50 kVA 3 Phase - All Peak | UT050P | 317 | $5.46950 | $0.09001 | $1,051,255 |
| 50 kVA 3 Phase - With Off Peak | UT050Q | 79 | $3.72390 | $0.09001 | $224,109 |
| 75 kVA 3 Phase - All Peak | UT075P | 96 | $9.25810 | $0.09001 | $577,334 |
| 75 kVA 3 Phase - With Off Peak | UT075Q | 19 | $6.23990 | $0.09001 | $97,472 |
| 100 kVA 3 Phase - All Peak | UT100P | 20 | $12.37550 | $0.09001 | $191,946 |
| 100 kVA 3 Phase - With Off Peak | UT100Q | 3 | $8.59540 | $0.09001 | $25,157 |

# TPC Rural

## Residential

| | | | | | |
|---|---|---|---|---|---|
| Small Residential (8kVA 1 Phase) - All Peak | RD08P | 104 | $1.11050 | $0.09001 | $75,443 |
| Small Residential (8kVA 1 Phase) - With Off Peak | RD08Q | 89 | $0.75220 | $0.09001 | $56,948 |
| Residential (20kVA 1 Phase) - All Peak | RD20P | 1,963 | $2.04130 | $0.09001 | $3,217,039 |
| Residential (20kVA 1 Phase) - With Off Peak | RD20Q | 5,281 | $1.39690 | $0.09001 | $7,525,226 |
| Residential Low Fixed Charge Option (20kVA 1 Phase) - All Peak | RDL20P | 936 | $0.15000 | $0.14543 | $1,304,727 |
| Residential Low Fixed Charge Option (20kVA 1 Phase) - With Off Peak | RDL20Q | 2,054 | $0.10000 | $0.14543 | $2,486,085 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak | RDL08P | 39 | $0.15000 | $0.11657 | $26,628 |
| Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak | RDL08Q | 33 | $0.10000 | $0.11657 | $20,407 |

## General Single Phase

| | | | | | |
|---|---|---|---|---|---|
| Street Lights (1 Phase) | RS001L | 835 | $0.16110 | $0.09001 | $117,876 |
| 1 kVA 1 Phase - All Peak | RS001P | 125 | $0.69830 | $0.09001 | $132,350 |
| 8 kVA 1 Phase - All Peak | RS008P | 1,081 | $1.11050 | $0.09001 | $784,169 |
| 8 kVA 1 Phase - With Off Peak` | RS008Q | 26 | $0.75220 | $0.09001 | $16,636 |
| 20 kVA 1 Phase - All Peak | RS020P | 1,645 | $2.04130 | $0.09001 | $2,695,888 |
| 20 kVA 1 Phase - With Off Peak | RS020Q | 342 | $1.39690 | $0.09001 | $487,337 |

## General Three Phase

| | | | | | |
|---|---|---|---|---|---|
| 15 kVA 3 Phase - All Peak | RT015P | 337 | $1.93000 | $0.09001 | $424,028 |
| 15 kVA 3 Phase - With Off Peak | RT015Q | 12 | $1.31310 | $0.09001 | $13,174 |
| 30 kVA 3 Phase - All Peak | RT030P | 1,841 | $3.08000 | $0.09001 | $4,715,038 |
| 30 kVA 3 Phase - With Off Peak | RT030Q | 432 | $2.09230 | $0.09001 | $956,021 |
| 50 kVA 3 Phase - All Peak | RT050P | 652 | $6.26000 | $0.09001 | $3,858,499 |
| 50 kVA 3 Phase - With Off Peak | RT050Q | 513 | $4.28630 | $0.09001 | $2,616,047 |
| 75 kVA 3 Phase - All Peak | RT075P | 94 | $11.11000 | $0.09001 | $1,008,314 |
| 75 kVA 3 Phase - With Off Peak | RT075Q | 42 | $7.48490 | $0.09001 | $387,112 |
| 100 kVA 3 Phase - All Peak | RT100P | 28 | $14.87000 | $0.09001 | $492,683 |
| 100 kVA 3 Phase - With Off Peak | RT100Q | 9 | $10.31460 | $0.09001 | $135,982 |

## 8. HOW FIXED AND VARIABLE PRICES ARE SET

The total line charge is split into fixed charges and variable charges. The fixed/variable split is approximately 50:50.

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

In the case of all other installations the variable charge is a standard charge of $0.09757 per Day kWh. The fixed charge is then calculated as the difference between the total charge and the number of Day kWh for the installation times $0.09757. This method of calculating the fixed charge accounts for the fact that some installations have negative fixed charges.

The Variable Charge of $0.09757 per kWh of daytime sales equates to $0.08796 per kWh of daytime purchases at the grid exit point.

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

The application of fixed and variable charges is an application of the line charge to the end-use consumer. The objectives behind the fixed and variable charges are as follows:

- The 50:50 fixed: variable line charge is a compromise between a totally fixed charge that would benefit the large consumer within a load group, and a totally variable charge that would benefit the small consumer within a load group. Due to the uncertain and variable consumption levels of irrigation supplies and embedded networks, the line charges for these consumer groups are recovered by a 100% fixed line charge.

- As stated above, the fixed and variable charge allows the larger consumer in a load group to pay more which reflects to some extent their reduced diversity on the maximum demands seen at sub transmission and transmission level. Although the distribution network in the vicinity of the premises has to have enough capacity to supply the full capacity of the installation, the remainder of the network is designed to take into account the diversity between consumer demands. As a general rule, the less energy a consumer uses, the greater the diversity, hence the less capital investment required to supply. A totally fixed line charge does not take this into account so there would need to be more load sub-groups such as very small, small, medium, large and very large domestic consumers besides the existing All Peak and With Off Peak categories.

- 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.

- Retailers may directly pass through a totally fixed charge to consumers.

- 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.

- Consumers also have the opportunity to shift load to night time to receive immediate benefits.
- If a consumer is expanding its 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 resulted in a necessity for a uniform variable charge and individual fixed charges for each segment. PowerNet uses the 'GXP billing" approach for the Residential and General customers, where, variable charges are based on electricity volumes measured at the Transpower grid exit points. Quantities are determined by the wholesale electricity market reconciliation process with adjustments for embedded networks and individual customer quantities.
- The variable charge component is based on daytime energy usage, i.e. between 07:00 and 23:00 hours. Hence, nighttime consumption does not contribute directly to the line charge account.

**Loss Factors** - the amount of energy delivered from the Transpower grid exit points through the distribution network to supply electricity to customers is greater than the amount of energy metered at the customers' premises. The difference between these volumes is called 'distribution losses'.
TPCL charges electricity retailers based on the volumes of electricity metered at the grid exit point, this is call grid exit point (GXP) billing. To calculate the energy volumes at the GXP, the customer-metered volumes are multiplied by the loss factor. The electricity retailer therefore must multiply the GXP energy price that TPCL charges them by the loss factor to arrive at the customer energy price for distribution charges.

The loss factors for 2020-21 for residential and general customers are:

| | |
|---|---|
| Winter Day | 1.1350 |
| Winter Night | 1.0819 |
| Summer Day | 1.1256 |
| Summer Night | 1.0592 |
| | |
| Winter | May – September |
| Summer | October – April |
| Day | 7am – 11pm |
| Night | 11pm – 7am |

Loss factors for individual line charge customers are calculated on an individual basis.

# 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, and new investment agreements, 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.

PowerNet contracts directly with four ICP's for the line services provided to their large industrial sites. This is essentially because the value of The PowerNet owned assets dedicated to the supply of these sites is significant (in the millions of dollars).

The manner in which the charges were set in these contracts reflect the term of the agreement, the incremental costs involved in supplying these customers, the customer owned assets, any additional maintenance costs and the use of upstream network assets consistent with the pricing methodology and pricing principals.

## 9.1 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.

### *9.1.1 Target revenue from ICPs on Non-standard contracts*

The total target revenue from ICPs on Non-standard Contracts for the 2019/2020 year is $4.879m.

# 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.

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.

## 10.1 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 Power Company electricity network are:

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

## 10.2 Capital Contributions

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

## 10.3 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.

## 10.4 HVDC Transmission Charges

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

## 10.5 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 two Distributed Generators receiving this payment.

Avoided Transmission Charge payments are only paid to Distributed Generators who the Electricity Authority determines are necessary to enable Transpower to meet the grid reliability standards under Schedule 6.4 of the Electricity Industry Participation Code (Code) or have a connection agreement with The Power Company Limited for such payments. Distributed Generators must also be submitting full half hour metered export consumption data to the network on a monthly basis to be eligible for payments.

## 10.6 Energy Reporting

Where distributed generation is connected to the distributor's network, kWh being exported onto the distributor's network must be submitted to the distributor.

The format the data is submitted must match the format of the ICPs other submitted data, e.g. either EIEP1 or EIEP3 format.

For clarity, export onto the distributor's network, and consumption off the distributor's network, are to be reported separately under the relevant price options (i.e. they should not be netted off).

The introduction of zero-price export price will ensure that retailers provide export kWh volumes for all small-scale DG connections (ie, solar).

# 11. PRICING STRATEGY

Given that TPCL's pricing to Individual Customers is highly cost reflective, the focus for future pricing changes is in the structure of pricing for residential and general customers. Two issues for further development are: (1) how to improve time-of-day signals regarding peak times on the network that are likely to drive future investment; and (2) how to reduce distortions from the recovery of sunk costs.

TPCL has made significant progress on the first of these issues by examining TOU price implementation. PowerNet has engaged in significant workstreams to enable TOU pricing including: billing system changes; engagement with retailers seeking support and feedback on best practice to implementing a change to TOU and how the necessary data will be provided; and preparing TOU pricing models and analysis. We have introduced new loss codes to identify low user energy at a GXP level to aid the analysis. We intend to continue to develop TOU pricing, with the potential to implement for residential and general consumers from 1 April 2021. The change in consumers' lines charges as a result of TOU will depend on usage profiles, but generally TOU implementation will have the least bill impact of available price reform options.

Addressing the second issue is largely dependent on the government's implementation of a transition from the existing Low Fixed Charge (LFC) Regulations. The regulations limit fixed charges to 15c per day, which effectively means that for residential consumers with annual usage below 9000 kWh (which is the majority of TPCL's residential connections) 95% of revenue must be collected through variable charges. This means that variable charges are higher than is efficient and over signal the network impacts of energy use. The Electricity Networks Association (ENA) has facilitated a collaborative exercise in examining other pricing options in the presence of the LFC. However, that exercise has found that alternative options involve significant challenges, risks and lead-in times. Moreover, indications from the Minister that the government is actively pursuing LFC reform lead TPCL to conclude that at this stage the best course of action is to await the outcome of that reform.

# APPENDIX 1: 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 information disclosure requirements:

| IDD Section | Key sections of methodology demonstrating compliance |
|---|---|
| **2.4.1 (1)** | Sections 3, 5-9 |
| **2.4.1 (2)** | Section 3.2 |
| **2.4.1 (3)** | Sections 9 & 10 |
| **2.4.1 (4)** | Section 3.3 |
| **2.4.2** | No changes to the methodology |
| **2.4.3 (1)** | Section 6 |
| **2.4.3 (2)** | Section 4 |
| **2.4.3 (3)** | Section 5 |
| **2.4.3 (4)** | Section 5 |
| **2.4.3 (5) (a) , (b)** | Section 3 |
| **2.4.3 (6)** | Section 3.2 |
| **2.4.3 (7)** | Sections 6 & 7 |
| **2.4.3 (8)** | Appendix 2 |
| **2.4.4 (1-3)** | Section 11 |
| **2.4.5 (1) (a) to (c)** | Section 9 |
| **2.4.5 (2) (a) & (b)** | Section 9 |
| **2.4.5 (3) (a) & (b)** | Section 10 |
| | |

# APPENDIX 2: LINE CHARGE TABLES

## Line Charge Breakdown for Individual Customers

| ICP Number | Contract Capacity kVA | Trans Power Charge | Sub-transmission Charge | Distribution Charge | Overhead Charge | Total Line Charge | Fixed Charge per annum | Variable Charge per Day MWh |
|---|---|---|---|---|---|---|---|---|
| **800105TP-315** | 10000 | $632,991 | $534,691 | $4,504 | $116.46 | $1,172,302.70 | $586,151.35 | $20.51 |
| **800107TP-390** | 200 | $10,558 | $6,687 | $3,238 | $116.46 | $20,599.78 | $10,299.89 | $20.93 |
| **800116TP-578** | 3000 | $29,621 | $26,882 | $1,051 | $116.46 | $57,670.41 | $28,835.21 | $17.37 |
| **800117TP-93D** | 750 | $45 | $164 | $263 | $116.46 | $588.78 | $588.78 | $0.00 |
| **8001275TP-A4C** | 75 | $1,916 | $3,421 | $1,435 | $116.46 | $6,888.47 | $3,444.23 | $26.65 |
| **800127TP-EC5** | 300 | $2,440 | $1,837 | $3,004 | $116.46 | $7,397.58 | $3,698.79 | $45.67 |
| **800128TP-11B** | 100 | $93 | $342 | $2,484 | $116.46 | $3,035.33 | $3,035.33 | $0.00 |
| **800134TP-8A8** | 5000 | $174,665 | $138,703 | $2,734 | $116.46 | $316,218.76 | $158,109.38 | $20.45 |
| **8001365TP-9E5** | 750 | $41,266 | $24,814 | $363 | $116.46 | $66,559.29 | $33,279.64 | $18.22 |
| **800139TP-7F3** | 300 | $10,186 | $4,597 | $2,708 | $116.46 | $17,606.79 | $8,803.40 | $38.12 |
| **118447TP-ECC** | 150 | $4,496 | $3,189 | $2,468 | $116.46 | $10,269.71 | $270.59 | $90.01 |
| **800146TP-D70** | 30200 | $890,335 | $379,648 | $0 | $0.00 | $1,269,983.14 | $0.00 | $0.00 |
| **6375156TP-218** | 200 | $681 | $2,257 | $3,669 | $116.46 | $6,724.02 | $3,362.01 | $66.71 |
| **615297TP-AA3** | 50 | $1,616 | $2,487 | $1,692 | $116.46 | $5,911.85 | $2,955.93 | $41.65 |
| **502013TP-4D1** | 200 | $1,453 | $508 | $2,507 | $116.46 | $4,583.95 | ($856.75) | $90.01 |
| **4031015TP-9AA** | 200 | $17,083 | $48,300 | $1,511 | $116.46 | $67,010.58 | $67,010.58 | $0.00 |
| **382896TP-29B** | 200 | $278 | $5,087 | $3,316 | $116.46 | $8,796.47 | $8,796.47 | $0.00 |
| **800186TP-A9F** | 1250 | $21,731 | $33,881 | $14,700 | $116.46 | $70,427.96 | $35,213.98 | $26.47 |
| **244381TP-3EE** | 75 | $36 | $549 | $1,575 | $116.46 | $2,277.14 | $2,277.14 | $0.00 |

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|---|---|---|---|---|---|---|---|---|
| **1419275TP-57D** | 100 | $3,344 | $4,862 | $2,767 | $116.46 | $11,089.73 | $2,004.99 | $90.01 |
| **1819183TP-528** | 150 | $1,312 | $284 | $5,375 | $116.46 | $7,088.33 | $3,544.16 | $81.42 |
| **333040TP-1F2** | 200 | $652 | $10,806 | $3,836 | $116.46 | $15,410.91 | $15,410.91 | $0.00 |
| **482021TP-8E5** | 150 | $6,391 | $5,199 | $2,833 | $116.46 | $14,539.63 | $7,269.82 | $31.33 |
| **643886TP-0F5** | 200 | $4,924 | $4,497 | $2,808 | $116.46 | $12,345.62 | $6,172.81 | $78.45 |
| **569933TP-D35** | 300 | $11,303 | $5,158 | $3,295 | $116.46 | $19,872.80 | $9,936.40 | $17.72 |
| **329419TP-D0B** | 300 | $945 | $1,343 | $4,310 | $116.46 | $6,715.07 | $3,357.53 | $72.36 |
| **100109TP-F16** | 100 | $4,018 | $6,048 | $3,449 | $116.46 | $13,631.48 | $6,815.74 | $63.73 |
| **800158TP-446** | 500 | $35 | $851 | $513 | $116.46 | $1,515.84 | $757.92 | $378.96 |
| **8001315TP-CB8** | 1800 | $77,298 | $68,742 | $20,615 | $116.46 | $166,771.57 | $83,385.78 | $23.29 |
| **8001316TP-078** | 1500 | $53,687 | $36,660 | $25,150 | $116.46 | $115,613.86 | $57,806.93 | $22.98 |
| **391396TP-B94** | 100 | $1,358 | $2,218 | $3,655 | $116.46 | $7,348.04 | $538.60 | $90.01 |
| **437074TP-48B** | 30 | $577 | $555 | $431 | $116.46 | $1,680.44 | $840.22 | $54.62 |
| **437078TP-795** | 30 | $1,352 | $649 | $513 | $116.46 | $2,629.99 | $1,315.00 | $32.68 |
| **800155TP-B1D** | 300 | $8,375 | $1,881 | $5,527 | $116.46 | $15,898.74 | $7,949.37 | $17.85 |
| **1421365TP-AF8** | 150 | $1,966 | $6,794 | $4,343 | $116.46 | $13,219.33 | $13,219.33 | $0.00 |
| **338414TP-B11** | 100 | $2,146 | $2,062 | $3,820 | $116.46 | $8,144.46 | $4,072.23 | $74.04 |
| **5020273TP-22A** | 300 | $17,454 | $4,350 | $2,673 | $116.46 | $24,592.53 | $12,296.26 | $20.65 |
| **482027TP-96A** | 200 | $2,155 | $2,787 | $3,074 | $116.46 | $8,133.05 | $4,066.52 | $25.97 |
| **185015TP-7A4** | 200 | $1,458 | $614 | $3,130 | $116.46 | $5,319.28 | $2,659.64 | $55.72 |
| **543645TP-165** | 30 | $1,390 | $2,221 | $1,405 | $116.46 | $5,132.49 | ($4,602.59) | $90.01 |
| **5678995TP-502** | 200 | $5,837 | $2,199 | $2,448 | $116.46 | $10,600.02 | $5,300.01 | $24.36 |
| **800133TP-562** | 4500 | $6,697 | $3,697 | $1,641 | $116.46 | $12,150.76 | $6,075.38 | $295.82 |
| **3193295TP-E03** | 200 | $178 | $3,419 | $3,884 | $116.46 | $7,597.64 | $3,798.82 | $62.65 |
| **141326TP-DAF** | 200 | $6,939 | $11,161 | $3,308 | $116.46 | $21,524.80 | $10,762.40 | $26.63 |
| **800163TP-D6A** | 300 | $8,572 | $25,985 | $3,989 | $116.46 | $38,662.31 | $19,331.16 | $62.35 |
| **444030TP-F7D** | 200 | $7,689 | $5,796 | $2,977 | $116.46 | $16,578.21 | $8,289.11 | $32.50 |

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|---|---|---|---|---|---|---|---|---|
| **448899TP-2BE** | 100 | $774 | $1,328 | $1,744 | $116.46 | $3,961.79 | $2,770.93 | $90.01 |
| **427512TP-710** | 150 | $1,110 | $809 | $2,842 | $116.46 | $4,878.34 | $2,439.17 | $70.18 |
| **549615TP-72D** | 300 | $12,691 | $5,557 | $3,123 | $116.46 | $21,487.63 | $10,743.82 | $23.77 |
| **333049TP-FA3** | 150 | $985 | $10,721 | $3,275 | $116.46 | $15,097.54 | $15,097.54 | $0.00 |
| **3330513TP-914** | 150 | $472 | $8,976 | $3,376 | $116.46 | $12,939.97 | $12,939.97 | $0.00 |
| **240526TP-6BD** | 150 | $4,214 | $1,922 | $5,327 | $116.46 | $11,579.04 | $3,423.05 | $90.01 |
| **8001505TP-013** | 300 | $8,407 | $3,760 | $7,527 | $116.46 | $19,810.25 | $2,662.37 | $90.01 |
| **1421599TP-FF7** | 200 | $388 | $1,053 | $4,840 | $116.46 | $6,396.90 | $3,198.45 | $37.00 |
| **8001801TP-411** | 1000 | $76,808 | $55,439 | $8,239 | $116.46 | $140,602.13 | $70,301.06 | $20.71 |
| **8001815TP-FB6** | 1000 | $89,664 | $51,706 | $8,239 | $116.46 | $149,724.96 | $77,305.48 | $30.77 |
| **800181TP-755** | 500 | $21,865 | $13,224 | $5,301 | $116.46 | $40,507.31 | $20,253.65 | $27.77 |
| **410873TP-4E1** | 200 | $4,635 | $2,275 | $3,483 | $116.46 | $10,510.10 | $5,255.05 | $32.43 |
| **612680TP-5A5** | 100 | $1,987 | $2,649 | $3,677 | $116.46 | $8,429.46 | $4,214.73 | $35.09 |
| **175065TP-765** | 75 | $1,020 | $1,294 | $1,880 | $116.46 | $4,310.82 | $2,155.41 | $45.77 |
| **4004001TP-401** | 150 | $1,086 | $3,872 | $2,545 | $116.46 | $7,619.14 | $1,237.77 | $90.01 |
| **5290993TP-D4F** | 150 | $2,610 | $1,418 | $2,279 | $116.46 | $6,423.85 | ($2,671.81) | $90.01 |
| **166730TP-721** | 150 | $1,367 | $601 | $1,959 | $116.46 | $4,042.97 | $2,021.48 | $156.67 |
| **632751TP-46B** | 150 | $1,447 | $1,443 | $2,680 | $116.46 | $5,686.79 | ($2,657.24) | $90.01 |
| **318907TP-1B9** | 100 | $179 | $2,154 | $2,739 | $116.46 | $5,188.04 | $5,188.04 | $0.00 |
| **3193735TP-319** | 200 | $1,155 | $17,229 | $3,422 | $116.46 | $21,922.49 | $21,922.49 | $0.00 |
| **319398TP-A2A** | 75 | $131 | $1,504 | $1,612 | $116.46 | $3,363.15 | $3,363.15 | $0.00 |
| **3336978TP-1FC** | 100 | $269 | $2,743 | $3,656 | $116.46 | $6,784.64 | $6,784.64 | $0.00 |
| **141806TP-3F4** | 150 | $36 | $949 | $2,811 | $116.46 | $3,912.08 | $3,912.08 | $0.00 |
| **313732TP-2E5** | 200 | $5,716 | $11,928 | $3,097 | $116.46 | $20,857.72 | ($1,876.50) | $90.01 |
| **249946TP-9E1** | 150 | $1,551 | $3,363 | $2,658 | $116.46 | $7,688.01 | $3,844.01 | $21.48 |
| **249967TP-8F1** | 100 | $63 | $746 | $2,556 | $116.46 | $3,482.03 | $3,482.03 | $0.00 |
| **249945TP-521** | 150 | $1,669 | $3,216 | $2,796 | $116.46 | $7,797.72 | $3,898.86 | $22.02 |

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| **362484TP-9C2** | 200 | $8,999 | $7,595 | $1,715 | $116.46 | $18,425.31 | $9,212.66 | $24.22 |
| **404955TP-F5E** | 100 | $2,285 | $3,496 | $2,113 | $116.46 | $8,009.72 | ($958.32) | $90.01 |
| **405350TP-9BB** | 150 | $3,430 | $12,399 | $2,461 | $116.46 | $18,406.74 | ($4,418.12) | $90.01 |
| **405508TP-5A1** | 200 | $3,976 | $15,808 | $3,014 | $116.46 | $22,914.87 | ($7,857.88) | $90.01 |
| **209549TP-1A6** | 100 | $160 | $1,806 | $3,094 | $116.46 | $5,175.73 | $2,587.86 | $71.94 |
| **800153TP-A92** | 500 | $12,037 | $6,641 | $8,508 | $116.46 | $27,301.61 | $13,650.80 | $24.06 |
| **116195TP-ECE** | 150 | $5,249 | $2,558 | $4,444 | $116.46 | $12,367.78 | ($4,515.39) | $90.01 |
| **172559TP-2E6** | 150 | $461 | $2,631 | $4,818 | $116.46 | $8,026.53 | $5,791.67 | $90.01 |
| **162713TP-034** | 150 | $2,921 | $5,520 | $7,754 | $116.46 | $16,310.48 | $7,566.91 | $90.01 |
| **5791985TP-A1E** | 150 | $4,540 | $2,811 | $2,486 | $116.46 | $9,953.14 | $2,043.83 | $90.01 |
| **690202TP-00E** | 50 | $3,998 | $4,752 | $632 | $116.46 | $9,498.59 | $4,749.29 | $32.99 |
| **6902235TP-F5B** | 50 | $644 | $819 | $1,036 | $116.46 | $2,615.97 | $1,307.98 | $37.95 |
| **690247TP-FE4** | 50 | $4,128 | $4,610 | $1,445 | $116.46 | $10,299.30 | $5,149.65 | $25.06 |
| **690237TP-AB9** | 50 | $10,369 | $16,038 | $1,413 | $116.46 | $27,935.92 | $13,967.96 | $25.05 |
| **318943TP-216** | 200 | $212 | $4,822 | $3,284 | $116.46 | $8,433.51 | $4,216.75 | $149.13 |
| **243366TP-0FE** | 200 | $910 | $759 | $4,841 | $116.46 | $6,626.44 | $3,313.22 | $73.03 |
| **141848TP-2CA** | 100 | $125 | $715 | $3,146 | $116.46 | $4,102.95 | $2,051.48 | $24.11 |
| **3312316TP-8D0** | 200 | $2,318 | $20,530 | $4,492 | $116.46 | $27,456.51 | $14,890.03 | $90.01 |
| **166724TP-C86** | 500 | $40,858 | $9,370 | $3,715 | $116.46 | $54,058.57 | $27,029.29 | $14.94 |
| **166727TP-046** | 200 | $1,145 | $218 | $2,566 | $116.46 | $4,046.20 | $2,023.10 | $42.09 |
| **241126TP-B1C** | 150 | $5,266 | $987 | $3,762 | $116.46 | $10,130.87 | $5,065.44 | $48.01 |
| **690224TP-CD4** | 150 | $1,993 | $414 | $2,267 | $116.46 | $4,790.80 | $2,395.40 | $37.91 |
| **6902265TP-753** | 100 | $2,096 | $1,885 | $2,249 | $116.46 | $6,346.79 | $3,173.40 | $39.40 |
| **690249TP-C7F** | 200 | $3,435 | $600 | $2,594 | $116.46 | $6,745.51 | $3,372.76 | $22.79 |
| **250351TP-0CD** | 300 | $11,815 | $3,399 | $5,300 | $116.46 | $20,630.41 | $10,315.20 | $28.91 |
| **177096TP-8F2** | 200 | $8,359 | $2,395 | $3,309 | $116.46 | $14,180.48 | $7,090.24 | $28.47 |
| **800151TP-A17** | 100 | $517 | $784 | $2,593 | $116.46 | $4,010.40 | $788.77 | $90.01 |

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| **240375TP-473** | 150 | $5,632 | $1,829 | $2,956 | $116.46 | $10,533.32 | ($8,281.92) | $90.01 |
| **517704TP-375** | 150 | $4,418 | $2,781 | $2,545 | $116.46 | $9,860.71 | $1,206.22 | $90.01 |
| **1819179TP-7AE** | 150 | $2,902 | $923 | $5,345 | $116.46 | $9,286.09 | $4,643.05 | $34.01 |
| **637250TP-A0B** | 750 | $2,640 | $7,473 | $6,211 | $116.46 | $16,440.48 | $8,220.24 | $24.67 |
| **3193724TP-5F1** | 300 | $776 | $14,135 | $4,244 | $116.46 | $19,272.03 | $19,272.03 | $0.00 |
| **162358TP-044** | 150 | $33 | $446 | $3,107 | $116.46 | $3,702.92 | $1,851.46 | $30.83 |
| **141929TP-87B** | 200 | $2,774 | $6,145 | $3,589 | $116.46 | $12,624.49 | ($2,473.18) | $90.01 |
| **6222490TP-205** | 500 | $1,273 | $1,802 | $6,495 | $116.46 | $9,685.63 | $4,842.82 | $18.01 |
| **482074TP-DA2** | 200 | $2,846 | $3,278 | $3,478 | $116.46 | $9,718.04 | $4,859.02 | $41.49 |
| **8001245TP-DB4** | 500 | $10,415 | $24,511 | $5,011 | $116.46 | $40,053.28 | $20,026.64 | $46.78 |
| **8001236TP-429** | 150 | $1,231 | $471 | $2,965 | $116.46 | $4,783.58 | $2,391.79 | $33.84 |
| **8001876TP-C86** | 300 | $3,556 | $2,036 | $4,259 | $116.46 | $9,967.01 | $108.13 | $90.01 |
| **8001235TP-8E9** | 200 | $3,833 | $2,434 | $3,473 | $116.46 | $9,856.46 | $9,278.39 | $90.01 |
| **625837TP-99A** | 500 | $11,204 | $5,578 | $3,523 | $116.46 | $20,421.01 | $10,210.51 | $41.39 |
| **555205TP-2E0** | 100 | $3,563 | $3,595 | $2,427 | $116.46 | $9,700.73 | $4,850.36 | $27.34 |
| **556467TP-973** | 1000 | $13,580 | $13,642 | $4,670 | $116.46 | $32,009.14 | $16,004.57 | $13.06 |
| **569640TP-BA7** | 300 | $2,871 | $1,737 | $3,352 | $116.46 | $8,076.79 | $4,038.40 | $52.00 |
| **800103TP-29A** | 300 | $8,126 | $3,945 | $2,846 | $116.46 | $15,033.92 | $7,516.96 | $23.76 |
| **800114TP-5FD** | 750 | $23,822 | $19,809 | $5,102 | $116.46 | $48,849.37 | $24,424.68 | $19.21 |
| **521000TP-991** | 50 | $1,561 | $1,704 | $684 | $116.46 | $4,064.67 | $2,032.33 | $24.29 |
| **5210031TP-3F9** | 100 | $3,402 | $4,106 | $1,861 | $116.46 | $9,485.58 | $4,742.79 | $24.37 |
| **564570TP-57C** | 50 | $1,360 | $1,502 | $615 | $116.46 | $3,592.61 | $1,796.31 | $24.75 |
| **5791875TP-30D** | 200 | $7,757 | $3,172 | $2,657 | $116.46 | $13,702.69 | $6,851.35 | $21.20 |
| **5791016TP-030** | 50 | $1,890 | $2,135 | $566 | $116.46 | $4,707.02 | $2,353.51 | $24.55 |
| **800130TP-9A2** | 300 | $27,581 | $6,803 | $2,822 | $116.46 | $37,322.87 | $18,661.44 | $15.45 |
| **181975TP-7DD** | 150 | $7,468 | $1,962 | $3,149 | $116.46 | $12,695.68 | $6,347.84 | $18.19 |
| **4182832TP-1BD** | 200 | $7,697 | $27,050 | $3,408 | $116.46 | $38,271.23 | $8,740.84 | $90.01 |

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| **4182836TP-0B7** | 150 | $2,366 | $8,035 | $3,144 | $116.46 | $13,661.38 | $4,198.93 | $90.01 |
| **418284TP-E36** | 500 | $15,874 | $36,370 | $5,819 | $116.46 | $58,179.56 | $29,089.78 | $103.29 |
| **176257TP-8FF** | 200 | $3,620 | $1,175 | $2,384 | $116.46 | $7,295.45 | $1,284.85 | $90.01 |
| **800164TP-0A0** | 500 | $14,655 | $49,915 | $5,496 | $116.46 | $70,182.37 | $35,091.19 | $56.97 |
| **319736TP-DAF** | 200 | $281 | $4,582 | $4,633 | $116.46 | $9,612.09 | $9,612.09 | $0.00 |
| **180710TP-2C9** | 150 | $3,827 | $1,301 | $2,478 | $116.46 | $7,722.33 | $3,194.36 | $90.01 |
| **8001695TP-CF7** | 750 | $25,577 | $17,149 | $3,659 | $116.46 | $46,501.35 | $23,250.67 | $15.94 |
| **208362TP-581** | 150 | $1,099 | $4,524 | $2,865 | $116.46 | $8,604.87 | $2,575.14 | $90.01 |
| **800147TP-135** | 150 | $9,914 | $3,033 | $2,198 | $116.46 | $15,261.54 | $7,630.77 | $20.34 |
| **800150TP-652** | 100 | $3,108 | $5,161 | $2,472 | $116.46 | $10,857.19 | $1,737.44 | $90.01 |
| **142817TP-7FC** | 150 | $2,308 | $1,604 | $2,716 | $116.46 | $6,743.72 | $3,852.30 | $90.01 |
| **175412TP-3F3** | 4000 | $150,760 | $83,619 | $636,604 | $116.46 | $871,099.88 | $0.00 | $0.00 |
| **181750TP-1CC** | 200 | $8,711 | $2,087 | $3,222 | $116.46 | $14,137.32 | $7,068.66 | $16.36 |
| **6204314TP-54A** | 100 | $2,192 | $3,162 | $2,389 | $116.46 | $7,860.09 | ($2,343.57) | $90.01 |
| **589190TP-49A** | 150 | $4,878 | $3,458 | $2,576 | $116.46 | $11,028.57 | $5,514.28 | $35.91 |
| **116167TP-E5C** | 150 | $2,426 | $548 | $2,347 | $116.46 | $5,436.87 | $2,718.44 | $38.13 |
| **118468TP-C47** | 100 | $2,778 | $4,118 | $2,030 | $116.46 | $9,041.78 | ($6,714.39) | $90.01 |
| **1015827TP-5C5** | 150 | $3,548 | $6,605 | $3,192 | $116.46 | $13,461.31 | $2,265.86 | $90.01 |
| **190101TP-AC6** | 150 | $3,910 | $1,944 | $3,682 | $116.46 | $9,651.41 | $1,435.68 | $90.01 |
| **800169TP-FFB** | 150 | $3,252 | $1,912 | $2,353 | $116.46 | $7,633.96 | $3,816.98 | $19.10 |
| **400440TP-B34** | 100 | $1,246 | $1,945 | $1,799 | $116.46 | $5,106.49 | ($2,566.31) | $90.01 |
| **157641TP-7B1** | 150 | $3,447 | $1,169 | $2,815 | $116.46 | $7,547.83 | $3,436.27 | $90.01 |
| **364828TP-B0F** | 150 | $389 | $281 | $3,119 | $116.46 | $3,904.54 | $1,952.27 | $87.19 |
| **192544TP-A6D** | 300 | $26,473 | $8,190 | $5,110 | $116.46 | $39,890.11 | $19,945.05 | $17.44 |
| **426599TP-D2E** | 500 | $19,672 | $11,801 | $5,317 | $116.46 | $36,906.35 | $18,453.18 | $22.79 |
| **304798TP-4EA** | 300 | $4,107 | $3,994 | $4,656 | $116.46 | $12,873.91 | $6,436.95 | $57.88 |
| **192519TP-D3E** | 150 | $4,528 | $1,494 | $3,302 | $116.46 | $9,440.33 | ($439.05) | $90.01 |

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| **1186118TP-5A2** | 200 | $6,343 | $2,723 | $2,479 | $116.46 | $11,660.78 | $5,830.39 | $35.44 |
| **1186119TP-9E7** | 200 | $10,615 | $7,417 | $2,479 | $116.46 | $20,627.60 | ($6,474.04) | $90.01 |
| **118615TP-C46** | 200 | $4,142 | $2,946 | $2,479 | $116.46 | $9,683.15 | ($1,179.42) | $90.01 |
| **6204404TP-0E5** | 1000 | $36,087 | $24,458 | $4,371 | $116.46 | $65,031.91 | $32,515.96 | $23.63 |
| **6204405TP-CA0** | 300 | $11,550 | $5,940 | $2,689 | $116.46 | $20,296.31 | $10,148.15 | $25.74 |
| **6204407TP-C25** | 500 | $11,012 | $10,940 | $3,368 | $116.46 | $25,436.20 | $12,718.10 | $15.19 |
| **6204408TP-3FB** | 750 | $52,770 | $27,544 | $3,935 | $116.46 | $84,365.14 | $42,182.57 | $20.66 |
| **620456TP-103** | 750 | $11,140 | $6,563 | $3,938 | $116.46 | $21,757.34 | $10,878.67 | $29.19 |
| **8001320TP-60F** | 300 | $3,361 | $1,595 | $2,689 | $116.46 | $7,761.41 | $3,880.71 | $32.55 |
| **620455TP-DC3** | 300 | $5,892 | $3,564 | $2,756 | $116.46 | $12,329.45 | $6,164.73 | $34.31 |
| **6204406TP-060** | 1500 | $20,166 | $10,922 | $12,327 | $116.46 | $43,530.45 | $21,765.22 | $31.06 |
| **62044065TP-1CD** | 1000 | $32,332 | $18,087 | $4,660 | $116.46 | $55,195.63 | $27,597.82 | $24.01 |
| **176630TP-6C4** | 150 | $6,772 | $1,480 | $2,437 | $116.46 | $10,806.08 | $5,403.04 | $18.25 |
| **186250TP-0A9** | 750 | $9,913 | $3,074 | $5,557 | $116.46 | $18,661.16 | $9,330.58 | $14.66 |
| **204735TP-7C2** | 100 | $2,892 | $3,962 | $5,103 | $116.46 | $12,073.87 | $6,036.94 | $57.93 |
| **657599TP-EEF** | 200 | $8,611 | $1,971 | $331 | $116.46 | $11,028.86 | $11,028.86 | $0.00 |
| **525441TP-DF0** | 150 | $3,245 | $2,006 | $2,426 | $116.46 | $7,793.85 | $3,856.12 | $90.01 |
| **633604TP-988** | 200 | $1,119 | $3,856 | $2,661 | $116.46 | $7,751.88 | $3,875.94 | $25.56 |
| **1164012TP-00A** | 500 | $19,053 | $6,007 | $3,456 | $116.46 | $28,633.09 | $14,316.55 | $25.79 |
| **530906TP-856** | 300 | $9,713 | $12,576 | $2,693 | $116.46 | $25,098.06 | $12,549.03 | $36.12 |
| **5552033TP-EA2** | 6000 | $127,890 | $444,561 | $31,452 | $116.46 | $604,019.31 | $0.00 | $0.00 |
| **OCDB** | 13000 | $164,231 | $130,905 | $0 | $0.00 | $295,136.00 | $0.00 | $0.00 |
| **5672985TP-1EF** | 100 | $1,749 | $3,086 | $1,606 | $116.46 | $6,557.58 | $1,995.11 | $90.01 |
| **615269TP-92F** | 300 | $11,342 | $14,550 | $4,028 | $116.46 | $30,036.03 | $15,018.01 | $51.92 |
| **543979TP-A8C** | 50 | $4,756 | $561 | $0 | $116.46 | $5,432.96 | $2,716.48 | $138.38 |
| **1819727TP-A3B** | 100 | $1,541 | $2,706 | $1,867 | $116.46 | $6,230.72 | $3,115.36 | $27.67 |
| **50150092TP-CF2** | 75 | $2,317 | $2,033 | $1,362 | $116.46 | $5,828.41 | $2,914.21 | $41.47 |

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|---|---|---|---|---|---|---|---|---|
| **50150100TP-A94** | 150 | $4,749 | $1,035 | $2,353 | $116.46 | $8,254.00 | $4,127.00 | $22.40 |
| **800152TP-6D7** | 1250 | $53,524 | $17,839 | $1,984 | $116.46 | $73,463.71 | $36,731.85 | $14.97 |
| **800170TP-B07** | 750 | $189 | $3,104 | $4,194 | $116.46 | $7,603.39 | $3,801.70 | $745.71 |
| **182010TP-E8B** | 100 | $5,242 | $5,614 | $2,503 | $116.46 | $13,475.31 | $6,737.65 | $36.35 |
| **332490TP-111** | 200 | $290 | $13,140 | $4,090 | $116.46 | $17,636.79 | $8,818.40 | $138.00 |
| **8001045TP-7B3** | 500 | $19,488 | $9,038 | $3,736 | $116.46 | $32,378.07 | $16,189.04 | $34.91 |
| **800104TP-F50** | 1000 | $55,579 | $28,517 | $5,074 | $116.46 | $89,286.57 | $44,643.29 | $17.08 |
| **5791226TP-DCF** | 300 | $11,866 | $5,404 | $3,034 | $116.46 | $20,420.02 | $10,210.01 | $17.45 |
| **6438465TP-89B** | 500 | $17,777 | $14,630 | $3,958 | $116.46 | $36,482.19 | $18,241.10 | $30.88 |
| **643847TP-B5F** | 500 | $5,939 | $4,385 | $3,958 | $116.46 | $14,397.98 | $7,198.99 | $36.57 |
| **6438485TP-221** | 200 | $1,932 | $2,145 | $2,663 | $116.46 | $6,855.86 | ($6,013.96) | $90.01 |
| **800132TP-927** | 100 | $3,571 | $3,629 | $3,166 | $116.46 | $10,482.05 | $5,241.03 | $28.15 |
| **8001305TP-615** | 30 | $1,017 | $1,641 | $1,525 | $116.46 | $4,299.74 | ($659.71) | $90.01 |
| **8001708TP-54F** | 100 | $912 | $1,635 | $3,056 | $116.46 | $5,720.68 | $4,638.50 | $90.01 |
| **3149145TP-253** | 300 | $2,000 | $30,544 | $4,929 | $116.46 | $37,590.06 | $18,795.03 | $96.01 |
| **8001312TP-172** | 150 | $10,324 | $5,059 | $2,424 | $116.46 | $17,922.64 | $8,961.32 | $31.05 |
| **800113TP-837** | 100 | $1,224 | $1,863 | $1,754 | $116.46 | $4,956.68 | ($3,477.02) | $90.01 |
| **331280TP-F5A** | 200 | $699 | $29,542 | $4,414 | $116.46 | $34,772.29 | $34,772.29 | $0.00 |
| **579184TP-AA1** | 100 | $2,909 | $2,806 | $1,320 | $116.46 | $7,150.43 | $3,575.21 | $33.45 |
| **568266TP-ADC** | 500 | $20,281 | $12,704 | $3,686 | $116.46 | $36,787.32 | $18,393.66 | $19.58 |
| **5682737TP-04F** | 300 | $3,001 | $1,498 | $2,880 | $116.46 | $7,495.42 | $3,747.71 | $45.09 |
| **5684239TP-311** | 150 | $4,910 | $1,520 | $1,980 | $116.46 | $8,525.93 | $4,262.97 | $33.14 |
| **396517TP-0FD** | 50 | $354 | $525 | $1,625 | $116.46 | $2,620.60 | $882.67 | $90.01 |
| **482070TP-CA8** | 300 | $6,961 | $7,695 | $4,266 | $116.46 | $19,037.67 | $2,811.36 | $90.01 |
| **308479TP-A96** | 200 | $1,432 | $2,873 | $10,166 | $116.46 | $14,587.43 | $10,572.77 | $90.01 |
| **300360TP-C68** | 75 | $258 | $431 | $653 | $116.46 | $1,457.76 | $1,254.28 | $90.01 |
| **208740TP-450** | 300 | $7,461 | $18,788 | $3,628 | $116.46 | $29,993.63 | $14,996.81 | $37.06 |

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|---|---|---|---|---|---|---|---|---|
| **569639TP-0AB** | 150 | $4,704 | $2,636 | $2,282 | $116.46 | $9,738.31 | $4,869.15 | $31.01 |
| **319705TP-697** | 150 | $535 | $9,801 | $3,361 | $116.46 | $13,813.97 | $13,813.97 | $0.00 |
| **617670TP-292** | 300 | $11,507 | $13,019 | $4,251 | $116.46 | $28,892.83 | $14,446.42 | $43.19 |
| **112267TP-BDF** | 150 | $1,769 | $1,273 | $2,537 | $116.46 | $5,695.20 | ($298.47) | $90.01 |
| **141924TP-720** | 200 | $30 | $504 | $3,487 | $116.46 | $4,137.71 | $2,068.86 | $56.69 |
| **192534TP-F30** | 150 | $2,010 | $449 | $2,821 | $116.46 | $5,395.96 | $2,697.98 | $31.16 |
| **800171TP-742** | 1500 | $19,008 | $60,829 | $762 | $116.46 | $80,715.47 | $40,357.73 | $55.72 |
| **1101461TP-0EE** | 200 | $2,508 | $1,370 | $3,752 | $116.46 | $7,747.02 | $3,873.51 | $83.80 |
| **1101999TP-7E5** | 750 | $8,990 | $7,734 | $9,255 | $116.46 | $26,095.47 | $13,047.74 | $36.79 |
| **110146TP-A8C** | 200 | $2,463 | $1,815 | $3,752 | $116.46 | $8,146.85 | ($2,712.15) | $90.01 |
| **632798TP-DD5** | 100 | $864 | $4,192 | $2,458 | $116.46 | $7,631.15 | $3,815.57 | $52.00 |
| **634528TP-0A0** | 30 | $500 | $674 | $1,421 | $116.46 | $2,711.04 | $1,355.52 | $37.19 |
| **5552049TP-96E** | 300 | $8,500 | $12,567 | $3,844 | $116.46 | $25,027.08 | $12,513.54 | $22.03 |
| **5552055TP-0DD** | 3500 | $106,100 | $238,419 | $14,020 | $116.46 | $358,655.72 | $358,655.72 | $0.00 |
| **623482TP-FAB** | 150 | $8,114 | $5,148 | $3,247 | $116.46 | $16,625.55 | ($14,206.78) | $90.01 |
| **800121TP-F4A** | 2000 | $85,921 | $37,226 | $7,394 | $116.46 | $130,656.74 | $65,328.37 | $14.22 |
| **184621TP-6F0** | 50 | $1,045 | $1,695 | $586 | $116.46 | $3,442.55 | $218.84 | $90.01 |
| **800125TP-E40** | 2000 | $93,213 | $61,445 | $29,623 | $116.46 | $184,396.93 | $92,198.47 | $23.75 |
| **1101005TP-215** | 500 | $541 | $462 | $5,893 | $116.46 | $7,013.03 | $7,013.03 | $0.00 |
| **8001011TP-EB1** | 50 | $1,309 | $1,376 | $1,427 | $116.46 | $4,228.33 | $2,114.17 | $49.74 |
| **400495TP-B39** | 200 | $5,117 | $17,264 | $3,730 | $116.46 | $26,226.74 | $13,113.37 | $44.61 |
| **800112TP-472** | 100 | $2,199 | $3,040 | $2,581 | $116.46 | $7,936.37 | $3,968.19 | $32.46 |
| **434220TP-56E** | 50 | $1,840 | $1,737 | $1,400 | $116.46 | $5,093.80 | $2,546.90 | $31.74 |
| **416103TP-D75** | 50 | $1,221 | $1,457 | $1,716 | $116.46 | $4,510.92 | $2,255.46 | $30.82 |
| **530380TP-699** | 50 | $4,762 | $5,212 | $388 | $116.46 | $10,478.18 | $5,239.09 | $23.43 |
| **410812TP-754** | 50 | $1,517 | $1,494 | $881 | $116.46 | $4,007.71 | $2,003.86 | $27.54 |
| **615606TP-500** | 50 | $917 | $868 | $1,409 | $116.46 | $3,310.89 | $1,655.44 | $43.26 |

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|---|---|---|---|---|---|---|---|---|
| **5791154TP-B14** | 150 | $6,555 | $3,806 | $2,133 | $116.46 | $12,610.28 | ($12,767.40) | $90.01 |
| **656382TP-D30** | 100 | $84 | $149 | $2,419 | $116.46 | $2,768.21 | $2,693.91 | $90.01 |
| **800131TP-5E7** | 300 | $4,126 | $2,176 | $2,579 | $116.46 | $8,997.90 | $4,498.95 | $31.93 |
| **520373TP-2AF** | 1500 | $25,954 | $39,356 | $5,863 | $116.46 | $71,289.12 | $35,644.56 | $40.16 |
| **184687TP-F60** | 150 | $4,436 | $1,379 | $2,418 | $116.46 | $8,349.35 | ($4,378.52) | $90.01 |
| **522002TP-BF4** | 150 | $10,481 | $3,438 | $2,705 | $116.46 | $16,740.57 | $8,370.29 | $25.25 |
| **150925TP-224** | 150 | $9,455 | $14,760 | $2,753 | $116.46 | $27,084.05 | $13,542.03 | $37.11 |
| **150931TP-983** | 500 | $13,166 | $19,430 | $4,518 | $116.46 | $37,229.94 | $18,614.97 | $46.33 |
| **3764605TP-D7E** | 300 | $5,636 | $18,698 | $4,213 | $116.46 | $28,662.04 | $14,331.02 | $56.87 |
| **406890TP-FBA** | 75 | $3,742 | $4,029 | $1,048 | $116.46 | $8,935.67 | $4,467.84 | $35.13 |
| **405386TP-576** | 150 | $797 | $3,982 | $2,867 | $116.46 | $7,761.62 | $3,880.81 | $185.93 |
| **405190TP-453** | 150 | $2,787 | $11,485 | $2,713 | $116.46 | $17,101.39 | ($5,332.98) | $90.01 |
| **389990TP-5F0** | 150 | $3,092 | $13,746 | $2,776 | $116.46 | $19,730.59 | $4,223.50 | $90.01 |
| **389997TP-83A** | 200 | $2,630 | $12,415 | $2,986 | $116.46 | $18,147.66 | $5,304.11 | $90.01 |
| **389999TP-BA1** | 300 | $3,380 | $9,493 | $3,993 | $116.46 | $16,983.30 | $8,491.65 | $61.12 |
| **401815TP-3DF** | 300 | $12,788 | $35,172 | $4,362 | $116.46 | $52,438.37 | $26,219.19 | $42.07 |
| **8001611TP-8B7** | 50 | $1,811 | $2,749 | $659 | $116.46 | $5,335.90 | ($6,211.54) | $90.01 |
| **800161TP-DEF** | 500 | $16,245 | $41,169 | $5,187 | $116.46 | $62,717.05 | $31,358.53 | $48.62 |
| **181911TP-927** | 75 | $4,365 | $4,727 | $1,249 | $116.46 | $10,457.20 | $5,228.60 | $22.11 |
| **235545TP-814** | 200 | $11,166 | $3,168 | $4,055 | $116.46 | $18,505.88 | $9,252.94 | $21.88 |
| **6375055TP-7DC** | 500 | $7,082 | $16,546 | $5,118 | $116.46 | $28,862.74 | $14,431.37 | $16.98 |
| **150910TP-893** | 50 | $43 | $133 | $1,509 | $116.46 | $1,800.40 | $900.20 | $893.41 |
| **3204065TP-B03** | 150 | $194 | $2,198 | $2,616 | $116.46 | $5,124.44 | $3,162.22 | $93.85 |
| **624649TP-8F7** | 500 | $3,072 | $4,606 | $4,365 | $116.46 | $12,159.78 | $6,079.89 | $16.46 |
| **800166TP-025** | 200 | $4,911 | $19,157 | $3,073 | $116.46 | $27,257.09 | $13,628.54 | $63.64 |
| **416731TP-C0E** | 150 | $1,740 | $6,307 | $3,144 | $116.46 | $11,307.01 | $5,804.77 | $90.01 |
| **549325TP-5D0** | 500 | $8,931 | $4,046 | $3,948 | $116.46 | $17,041.73 | $8,520.87 | $23.83 |

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|---|---|---|---|---|---|---|---|---|
| **624606TP-58C** | 150 | $4,643 | $2,909 | $2,514 | $116.46 | $10,182.30 | ($1,228.96) | $90.01 |
| **141845TP-D91** | 200 | $3,101 | $6,683 | $3,845 | $116.46 | $13,744.52 | ($3,991.61) | $90.01 |
| **333060TP-CA7** | 150 | $708 | $10,723 | $3,462 | $116.46 | $15,009.35 | $15,009.35 | $0.00 |
| **3330508TP-D6D** | 300 | $519 | $9,361 | $4,293 | $116.46 | $14,289.76 | $14,289.76 | $0.00 |
| **405769TP-C13** | 200 | $3,082 | $14,278 | $8,824 | $116.46 | $26,300.63 | $8,264.00 | $90.01 |
| **373002TP-847** | 200 | $2,541 | $10,181 | $2,814 | $116.46 | $15,652.04 | $9,632.98 | $90.01 |
| **141990TP-498** | 150 | $3,110 | $6,260 | $4,361 | $116.46 | $13,848.28 | $10,146.41 | $90.01 |
| **1419725TP-870** | 200 | $3,540 | $6,195 | $3,818 | $116.46 | $13,670.08 | $9,079.57 | $90.01 |
| **315340TP-EFC** | 500 | $14,759 | $1,160,306 | $0 | $0.00 | $1,175,064.49 | $0.00 | $0.00 |
| **4245295TP-206** | 150 | $2,905 | $1,388 | $3,013 | $116.46 | $7,422.36 | $3,711.18 | $49.65 |
| **301586TP-0FB** | 100 | $1,042 | $1,832 | $2,542 | $116.46 | $5,532.75 | $2,160.19 | $90.01 |
| **424510TP-575** | 500 | $9,730 | $8,802 | $5,681 | $116.46 | $24,329.62 | $12,164.81 | $30.24 |
| **3193075TP-EBE** | 200 | $560 | $10,349 | $3,463 | $116.46 | $14,488.03 | $14,488.03 | $0.00 |
| **338411TP-65E** | 300 | $1,692 | $10,470 | $3,399 | $116.46 | $15,677.45 | $7,838.72 | $62.74 |
| **613920TP-315** | 100 | $699 | $805 | $3,232 | $116.46 | $4,853.19 | $2,426.59 | $101.46 |
| **8001015TP-FBB** | 300 | $17,032 | $8,465 | $2,989 | $116.46 | $28,603.48 | $14,301.74 | $16.76 |
| **800149TP-2AE** | 300 | $21,678 | $6,634 | $5,296 | $116.46 | $33,724.47 | $16,862.24 | $17.12 |

## Line Charge Breakdown for Group Customers

| Consumer Capacity | Code | Number of Connections | TransPower Charge | Sub transmission Charge | Distribution Charge | PowerNet Overheads | Fixed Charge per Day | Variable Charge per Day kWh |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| TPC Urban | | | | | | | | |
| Residential Standard | | | | | | | | |
| **Small Residential (8kVA 1 Phase) - All Peak** | UD08P | 83 | $6,534 | $10,823 | $10,313 | $9,666 | $0.9856 | $0.09001 |
| **Small Residential (8kVA 1 Phase) - With Off Peak** | UD08Q | 183 | $11,961 | $20,494 | $19,411 | $21,312 | $0.6447 | $0.09001 |
| **Residential (15kVA 1 Phase) - All Peak** | UD20P | 1,725 | $339,486 | $562,340 | $535,823 | $200,893 | $1.7727 | $0.09001 |
| **Residential (15kVA 1 Phase) - With Off Peak** | UD20Q | 6,873 | $1,123,068 | $1,924,227 | $1,822,594 | $800,426 | $1.2367 | $0.09001 |
| **Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak** | UDL20P | 1,756 | $278,267 | $475,729 | $491,230 | $204,503 | $0.1500 | $0.14543 |
| **Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak** | UDL20Q | 5,714 | $757,339 | $1,324,937 | $1,362,348 | $665,449 | $0.1000 | $0.14543 |
| **Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak** | UDL08P | 70 | $4,902 | $8,456 | $8,311 | $8,152 | $0.1500 | $0.11657 |
| **Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak** | UDL08Q | 152 | $9,466 | $16,291 | $15,716 | $17,702 | $0.1000 | $0.11657 |
| | | | | | | | | |
| General Single Phase | | | | | | | | |
| **Street Lights (1 Phase)** | US001L | 5,438 | $121,404 | $203,885 | $109,330 | $12,666 | $0.1431 | $0.09001 |
| **1 kVA 1 Phase - All Peak** | US001P | 27 | $4,159 | $6,548 | $3,364 | $3,144 | $0.6983 | $0.09001 |
| **8 kVA 1 Phase - All Peak** | US008P | 232 | $18,263 | $30,252 | $28,826 | $27,019 | $0.9854 | $0.09001 |
| **8 kVA 1 Phase - With Off Peak** | US008Q | 14 | $915 | $1,568 | $1,485 | $1,630 | $0.6445 | $0.09001 |
| **15 kVA 1 Phase - All Peak** | US020P | 376 | $73,998 | $122,574 | $116,794 | $43,789 | $1.7726 | $0.09001 |
| **15 kVA 1 Phase - With Off Peak** | US020Q | 101 | $16,504 | $28,277 | $26,783 | $11,762 | $1.2365 | $0.09001 |
| | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|
| General Three Phase | | | | | | | | |
| **15 kVA 3 Phase - All Peak** | UT015P | 112 | $16,531.47 | $27,383 | $26,092 | $13,043 | $1.6853 | $0.09001 |
| **15 kVA 3 Phase - With Off Peak** | UT015Q | 11 | $1,348.07 | $2,310 | $2,188 | $1,281 | $1.1458 | $0.09001 |
| **30 kVA 3 Phase - All Peak** | UT030P | 547 | $169,673.74 | $286,461 | $283,729 | $63,703 | $2.6929 | $0.09001 |
| **30 kVA 3 Phase - With Off Peak** | UT030Q | 100 | $25,868.21 | $44,883 | $44,237 | $11,646 | $1.8018 | $0.09001 |
| **50 kVA 3 Phase - All Peak** | UT050P | 317 | $238,771.27 | $398,198 | $377,368 | $36,918 | $5.4695 | $0.09001 |
| **50 kVA 3 Phase - With Off Peak** | UT050Q | 79 | $49,482.68 | $85,162 | $80,263 | $9,200 | $3.7239 | $0.09001 |
| **75 kVA 3 Phase - All Peak** | UT075P | 96 | $130,997.77 | $221,165 | $213,991 | $11,180 | $9.2581 | $0.09001 |
| **75 kVA 3 Phase - With Off Peak** | UT075Q | 19 | $21,621.48 | $37,515 | $36,123 | $2,213 | $6.2399 | $0.09001 |
| **100 kVA 3 Phase - All Peak** | UT100P | 20 | $43,987.58 | $74,265 | $71,423 | $2,271 | $12.3755 | $0.09001 |
| **100 kVA 3 Phase - With Off Peak** | UT100Q | 3 | $5,643.59 | $9,792 | $9,372 | $349 | $8.5954 | $0.09001 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| TPC Rural | | | | | | | | |
| Residential | | | | | | | | |
| **Small Residential (8kVA 1 Phase) - All Peak** | RD08P | 104 | $8,187.02 | $13,561.35 | $41,582.58 | $12,111.78 | $1.1105 | $0.09001 |
| **Small Residential (8kVA 1 Phase) - With Off Peak** | RD08Q | 89 | $5,817.14 | $9,966.89 | $30,798.66 | $10,364.89 | $0.7522 | $0.09001 |
| **Residential (15kVA 1 Phase) - All Peak** | RD20P | 1,963 | $386,324.78 | $639,926 | $1,962,178 | $228,610 | $2.0413 | $0.09001 |
| **Residential (15kVA 1 Phase) - With Off Peak** | RD20Q | 5,281 | $862,930.34 | $1,478,516 | $4,568,757 | $615,022 | $1.3969 | $0.09001 |
| **Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak** | RDL20P | 936 | $148,324.54 | $253,578 | $793,819 | $109,006 | $0.1500 | $0.14543 |
| **Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak** | RDL20Q | 2,054 | $272,239.04 | $476,273 | $1,498,366 | $239,208 | $0.1000 | $0.14543 |
| **Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak** | RDL08P | 39 | $2,731.27 | $4,711 | $14,643 | $4,542 | $0.1500 | $0.11657 |
| **Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak** | RDL08Q | 33 | $2,055.07 | $3,537 | $10,972 | $3,843 | $0.1000 | $0.11657 |
| | | | | | | | | |
| General Single Phase | | | | | | | | |
| **Street Lights (1 Phase)** | RS001L | 835 | $18,641.49 | $31,306 | $65,983 | $1,945 | $0.1611 | $0.09001 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1 kVA 1 Phase - All Peak** | RS001P | 125 | $19,253.27 | $30,317 | $68,222 | $14,557 | $0.6983 | $0.09001 |
| **8 kVA 1 Phase - All Peak** | RS008P | 1,081 | $85,097.73 | $140,959.81 | $432,218.93 | $125,892.69 | $1.1105 | $0.09001 |
| **8 kVA 1 Phase - With Off Peak** | RS008Q | 26 | $1,699.39 | $2,911.68 | $8,997.36 | $3,027.95 | $0.7522 | $0.09001 |
| **15 kVA 1 Phase - All Peak** | RS020P | 1,645 | $323,741.35 | $536,260 | $1,644,311 | $191,576 | $2.0413 | $0.09001 |
| **15 kVA 1 Phase - With Off Peak** | RS020Q | 342 | $55,883.77 | $95,749 | $295,875 | $39,829 | $1.3969 | $0.09001 |
| | | | | | | | | |
| General Three Phase | | | | | | | | |
| **15 kVA 3 Phase - All Peak** | RT015P | 337 | $49,742.02 | $82,395 | $252,644 | $39,247 | $1.9300 | $0.09001 |
| **15 kVA 3 Phase - With Off Peak** | RT015Q | 12 | $1,470.63 | $2,520 | $7,786 | $1,398 | $1.3131 | $0.09001 |
| **30 kVA 3 Phase - All Peak** | RT030P | 1,841 | $571,059.13 | $964,123 | $2,965,453 | $214,402 | $3.0800 | $0.09001 |
| **30 kVA 3 Phase - With Off Peak** | RT030Q | 432 | $111,750.65 | $193,894 | $600,066 | $50,310 | $2.0923 | $0.09001 |
| **50 kVA 3 Phase - All Peak** | RT050P | 652 | $491,100.52 | $819,007 | $2,472,460 | $75,932 | $6.2600 | $0.09001 |
| **50 kVA 3 Phase - With Off Peak** | RT050Q | 513 | $321,324.24 | $553,015 | $1,681,964 | $59,744 | $4.2863 | $0.09001 |
| **75 kVA 3 Phase - All Peak** | RT075P | 94 | $128,268.65 | $216,557 | $652,542 | $10,947 | $11.1100 | $0.09001 |
| **75 kVA 3 Phase - With Off Peak** | RT075Q | 42 | $47,794.84 | $82,927 | $251,499 | $4,891 | $7.4849 | $0.09001 |
| **100 kVA 3 Phase - All Peak** | RT100P | 28 | $63,161.66 | $106,636 | $319,624 | $3,261 | $14.8700 | $0.09001 |
| **100 kVA 3 Phase - With Off Peak** | RT100Q | 9 | $16,930.78 | $29,376 | $88,627 | $1,048 | $10.3146 | $0.09001 |