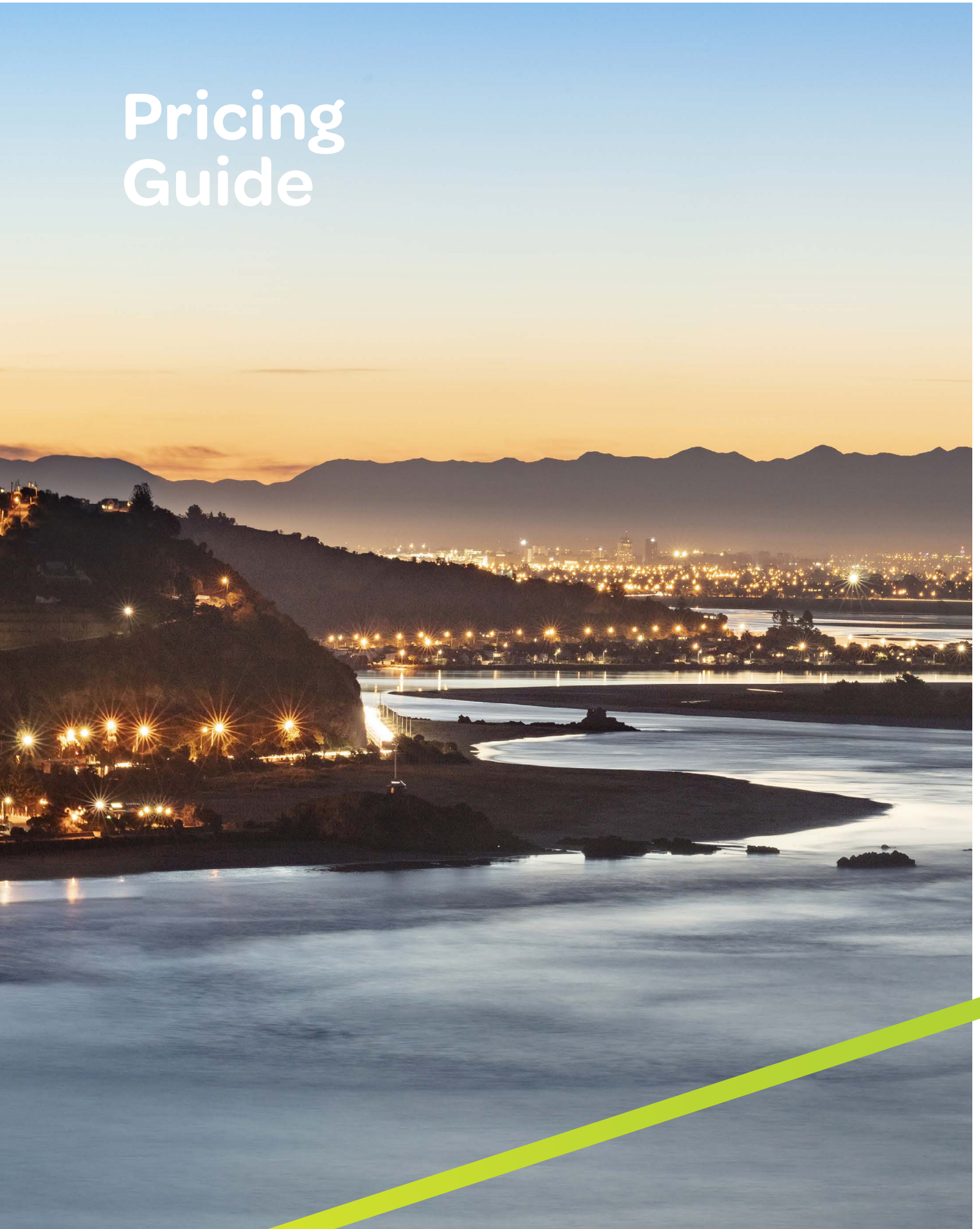


Pricing Guide



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 200,000 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 2020

Number of customer connections	207,500
Network maximum demand (MW)	610
Electricity delivered (annual GWh)	3,419
Value of network assets	\$1.2bn

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Introduction



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

We produce this guide to explain our pricing approach and to provide a comparison between Orion and other electricity distributors in New Zealand.

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.

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

Group Chief Executive

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 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 regulated price-quality path under which Orion operates has been updated and reset by the Commerce Commission to apply for the 5 year period beginning 1 April 2020. Among other things, the updated price-quality path takes account of the current low-interest environment in which we are operating
 - b. the Low Fixed Charge regulations that require us to provide pricing options with low fixed charges for residential customers
 - c. the Electricity Authority’s Distribution Pricing Review, which is pushing for ‘service-based’ and ‘cost-reflective’ distribution pricing
 - 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/corporate/corporate-publications/pricing-guides-and-information

Overleaf: Steve Macdonald, General Manager Infrastructure, in the final cable pull in installing a new 11kV electricity cable through the Lyttelton Road Tunnel. The 2.2km cable provides an alternative power supply that boosts the capacity, resilience and reliability of the power service to the Lyttelton, Corsair Bay and Cass Bay community, and the vital Lyttelton Port.



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 government-owned companies generate electricity in this country – they include Contact Energy, Genesis Energy, Meridian Energy, Mercury, Todd Energy and Trustpower. Most are also electricity retailers. Increasingly customers are generating some of their own electricity, in particular by installing solar panels.



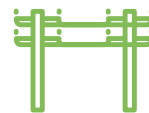
Transmission

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 provide interconnection for customers with generation and 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.

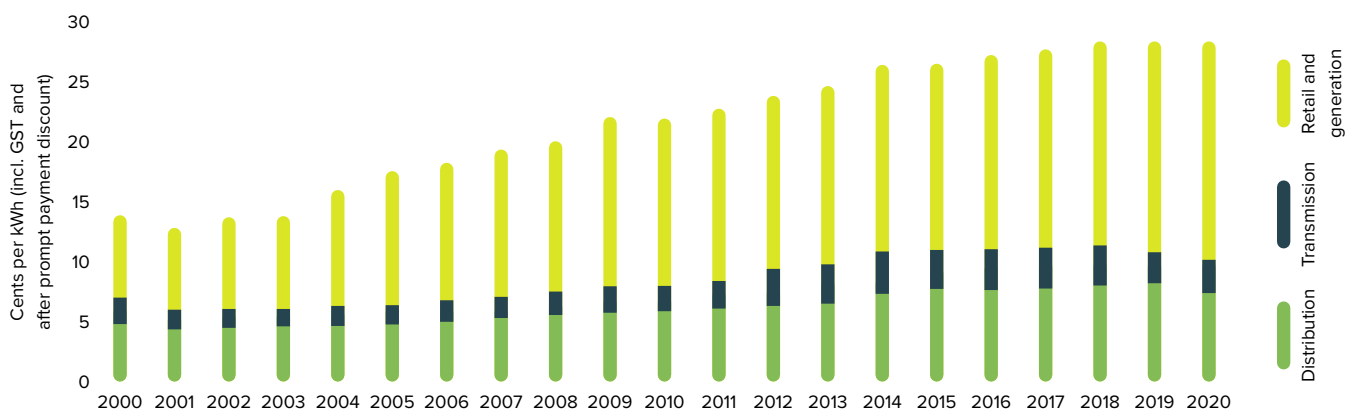


The electricity bill you receive from your retailer therefore covers the cost of generating, transmitting, and distributing the electricity, and retailing services, including metering costs.

Orion's delivery charges, which include only the costs of transmitting and distributing electricity account for around 36% of the average household electricity bill.

The graph below outlines the changes in the residential electricity price since 2000.

Breakdown of the residential electricity price for an average Orion household



Source: Quarterly Survey of Domestic Electricity Prices to 15 February 2020, Ministry of Business, Innovation and Employment.
Prices represent a snapshot as at 15 May each year.

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 hour' typically occurs 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 and reward 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 more than 200,000 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.

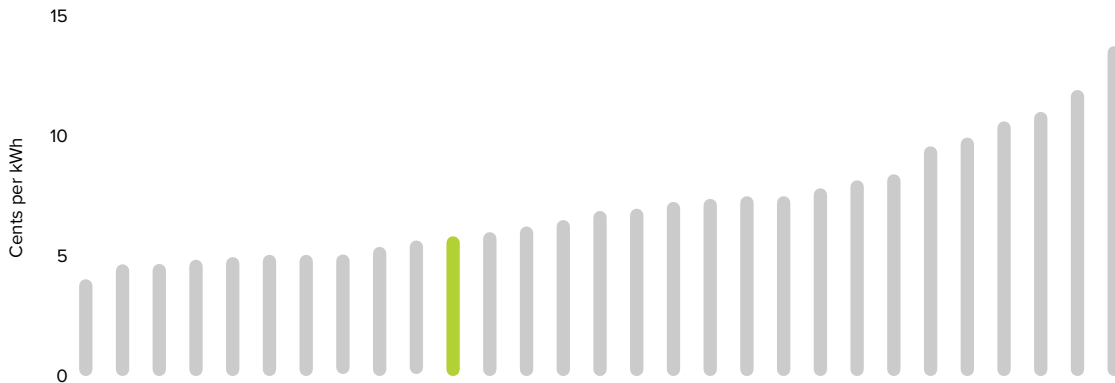
¹ Street lighting and large capacity connections relate to only a few customers so are not discussed further in this guide.

How do Orion's prices compare with others?

It is difficult to make meaningful comparisons between the prices of the various New Zealand electricity distributors, as they each have different cost structures and use different pricing approaches.

One of the best price indicators available is shown in the following graph, and demonstrates how our pricing compares favourably with other New Zealand electricity distributors (the green bar is Orion).

Distribution revenue – cents per kWh



Source: Distributor information disclosures for the year ended 31 March 2019.
Distribution revenue is total line charge revenue less Transpower charges.

Overleaf: Growth in the region is still driving development of the Orion network with more than 3,000 new customer connections installed in FY20.



Residential and small business pricing

Orion does not charge each home or business on the network individually. Instead, retailers operating in our region are charged for the total electricity used by all of their residential and small business customers. This results in lower costs for the customer.

The majority of 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 main components – a fixed daily charge, a 'peak charge' and two 'volume charges'.

Orion's general connection delivery prices as at 1 April 2020 (excluding GST)

Fixed daily charge	15.00 cents/connection/day
Peak charge	41.20 cents/kW ² /day
Volume charge	
Weekdays (7am to 9pm)	6.707 cents/kWh ³
Nights and weekends	1.798 cents/kWh

The fixed daily charge is applied to the number of days each connection is 'energised' during the month. The fixed charge was introduced on 1 April 2019 and to the extent possible under current regulation reflects the need to recover the basic costs of providing services, irrespective of consumption, as more customers embrace new technologies such as solar, batteries and electric vehicles.

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.

² The kilowatt (kW) is a measure of the rate of energy consumption, showing how fast electricity is being used at a particular time.

³ 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 31
'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: 30 to 37 Night: 13 to 20
'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: 26 to 34 Night: 13 to 20

Prices are sourced from Powerswitch website and are shown GST inclusive and after prompt payment discount. Retailer fixed charges are not shown. Indicative prices reflect a typical customer on a low user pricing plan.

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 95% 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 smaller portion of Transpower's transmission charges and a higher 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'⁴ 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'⁵ of the pump. Poor power factors increase load on the network and can cause areas of low voltage, 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 2020 (excluding GST)

Capacity charge (from 1 October to 31 March only)	44.90 cents/kW/day
Volume charge Weekdays (7am to 9pm) Nights and weekends	6.707 cents/kWh 1.798 cents/kWh
Power factor correction rebate (from 1 October to 31 March only)	(16.58) cents/kVAr/day
Interruptibility rebate (from 1 October to 31 March only)	(4.15) cents/kW/day

⁴ Nameplate rating is the output of the pump motor as specified by the manufacturer.

⁵ Power factor is a measurement of power efficiency.

Major customer pricing

Of the more than 200,000 connections on our network, approximately 500 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 150kVA⁶, 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 2020 (excluding GST)

Control period demand charge

Based on customer's contribution to our peak loading levels	39.55 cents/kVA/day
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Nominated maximum demand charge

Based on customer's contracted (requested) capacity or their historical peak demand	10.44 cents/kVA/day
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Metered maximum demand charge

Based on customer's peak load for their own connection during weekdays	7.62 cents/kVA/day
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Fixed charges

Major connections	1000 cents/day
Additional connections	500 cents/day

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.

⁶ 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 us 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.

Further information on our commercial arrangements for distributed generation can be found on our website www.oriongroup.co.nz/customers/connecting-your-solar-or-diesel-generation/

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