



LINE PRICING METHODOLOGY

**FOR THE POWER COMPANY LIMITED (TPCL) NETWORK
AS AT 1 APRIL 2022**

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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 TPCL'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 TPCL's network

Group Customers include most customers with a Contract Capacity up to 100 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 TPCL's 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 Night 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).

1. INTRODUCTION

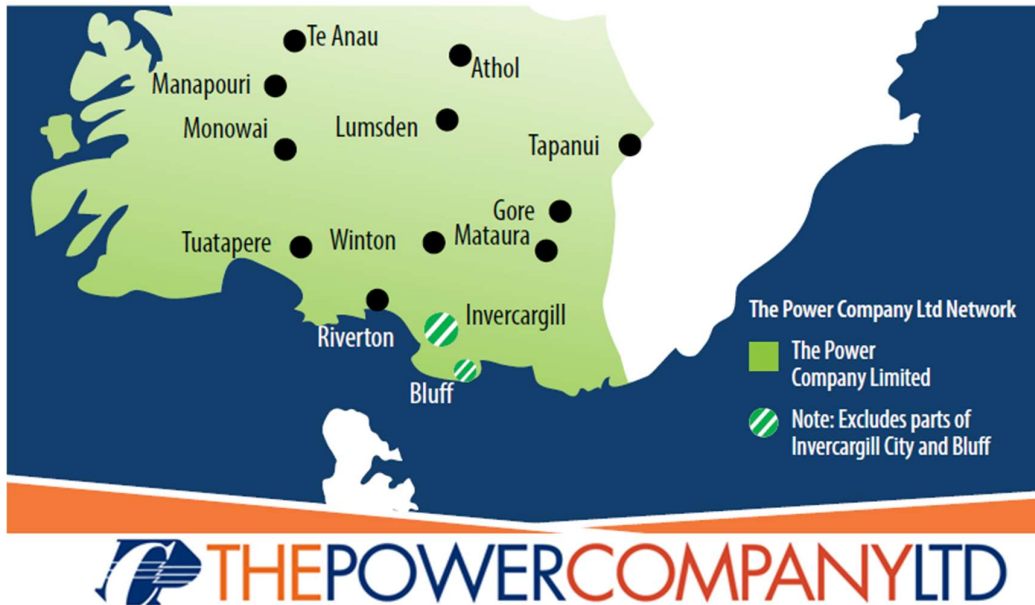
As a consumer Trust owned company, TPCL is not subject to Commerce Commission (the Commission) revenue cap regulation. However, it does face regulatory disclosure regulations. This document discloses information required under section 2.4 of the Information Disclosure Determination relating to how TPCL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

We first provide contextual information about TPCL's network (section 2), then present an overview of our prices and how they are set (section 3). We discuss our forward pricing strategy (section 4) We then assess our pricing against the Authority's Distribution Pricing Principles (section 5). 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 6 to 10). Charges for generators connected to TPCL's network are described (section 11).

2. CONTEXTUAL INFORMATION ABOUT TPCL

2.1 TPCL's Network

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 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 37,100 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 4.1 ICPs per km of line, 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 subtransmission network, including 505km of 66kV lines and 400km 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 6,714 km of 11kV lines and 153km of 11kV underground cables. Around 10,500 distribution transformers connect the Low Voltage (230V) network, which has 846 km of lines and 213km of underground cable.

2.2 Upcoming investment in network capacity

As at end March 2021, the value of TPCL's network assets in its Regulatory Asset Base was \$421 million. Over the next three years TPCL intends to invest \$93.94m in its network, including \$36.71 million in asset replacement and \$12.25 million 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):

- Seven of TPCL's 37 zone substations [Glenham, Tokanui, North Gore, South Gore, Riversdale, Winton, and North Makarewa 66kV portion] 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 (EV's) and battery storage.

Solar (Photovoltaic) connections

As February 2022, TPCL had 462 solar connections to its network, equivalent to 1.25% of all TPCL ICPs. This rate is below the national average of 2.42%, and significantly below the rate of 5.70%, which is the average of the top 10 highest uptake EDB areas. There is an acceleration in uptake on TPCL's network: the average number of new solar connections per month over the 12 months to February 2022 was 5.3, as compared with 3.0 and 3.1 for the prior two preceding 12-month periods April – March.

The potential for growth in solar uptake and impact on the network is explored in the AMP. Through our annual customer engagement survey, intentions to purchase and installing solar panels on rooftops in the next five years has increased to 33%; an increase of 16% from 2019. The main barriers to adoption was found to be relating to economical reasons where projected payback period has a large influence on the purchase intention. Other considerations that may limit solar uptake are (1) it appears that the majority of customers are unable to install solar as they do not own the property (e.g. rental), or prefer to dispose of their income elsewhere; and (2) energy cost reduction options such as home insulation and EV's 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 180 EV's registered in TPCL's area – an uptake rate per connection of 0.49%. With the introduction of the Clean Car rebate where electric cars can get up to \$8,625 rebate and with increase in cost of fuel, we expect EV adoption to grow year on year. As is explained in our AMP, EVs have the potential to have large impacts 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 customers choose not to charge off-peak in response to price signals, EV 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 EV's.

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 value streams of energy storage from the customers' point of view and also 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 energy storage technology is not economic except in exceptional circumstances, and it is not expected that there will be significant organic adoption unless electricity distribution businesses provide incentives for their adoption or it is coupled with significant solar PV installations on a customer premise. TPCL has been engaged in pilot studies and will continue to explore how customers may use energy storage to respond to price signals that provides mutual benefits to customers and TPCL.

2.4 The Power Company Ltd and PowerNet Limited 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 Management Agreement (Agreement).

The Agreement includes provision for PowerNet to act as manager 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. PowerNet charges a management fee that covers its overheads for operating the line and metering businesses 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.

TPCL uses "GXP billing" for its residential and 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 and General consumers; and Individual Consumers (for which prices are connection-specific).

3.1.1 Individual Consumers

There are 275 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 TPCL and is connected to TPCL’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 and General customers

The Residential and 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 Peak period, which is defined as 7am to 11am and 5pm to 9pm, the Shoulder period, which is defined as 11am to 5pm and 9pm to 11pm and energy usage during the Night period (11pm to 7am).

Prices for Residential and 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. From 1 April 2022 the Low Fixed Charge Tariff Option is being phased out over a 5-year period by the Government. The phase out allows distributors to increase the daily fixed charge by an additional 15 cents per day for each of the 5 years, and when it reaches 90 cents per day in 5-years’ time it will be removed altogether. 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 and General consumers are as follows:

Residential Standard	Code	
	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 made a significant change to its pricing structure as we move to more cost-reflective pricing for the 12 months from 1 April 2022. Changes made to TPCL's pricing are:

- Time of Use (TOU) pricing for Residential and General Customers' is replacing the existing Day/Night variable (kWh) line charge price structure. TOU now consists of three time periods for variable line charge prices these being:

Peak period, which is defined as 7am to 11am and 5pm to 9pm; and

Shoulder period, which is defined as 11am to 5pm and 9pm to 11pm; and

Night period (11pm to 7am).

- In line with the Government announced phase out of the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 TPCL has increased the daily fixed charge to the Residential Low Fixed Charge Option customers.

Target revenue for 2022/23 is calculated at \$69.3 million, increasing from \$66.7 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 2022-23 year. We also outline the change in revenue compared with the previous year:

	Group customers	Individual customers	Total
2022-23 Revenue			
Distribution	\$48,684,251	\$7,819,915	\$56,504,166
Transmission	\$7,247,209	\$5,540,211	\$12,787,420
Total	\$55,931,460	\$13,360,126	\$69,291,586
Previous year			
Distribution	\$46,788,204	\$7,307,354	\$54,095,558
Transmission	\$7,771,945	\$4,849,555	\$12,621,500
Total	\$54,560,149	\$12,156,909	\$66,717,058

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 an increase in Transpower's connection charges and increased co-incident peak demands with Transpower's highest 100 peaks for the lower south island.

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 \$1.70 (excluding GST) per month. Residential customer pricing is as follows:

Daily prices		2021/22	2022/23	2022/23	2022/23
Residential – urban	\$/day	1.2491	1.2800		
Residential – rural	\$/day	1.4109	1.4492		
Residential – Low Fixed Charge	\$/day	0.1000	0.2000		
Variable Charges		Day	Peak	Shoulder	Night
All except low user	c/kWh	9.100	9.347	8.345	1.00
Low User	c/kWh	14.601	14.977	12.975	1.00

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, TPCL consults with retailers and customer groups. The pricing to apply 1 April 2022 does involve significant changes, TPCL consulted with retailers and the Southland Electric Power Supply Consumer Trust on the change to Time-of-Use pricing and the likely impact to customers.

Even in the absence of significant pricing change, TPCL seeks the views of consumers as part of the asset management process 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 STRATEGY

Given that TPCL's pricing to Individual Customers is highly cost reflective and service based, the focus of the pricing strategy has been on the structure of pricing for residential and general customers.

4.1 Time of Use (TOU) Pricing

TPCL's variable pricing previously consisted of a variable price for Day (7am to 11pm) energy and zero for Night (11pm to 7am) energy. This pricing sent a strong signal for customers to shift consumption into the night period, it did not however signal times during the day when the network is at peak loading or times when there is spare capacity in the network. It made no difference, if for example people with EV's charged their cars at 5pm, network peak time or at 2pm, network off-peak time. This lack of signal could force the network to invest in expensive upgrades and pushing the price of line charges higher for everyone.

TPCL has completed significant work on examining alternative cost reflective pricing options.

We evaluated five different cost reflective pricing options on the following criteria:

1. Economic Efficiency
2. Actionable and Simple
3. Supports retail Competition
4. Durable and Flexibility
5. Stable/Predictable

The combination of installed capacity and TOU came out on top of all other options under the evaluation process. This combination will be the start of our cost reflective pricing journey as we look to provide customers with better pricing signals and a choice of when and how much they pay for their line charges, which is efficient and fair for the long term benefit to all our customers.

4.2 TOU price implementation.

PowerNet has engaged in work streams 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 along with comprehensive customer impact analysis. We have introduced new loss codes to identify low user energy at a GXP level to aid the analysis.

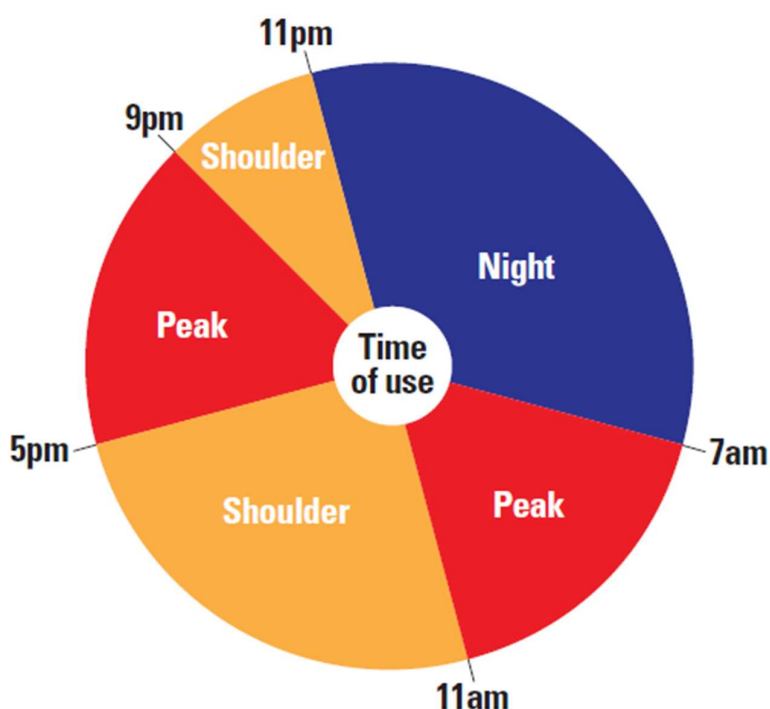
As a result of all the previous work a combination of installed capacity and TOU pricing for residential and general consumers is being implemented from 1 April 2022.

TOU pricing provides an incentive for consumers to shift energy usage out of peak periods, which can avoid or defer costly network upgrades. New uses of electricity such as solar generation, batteries, electrification and charging EVs are increasing the scope for network pricing to influence investment and cost-shifting outcomes mean that it will be even more important to have meaningful peak pricing signals. Ensuring that the supporting price structures, such as TOU, are in place before EV uptake is widespread will mean that pricing will be up and running and effective when it is needed, allowing time for consumer education and for networks to understand consumer preferences and price responsiveness.

The time-bands shown in the graph below for peak, shoulder, and night were selected based upon the times that peaks occur on our network, and the times that the majority of Regional Coincident Peak Demand (RCPD) peaks fall within (transmission charges being a significant variable cost).

While transmission charges will switch from a variable to a fixed cost once the new Transmission Pricing Methodology (TPM) is implemented, as our network peaks and the RCPD peaks generally align, we do not expect material changes to our time-bands, we will however continually review peak times at our individual GXP's and zone substations to ensure the time bands are appropriate and will make changes if required.

Graph: TPCL TOU time periods



The price differential between the peak and shoulder price will initially be marginal but as network constraints become greater or we have EV clustering on the network, we will use the price differential as a tool to send stronger signals to customers to shift load out of the peak periods and therefore avoiding or deferring expensive network upgrades.

4.3 Installed Capacity (fixed Charges)

As a significant proportion of TPC's costs are essentially fixed, it would not be efficient for all costs to be recovered through charges that relate to energy usage. As a result, a portion of our costs

are recovered from daily fixed charges. TPC's daily charges vary according to a connection's capacity (installed capacity) and availability of controlled load.

Customers with at least 25% of their total energy consumption on a controlled load or energy used during the night period qualify for the "off-peak" fixed charge price, which is up to 35% reduction on the "peak" price. This price incentive is fixed for customers and does not vary according to monthly consumption, it provides a strong signal and a tool for TPCL to control the load on the network during congestion periods therefore helping to avoid network upgrades and price increases.

Currently 45.2% of TPCL's total line charge revenue is from fixed charges, with the 5-year phase out of the LFC and the fact that the majority of costs are fixed, TPCL will look to increase the share of total revenue from fixed charges over time.

4.4 Customer Impact analysis

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.

TPCL has completed extensive impact analysis of a shift to installed capacity and TOU pricing. The analysis involved modelling over 52% of the residential and general customers who had more than 12 months' worth of half hourly smart meter data. Each ICP was overlaid with a NZ deprivation level index rating which was derived by the University of Otago using NZ census data to enable us to evaluate the impact at a socioeconomic level. Summarized in the below table we examine the break-down of energy usage by customer category by decile level:






TPC: General Descriptive Statistics :Consumption

TPC ICP Split per Decile and Sample Data		Total	Depreivation Decile									
			Advantaged			Middle NZ			Most Deprived			
			1	2	3	4	5	6	7	8	9	10
Network ICP Count												
Residential		26,948	2,445	2,603	3,209	3,151	3,260	3,792	2,862	2,890	2,307	429
% of Total Network 36,459 ICPs		74%	7%	7%	9%	9%	9%	10%	8%	8%	6%	1%
% of Residential 26,948 ICPs		100%	9%	10%	12%	12%	12%	14%	11%	11%	9%	2%
Residential Standard		16,614	1,750	1,784	2,192	2,108	2,101	2,348	1,533	1,488	1,115	195
% of Total Network 36,459 ICPs		46%	5%	5%	6%	6%	6%	6%	4%	4%	3%	1%
% of Residential 26,948 ICPs		62%	6%	7%	8%	8%	8%	9%	6%	6%	4%	1%
% of Standard 8,781 ICPs		100%	11%	11%	13%	13%	13%	14%	9%	9%	7%	1%
Residential Low User		10,334	695	819	1,017	1,043	1,159	1,444	1,329	1,402	1,192	234
% of Total Network 36,459 ICPs		28%	2%	2%	3%	3%	3%	4%	4%	4%	3%	1%
% of Residential 26,948 ICPs		38%	3%	3%	4%	4%	4%	5%	5%	5%	4%	1%
% of Low User 6,547 ICPs		100%	7%	8%	10%	10%	11%	14%	13%	14%	12%	2%
Sample Average Annual Consumption kWh												
			10,281 kWh, 21% of Residential			9,121kWh, 30% of Residential			8,806kWh, 10% of Residential			
Residential Standard kWh		9,490	11,265	10,192	9,431	10,435	8,715	8,689	8,636	8,328	9,517	8,446
Residential Low User kWh		6,021	6,538	6,359	6,245	6,163	6,114	5,887	6,053	5,768	5,575	5,672
			6,366kWh, 9% of Residential			6,038kWh, 18% of Residential			5,679kWh, 10% of Residential			
SAMPLE ICP COUNT 52% of In Scope ICPs												
Residential Standard	53% of Group	8,793	1,062	1,022	1,123	1,013	1,045	1,262	743	821	602	100
Residential Low	57% of Group	5,868	440	476	597	545	620	830	703	829	693	135
Commercial ICP												
TPC 8kVA	44% of Group	594	52	69	111	112	90	80	32	21	22	5
TPC 15kVA	46% of Group	214	14	21	37	44	31	29	16	18	4	0
TPC 20kVA	42% of Group	1,034	73	102	161	177	171	130	69	78	64	9
TPC 30kVA	41% of Group	1,195	44	105	187	251	144	206	104	95	52	7
TPC 50kVA	50% of Group	779	23	49	117	182	90	154	61	53	43	7
TPC 75kVA	44% of Group	110	5	3	17	19	18	20	7	12	8	1
TPC 100kVA	11% of Group	6	0	1	0	1	2	1	0	1	0	0
* In Scope ICPs - All ICPs that do not have an Individual price calculated												

* In Scope ICPs - All ICPs that do not have an individual price calculated

- TPC 74% Residential with 15% of total ICPs, **5,626 ICPs in the Most Deprived Band**
- Sample Consumption indicates the Annual kWh for both Standard & Low User mainly decreases as the decile becomes more deprived
- 16%, 4,331 Residential ICPs who are the most deprived plus Decile7, either cannot take advantage of the Low User, or it will not make a substantial difference – as they are over or close to the breakeven 9,000kWh.
- 13%, 3,574 Residential ICPs who are the Most Advantaged plus Decile4 have benefited from the Low User regulations

In the table below we analyze the impact by customer group and decile level of the move to MOU variable pricing:

TPCL Average Annual Bill Impact by Installed Capacity & TOU Pricing Option with Deprivation Level & Customer Group					
	TPC: Fixed + TOU: YEAR ONE Avg Annual Bill Impact by Price Category and Deprivation Band	ICP Sample No.	Avg Annual Energy Usage kWh	Avg Annual Line Charge	Avg Change to Annual Line Charge
					 %  \$
Residential 74%					
Standard Residential 62%		8,793	9,490	\$1,154	0.42% \$4.81
Standard Residential decile 10 - 8 (Most Deprived)		1,523	8,806	\$1,076	0.32% \$3.43
Standard Residential decile 7- 4 (Middle NZ)		4,063	9,121	\$1,129	0.44% \$4.93
Standard Residential decile 3-1 (Advantaged)		3,207	10,281	\$1,223	0.44% \$5.32
Standard Domestic Decile 10		100	8,446	\$1,058	0.37% \$3.85
Standard Domestic Decile 1		1,062	11,265	\$1,284	0.42% \$5.40
Low User 38%		5,868	6,021	\$698	-0.28% -\$1.99
Low User decile 10 - 8 (Most Deprived)		1,657	5,679	\$656	-0.27% -\$1.80
Low User decile 7- 4 (Middle NZ)		2,698	6,038	\$698	-0.27% -\$1.90
Low User decile 3-1 (Advantaged)		1,513	6,366	\$743	-0.32% -\$2.36
Low User Decile 10		135	5,672	\$662	-0.38% -\$2.52
Low User Decile 1		440	6,538	\$770	-0.39% -\$2.99
<hr/>					
Commercial 25%					
General 8kVA		594	4,373	\$683	0.24% \$1.62
General 15kVA		214	7,273	\$1,163	0.07% \$0.78
General 20kVA		1,034	7,324	\$1,175	0.19% \$2.24
General 30kVA		1,195	13,533	\$1,950	0.12% \$2.32
General 50kVA		779	76,063	\$7,127	0.24% \$17.09
General 75kVA		110	86,297	\$9,448	-0.05% -\$4.43
General 100kVA		6	181,459	\$16,817	0.43% \$72.79
Dairy Byre		624	92,565	\$8,161	0.37% \$30.07
Woolsheds		304	3,139	\$987	0.09% \$0.88
Farm pumps		362	7,596	\$1,178	0.30% \$3.58

5. PRICING PRINCIPLES ASSESSMENT

The 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.

5.1 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)

TPCL's 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. TPCL 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 16 years ago when a capped differential of 15% was introduced between rural and urban consumers in the same consumer group.

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 introduction of Peak, shoulder and Night energy component of line charges to residential and general customers also provides a strong signal to consumers to utilise spare network capacity at Shoulder or Night time's thus reducing capital investment in the network. As discussed above in section 2.2, there are some assets in TPCL's network that are at or approaching capacity limits (eg, a number of zone substations), as well as two GXPs. A time-of-use pricing structure assists in deferring network upgrades. The move to TOU pricing will serve to refine and improve the signals of the previous day/night structure. Looking to the future, and the potential for developments such as EV's, 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 been implemented.

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. TPCL 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 shoulder or night times through the use of night store heaters, heating the hot water or using their appliances such as clothes driers, washing machines etc. during these periods. The customer is then financially rewarded, as the consumption attracts lower variable line charge prices. The "whole house TOU 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 and meet the requirements of Schedule 6.4 of Part 6 of the Electricity Industry Participation Code 2010. These payments are also offered to any new investors

in distributed generation who meet the requirements. TPCL'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. TOU pricing assists with this – 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 were previously 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.

5.2 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 TOU kWh charges (Residential and 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.

5.3 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 10, 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 bypass 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 subtransmission 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 TPCL 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.

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

TPCL's previous price structure had been in place since 1996 and had 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 fixed pricing structure and differentials between peak and off-peak fixed charges and has introduced Peak, Shoulder and Night consumption periods for 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 is 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 TPCL therefore, TPCL 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 period tariff for the majority of customers. TPCL 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 and general connections, which saves on administration costs, and ultimately should result in lower costs and prices.

With regard to uptake incentives, because pricing is at a GXP level for residential and general customers, TPCL's pricing structure (eg, TOU) 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 2022 does incorporate structural changes and as a result, consumer impacts of the change in price levels have been predicted with through analysis.

6. 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 Commission from 1 April 2022 under the 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 Commission's 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.

The inputs have resulted in lower price reset outcomes, which cause concern for non-exempt EDBs. TPCL as an exempt EDB has engaged an independent expert to calculate 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 the 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.

From 2019 onwards 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 credited 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 2021 to 31 March 2022 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 2023	\$000
Direct network costs	11,519
Indirect network costs	6,814
Transmission costs	12,858
Depreciation (RAB)	16,219
Return of capital (WACC x RAB)	24,116
Regulatory Taxation	4,486
Total Revenue Requirement Before Discount	76,011
Posted Discount	8,350
Total Revenue Requirement	67,661

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 \$69,291,000. This results in an implicit discount of \$6,720,000 below the total revenue requirement (before the posted discount) of \$76,011,000.

7. 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.

7.1 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 1700-2200 hours, each week day during subtransmission peak months of individual grid exit points)
- (c) The Peak energy MWh. (0700-1100 hours and 1700-2200 hours, each week day during subtransmission 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.

7.2 Transpower and Subtransmission Costs

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

TPCL's methodology takes into account the duration that the customer impacts on the peak loading hours of the network. This is achieved by allocating some of the Transmission, subtransmission and distribution costs based on the 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.

7.3 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.

7.4 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.

7.5 Subtransmission and Distribution Split

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

a. Supply

The “supply” part is based on the depreciation of the network assets, other ownership costs and 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	2	5	54	129	15	36	56
50	19	410	754	2,659	291	776	1,096
75	9	102	362	924	88	222	434
100	34	337	1,792	3,845	436	993	1,786
150	61	1,036	5,343	9,454	1,180	2,834	4,177
200	53	1,380	5,895	11,758	1,544	3,171	5,612
300	40	3,480	7,059	21,037	2,564	6,578	8,539
500	24	2,978	5,983	16,645	1,921	5,022	7,146
750	10	1,813	3,075	13,034	1,401	3,578	5,488
1000	6	2,653	4,118	14,592	1,861	4,444	6,013
1250	2	854	1,829	5,495	687	1,421	2,716
1500	4	1,128	2,190	5,136	660	1,484	2,376
1800	1	661	1,306	5,433	756	1,111	2,628
2000	2	1,899	2,773	10,867	1,215	3,071	5,012
3000	1	108	136	621	56	186	236
3500	1	1,427	2,086	11,476	1,006	2,644	5,182
4000	1	1,453	3,592	15,957	1,094	3,077	7,728
4500	1	53	93	259	41	106	88
5000	1	1,335	2,507	11,218	1,177	2,859	4,863
9000	1	2,525	5,049	26,003	2,030	4,069	13,273
10000	1	5,404	9,159	42,426	5,885	10,614	18,532
13000	1	1,766	12,946	25,612	742	2,034	14,801
30200	1	11,827	25,625	114,083	18,395	16,891	58,824

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

Consumer	Code	Number of	After Diversity	Total Energy	Winter Peak	Winter Day	Summer Day
Capacity		Connections	Peak Demand	Group	Group	Group	Group
			kW	MWh	MWh	MWh	MWh
TPC Urban							
Residential Standard							
Small Residential (8kVA 1 Phase) - All Peak	UD08P	106	101	450	52	164	186
Small Residential (8kVA 1 Phase) - With Off Peak	UD08Q	200	162	851	73	279	345
Residential (15kVA 1 Phase) - All Peak	UD20P	2,023	4,825	21,541	2,469	7,849	8,909
Residential (15kVA 1 Phase) - With Off Peak	UD20Q	7,293	14,790	77,674	6,678	25,471	31,481
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	UDL20P	1,665	3,972	9,852	1,129	3,590	4,074
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	UDL20Q	5,335	10,819	31,567	2,714	10,352	12,794
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	UDL08P	67	64	254	22	92	105
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	UDL08Q	139	113	525	45	172	213
General Single Phase							
Street Lights (1 Phase)	US001L	5,330	1,359	4,759	546	1,734	1,968
1 kVA 1 Phase - All Peak	US001P	30	30	313	36	114	130
8 kVA 1 Phase - All Peak	US008P	239	228	1,018	117	371	421
8 kVA 1 Phase - With Off Peak	US008Q	14	11	60	5	20	24
15 kVA 1 Phase - All Peak	US020P	376	897	4,005	459	1,459	1,656
15 kVA 1 Phase - With Off Peak	US020Q	96	194	1,021	88	335	414
General Three Phase							

15 kVA 3 Phase - All Peak	UT015P	108	193	861	99	314	356
15 kVA 3 Phase - With Off Peak	UT015Q	10	15	80	7	26	32
30 kVA 3 Phase - All Peak	UT030P	558	2,400	7,620	873	2,776	3,151
30 kVA 3 Phase - With Off Peak	UT030Q	96	352	1,314	113	431	533
50 kVA 3 Phase - All Peak	UT050P	325	3,115	12,360	1,417	4,503	5,112
50 kVA 3 Phase - With Off Peak	UT050Q	76	620	2,895	249	949	1,173
75 kVA 3 Phase - All Peak	UT075P	96	1,825	5,792	664	2,110	2,395
75 kVA 3 Phase - With Off Peak	UT075Q	17	268	1,002	86	329	406
100 kVA 3 Phase - All Peak	UT100P	18	574	1,822	209	664	754
100 kVA 3 Phase - With Off Peak	UT100Q	3	80	298	26	98	121
TPC Rural							
Residential							
Small Residential (8kVA 1 Phase) - All Peak	RD08P	120	115	513	59	187	212
Small Residential (8kVA 1 Phase) - With Off Peak	RD08Q	91	74	388	33	127	157
Residential (15kVA 1 Phase) - All Peak	RD20P	2,181	5,203	23,227	2,663	8,463	9,606
Residential (15kVA 1 Phase) - With Off Peak	RD20Q	5,423	10,997	57,755	4,966	18,939	23,408
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	RDL20P	899	2,145	5,319	610	1,938	2,200
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	RDL20Q	1,955	3,965	11,568	995	3,793	4,688
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	RDL08P	39	37	146	13	53	60
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	RDL08Q	32	26	120	10	39	49
General Single Phase							
Street Lights (1 Phase)	RS001L	1,173	299	1,047	120	382	433

1 kVA 1 Phase - All Peak	RS001P	138	138	1,448	166	528	599
8 kVA 1 Phase - All Peak	RS008P	1,119	1,068	4,766	546	1,737	1,971
8 kVA 1 Phase - With Off Peak	RS008Q	24	19	101	9	33	41
15 kVA 1 Phase - All Peak	RS020P	1,646	3,926	17,525	2,009	6,386	7,248
15 kVA 1 Phase - With Off Peak	RS020Q	346	701	3,683	317	1,208	1,493
General Three Phase							
15 kVA 3 Phase - All Peak	RT015P	352	629	2,808	322	1,023	1,161
15 kVA 3 Phase - With Off Peak	RT015Q	14	22	113	10	37	46
30 kVA 3 Phase - All Peak	RT030P	1,817	7,821	24,828	2,846	9,046	10,268
30 kVA 3 Phase - With Off Peak	RT030Q	421	1,541	5,754	495	1,887	2,332
50 kVA 3 Phase - All Peak	RT050P	657	6,303	25,011	2,867	9,113	10,344
50 kVA 3 Phase - With Off Peak	RT050Q	514	4,195	19,584	1,684	6,422	7,937
75 kVA 3 Phase - All Peak	RT075P	99	1,869	5,932	680	2,162	2,453
75 kVA 3 Phase - With Off Peak	RT075Q	40	649	2,425	208	795	983
100 kVA 3 Phase - All Peak	RT100P	30	950	3,015	346	1,099	1,247
100 kVA 3 Phase - With Off Peak	RT100Q	9	240	895	77	293	363

8. COST ALLOCATION TO CAPACITY GROUPS

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

8.1 Transmission Charges

Transmission charges reflect the Transpower grid asset management costs incurred by TPCL 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

8.1.1 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 TPCL and EIL, each network is connected to the transmission grid there.

The total connection charges for each point of supply are:

(a)	Gore	\$534,107
(b)	Edendale	\$285,854
(c)	Invercargill	\$430,886
(d)	North Makarewa	\$798,682

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	\$9.53	\$5.57	\$1.83
Edendale	\$5.40	\$5.21	\$1.55
Invercargill	\$6.54	\$3.61	\$1.22
North Makarewa	\$9.19	\$4.59	\$1.51

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	\$7.96	\$5.65	\$1.14

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.

8.1.2 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	\$2,692,670
(b)	Edendale	\$1,531,734
(c)	Invercargill	\$3,372,519
(d)	North Makarewa	\$2,883,446
(e)	Flat Hill, Maitara	\$162,097

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	Per Peak	Per Winter Day
	Demand	MWh	MWh
Gore	\$41.17	\$42.14	\$9.22
Edendale	\$28.53	\$48.13	\$9.55
Invercargill (TPCL)	\$43.87	\$42.40	\$9.55
North Makarewa	\$30.04	\$24.84	\$5.44

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

Point of Supply	Per kVA Coincident
	Peak Demand
Gore	\$96.89
Edendale	\$96.89
Invercargill (TPCL)	\$96.89
North Makarewa	\$96.89

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

	Per kVA Peak	Per Winter Peak	Per Winter Day
	Demand	MWh	MWh
All Points of Supply	\$37.13	\$46.12	\$6.20

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

8.1.3 Transpower Revenue for Individual Customers

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

Consumer Capacity kVA	Number of Connections	Transpower Revenue per Consumer Group	Average Line Charge
30	2	\$1,509	\$755
50	19	\$44,853	\$2,361
75	9	\$12,822	\$1,425
100	34	\$55,783	\$1,641
150	61	\$187,927	\$3,081
200	53	\$202,699	\$3,825
300	40	\$393,533	\$9,838
500	24	\$323,845	\$13,494
750	10	\$197,016	\$19,702
1000	6	\$285,108	\$47,518
1250	2	\$97,589	\$48,794
1500	4	\$120,600	\$30,150
1800	1	\$73,286	\$73,286
2000	2	\$201,432	\$100,716
3000	1	\$11,457	\$11,457
3500	1	\$154,657	\$154,657
4000	1	\$183,112	\$183,112
4500	1	\$5,798	\$5,798
5000	1	\$164,012	\$164,012
9000	1	\$292,514	\$292,514
10000	1	\$638,962	\$638,962
13000	1	\$310,123	\$310,123
30200	1	\$1,415,653	\$1,415,653

8.1.4 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	106	\$76	\$8,043
Small Residential (8kVA 1 Phase) - With Off Peak	UD08Q	200	\$63	\$12,599
Residential (15kVA 1 Phase) - All Peak	UD20P	2,023	\$190	\$384,869
Residential (15kVA 1 Phase) - With Off Peak	UD20Q	7,293	\$158	\$1,150,478
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	UDL20P	1,665	\$154	\$255,614
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	UDL20Q	5,335	\$128	\$684,332
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	UDL08P	67	\$68	\$4,530
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	UDL08Q	139	\$60	\$8,346
General Single Phase				
Street Lights (1 Phase)	US001L	5,330	\$18	\$98,241
1 kVA 1 Phase - All Peak	US001P	30	\$127	\$3,779
8 kVA 1 Phase - All Peak	US008P	239	\$76	\$18,192
8 kVA 1 Phase - With Off Peak	US008Q	14	\$63	\$894
15 kVA 1 Phase - All Peak	US020P	376	\$190	\$71,551

15 kVA 1 Phase - With Off Peak	US020Q	96	\$158	\$15,118
General Three Phase				
15 kVA 3 Phase - All Peak	UT015P	108	\$143	\$15,390
15 kVA 3 Phase - With Off Peak	UT015Q	10	\$118	\$1,183
30 kVA 3 Phase - All Peak	UT030P	558	\$300	\$167,405
30 kVA 3 Phase - With Off Peak	UT030Q	96	\$250	\$24,052
50 kVA 3 Phase - All Peak	UT050P	325	\$729	\$236,433
50 kVA 3 Phase - With Off Peak	UT050Q	76	\$605	\$45,981
75 kVA 3 Phase - All Peak	UT075P	96	\$1,321	\$127,252
75 kVA 3 Phase - With Off Peak	UT075Q	17	\$1,100	\$18,337
100 kVA 3 Phase - All Peak	UT100P	18	\$2,184	\$40,034
100 kVA 3 Phase - With Off Peak	UT100Q	3	\$1,819	\$5,456
TPC Rural				
Residential				
Small Residential (8kVA 1 Phase) - All Peak	RD08P	120	\$76	\$9,159
Small Residential (8kVA 1 Phase) - With Off Peak	RD08Q	91	\$63	\$5,753
Residential (15kVA 1 Phase) - All Peak	RD20P	2,181	\$190	\$414,999
Residential (15kVA 1 Phase) - With Off Peak	RD20Q	5,423	\$158	\$855,444
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	RDL20P	899	\$154	\$138,016
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	RDL20Q	1,955	\$128	\$250,772
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	RDL08P	39	\$68	\$2,603
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	RDL08Q	32	\$60	\$1,905
General Single Phase				

Street Lights (1 Phase)	RS001L	1,173	\$18	\$21,620
1 kVA 1 Phase - All Peak	RS001P	138	\$127	\$17,461
8 kVA 1 Phase - All Peak	RS008P	1,119	\$76	\$85,163
8 kVA 1 Phase - With Off Peak	RS008Q	24	\$63	\$1,493
15 kVA 1 Phase - All Peak	RS020P	1,646	\$190	\$313,129
15 kVA 1 Phase - With Off Peak	RS020Q	346	\$158	\$54,556
General Three Phase				
15 kVA 3 Phase - All Peak	RT015P	352	\$143	\$50,166
15 kVA 3 Phase - With Off Peak	RT015Q	14	\$118	\$1,676
30 kVA 3 Phase - All Peak	RT030P	1,817	\$300	\$545,456
30 kVA 3 Phase - With Off Peak	RT030Q	421	\$250	\$105,294
50 kVA 3 Phase - All Peak	RT050P	657	\$729	\$478,452
50 kVA 3 Phase - With Off Peak	RT050Q	514	\$605	\$311,079
75 kVA 3 Phase - All Peak	RT075P	99	\$1,321	\$130,335
75 kVA 3 Phase - With Off Peak	RT075Q	40	\$1,100	\$44,376
100 kVA 3 Phase - All Peak	RT100P	30	\$2,184	\$66,239
100 kVA 3 Phase - With Off Peak	RT100Q	9	\$1,819	\$16,369

8.2 Subtransmission Charges

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

There are two components making up the subtransmission charges:

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

8.2.1 Supply Charge

The subtransmission 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 subtransmission 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 subtransmission 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 TPCL's zone substations is \$17,333,192

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%

8.2.2 Maintenance Charge

The subtransmission maintenance charges for TPC total \$3,343,807

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

Total Energy	50%
Peak Demand	50%

8.2.3 Total Subtransmission Charges

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

Zone Substation	Total Supply Charge	Total Maintenance Charge
Awarua	\$200,101	\$38,709
Bluff	\$486,177	\$94,049
Centre Bush	\$422,334	\$81,699
Conical Hills	\$354,555	\$68,588
Dipton	\$355,916	\$68,851
Edendale	\$346,521	\$74,481
Glenham	\$274,515	\$53,104
Gorge Road	\$387,038	\$74,871
Hillside	\$300,679	\$58,165
Kelso	\$602,141	\$116,482
Kennington	\$234,315	\$45,327
Lumsden	\$723,373	\$139,934
Makarewa	\$380,019	\$73,513
Athol	\$758,332	\$146,697
Mataura	\$376,825	\$72,895
Monowai	\$177,650	\$34,366
Mossburn	\$797,317	\$162,356
NZMP	\$418,476	\$85,213
North Gore	\$286,618	\$55,445
Ohai	\$540,774	\$93,403
Orawia	\$666,331	\$117,181
Otatara	\$315,942	\$61,118
Otautau	\$425,446	\$74,819
White Hill	\$82,445	\$15,949
Riversdale	\$565,479	\$109,390
Riverton	\$500,575	\$96,835
Seaward Bush	\$300,267	\$58,086
South Gore	\$255,919	\$49,507
Te Anau	\$1,513,518	\$292,785
Tokanui	\$405,632	\$78,468
Underwood	\$525,026	\$101,565
Waikiwi	\$581,164	\$112,424
Waikaka	\$344,794	\$66,699
Winton	\$794,724	\$153,737

Colyer RD	\$645,438	\$124,858
Hedgehope	\$522,382	\$101,053
Isla Bank	\$416,135	\$80,500
ICC46	\$48,300	\$10,686

8.2.4 Subtransmission Charges for Individual Customers above 100 kVA

The subtransmission 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	\$74.89	\$29.65	\$8.17	\$1.03	\$1.03
Bluff	\$66.17	\$36.74	\$9.18	\$1.83	\$1.83
Centre Bush	\$79.04	\$82.81	\$22.23	\$3.97	\$3.97
Conical Hills	\$75.83	\$41.05	\$11.14	\$2.64	\$2.64
Dipton	\$166.51	\$237.89	\$59.63	\$12.07	\$12.07
Edendale	\$39.18	\$29.30	\$7.87	\$1.43	\$1.43
Glenham	\$143.90	\$118.43	\$32.14	\$6.43	\$6.43
Gorge Road	\$111.43	\$128.39	\$34.60	\$6.02	\$6.02
Hillside	\$227.35	\$170.01	\$44.89	\$8.78	\$8.78
Kelso	\$100.16	\$59.87	\$16.30	\$3.38	\$3.38
Kennington	\$24.53	\$20.65	\$8.03	\$1.33	\$1.33
Lumsden	\$141.01	\$103.03	\$27.13	\$5.17	\$5.17
Makarewa	\$67.89	\$31.84	\$8.56	\$1.61	\$1.61
Athol	\$333.91	\$237.15	\$69.81	\$15.70	\$15.70
Mataura	\$39.90	\$29.58	\$8.14	\$1.31	\$1.31
Monowai	\$332.45	\$348.92	\$91.36	\$18.84	\$18.84
Mossburn	\$271.29	\$250.04	\$66.91	\$13.96	\$13.96
NZMP	\$11.87	\$5.45	\$13.40	\$0.39	\$0.39
North Gore	\$24.38	\$12.40	\$3.31	\$0.71	\$0.71
Ohai	\$158.74	\$96.48	\$25.63	\$4.55	\$4.55
Orawia	\$161.42	\$103.39	\$28.24	\$5.30	\$5.30
Otatara	\$52.56	\$34.88	\$9.77	\$2.22	\$2.22
Otautau	\$86.07	\$38.61	\$10.68	\$1.90	\$1.90
White Hill	\$102.86	\$485.79	\$81.02	\$16.74	\$16.74
Riversdale	\$79.87	\$65.23	\$17.37	\$3.16	\$3.16
Riverton	\$72.06	\$40.14	\$10.76	\$2.18	\$2.18
Seaward Bush	\$28.82	\$11.38	\$2.94	\$0.61	\$0.61
South Gore	\$17.00	\$10.67	\$2.80	\$0.52	\$0.52
Te Anau	\$180.69	\$100.11	\$26.15	\$5.27	\$5.27
Tokanui	\$178.61	\$240.30	\$59.86	\$12.48	\$12.48
Underwood	\$35.12	\$23.57	\$6.34	\$0.95	\$0.95
Waikiwi	\$39.55	\$17.07	\$4.69	\$1.00	\$1.00
Waikaka	\$280.54	\$188.30	\$71.20	\$12.23	\$12.23
Winton	\$56.93	\$24.81	\$8.27	\$1.48	\$1.48

Colyer RD	\$52.66	\$39.03	\$12.15	\$1.36	\$1.36
Hedgehope	\$233.45	\$233.93	\$47.18	\$19.47	\$19.47
Isla Bank	\$155.83	\$465.88	\$122.64	\$38.78	\$38.78

8.2.5 Subtransmission 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	Supply	Supply	Maintenance	Maintenance
	Charge per	Charge	Charge	Charge	Charge per
	kVA	per	per Winter	per Domestic	kVA Winter
	Peak Demand	Peak MWh	Day MWh	Total MWh	Peak Demand
Residential and General	\$82.77	\$57.83	\$11.80	\$3.04	\$3.04

8.3 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 and 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	Wallacetown
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

8.3.1 Supply Charge

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

The total supply charge for TPCL totals \$16,894,688.

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

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

8.3.2 Maintenance Charge

The maintenance charges for TPCL total \$5,959,344.

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

Total Energy	50%
Contract Capacity	50%

8.3.3 Transformer Charge

The supply and maintenance transformer charges for TPCL total \$6,934,928.

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

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

8.3.4 Locational Individual Distribution Charges

(a)	Distribution Supply charge	\$3.39 per kVA km Urban
(b)	Distribution Supply charge	\$0.75 per kVA km Rural
(c)	Distribution Transformer charge	\$349 per Transformer
(d)	Distribution Maintenance charge	\$2,264 per km Urban
(e)	Distribution Maintenance charge	\$973 per km Rural

- (f) Maintenance Transformer charge \$866 per Transformer for capacity $\geq 75\text{kVA}$
- (g) Maintenance Transformer charge \$50.46 per Transformer for capacity $< 75\text{kVA}$

The Transformer charge of \$349 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%.

8.3.5 Distribution Charges for Residential and General Customers

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

TPC Urban

- (a) Distribution Supply charge \$7.55 per kVA Contract Capacity
- (b) Distribution Supply charge \$33.21 per Winter Peak MWh
- (c) Distribution Supply charge \$6.56 per Winter Day MWh
- (d) Distribution Maintenance charge \$1.51 per Domestic Total MWh
- (e) Distribution Maintenance charge \$1.51 per Commercial Total MWh
- (f) Distribution Maintenance charge \$1.01 per kVA Contract Capacity
- (g) Distribution Transformer charge \$11.25 per kVA AD Transformer capacity

TPC Rural

- (a) Distribution Supply charge \$44.46 per kVA Contract Capacity
- (b) Distribution Supply charge \$128.00 per Winter Peak MWh
- (c) Distribution Supply charge \$26.31 per Winter Day MWh
- (d) Distribution Maintenance charge \$11.76 per Domestic Total MWh
- (e) Distribution Maintenance charge \$11.76 per Commercial Total MWh

- | | | |
|-----|---------------------------------|---|
| (f) | Distribution Maintenance charge | \$11.54 per kVA Contract Capacity |
| (g) | Distribution Transformer charge | \$11.25 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.

8.4 Overheads

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

These costs include the following:

- (a) Executive Management
- (b) Directors Fees
- (c) System Control
- (d) Miscellaneous overheads, e.g. buildings, etc.

These charges are split equally over the total customer base.

The total overhead costs are \$4,729,527

The charge per customer is \$127.91

8.5 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.

8.6 TPCL Charges

8.6.1 TPCL Revenue for Individual Customers

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

Consumer Capacity kVA	Subtransmission Charge	Distribution Charge	Overhead Charge	Total TPCL Charge
30	\$2,641.33	\$3,395.47	\$255.81	\$6,292.61
50	\$53,225.72	\$22,410.37	\$2,430.20	\$78,066.30
75	\$17,965.64	\$13,465.68	\$1,151.15	\$32,582.46
100	\$92,886.58	\$90,817.93	\$4,348.78	\$188,053.29
150	\$218,630.96	\$198,136.77	\$7,802.23	\$424,569.97
200	\$370,827.86	\$195,827.66	\$6,778.99	\$573,434.51
300	\$398,911.99	\$151,373.26	\$5,116.22	\$555,401.47
500	\$1,453,022.60	\$116,173.17	\$2,813.92	\$1,572,009.69
750	\$130,247.89	\$44,824.23	\$1,279.05	\$176,351.17
1000	\$178,036.50	\$37,729.31	\$767.43	\$216,533.25
1250	\$58,879.00	\$16,358.21	\$255.81	\$75,493.03
1500	\$125,139.09	\$46,763.69	\$511.62	\$172,414.40
1800	\$72,006.83	\$21,337.09	\$127.91	\$93,471.83
2000	\$135,887.77	\$8,111.62	\$255.81	\$144,255.19
3000	\$8,285.33	\$1,078.79	\$127.91	\$9,492.03
3500	\$174,712.77	\$15,265.53	\$127.91	\$190,106.20
4000	\$91,862.76	\$642,110.53	\$127.91	\$734,101.19
4500	\$3,656.68	\$1,728.93	\$127.91	\$5,513.51
5000	\$183,207.61	\$2,880.05	\$127.91	\$186,215.56
6000	\$489,800.21	\$62,131.95	\$127.91	\$552,060.07
10000	\$564,494.88	\$4,750.00	\$127.91	\$569,372.78
13000	\$216,261.50	\$0.00	\$0.00	\$216,261.50
30200	\$405,455.75	\$0.00	\$0.00	\$405,455.75

8.6.2 TPCL Revenue for Group Customers

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

Consumer Capacity	Code	Number of Connections	Subtransmission Charge	Distribution Charge	Overheads	Total TPCL Revenue
TPC Urban						
Residential Standard						
Small Residential (8kVA 1 Phase) - All Peak	UD08P	106	\$15,282.93	\$14,176.07	\$13,515.34	\$42,974.33
Small Residential (8kVA 1 Phase) - With Off Peak	UD08Q	200	\$24,667.95	\$22,802.94	\$25,538.44	\$73,009.33
Residential (15kVA 1 Phase) - All Peak	UD20P	2,023	\$731,302.81	\$678,338.13	\$258,688.66	\$1,668,329.60
Residential (15kVA 1 Phase) - With Off Peak	UD20Q	7,293	\$2,252,546.12	\$2,082,243.64	\$932,814.03	\$5,267,603.79
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	UDL20P	1,665	\$502,639.69	\$503,652.57	\$212,962.48	\$1,219,254.74
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	UDL20Q	5,335	\$1,373,475.60	\$1,372,997.91	\$682,375.27	\$3,428,848.78
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	UDL08P	67	\$8,955.70	\$8,574.39	\$8,569.66	\$26,099.75
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	UDL08Q	139	\$16,428.54	\$15,455.29	\$17,746.87	\$49,630.70
General Single Phase						
Street Lights (1 Phase)	US001L	5,330	\$189,482.85	\$109,698.24	\$13,634.71	\$312,815.80
1 kVA 1 Phase - All Peak	US001P	30	\$6,793.82	\$3,607.67	\$3,815.84	\$14,217.34
8 kVA 1 Phase - All Peak	US008P	239	\$34,567.39	\$32,063.84	\$30,569.39	\$97,200.62
8 kVA 1 Phase - With Off Peak	US008Q	14	\$1,750.23	\$1,617.90	\$1,811.99	\$5,180.13
15 kVA 1 Phase - All Peak	US020P	376	\$135,955.43	\$126,108.84	\$48,092.43	\$310,156.70

15 kVA 1 Phase - With Off Peak	US020Q	96	\$29,599.48	\$27,361.63	\$12,257.60	\$69,218.71
General Three Phase						
15 kVA 3 Phase - All Peak	UT015P	108	\$29,243.07	\$27,125.14	\$13,792.46	\$70,160.68
15 kVA 3 Phase - With Off Peak	UT015Q	10	\$2,316.48	\$2,141.34	\$1,279.05	\$5,736.88
30 kVA 3 Phase - All Peak	UT030P	558	\$324,745.05	\$312,512.85	\$71,307.26	\$708,565.16
30 kVA 3 Phase - With Off Peak	UT030Q	96	\$47,802.06	\$45,873.80	\$12,300.24	\$105,976.09
50 kVA 3 Phase - All Peak	UT050P	325	\$452,574.54	\$417,211.55	\$41,505.30	\$911,291.39
50 kVA 3 Phase - With Off Peak	UT050Q	76	\$90,509.10	\$83,172.42	\$9,720.81	\$183,402.33
75 kVA 3 Phase - All Peak	UT075P	96	\$246,853.70	\$232,048.00	\$12,321.55	\$491,223.25
75 kVA 3 Phase - With Off Peak	UT075Q	17	\$36,444.85	\$34,164.80	\$2,131.76	\$72,741.41
100 kVA 3 Phase - All Peak	UT100P	18	\$77,661.77	\$72,562.58	\$2,344.93	\$152,569.29
100 kVA 3 Phase - With Off Peak	UT100Q	3	\$10,844.55	\$10,104.73	\$383.72	\$21,332.99
TPC Rural Residential						
Small Residential (8kVA 1 Phase) - All Peak	RD08P	120	\$17,404.22	\$50,901.11	\$15,391.28	\$83,696.62
Small Residential (8kVA 1 Phase) - With Off Peak	RD08Q	91	\$11,263.25	\$33,197.80	\$11,660.71	\$56,121.76
Residential (15kVA 1 Phase) - All Peak	RD20P	2,181	\$788,553.55	\$2,306,236.36	\$278,940.34	\$3,373,730.25
Residential (15kVA 1 Phase) - With Off Peak	RD20Q	5,423	\$1,674,892.98	\$4,936,655.84	\$693,598.97	\$7,305,147.79
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	RDL20P	899	\$271,395.24	\$810,233.37	\$114,986.95	\$1,196,615.56
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	RDL20Q	1,955	\$503,307.37	\$1,510,142.02	\$250,055.04	\$2,263,504.42
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	RDL08P	39	\$5,146.19	\$15,259.10	\$4,924.36	\$25,329.65
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	RDL08Q	32	\$3,749.46	\$11,094.52	\$4,050.34	\$18,894.31

General Single Phase						
Street Lights (1 Phase)	RS001L	1,173	\$41,700.45	\$91,803.23	\$3,000.66	\$136,504.34
1 kVA 1 Phase - All Peak	RS001P	138	\$31,388.22	\$70,205.04	\$17,629.63	\$119,222.88
8 kVA 1 Phase - All Peak	RS008P	1,119	\$161,820.71	\$473,267.55	\$143,104.82	\$778,193.08
8 kVA 1 Phase - With Off Peak	RS008Q	24	\$2,923.91	\$8,618.08	\$3,027.09	\$14,569.08
15 kVA 1 Phase - All Peak	RS020P	1,646	\$594,985.80	\$1,740,120.11	\$210,468.32	\$2,545,574.23
15 kVA 1 Phase - With Off Peak	RS020Q	346	\$106,815.51	\$314,832.91	\$44,233.95	\$465,882.37
General Three Phase						
15 kVA 3 Phase - All Peak	RT015P	352	\$95,322.47	\$278,784.06	\$44,958.75	\$419,065.27
15 kVA 3 Phase - With Off Peak	RT015Q	14	\$3,281.68	\$9,672.58	\$1,811.99	\$14,766.25
30 kVA 3 Phase - All Peak	RT030P	1,817	\$1,058,115.48	\$3,103,717.76	\$232,340.15	\$4,394,173.39
30 kVA 3 Phase - With Off Peak	RT030Q	421	\$209,268.63	\$617,635.58	\$53,848.17	\$880,752.38
50 kVA 3 Phase - All Peak	RT050P	657	\$915,841.65	\$2,636,409.70	\$83,991.21	\$3,636,242.56
50 kVA 3 Phase - With Off Peak	RT050Q	514	\$612,325.84	\$1,775,765.94	\$65,764.69	\$2,453,856.47
75 kVA 3 Phase - All Peak	RT075P	99	\$252,832.86	\$726,386.04	\$12,620.00	\$991,838.89
75 kVA 3 Phase - With Off Peak	RT075Q	40	\$88,196.54	\$255,009.31	\$5,158.85	\$348,364.70
100 kVA 3 Phase - All Peak	RT100P	30	\$128,494.94	\$367,192.75	\$3,879.80	\$499,567.48
100 kVA 3 Phase - With Off Peak	RT100Q	9	\$32,533.65	\$93,569.71	\$1,151.15	\$127,254.50

8.7 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.

8.8 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 2022-23 year. We also outline the change in revenue compared with the previous year:

	Group customers	Individual customers	Total
2021-22 Revenue			
Distribution	\$48,684,251	\$7,819,915	\$56,504,166
Transmission	\$7,247,209	\$5,540,211	\$12,787,420
Total	\$55,931,460	\$13,360,126	\$69,291,586
Previous year			
Distribution	\$46,788,204	\$7,307,354	\$54,095,558
Transmission	\$7,771,945	\$4,849,555	\$12,621,500
Total	\$54,560,149	\$12,156,909	\$66,717,058

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 an increase in Transpower's connection charges and increased co-incident peak demands with Transpower's highest 100 peaks for the lower south island. ACOT payments to distributed generators also increased.

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	2	\$7,802	\$3,901
50	19	\$122,920	\$6,469
75	9	\$45,404	\$5,045
100	34	\$243,836	\$7,172
150	61	\$613,697	\$10,061
200	53	\$776,545	\$14,652
300	40	\$948,935	\$23,723
500	24	\$1,895,854	\$78,994
750	10	\$373,367	\$37,337
1000	6	\$501,641	\$83,607
1250	2	\$173,082	\$86,541
1500	4	\$293,015	\$73,254
1800	1	\$166,758	\$166,758
2000	2	\$345,687	\$172,844
3000	1	\$20,949	\$20,949
3500	1	\$344,763	\$344,763
4000	1	\$1,096,088	\$1,096,088
4500	1	\$11,312	\$11,312
5000	1	\$350,228	\$350,228
9000	1	\$1,329,869	\$1,329,869
10000	1	\$1,208,335	\$1,208,335
13000	1	\$526,384	\$526,384
30200	1	\$1,821,109	\$1,821,109

8.8.1 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	Line Charge Revenue per Consumer Group
TPC Urban			
Residential Standard			
Small Residential (8kVA 1 Phase) - All Peak	UD08P	106	\$51,017
Small Residential (8kVA 1 Phase) - With Off Peak	UD08Q	200	\$85,608
Residential (15kVA 1 Phase) - All Peak	UD20P	2,023	\$2,053,199
Residential (15kVA 1 Phase) - With Off Peak	UD20Q	7,293	\$6,418,081
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	UDL20P	1,665	\$1,474,869
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	UDL20Q	5,335	\$4,113,181
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	UDL08P	67	\$30,630
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	UDL08Q	139	\$57,977
General Single Phase			
Street Lights (1 Phase)	US001L	5,330	\$411,056
1 kVA 1 Phase - All Peak	US001P	30	\$17,997
8 kVA 1 Phase - All Peak	US008P	239	\$115,393
8 kVA 1 Phase - With Off Peak	US008Q	14	\$6,074
15 kVA 1 Phase - All Peak	US020P	376	\$381,707
15 kVA 1 Phase - With Off Peak	US020Q	96	\$84,337
General Three Phase			
15 kVA 3 Phase - All Peak	UT015P	108	\$85,551
15 kVA 3 Phase - With Off Peak	UT015Q	10	\$6,920
30 kVA 3 Phase - All Peak	UT030P	558	\$875,970
30 kVA 3 Phase - With Off Peak	UT030Q	96	\$130,028
50 kVA 3 Phase - All Peak	UT050P	325	\$1,147,724
50 kVA 3 Phase - With Off Peak	UT050Q	76	\$229,384
75 kVA 3 Phase - All Peak	UT075P	96	\$618,476
75 kVA 3 Phase - With Off Peak	UT075Q	17	\$91,079
100 kVA 3 Phase - All Peak	UT100P	18	\$192,604
100 kVA 3 Phase - With Off Peak	UT100Q	3	\$26,789

Consumer Capacity	Code	Number of Connections	Line Charge Revenue per Consumer Group
TPC Rural			
Residential			
Small Residential (8kVA 1 Phase) - All Peak	RD08P	120	\$92,856
Small Residential (8kVA 1 Phase) - With Off Peak	RD08Q	91	\$61,874
Residential (20kVA 1 Phase) - All Peak	RD20P	2,181	\$3,788,730
Residential (20kVA 1 Phase) - With Off Peak	RD20Q	5,423	\$8,160,592
Residential Low Fixed Charge Option (20kVA 1 Phase) - All Peak	RDL20P	899	\$1,334,632
Residential Low Fixed Charge Option (20kVA 1 Phase) - With Off Peak	RDL20Q	1,955	\$2,514,276
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	RDL08P	39	\$27,933
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	RDL08Q	32	\$20,799
General Single Phase			
Street Lights (1 Phase)	RS001L	1,173	\$158,125
1 kVA 1 Phase - All Peak	RS001P	138	\$136,683
8 kVA 1 Phase - All Peak	RS008P	1,119	\$863,356
8 kVA 1 Phase - With Off Peak	RS008Q	24	\$16,062
20 kVA 1 Phase - All Peak	RS020P	1,646	\$2,858,703
20 kVA 1 Phase - With Off Peak	RS020Q	346	\$520,438
General Three Phase			
15 kVA 3 Phase - All Peak	RT015P	352	\$469,232
15 kVA 3 Phase - With Off Peak	RT015Q	14	\$16,442
30 kVA 3 Phase - All Peak	RT030P	1,817	\$4,939,629
30 kVA 3 Phase - With Off Peak	RT030Q	421	\$986,047
50 kVA 3 Phase - All Peak	RT050P	657	\$4,114,695
50 kVA 3 Phase - With Off Peak	RT050Q	514	\$2,764,935
75 kVA 3 Phase - All Peak	RT075P	99	\$1,122,174
75 kVA 3 Phase - With Off Peak	RT075Q	40	\$392,741
100 kVA 3 Phase - All Peak	RT100P	30	\$565,806
100 kVA 3 Phase - With Off Peak	RT100Q	9	\$143,624

9. HOW FIXED AND VARIABLE PRICES ARE SET

Individual Customers

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

For the individual line charge 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 cents per Day kWh.

In the case of all non-half hour metered individual line charge installations the variable charge is a standard charge GXP rate of \$0.09347 per Peak kWh, \$0.08345 per Shoulder kWh and \$0.01 per Night kWh. The fixed charge is then calculated as the difference between the total charge and the total variable charge. This method of calculating the fixed charge accounts for the fact that some installations have negative fixed charges.

Residential and General Customers

This year we have introduced installed capacity and TOU variable pricing for the Residential and General customers.

The introduction of TOU variable pricing is a way to move to more cost reflective and service based pricing and is a way of encouraging efficient network use and investment, for the long term benefit of our customers. By efficient use of the network, we mean increasing the use of the network within its existing capacity, including by shifting load outside of peak periods, and incentivising new load to also go onto the network outside of peak periods. More energy delivered across the network without incurring costly upgrades means lower cost per unit of energy delivered for all of us.

TOU pricing periods are:

Peak period, which is defined as 7am to 11am and 5pm to 9pm

Shoulder period, which is defined as 11am to 5pm and 9pm to 11pm

Night period 11pm to 7am.

TOU enables us to increase prices at times when there is congestion on the network, and reduce them at times when there is plenty of capacity. This sends a price signal to transfer load outside of congestion periods, and incentivises growth in consumption at times when there is no incremental cost for us to deliver the additional energy.

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:

- 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.

- 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%.
- 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 subtransmission 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 cheaper during, Shoulder and Night time periods, 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.
- 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 and General resulted in a necessity for a uniform variable charge and individual fixed charges for each segment. TPCL 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.

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 2022-23 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.

10. NON-STANDARD CONTRACTS

TPCL is fielding a large number of enquiries from new and existing business in relation to the decarbonisation of existing load or new load projects. The size of these projects are step changes rather than incremental changes for the network.

In cases like these the standard methodology for the determination of line charges for large customers, 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.

TPCL contracts directly with four ICP's for the line services provided to their large industrial sites. This is essentially because the value of TPCL's 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.

10.1 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.

10.1.1 Target revenue from ICPs on Non-standard contracts

The total target revenue from ICPs on Non-standard Contracts for the 2022/2023 year is \$5.80m.

11. DISTRIBUTED GENERATION

TPCLs 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 TPCL.

In other situations there may be incremental costs incurred by TPCL due to investigation and network modifications required. As with all customers seeking connection to the TPCL 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.

11.1 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 TPCL's electricity network are:

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

11.2 Capital Contributions

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

11.3 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.

11.4 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.

11.5 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 Authority's 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 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 TPCL 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.

11.6 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).

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 Commission's information disclosure requirements:

IDD Section	Key sections of methodology demonstrating compliance
2.4.1 (1)	Sections 3, 6-9
2.4.1 (2)	Section 3.2
2.4.1 (3)	Sections 10 and 11
2.4.1 (4)	Section 3.3
2.4.2	Section 4
2.4.3 (1)	Section 7
2.4.3 (2)	Section 5
2.4.3 (3)	Section 6
2.4.3 (4)	Section 6
2.4.3 (5) (a) , (b)	Section 3 and 8
2.4.3 (6)	Section 3.2
2.4.3 (7)	Sections 7 and 8
2.4.3 (8)	Appendix 2
2.4.4 (1-3)	Section 4
2.4.5 (1) (a) to (c)	Section 10
2.4.5 (2) (a) and (b)	Section 10
2.4.5 (3) (a) and (b)	Section 11

APPENDIX 2: LINE CHARGE TABLES

Line Charge Breakdown for Individual Customers

ICP Number	Contract Capacity kVA	Trans Power Charge	Subtransmission Charge	Distribution Charge	Overhead Charge	Total Line Charge	Fixed Charge per annum	Variable Charge per Day MWh
800105TP-315	10,000	\$638,962	\$564,495	\$4,750	\$127.91	\$1,208,335	\$604,168	\$20.73
800107TP-390	200	\$10,716	\$7,911	\$3,228	\$127.91	\$21,983	\$10,991	\$17.88
800116TP-578	3,000	\$11,457	\$8,285	\$1,079	\$127.91	\$20,949	\$10,475	\$24.82
800117TP-93D	750	\$64	\$65	\$270	\$127.91	\$526	\$526	\$0.00
8001275TP-A4C	150	\$3,836	\$6,182	\$2,534	\$127.91	\$12,679	\$6,340	\$34.84
800127TP-EC5	300	\$3,831	\$3,776	\$3,053	\$127.91	\$10,787	\$5,394	\$30.81
800128TP-11B	100	\$17	\$196	\$2,520	\$127.91	\$2,861	\$2,861	\$0.00
800134TP-8A8	5,000	\$164,012	\$183,208	\$2,880	\$127.91	\$350,228	\$175,114	\$22.68
8001365TP-9E5	750	\$42,340	\$30,977	\$368	\$127.91	\$73,813	\$36,907	\$19.43
800139TP-7F3	300	\$8,994	\$5,258	\$2,799	\$127.91	\$17,179	\$8,589	\$41.64
118447TP-ECC	150	\$4,236	\$3,799	\$2,533	\$127.91	\$10,696	\$5,348	\$51.57
800146TP-D70	30,200	\$1,415,653	\$405,456	\$0	\$0.00	\$1,821,109	\$0	\$0.00
6375156TP-218	200	\$479	\$2,398	\$3,696	\$127.91	\$6,701	\$3,351	\$63.84
615297TP-AA3	50	\$1,885	\$2,611	\$1,918	\$127.91	\$6,542	\$3,271	\$46.46
502013TP-4D1	200	\$2,874	\$1,165	\$2,559	\$127.91	\$6,726	\$2,193	\$93.47
4031015TP-9AA	300	\$17,686	\$43,702	\$2,370	\$127.91	\$63,885	\$63,885	\$0.00
382896TP-29B	200	\$277	\$5,302	\$3,372	\$127.91	\$9,079	\$9,079	\$0.00
800186TP-A9F	1,250	\$25,874	\$38,615	\$14,397	\$127.91	\$79,013	\$39,507	\$29.18
244381TP-3EE	75	\$124	\$586	\$1,797	\$127.91	\$2,634	\$2,634	\$0.00

1419275TP-57D	100	\$1,650	\$3,635	\$2,823	\$127.91	\$8,236	\$4,746	\$93.47
1819183TP-528	150	\$1,426	\$271	\$5,147	\$127.91	\$6,972	\$3,486	\$86.97
333040TP-1F2	200	\$615	\$10,128	\$3,896	\$127.91	\$14,767	\$14,767	\$0.00
482021TP-8E5	150	\$8,747	\$7,159	\$2,845	\$127.91	\$18,879	\$9,440	\$33.31
643886TP-0F5	200	\$5,763	\$6,115	\$2,863	\$127.91	\$14,869	\$7,434	\$89.09
569933TP-D35	300	\$12,253	\$6,191	\$3,426	\$127.91	\$21,998	\$10,999	\$19.25
329419TP-D0B	300	\$969	\$1,729	\$4,347	\$127.91	\$7,172	\$3,586	\$61.60
100109TP-F16	100	\$4,180	\$5,748	\$3,537	\$127.91	\$13,593	\$6,797	\$67.73
800158TP-446	500	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0.00
8001315TP-CB8	1,800	\$73,286	\$72,007	\$21,337	\$127.91	\$166,758	\$83,379	\$22.30
8001316TP-078	1,500	\$38,473	\$19,218	\$25,897	\$127.91	\$83,717	\$41,858	\$28.13
391396TP-B94	100	\$1,779	\$3,163	\$3,551	\$127.91	\$8,621	(\$494)	\$93.47
437074TP-48B	75	\$1,373	\$2,480	\$1,187	\$127.91	\$5,168	\$2,584	\$92.76
437078TP-795	50	\$1,464	\$854	\$933	\$127.91	\$3,379	\$1,690	\$41.77
800155TP-B1D	300	\$8,293	\$1,993	\$5,675	\$127.91	\$16,089	\$8,045	\$18.23
1421365TP-AF8	200	\$3,098	\$6,131	\$4,931	\$127.91	\$14,288	\$14,288	\$0.00
338414TP-B11	100	\$491	\$421	\$3,827	\$127.91	\$4,867	\$2,434	\$94.84
5020273TP-22A	300	\$18,070	\$4,612	\$2,764	\$127.91	\$25,574	\$12,787	\$22.35
482027TP-96A	200	\$1,392	\$1,713	\$3,080	\$127.91	\$6,312	\$3,156	\$26.77
105192TP-905	300	\$10,444	\$9,172	\$3,870	\$127.91	\$23,614	\$11,807	\$107.34
185015TP-7A4	200	\$1,672	\$818	\$3,210	\$127.91	\$5,828	\$2,914	\$64.96
543645TP-165	75	\$1,579	\$2,739	\$1,683	\$127.91	\$6,129	(\$5,467)	\$93.47
5678995TP-502	200	\$6,489	\$2,847	\$2,503	\$127.91	\$11,966	\$5,983	\$26.30
800133TP-562	4,500	\$5,798	\$3,657	\$1,729	\$127.91	\$11,312	\$5,656	\$29.08
3193295TP-E03	200	\$466	\$4,513	\$3,944	\$127.91	\$9,051	\$4,526	\$62.23
141326TP-DAF	200	\$8,010	\$13,198	\$3,382	\$127.91	\$24,718	\$12,359	\$28.99
800163TP-D6A	300	\$1,789	\$4,904	\$4,137	\$127.91	\$10,958	\$5,479	\$69.36

444030TP-F7D	200	\$7,307	\$5,721	\$3,055	\$127.91	\$16,211	\$8,106	\$35.72
448899TP-2BE	100	\$687	\$1,333	\$1,788	\$127.91	\$3,936	\$2,721	\$93.47
427512TP-710	150	\$1,228	\$1,171	\$2,917	\$127.91	\$5,444	\$2,722	\$98.57
549615TP-72D	300	\$14,433	\$6,946	\$3,244	\$127.91	\$24,751	\$12,375	\$25.86
333049TP-FA3	150	\$748	\$10,171	\$3,330	\$127.91	\$14,378	\$14,378	\$0.00
3330513TP-914	150	\$445	\$8,594	\$3,432	\$127.91	\$12,599	\$12,599	\$0.00
240526TP-6BD	150	\$1,484	\$634	\$5,102	\$127.91	\$7,349	\$77	\$93.47
8001505TP-013	300	\$6,118	\$2,775	\$7,253	\$127.91	\$16,273	(\$21,582)	\$93.47
1421599TP-FF7	200	\$606	\$1,231	\$4,773	\$127.91	\$6,737	\$3,369	\$22.60
8001801TP-411	1,000	\$46,699	\$32,368	\$8,780	\$127.91	\$87,974	\$43,987	\$22.59
8001815TP-FB6	1,000	\$68,927	\$55,558	\$8,780	\$127.91	\$133,393	\$66,696	\$41.50
800181TP-755	200	\$8,267	\$3,662	\$3,289	\$127.91	\$15,346	\$7,673	\$53.29
612680TP-5A5	100	\$2,912	\$3,558	\$3,712	\$127.91	\$10,310	\$5,155	\$38.99
175065TP-765	75	\$1,257	\$1,571	\$2,113	\$127.91	\$5,068	\$2,534	\$44.67
4004001TP-401	150	\$749	\$3,410	\$2,614	\$127.91	\$6,900	\$1,328	\$93.47
5290993TP-D4F	150	\$2,275	\$1,448	\$2,337	\$127.91	\$6,187	(\$2,014)	\$93.47
166730TP-721	150	\$836	\$643	\$2,003	\$127.91	\$3,609	\$1,805	\$137.45
632751TP-46B	150	\$1,858	\$1,500	\$2,721	\$127.91	\$6,207	(\$1,113)	\$93.47
318907TP-1B9	100	\$162	\$1,971	\$2,778	\$127.91	\$5,039	\$5,039	\$0.00
3193735TP-319	200	\$985	\$18,021	\$3,438	\$127.91	\$22,571	\$22,571	\$0.00
319398TP-A2A	75	\$132	\$1,525	\$1,828	\$127.91	\$3,613	\$3,613	\$0.00
3336978TP-1FC	100	\$257	\$2,787	\$3,661	\$127.91	\$6,832	\$6,832	\$0.00
141806TP-3F4	150	\$19	\$760	\$2,868	\$127.91	\$3,775	\$3,775	\$0.00
313732TP-2E5	200	\$5,054	\$14,078	\$3,151	\$127.91	\$22,411	(\$4,331)	\$93.47
249946TP-9E1	150	\$2,305	\$3,295	\$2,713	\$127.91	\$8,440	\$4,220	\$18.44
249967TP-8F1	100	\$56	\$839	\$2,609	\$127.91	\$3,632	\$3,632	\$0.00
249945TP-521	150	\$2,215	\$3,446	\$2,824	\$127.91	\$8,613	\$4,306	\$22.23

362484TP-9C2	200	\$9,435	\$8,302	\$1,773	\$127.91	\$19,638	\$9,819	\$27.43
404955TP-F5E	100	\$297	\$3,658	\$2,148	\$127.91	\$6,231	\$3,116	\$35.13
405350TP-9BB	150	\$2,488	\$11,595	\$2,530	\$127.91	\$16,741	(\$5,561)	\$93.47
405508TP-5A1	200	\$3,143	\$15,283	\$3,071	\$127.91	\$21,625	(\$9,464)	\$93.47
209549TP-1A6	100	\$164	\$1,970	\$3,134	\$127.91	\$5,396	\$2,698	\$55.73
800153TP-A92	500	\$19,057	\$6,608	\$8,314	\$127.91	\$34,108	\$17,054	\$29.19
116195TP-ECE	150	\$4,758	\$2,292	\$4,175	\$127.91	\$11,354	(\$6,590)	\$93.47
172559TP-2E6	150	\$589	\$3,892	\$4,514	\$127.91	\$9,124	\$6,140	\$93.47
162713TP-034	150	\$4,208	\$7,590	\$7,030	\$127.91	\$18,956	\$8,783	\$93.47
5791985TP-A1E	150	\$4,217	\$3,304	\$2,564	\$127.91	\$10,213	\$2,373	\$93.47
690202TP-00E	50	\$5,142	\$7,076	\$706	\$127.91	\$13,052	\$6,526	\$32.16
6902235TP-F5B	50	\$84	\$210	\$1,041	\$127.91	\$1,463	\$731	\$265.49
690247TP-FE4	50	\$4,115	\$5,558	\$1,670	\$127.91	\$11,471	\$5,735	\$25.88
690237TP-AB9	50	\$11,022	\$18,870	\$1,637	\$127.91	\$31,657	\$15,828	\$25.11
690250TP-883	500	\$11,336	\$7,111	\$9,904	\$127.91	\$28,479	\$14,239	\$15.95
318943TP-216	200	\$242	\$8,055	\$3,309	\$127.91	\$11,735	\$5,867	\$88.11
243366TP-0FE	200	\$948	\$989	\$4,936	\$127.91	\$7,001	\$3,500	\$64.49
141848TP-2CA	100	\$82	\$464	\$3,158	\$127.91	\$3,832	\$1,916	\$27.48
3312316TP-8D0	200	\$1,907	\$16,501	\$4,437	\$127.91	\$22,972	\$16,036	\$93.47
166724TP-C86	500	\$41,090	\$10,816	\$3,942	\$127.91	\$55,977	\$27,988	\$15.49
166727TP-046	200	\$955	\$214	\$2,627	\$127.91	\$3,924	\$1,962	\$48.10
241126TP-B1C	150	\$5,232	\$1,107	\$3,909	\$127.91	\$10,376	\$5,188	\$48.82
690224TP-CD4	150	\$2,620	\$595	\$2,335	\$127.91	\$5,678	\$2,839	\$34.92
6902265TP-753	100	\$14	\$181	\$2,195	\$127.91	\$2,517	\$1,259	\$97.45
690249TP-C7F	200	\$747	\$160	\$2,656	\$127.91	\$3,692	\$1,846	\$54.63
250351TP-0CD	300	\$10,524	\$3,176	\$5,189	\$127.91	\$19,018	\$9,509	\$29.22
177096TP-8F2	200	\$9,361	\$2,616	\$3,396	\$127.91	\$15,501	\$7,750	\$31.02

800151TP-A17	100	\$527	\$879	\$2,513	\$127.91	\$4,047	\$777	\$93.47
240375TP-473	150	\$5,293	\$1,829	\$3,058	\$127.91	\$10,308	(\$8,306)	\$93.47
517704TP-375	150	\$4,014	\$3,228	\$2,626	\$127.91	\$9,997	\$1,982	\$93.47
637250TP-A0B	750	\$4,180	\$7,146	\$6,451	\$127.91	\$17,904	\$8,952	\$25.15
3193724TP-5F1	300	\$739	\$13,639	\$4,281	\$127.91	\$18,787	\$18,787	\$0.00
162358TP-044	150	\$85	\$614	\$3,162	\$127.91	\$3,989	\$1,994	\$22.72
141929TP-87B	200	\$3,124	\$6,132	\$3,659	\$127.91	\$13,044	\$1,130	\$93.47
6222490TP-205	500	\$2,289	\$1,914	\$6,725	\$127.91	\$11,056	\$5,528	\$18.38
482074TP-DA2	200	\$4,735	\$3,360	\$3,441	\$127.91	\$11,664	\$5,832	\$47.49
8001245TP-DB4	500	\$17,025	\$21,638	\$5,191	\$127.91	\$43,981	\$21,991	\$46.86
8001236TP-429	150	\$2,162	\$479	\$3,066	\$127.91	\$5,836	\$2,918	\$45.68
8001876TP-C86	300	\$5,998	\$3,404	\$4,438	\$127.91	\$13,969	(\$1,873)	\$93.47
8001235TP-8E9	200	\$4,599	\$2,869	\$3,582	\$127.91	\$11,178	\$7,443	\$93.47
625837TP-99A	500	\$8,997	\$5,114	\$3,718	\$127.91	\$17,957	\$8,978	\$51.63
555205TP-2E0	100	\$3,498	\$3,864	\$2,470	\$127.91	\$9,960	\$4,980	\$26.59
556467TP-973	1,000	\$12,477	\$12,343	\$5,007	\$127.91	\$29,955	\$14,977	\$11.70
569640TP-BA7	300	\$2,709	\$2,782	\$3,486	\$127.91	\$9,105	\$4,553	\$52.84
800103TP-29A	300	\$7,991	\$5,025	\$2,951	\$127.91	\$16,095	\$8,047	\$24.14
800114TP-5FD	750	\$25,235	\$24,208	\$5,372	\$127.91	\$54,943	\$27,471	\$20.11
521000TP-991	50	\$1,427	\$1,768	\$757	\$127.91	\$4,079	\$2,039	\$25.70
5210031TP-3F9	100	\$3,167	\$4,234	\$1,919	\$127.91	\$9,449	\$4,724	\$25.98
564570TP-57C	50	\$208	\$235	\$723	\$127.91	\$1,294	\$647	\$114.43
5791875TP-30D	200	\$7,300	\$3,310	\$2,719	\$127.91	\$13,456	\$6,728	\$23.85
5791016TP-030	50	\$1,851	\$2,251	\$635	\$127.91	\$4,865	\$2,433	\$26.95
800130TP-9A2	300	\$27,020	\$6,945	\$2,916	\$127.91	\$37,009	\$18,505	\$15.60
181975TP-7DD	150	\$6,355	\$1,904	\$3,262	\$127.91	\$11,649	\$5,825	\$18.10
4182832TP-1BD	200	\$6,466	\$29,330	\$3,456	\$127.91	\$39,379	\$7,933	\$93.47

4182836TP-0B7	150	\$828	\$3,789	\$3,192	\$127.91	\$7,936	\$705	\$93.47
418284TP-E36	500	\$18,962	\$32,988	\$6,015	\$127.91	\$58,092	\$29,046	\$115.27
176257TP-8FF	200	\$1,316	\$710	\$2,433	\$127.91	\$4,587	\$2,293	\$38.87
800164TP-0A0	300	\$9,566	\$35,989	\$4,119	\$127.91	\$49,802	\$24,901	\$64.69
319736TP-DAF	200	\$309	\$4,879	\$4,610	\$127.91	\$9,926	\$9,926	\$0.00
180710TP-2C9	150	\$1,875	\$636	\$2,526	\$127.91	\$5,165	(\$179)	\$93.47
8001695TP-CF7	750	\$35,692	\$20,978	\$3,942	\$127.91	\$60,740	\$30,370	\$16.01
208362TP-581	150	\$702	\$3,215	\$2,898	\$127.91	\$6,942	\$2,609	\$93.47
800147TP-135	150	\$8,771	\$2,772	\$2,254	\$127.91	\$13,925	\$6,963	\$20.79
800150TP-652	100	\$2,878	\$5,343	\$2,523	\$127.91	\$10,871	\$1,564	\$93.47
142817TP-7FC	150	\$624	\$505	\$2,744	\$127.91	\$4,001	\$1,783	\$93.47
175412TP-3F3	4,000	\$183,112	\$91,863	\$642,111	\$127.91	\$917,213	\$0	\$0.00
181750TP-1CC	200	\$7,743	\$2,110	\$3,319	\$127.91	\$13,300	\$6,650	\$16.95
6204314TP-54A	100	\$1,980	\$3,146	\$2,439	\$127.91	\$7,693	(\$1,676)	\$93.47
589190TP-49A	150	\$4,874	\$3,122	\$2,630	\$127.91	\$10,754	\$5,377	\$37.06
116167TP-E5C	150	\$1,957	\$466	\$2,409	\$127.91	\$4,960	\$2,480	\$46.29
118468TP-C47	100	\$3,131	\$5,060	\$2,046	\$127.91	\$10,365	(\$6,491)	\$93.47
1015827TP-5C5	150	\$4,416	\$9,144	\$3,269	\$127.91	\$16,957	\$7,647	\$93.47
190101TP-AC6	150	\$1,098	\$406	\$3,578	\$127.91	\$5,210	(\$743)	\$93.47
800169TP-FFB	150	\$3,873	\$2,097	\$2,402	\$127.91	\$8,499	\$4,250	\$21.84
400440TP-B34	100	\$1,119	\$1,922	\$1,852	\$127.91	\$5,020	(\$1,006)	\$93.47
364828TP-B0F	150	\$440	\$361	\$3,194	\$127.91	\$4,123	\$2,061	\$80.76
192544TP-A6D	300	\$25,501	\$8,751	\$5,013	\$127.91	\$39,393	\$19,696	\$17.67
426599TP-D2E	500	\$19,826	\$13,167	\$5,614	\$127.91	\$38,735	\$19,367	\$25.03
192519TP-D3E	150	\$4,254	\$1,517	\$3,424	\$127.91	\$9,322	\$335	\$93.47
1186118TP-5A2	200	\$3,021	\$2,165	\$2,529	\$127.91	\$7,843	\$3,921	\$39.03
1186119TP-9E7	300	\$9,906	\$8,387	\$2,859	\$127.91	\$21,279	\$10,640	\$48.35

118615TP-C46	200	\$7,120	\$5,978	\$2,529	\$127.91	\$15,756	(\$10,757)	\$93.47
6204404TP-0E5	1,000	\$55,635	\$26,827	\$4,719	\$127.91	\$87,309	\$43,655	\$25.76
6204405TP-CA0	300	\$13,404	\$5,491	\$2,780	\$127.91	\$21,803	\$10,902	\$27.91
6204407TP-C25	500	\$22,595	\$9,981	\$3,567	\$127.91	\$36,272	\$18,136	\$22.66
6204408TP-3FB	750	\$49,008	\$24,856	\$4,220	\$127.91	\$78,212	\$39,106	\$19.66
620456TP-103	750	\$16,221	\$7,835	\$4,223	\$127.91	\$28,407	\$14,204	\$25.96
8001320TP-60F	300	\$4,301	\$1,863	\$2,780	\$127.91	\$9,072	\$4,536	\$31.65
620455TP-DC3	300	\$7,736	\$3,731	\$2,847	\$127.91	\$14,443	\$7,221	\$29.40
6204406TP-060	1,500	\$25,082	\$11,978	\$13,623	\$127.91	\$50,811	\$25,406	\$30.75
62044065TP-1CD	1,000	\$44,929	\$19,832	\$5,011	\$127.91	\$69,900	\$34,950	\$24.70
176630TP-6C4	150	\$4,480	\$1,155	\$2,511	\$127.91	\$8,274	\$4,137	\$19.39
186250TP-0A9	750	\$8,852	\$3,320	\$5,945	\$127.91	\$18,245	\$9,123	\$16.25
204735TP-7C2	100	\$3,293	\$3,637	\$4,522	\$127.91	\$11,580	\$5,790	\$64.22
657599TP-EEF	200	\$9,996	\$2,504	\$337	\$127.91	\$12,965	\$12,965	\$0.00
525441TP-DF0	150	\$2,325	\$1,335	\$2,475	\$127.91	\$6,262	\$3,534	\$93.47
633604TP-988	200	\$1,747	\$4,338	\$2,713	\$127.91	\$8,927	\$4,463	\$23.91
1164012TP-00A	500	\$21,377	\$6,970	\$3,659	\$127.91	\$32,134	\$16,067	\$24.49
530906TP-856	300	\$10,765	\$12,527	\$2,787	\$127.91	\$26,207	\$13,103	\$36.81
5552033TP-EA2	9,000	\$292,514	\$489,800	\$62,132	\$127.91	\$844,574	\$0	\$0.00
5552038TP-076	13,000	\$310,123	\$216,261	\$0	\$0.00	\$526,384	\$0	\$0.00
5672985TP-1EF	100	\$1,562	\$3,106	\$1,607	\$127.91	\$6,403	\$1,665	\$93.47
615269TP-92F	300	\$13,725	\$10,010	\$4,125	\$127.91	\$27,988	\$13,994	\$56.85
543979TP-A8C	50	\$5,668	\$554	\$0	\$127.91	\$6,350	\$3,175	\$131.47
1819727TP-A3B	100	\$1,273	\$2,647	\$1,929	\$127.91	\$5,978	\$2,989	\$28.39
50150092TP-CF2	75	\$2,463	\$1,966	\$1,586	\$127.91	\$6,144	\$3,072	\$51.21
50150100TP-A94	150	\$5,467	\$1,163	\$2,402	\$127.91	\$9,160	\$4,580	\$23.85
800152TP-6D7	1,250	\$71,715	\$20,264	\$1,962	\$127.91	\$94,068	\$47,034	\$16.90

800170TP-B07	750	\$115	\$931	\$4,421	\$127.91	\$5,594	\$2,797	\$438.17
182010TP-E8B	100	\$5,907	\$6,481	\$2,551	\$127.91	\$15,067	\$7,533	\$39.03
332490TP-111	200	\$453	\$12,274	\$4,080	\$127.91	\$16,936	\$8,468	\$146.47
8001045TP-7B3	500	\$17,854	\$10,512	\$3,940	\$127.91	\$32,434	\$16,217	\$30.92
800104TP-F50	1,000	\$56,441	\$31,109	\$5,432	\$127.91	\$93,110	\$46,555	\$18.53
5791226TP-DCF	300	\$24,965	\$12,416	\$3,141	\$127.91	\$40,650	\$20,325	\$21.27
6438465TP-89B	500	\$17,772	\$16,594	\$4,173	\$127.91	\$38,667	\$19,334	\$36.42
643847TP-B5F	500	\$6,340	\$4,250	\$4,173	\$127.91	\$14,891	\$7,445	\$40.93
6438485TP-221	200	\$1,522	\$2,439	\$2,719	\$127.91	\$6,807	(\$4,606)	\$93.47
800132TP-927	100	\$3,461	\$4,058	\$3,224	\$127.91	\$10,871	\$5,436	\$29.84
8001305TP-615	30	\$986	\$1,760	\$1,750	\$127.91	\$4,625	(\$437)	\$93.47
8001708TP-54F	100	\$928	\$1,794	\$3,111	\$127.91	\$5,960	\$4,448	\$93.47
3149145TP-253	300	\$2,644	\$33,392	\$4,949	\$127.91	\$41,114	\$20,557	\$125.91
8001312TP-172	200	\$15,248	\$6,688	\$2,498	\$127.91	\$24,562	\$12,281	\$27.01
800113TP-837	100	\$1,386	\$2,302	\$1,803	\$127.91	\$5,618	(\$3,588)	\$93.47
331280TP-F5A	200	\$807	\$31,791	\$4,363	\$127.91	\$37,088	\$37,088	\$0.00
579184TP-AA1	100	\$3,327	\$3,402	\$1,353	\$127.91	\$8,209	\$4,105	\$34.92
568266TP-ADC	500	\$24,099	\$14,439	\$3,912	\$127.91	\$42,578	\$21,289	\$21.45
5682737TP-04F	300	\$2,852	\$2,305	\$2,987	\$127.91	\$8,272	\$4,136	\$50.23
5684239TP-311	150	\$4,888	\$1,714	\$2,029	\$127.91	\$8,759	\$4,379	\$36.13
396517TP-0FD	50	\$252	\$410	\$1,849	\$127.91	\$2,640	\$1,252	\$93.47
482070TP-CA8	300	\$4,697	\$5,479	\$4,226	\$127.91	\$14,530	(\$1,716)	\$93.47
308479TP-A96	200	\$1,504	\$3,849	\$10,107	\$127.91	\$15,588	\$11,169	\$93.47
300360TP-C68	75	\$229	\$433	\$742	\$127.91	\$1,532	\$1,332	\$93.47
208740TP-450	300	\$7,144	\$21,210	\$3,685	\$127.91	\$32,167	\$16,083	\$42.51
569639TP-0AB	150	\$6,108	\$3,728	\$2,349	\$127.91	\$12,312	\$6,156	\$39.17
319705TP-697	150	\$387	\$6,010	\$3,418	\$127.91	\$9,943	\$9,943	\$0.00

617670TP-292	50	\$614	\$642	\$1,863	\$127.91	\$3,247	\$1,624	\$73.62
112267TP-BDF	150	\$1,763	\$1,516	\$2,588	\$127.91	\$5,995	(\$51)	\$93.47
141924TP-720	200	\$44	\$544	\$3,556	\$127.91	\$4,272	\$2,136	\$71.69
192534TP-F30	150	\$2,249	\$475	\$2,916	\$127.91	\$5,768	\$2,884	\$34.65
142192TP-6F0	150	\$4,975	\$1,409	\$16,052	\$127.91	\$22,563	\$11,282	\$391.72
800171TP-742	1,500	\$22,525	\$55,462	\$753	\$127.91	\$78,868	\$39,434	\$63.32
1101999TP-7E5	750	\$15,308	\$9,933	\$9,614	\$127.91	\$34,982	\$17,491	\$39.63
632798TP-DD5	100	\$1,227	\$4,977	\$2,505	\$127.91	\$8,836	\$4,418	\$38.35
634528TP-0A0	30	\$523	\$881	\$1,646	\$127.91	\$3,177	\$1,589	\$37.22
5552049TP-96E	300	\$13,166	\$15,171	\$3,914	\$127.91	\$32,379	\$16,189	\$18.22
5552055TP-0DD	3,500	\$154,657	\$174,713	\$15,266	\$127.91	\$344,763	\$344,763	\$0.00
623482TP-FAB	150	\$7,587	\$4,662	\$3,305	\$127.91	\$15,682	(\$18,755)	\$93.47
800121TP-F4A	2,000	\$85,478	\$33,361	\$7,753	\$127.91	\$126,720	\$63,360	\$15.77
184621TP-6F0	50	\$983	\$1,777	\$652	\$127.91	\$3,540	\$250	\$93.47
800125TP-E40	2,000	\$115,954	\$102,527	\$359	\$127.91	\$218,967	\$109,484	\$26.92
1101005TP-215	500	\$298	\$462	\$6,185	\$127.91	\$7,072	\$7,072	\$0.00
8001011TP-EB1	50	\$2,245	\$1,850	\$1,652	\$127.91	\$5,875	\$2,937	\$53.89
400495TP-B39	200	\$5,035	\$16,731	\$3,842	\$127.91	\$25,736	\$12,868	\$47.05
800112TP-472	100	\$2,696	\$3,321	\$2,627	\$127.91	\$8,773	\$4,386	\$35.20
434220TP-56E	50	\$1,493	\$1,722	\$1,623	\$127.91	\$4,965	\$2,483	\$32.40
416103TP-D75	50	\$1,366	\$1,491	\$1,940	\$127.91	\$4,924	\$2,462	\$36.43
530380TP-699	50	\$3,176	\$3,399	\$444	\$127.91	\$7,146	\$3,573	\$23.16
410812TP-754	50	\$1,828	\$1,800	\$913	\$127.91	\$4,669	\$2,335	\$28.36
615606TP-500	50	\$31	\$147	\$1,454	\$127.91	\$1,760	\$880	\$993.78
405709TP-3E3	500	\$10,166	\$34,620	\$6,906	\$127.91	\$51,820	\$25,910	\$44.07
388525TP-7A1	200	\$3,978	\$13,718	\$11,892	\$127.91	\$29,716	\$14,858	\$99.05
5791154TP-B14	150	\$5,983	\$4,214	\$2,185	\$127.91	\$12,510	\$6,255	\$26.68

656382TP-D30	100	\$72	\$146	\$2,468	\$127.91	\$2,815	\$2,739	\$93.47
800131TP-5E7	300	\$5,250	\$2,234	\$2,669	\$127.91	\$10,280	\$5,140	\$31.85
520373TP-2AF	1,500	\$34,520	\$38,481	\$6,490	\$127.91	\$79,619	\$39,809	\$43.16
184687TP-F60	150	\$4,485	\$1,454	\$2,481	\$127.91	\$8,547	(\$3,359)	\$93.47
522002TP-BF4	300	\$14,854	\$4,464	\$3,334	\$127.91	\$22,780	\$11,390	\$28.33
150925TP-224	150	\$11,435	\$16,511	\$2,814	\$127.91	\$30,889	\$15,444	\$36.54
150931TP-983	500	\$15,982	\$27,284	\$4,755	\$127.91	\$48,148	\$24,074	\$61.31
3764605TP-D7E	300	\$7,012	\$17,466	\$4,281	\$127.91	\$28,887	\$14,443	\$61.67
406890TP-FBA	75	\$2,323	\$3,205	\$1,157	\$127.91	\$6,813	\$3,407	\$33.14
405386TP-576	150	\$749	\$4,067	\$2,949	\$127.91	\$7,893	\$3,946	\$184.14
405190TP-453	150	\$2,410	\$11,638	\$2,794	\$127.91	\$16,970	\$266	\$93.47
389990TP-5F0	150	\$1,487	\$7,457	\$2,854	\$127.91	\$11,926	\$1,407	\$93.47
389997TP-83A	200	\$910	\$4,366	\$3,061	\$127.91	\$8,465	\$2,172	\$93.47
389999TP-BA1	300	\$805	\$2,582	\$4,141	\$127.91	\$7,656	\$3,828	\$107.11
401815TP-3DF	300	\$13,297	\$31,754	\$4,533	\$127.91	\$49,711	\$24,856	\$41.83
800161TP-DEF	500	\$1,029	\$2,658	\$5,476	\$127.91	\$9,291	\$4,646	\$94.68
181911TP-927	75	\$3,342	\$3,461	\$1,373	\$127.91	\$8,304	\$4,152	\$25.21
235545TP-814	200	\$11,277	\$2,949	\$3,979	\$127.91	\$18,333	\$9,166	\$24.75
6375055TP-7DC	500	\$8,345	\$13,603	\$5,283	\$127.91	\$27,359	\$13,680	\$17.05
3204065TP-B03	150	\$346	\$4,162	\$2,658	\$127.91	\$7,294	\$4,247	\$80.76
624649TP-8F7	500	\$2,912	\$4,351	\$4,578	\$127.91	\$11,969	\$5,985	\$16.66
800166TP-025	200	\$1,191	\$3,734	\$3,151	\$127.91	\$8,204	\$4,102	\$78.07
416731TP-C0E	150	\$1,404	\$6,412	\$3,192	\$127.91	\$11,135	\$5,593	\$93.47
549325TP-5D0	500	\$9,922	\$4,765	\$4,177	\$127.91	\$18,992	\$9,496	\$24.55
624606TP-58C	150	\$4,132	\$3,279	\$2,565	\$127.91	\$10,104	\$1,859	\$93.47
141845TP-D91	200	\$3,154	\$6,202	\$3,824	\$127.91	\$13,308	\$1,053	\$93.47
333060TP-CA7	150	\$618	\$10,243	\$3,519	\$127.91	\$14,508	\$14,508	\$0.00

3330508TP-D6D	300	\$587	\$9,587	\$4,394	\$127.91	\$14,696	\$14,696	\$0.00
405769TP-C13	200	\$2,473	\$12,505	\$8,627	\$127.91	\$23,733	\$5,325	\$93.47
373002TP-847	200	\$2,513	\$9,981	\$2,856	\$127.91	\$15,478	\$7,739	\$130.46
141990TP-498	150	\$2,873	\$5,325	\$4,317	\$127.91	\$12,642	\$8,864	\$93.47
1419725TP-870	200	\$3,708	\$6,296	\$3,893	\$127.91	\$14,025	\$7,795	\$93.47
315340TP-EFC	500	\$14,534	\$1,191,989	\$0	\$0.00	\$1,206,523	\$0	\$0.00
4245295TP-206	150	\$3,639	\$1,756	\$3,093	\$127.91	\$8,616	\$4,308	\$54.57
301586TP-0FB	100	\$924	\$1,836	\$2,595	\$127.91	\$5,484	\$2,166	\$93.47
424510TP-575	500	\$12,038	\$11,188	\$5,967	\$127.91	\$29,321	\$14,660	\$37.97
3193075TP-EBE	200	\$597	\$12,003	\$3,478	\$127.91	\$16,205	\$16,205	\$0.00
338411TP-65E	300	\$3,556	\$11,655	\$3,330	\$127.91	\$18,670	\$9,335	\$52.13
613920TP-315	100	\$677	\$810	\$3,321	\$127.91	\$4,935	\$2,468	\$91.38
8001015TP-FBB	300	\$17,045	\$9,314	\$3,095	\$127.91	\$29,582	\$14,791	\$17.23
800149TP-2AE	300	\$22,893	\$7,103	\$5,186	\$127.91	\$35,310	\$17,655	\$18.52

Line Charge Breakdown for Group Customers

Consumer Capacity	Code	Number of Connections	Transpower Charge	Subtransmission Charge	Distribution Charge	TPCL Overhead	Fixed Charge per Day
TPC Urban Residential Standard							
Small Residential (8kVA 1 Phase) - All Peak	UD08P	106	\$8,043	\$15,283	\$14,176	\$13,515	\$1.0225
Small Residential (8kVA 1 Phase) - With Off Peak	UD08Q	200	\$12,599	\$24,668	\$22,803	\$25,538	\$0.6689
Residential (15kVA 1 Phase) - All Peak	UD20P	2,023	\$384,869	\$731,303	\$678,338	\$258,689	\$1.8391
Residential (15kVA 1 Phase) - With Off Peak	UD20Q	7,293	\$1,150,478	\$2,252,546	\$2,082,244	\$932,814	\$1.2830
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	UDL20P	1,665	\$255,614	\$502,640	\$503,653	\$212,962	\$0.3000
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	UDL20Q	5,335	\$684,332	\$1,373,476	\$1,372,998	\$682,375	\$0.2000
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	UDL08P	67	\$4,530	\$8,956	\$8,574	\$8,570	\$0.3000
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	UDL08Q	139	\$8,346	\$16,429	\$15,455	\$17,747	\$0.2000
General Single Phase							
Street Lights (1 Phase)	US001L	5,330	\$98,241	\$189,483	\$109,698	\$13,635	\$0.1486
1 kVA 1 Phase - All Peak	US001P	30	\$3,779	\$6,794	\$3,608	\$3,816	\$0.7245
8 kVA 1 Phase - All Peak	US008P	239	\$18,192	\$34,567	\$32,064	\$30,569	\$1.0223
8 kVA 1 Phase - With Off Peak	US008Q	14	\$894	\$1,750	\$1,618	\$1,812	\$0.6687
15 kVA 1 Phase - All Peak	US020P	376	\$71,551	\$135,955	\$126,109	\$48,092	\$1.8390
15 kVA 1 Phase - With Off Peak	US020Q	96	\$15,118	\$29,599	\$27,362	\$12,258	\$1.2828

General Three Phase

15 kVA 3 Phase - All Peak	UT015P	108	\$15,390.02	\$29,243	\$27,125	\$13,792	\$1.8096
15 kVA 3 Phase - With Off Peak	UT015Q	10	\$1,183.13	\$2,316	\$2,141	\$1,279	\$1.2303
30 kVA 3 Phase - All Peak	UT030P	558	\$167,405.19	\$324,745	\$312,513	\$71,307	\$2.8914
30 kVA 3 Phase - With Off Peak	UT030Q	96	\$24,051.75	\$47,802	\$45,874	\$12,300	\$1.9347
50 kVA 3 Phase - All Peak	UT050P	325	\$236,433.07	\$452,575	\$417,212	\$41,505	\$5.8441
50 kVA 3 Phase - With Off Peak	UT050Q	76	\$45,981.17	\$90,509	\$83,172	\$9,721	\$3.9790
75 kVA 3 Phase - All Peak	UT075P	96	\$127,252.41	\$246,854	\$232,048	\$12,322	\$7.6834
75 kVA 3 Phase - With Off Peak	UT075Q	17	\$18,337.34	\$36,445	\$34,165	\$2,132	\$5.1785
100 kVA 3 Phase - All Peak	UT100P	18	\$40,034.43	\$77,662	\$72,563	\$2,345	\$11.2975
100 kVA 3 Phase - With Off Peak	UT100Q	3	\$5,456.47	\$10,845	\$10,105	\$384	\$7.8467

TPC Rural Residential

Small Residential (8kVA 1 Phase) - All Peak	RD08P	120	\$9,159	\$17,404	\$50,901	\$15,391	\$1.1521
Small Residential (8kVA 1 Phase) - With Off Peak	RD08Q	91	\$5,753	\$11,263	\$33,198	\$11,661	\$0.7804
Residential (15kVA 1 Phase) - All Peak	RD20P	2,181	\$414,999	\$788,554	\$2,306,236	\$278,940	\$2.1177
Residential (15kVA 1 Phase) - With Off Peak	RD20Q	5,423	\$855,444	\$1,674,893	\$4,936,656	\$693,599	\$1.4492
Residential Low Fixed Charge Option (15kVA 1 Phase) - All Peak	RDL20P	899	\$138,016	\$271,395	\$810,233	\$114,987	\$0.3000
Residential Low Fixed Charge Option (15kVA 1 Phase) - With Off Peak	RDL20Q	1,955	\$250,772	\$503,307	\$1,510,142	\$250,055	\$0.2000
Residential Low Fixed Charge Option (8kVA 1 Phase) - All Peak	RDL08P	39	\$2,603	\$5,146	\$15,259	\$4,924	\$0.3000
Residential Low Fixed Charge Option (8kVA 1 Phase) - With Off Peak	RDL08Q	32	\$1,905	\$3,749	\$11,095	\$4,050	\$0.2000

General Single Phase

Street Lights (1 Phase)	RS001L	1,173	\$21,620	\$41,700	\$91,803	\$3,001	\$0.1673
1 kVA 1 Phase - All Peak	RS001P	138	\$17,461	\$31,388	\$70,205	\$17,630	\$0.7245
8 kVA 1 Phase - All Peak	RS008P	1,119	\$85,163	\$161,821	\$473,268	\$143,105	\$1.1521
8 kVA 1 Phase - With Off Peak	RS008Q	24	\$1,493	\$2,924	\$8,618	\$3,027	\$0.7804
15 kVA 1 Phase - All Peak	RS020P	1,646	\$313,129	\$594,986	\$1,740,120	\$210,468	\$2.1177
15 kVA 1 Phase - With Off Peak	RS020Q	346	\$54,556	\$106,816	\$314,833	\$44,234	\$1.4492

General Three Phase

15 kVA 3 Phase - All Peak	RT015P	352	\$50,166	\$95,322	\$278,784	\$44,959	\$2.0748
15 kVA 3 Phase - With Off Peak	RT015Q	14	\$1,676	\$3,282	\$9,673	\$1,812	\$1.4100
30 kVA 3 Phase - All Peak	RT030P	1,817	\$545,456	\$1,058,115	\$3,103,718	\$232,340	\$3.3073
30 kVA 3 Phase - With Off Peak	RT030Q	421	\$105,294	\$209,269	\$617,636	\$53,848	\$2.2466
50 kVA 3 Phase - All Peak	RT050P	657	\$478,452	\$915,842	\$2,636,410	\$83,991	\$6.6865
50 kVA 3 Phase - With Off Peak	RT050Q	514	\$311,079	\$612,326	\$1,775,766	\$65,765	\$4.5800
75 kVA 3 Phase - All Peak	RT075P	99	\$130,335	\$252,833	\$726,386	\$12,620	\$9.2234
75 kVA 3 Phase - With Off Peak	RT075Q	40	\$44,376	\$88,197	\$255,009	\$5,159	\$6.2117
100 kVA 3 Phase - All Peak	RT100P	30	\$66,239	\$128,495	\$367,193	\$3,880	\$13.5783
100 kVA 3 Phase - With Off Peak	RT100Q	9	\$16,369	\$32,534	\$93,570	\$1,151	\$9.4162

Variable Line Charge Prices	Peak c/kWh	Shoulder c/kWh	Night c/kWh
Residential Standard and General	\$ 0.09347	\$ 0.08345	\$ 0.01000
Residential Low Fixed Charge Fixed Charge Option (8kVA 1 Phase)	\$ 0.12057	\$ 0.10026	\$ 0.01000
Residential Low Fixed Charge Fixed Charge Option (20kVA 1 Phase)	\$ 0.14997	\$ 0.12975	\$ 0.01000