

Pricing Guide

A guide to Orion's pricing for 2017/18



Orion

About Orion

Orion owns and operates the electricity distribution network that provides power to central Canterbury. As one of the largest electricity distribution networks in New Zealand, we cover remote rural areas, regional towns and the city of Christchurch.

Our network extends over 8,000 square kilometres across central Canterbury from the Waimakariri River in the north to the Rakaia River in the south. We deliver electricity to more than 198,000 homes and businesses.

Our shareholders are:

- Christchurch City Council 89.3%
- Selwyn District Council 10.7%.

Further information about Orion is available on our website www.oriongroup.co.nz

Network summary as at 1 April 2017

Number of customer connections	198,000
Network maximum demand (MW)	599
Electricity delivered (annual GWh)	3,227
Total kilometres of lines and cables	14,592
Value of network assets	\$1.1bn

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Introduction

It's my pleasure to introduce Orion's latest network pricing guide.

A safe and reliable distribution of electricity is the primary expectation of our community, who also expect that this will be delivered in a cost-effective way.

To that end, Orion is acutely aware of finding the right balance between investment in the network to ensure greater resilience and the cost implications for customers that arise from this investment. As an organisation, we work hard to ensure the needs and preferences of our customers are met through appropriate performance levels within fair price parameters.

Prior to the Canterbury earthquakes we managed one of the most reliable and cost-effective electricity networks in the country. In April 2014, the Commerce Commission enabled us to increase our prices to recover some of our significant earthquake recovery costs and invest in development of assets to support the changing demands of the region, and to eventually return the network to pre-quake levels of reliability. Despite the increase in prices, our pricing continues to compare favourably with other electricity distributors (see graph on page 6).

This guide details how we determine Orion's prices for delivering electricity via our network – both our prices to distribute electricity within our region and Transpower's prices to transmit electricity to our region. It does not discuss the prices of other industry participants such as generators, retailers or metering providers.

In the interest of providing an easy to understand overview of Orion's pricing approach, some technicalities are not included in this guide, however full details can be found on our website www.oriongroup.co.nz/corporate/corporate-publications/pricing-guides-and-information

I hope you find this guide useful and welcome any feedback you may have on it, or any other aspect of Orion's performance. Please email any comments directly to me rob.jamieson@oriongroup.co.nz



Rob Jamieson

Chief Executive Officer

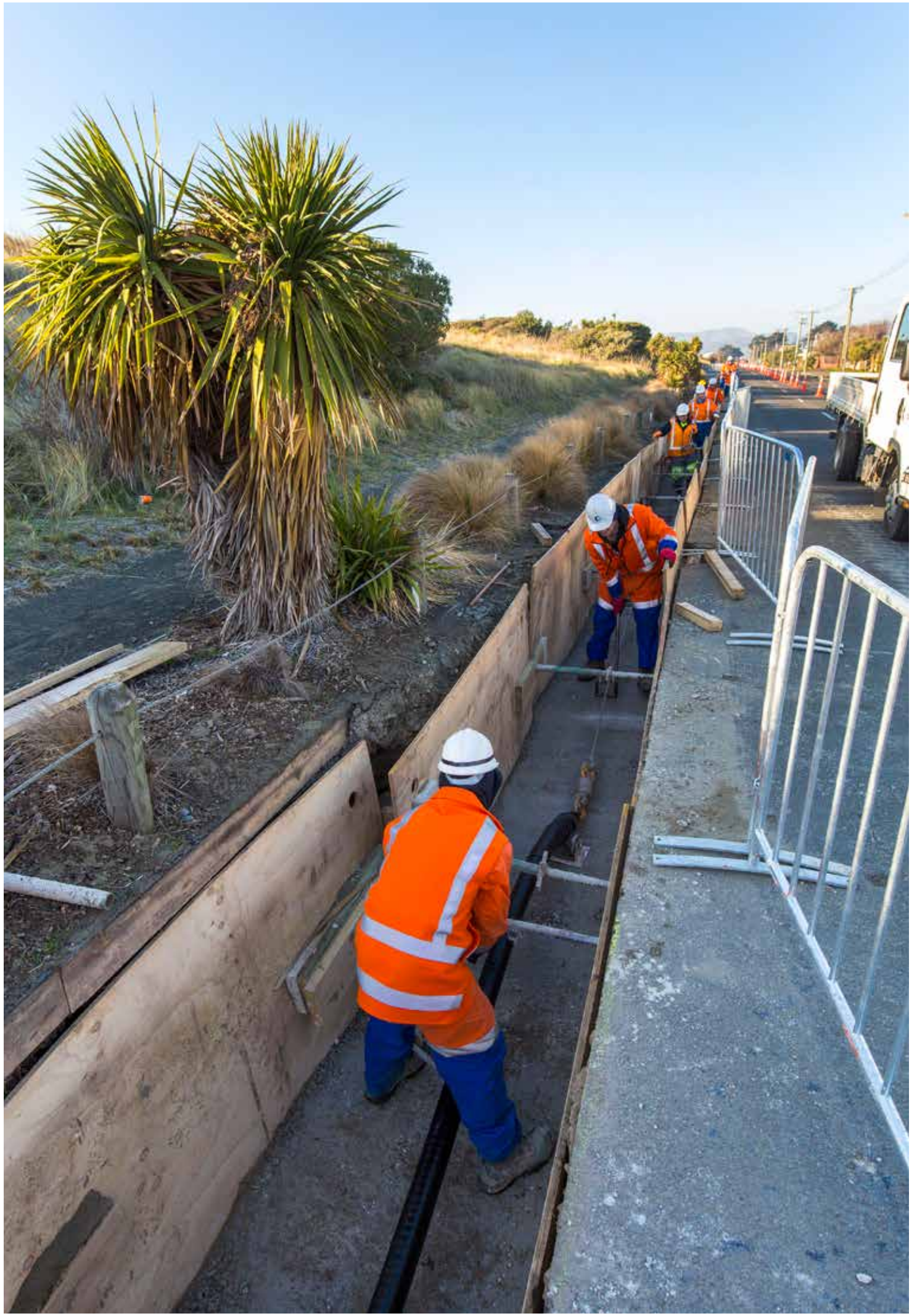
Pricing principles

Our pricing approach is based on some key principles:

- 1. Actual costs** – our pricing structure reflects the actual cost of delivering electricity across our network. This enables us to pass on savings to customers who use less electricity which, in turn, lowers the cost of operating the network. Importantly, it also helps customers to make informed choices about electricity and alternative energy sources, such as gas and solar.
- 2. Shared network efficiencies** – all our customers share the network. As the network grows, operating efficiencies are gained through scale and the diversity of range of electrical loads. Our aim is to ensure that all customers share the benefits of these efficiencies.
- 3. Simple, stable approach** - we provide simple ‘pricing signals’ to help customers use electricity efficiently, and to assist in evaluating the merits of investing in new electrical equipment or replacement appliances. We offer stable prices to give customers confidence that cost advantages will remain.
- 4. Appropriate rate of return** – we aim to make a rate of return that is appropriate for our business as determined by the Commerce Commission.
- 5. Regulatory considerations** – in particular:
 - a. the Commerce Commission has allowed us to increase our prices by more than the inflation rate for the five years through to 2019 given the additional investment required to support the 2010 and 2011 earthquake recovery programme
 - b. the price of electricity distribution is not differentiated on the basis of urban versus rural areas
 - c. there is currently no fixed daily charge for residential and small business customers on Orion’s network
 - d. where distributed generation brings benefits, we pass those benefits back to the distributed generation customer

Our full pricing principles and objectives can be found in our pricing methodology document available on our website www.oriongroup.co.nz

Overleaf: A team from Connetics installing high voltage cable in New Brighton as part of the Northern Loop cable project. Beginning a few weeks after the 22 February 2011 earthquake and taking five years to complete, the \$60m project is one of the largest undertaken by Orion. It involved the laying of a 38km circuit of high voltage cable, the construction of the Rawhiti substation, to replace the damaged Pages Road substation, the enhancement of the Dallington and McFaddens substations plus the build of the new Waimakariri substation. The project has delivered a growing region with a cost effective and resilient power supply for today and into the future.



The electricity industry

The process of getting electricity from the source of generation to you, the customer, usually involves four key stages:

Generation

Generators produce electricity. Almost all electricity in New Zealand, generated for retail purposes, is sold into the wholesale electricity market for supply to electricity retailers. Several private and semi or fully government-owned companies generate electricity in this country – they include Contact Energy, Genesis Energy, Meridian Energy, Mighty River Power, Todd Energy and TrustPower. Most are also electricity retailers. Increasingly customers are generating some of their own electricity, in particular by installing solar panels.



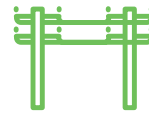
Transmission

Transpower is the state-owned enterprise responsible for transmitting the electricity produced by generators. It operates the national grid of high-voltage power lines and tall pylons that connect to the power stations and send electricity around the country.



Distribution

Also known as lines companies or network companies, distributors own the lower voltage power lines and distribution networks in local areas. These networks connect to the national grid to deliver power to industries, businesses and homes. Orion is one of 29 electricity distributors in New Zealand.



Retailing

Sometimes referred to as power companies, electricity retailers purchase electricity from the wholesale market to sell to residential, industrial and business customers. They also typically provide or arrange for metering, billing, payment processing and customer service.



Electricity retailers operating in the Orion network area include Contact, Genesis, Meridian, Mercury, Nova, Powershop, Pulse, Simply Energy, TrustPower and Flick.

The electricity bill you receive from your retailer therefore covers the cost of generating, transmitting, and distributing the electricity, retailing services, including metering costs.

Orion's delivery charges, which include only the costs of transmitting and distributing electricity, account for around 40% of the average household electricity bill.

Our pricing approach

Orion's objective is to balance price levels with providing our community with the reliability and resilience of electricity supply it requires for the specific conditions we face in Canterbury.

Like roads, electricity networks have limited capacity and Orion's 'rush hours' typically occur on very cold winter mornings and evenings. Our priority is to ensure a network that can sustain these peaks in demand, even though they are typically only for short periods of time.

One option is to increase the network's capacity – much like making the roads bigger to handle an increased volume of traffic. This is, however, expensive and would require increases in our charges to cover the cost involved in expansion.

Another option is to actively promote mechanisms such as ripple control whereby congestion on the network can be alleviated during periods of high or 'peak' electrical demand by shifting some consumption to an off-peak period.

We use 'price signals', charging higher prices during periods of high electricity demand and lower prices during low demand periods, to support customers managing their use in this way.

Ways in which customers do this include:

- having their hot water cylinders peak load controlled, which means it can be switched off and on by us
- heating their hot water only at night
- investing in more efficient forms of heating such as heat pumps, which produce much more heat output for the same electrical input.

Peak and off-peak pricing

Determining how much extra to charge customers during periods of high electricity demand is complicated. Some parts of our network cost more than others, and different parts are used to deliver electricity to each of our 198,000 individual customer connections. Individual customer pricing is simply not feasible for all of these connections.

To recognise the key differences in the usage and cost of our network, we separate customer connections into various pricing categories:

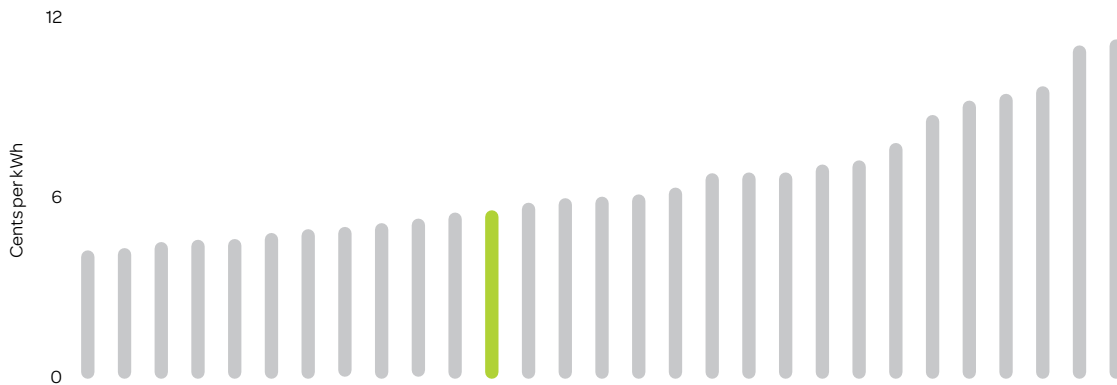
- **general (residential and small business) connections** – where maximum electricity use is in winter
- **major customer connections** – businesses that are large electricity consumers
- **irrigation connections** – for farms with significant irrigation requirements
- **street lighting¹ connections** – for private and publicly owned dedicated lighting connections supplied from Orion's separate lighting network
- **large capacity¹ connections** – for very large businesses that consume a significant amount of electricity and for which Orion negotiates an individual price due to their size and impact on the local network.

¹ Street lighting and large capacity connections relate to only a few customers so are not discussed further in this guide.

How do Orion's prices compare with others?

Despite the price impacts of the Canterbury earthquakes, we believe our pricing compares favourably with other New Zealand electricity distributors, as shown in the graph below (the green bar is Orion).

Distribution revenue – cents per kWh



Source: Distributor information disclosures for the year ended 31 March 2016.
Distribution revenue is total revenue less transmission costs and other 'pass through' costs.

Overleaf: Residential development is still having a large impact on the Orion network with over 2,500 new residential connections installed over the last 12 months, the highest number of connections recorded for a decade.



Residential and small business pricing

Orion does not charge each home or business¹ on the network individually. Instead we charge the twenty or so retailers that use our network to deliver electricity to customers.

Our charges to retailers are based on the amount of electricity entering our network, primarily from Transpower's national transmission grid. These amounts are recorded every half hour and this allows us to identify times of heavy loading and to charge appropriately.

Our pricing structure

Our pricing structure for residential and small business connections has three components – a 'peak price' and two 'volume prices'.

Orion's general connection delivery prices as at 1 April 2017 (excluding GST)

Peak price	53.10 cents/kW ¹ /day
Volume price	
Working weekdays (7am to 9pm)	8.773 cents/kWh ²
Nights, weekends and public holidays	1.125 cents/kWh

The peak price is based on the average demand during periods of highest load on our network, called 'peak periods'. The peak price reflects our cost to build and reinforce our network to meet peak demand and provide surety of supply.

Peak periods occur on the coldest weekday mornings and evenings, generally for about 150 hours each winter. Orion provides signals to retailers at the beginning and end of each peak period, prompting them to encourage customers to turn off non-essential appliances and other electrical equipment in order to avoid the higher prices charged when the network is heavily loaded. Each residential customer contributes on average 2kW to 3kW to this charge.

The volume prices apply to the amount of electricity used, but at two different rates depending on when usage occurs. Charges are lower at night and weekends to influence retailers to encourage households and businesses, wherever possible, to use their appliances when demand on the network is lighter.

Unlike most other electricity distributors, Orion does not currently apply a fixed daily charge for each residential and small business connection.

¹ The kilowatt (kW) is a measure of the rate of energy consumption, showing how fast electricity is being used at a particular time.

² The kilowatt-hour (kWh) is a unit of energy equivalent to one kilowatt of power expended for one hour of time. This is the normal measure of energy shown on most electricity accounts.

Retail pricing options and plans

As noted above, Orion's charge for delivery (distribution and transmission) of electricity within the region is just one of the many costs that retailers factor into the price they charge customers. Their other costs are:

- the cost of purchasing electricity from the wholesale market
- customer metering – to provide and maintain meters, read and process readings
- the retailer's own costs to produce each electricity bill, process money received and communicate with customers

Retailers look at all of these costs, including Orion's delivery charges to them, and then 'repackage' them into various pricing plans for their residential and small business customers.

Three common pricing plans are shown in the following table which also shows an indicative range of retail prices for each:

Plan	Description	Indicative retail price range (cents per kWh)
'Economy' or 'Inclusive' or 'Composite'	A lower price for all electricity used, taking into account that the customer's water heater is generally switched off during peak periods.	23 to 29
'Day/night'	Day and night usage is separately measured. Night usage has a lower price. Customers who can move their usage to night periods can save on these plans (for example, heating water cylinders at night, using night-store space heaters, and even starting the dishwasher after 9pm).	Day: 33 to 36 Night: 11 to 14
'Anytime and night'	This plan measures dedicated night usage (generally only water heating and night-store space heating) on a separate meter, providing a different way to reward this off-peak usage with a lower price. Electricity usage at all other times is measured with an anytime meter.	Anytime: 23 to 32 Night: 11 to 14

Prices are sourced from Powerswitch website and are shown GST inclusive and after prompt payment discount. Retailer fixed charges are not shown.

For detailed information about retail pricing, please contact your electricity retailer. To help find out the retail pricing plan that is the cheapest for your home we recommend you visit the PowerSwitch website www.powerswitch.org.nz

Smart metering

More than 90% of all residential and small business customers in the Orion network area now have a smart meter installed.

Retailers can use smart meters to charge different electricity prices at different times of the day or season, encouraging customers to reduce energy consumption at peak network demand times, thereby lowering their electricity bills.

Some retailers are now using the capability of smart meters to provide more detailed consumption information to customers.

Overleaf: The majority of farming throughout the Orion network region is devoted to dairy and arable crops that require large amounts of water to thrive. During the hot, dry summer months the widespread and constant daily use of water by our irrigation customers causes the rural network to become heavily loaded. In comparison, our other customers tend to use more electricity during the winter and the amount they use can vary considerably during the day.



Irrigation pricing

Orion's rural network is heavily loaded in summer months due to the widespread use of irrigation throughout central Canterbury.

Irrigation load is very different to other electrical loads. While most of our customers use more electricity during winter and the amount they use can vary considerably throughout the day, our rural irrigation customers use the majority of their electricity during summer and the amount they use is more constant throughout the day. During dry, hot months, a point is reached where almost all irrigation load is on at the same time.

With this pattern of electricity usage, irrigation customers uniquely contribute to our costs. Compared to other connections, these customers account for a small portion of Transpower's transmission charges and a high portion of our distribution costs. This is appropriately reflected in our pricing.

There are around 1,100 irrigation connections.

The following pricing components apply for irrigation connections:

- **Capacity charge** - this is generally based on the 'nameplate rating'³ of irrigator pump motors. This charge reflects the capacity we must provide for irrigation connections, regardless of how much the pump is used in a season.
- **Volume charge** - this is a price for the amount of electricity used and is charged at differing 'cents per kWh' depending on the time of day. This provides an incentive for customers to shift their irrigation load away from peak to nights and weekends.
- **'Power factor correction' rebate** - we credit the retailer of an irrigation customer with a rebate if the customer installs and maintains a capacitor on their pump motor to improve the 'power factor'⁴ of the pump. Poor power factors increase load on the network and can cause voltages to drop, which affects other customers.
- **'Interruptibility' rebate** - we provide this rebate to the retailers of those irrigation customers who allow us to interrupt their power supply in the event of an emergency. Irrigation customers can generally accept occasional interruptions with no significant impact on their business operations. The rebate is designed to reduce Orion's need to invest in additional and costly back-up systems. In the event of a fault, we can interrupt the supply of electricity to irrigation systems and divert any available power to more essential electrical loads, such as dairy sheds and rural homes.

The table below outlines our delivery prices for the irrigation pricing components above.

Orion's irrigation connection delivery prices as at 1 April 2017 (excluding GST)

Capacity charge (from 1 October to 31 March only)	41.97 cents/kW/day
Volume charge Working weekdays (7am to 9pm)	8.773 cents/kWh
Nights, weekends and public holidays	1.125 cents/kWh
Power factor correction rebate (from 1 October to 31 March only)	(17.93) cents/kVAr/day
Interruptibility rebate (from 1 October to 31 March only)	(4.48) cents/kW/day

³ Nameplate rating is the output of the pump motor as specified by the manufacturer.

⁴ Power factor is a measurement of power efficiency.

Major customer pricing

Of the 198,000 connections on our network, approximately 400 are categorised as major customer connections. While major customers make up only 0.2% of our customers by number, they use around 25% of the total electricity delivered over our network.

To qualify as a major customer, a business needs to have a maximum demand for electricity of at least 250kVA, compared with the maximum electricity demand of a typical house of about 10kVA.

Major customers generally use only our high voltage network, and they often have transformers and other equipment dedicated to their connection. Major customers often require greater security of supply. We reflect these differences in their prices.

Major customers are not charged on a 'cents per kWh' basis. Instead we have three main charges – the control period demand charge, nominated maximum demand charge and the metered maximum demand charge. These charges are respectively based on the customer's contribution to our peak network loads and a combination of the amount of capacity they have contracted for their own maximum power demands measured over various periods.

The table below outlines the four components of our major customer delivery pricing.

Orion's major customer delivery prices as at 1 April 2017 (excluding GST)

Control period demand charge

Based on customer's contribution to our peak loading levels	48.57 cents/kVA ⁵ /day
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Nominated maximum demand charge

Based on customer's contracted (requested) capacity or their historical peak demand	10.49 cents/kVA/day
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Measured maximum demand charge

Based on customer's peak load for their own connection during working weekdays	8.48 cents/kVA/day
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Fixed annual charge

Per connection	189.00 cents/day
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Orion equipment charge

For Orion's equipment dedicated to delivering electricity to major customer	Depends on equipment used
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During periods of high electricity demand, Orion uses ripple control signals to tell major customers that they are in a high price period, called a 'control period'.

As with general customers, Orion provides a signal to major customers at the beginning and end of each control period, providing the opportunity to reduce their electricity usage, through such means as turning off boilers and freezers and running generators.

If a typical major customer responded to Orion's pricing signals by turning off their entire electrical load during control periods, their Orion-related charges for the following year would be reduced by around 75%. Even modest efforts to reduce electrical load during control periods can result in significant savings for major customers.

⁵ The kilovolt-ampere (kVA) is an alternative measure of the rate of energy consumption which is more accurate for larger commercial loads.

Overleaf: While solar photovoltaic (PV) panels are the most popular form of distributed generation in the home, diesel generation is used by many larger businesses.



Payment for distributed generation

As well as encouraging customers to use less electricity during peak demand periods, our pricing approach encourages 'distributed generation' within our network.

Distributed generators, located at a home or business, are capable of generating electricity for that home or business use. They may also be capable of putting surplus electricity back into our network.

Solar photovoltaic (PV) panels are the most popular form of distributed generation in the home, while diesel generation is deployed by many larger businesses.

Businesses generating their own electricity and exporting surplus power back into the network when heavily loaded assists Orion in two main ways:

- adding security to our community's electricity supply
- delaying the need for to expand the network capacity by supplying electricity close to where the power is consumed.

Orion provides credits for pre-approved reliable distributed generators connected to the network, based on the amount of electricity they provide during periods of high network loading. Orion has a standard set of credit prices for smaller generators, and considers individual credits for larger (more than 750kW) generators.

Not all network companies in New Zealand pay for distributed generation. However, we believe reliable distributed generation should be encouraged as it makes our community's electricity supply more secure.

While we encourage distributed generation, we try to ensure that one group of customers does not subsidise any other group of customers. Consequently, if a distributed generator imposes costs on Orion – for instance, a wind turbine is erected away from our existing network and we need to build new lines to connect the turbine to the network – then we will seek to recover those costs from the customer who owns the generator. This practice ensures that established customers do not cross-subsidise new customers.

Orion also credits business customers who run their generators in response to a signal from Orion. This arrangement is separate from our other pricing arrangements and the request is made only in emergencies, and during periods following peak loading in order to lessen interruption to hot water supply.

Further information on our commercial arrangements for distributed generation can be found on our website www.oriongroup.co.nz under Publications & Disclosures/Pricing.

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General Manager People and Strategy

Vacant – awaiting appointment
Chief Financial Officer

Head office

565 Wairakei Road
PO Box 13896
Christchurch
New Zealand

Phone +64 3 363 9898

Email info@oriongroup.co.nz

Website www.oriongroup.co.nz