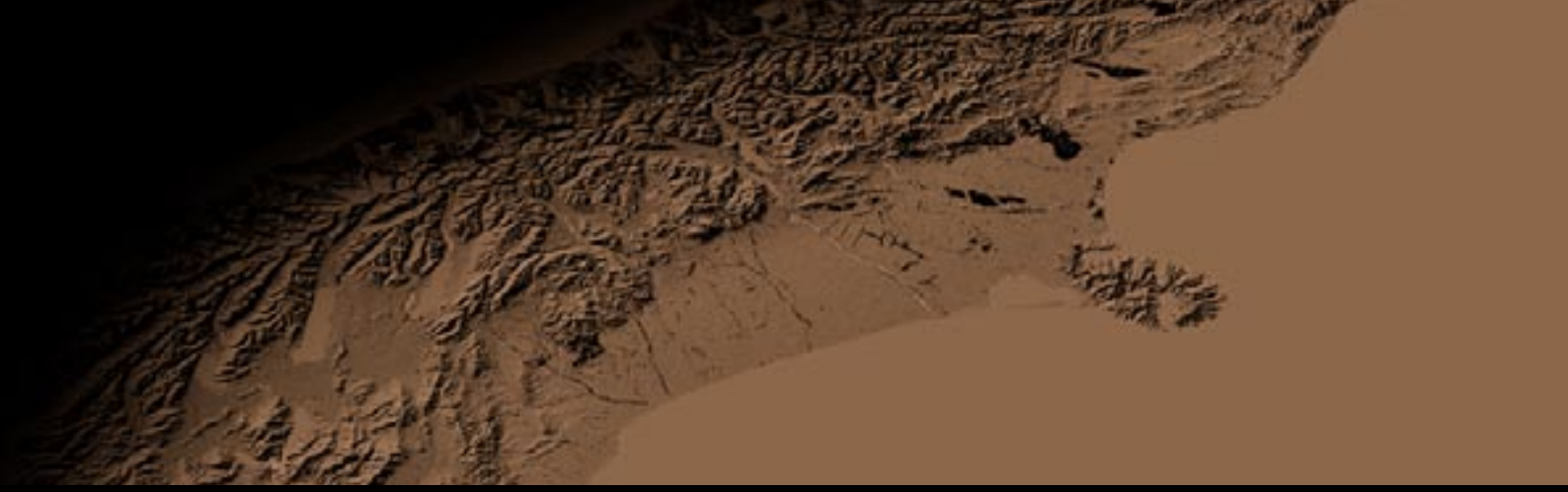

NETWORK QUALITY REPORT

A report on the reliability of Orion's electricity distribution network **2005**

Orion
your NETWORK

Who is Orion?

Orion New Zealand Limited owns and operates the electricity network in central Canterbury between the Waimakariri and Rakaia Rivers. Our network covers a diverse area that includes Christchurch, farming communities and the high country area inland to the main divide.

We transport electricity from nine Transpower grid exit points to more than 175,000 homes and businesses. Orion charges electricity retailers for this delivery service, and electricity retailers then on-charge homes and businesses. Retailers also charge consumers for the cost of generating electricity plus their retail charge.

Orion's charges typically amount to less than 30% of a household's electricity bill.

Our shareholders are:

Christchurch City Council 87.625%
Selwyn District Council 10.725%
Banks Peninsula District Council 1.650%

Further information on Orion is available from our:

- Website (www.oriongroup.co.nz)
- Annual Report
- Asset Management Plan – a document detailing Orion's asset replacement, reinforcement and maintenance strategies over the next 10 years
- Pricing Guide – a guide to help consumers understand our prices and how they compare with those of other electricity distributors

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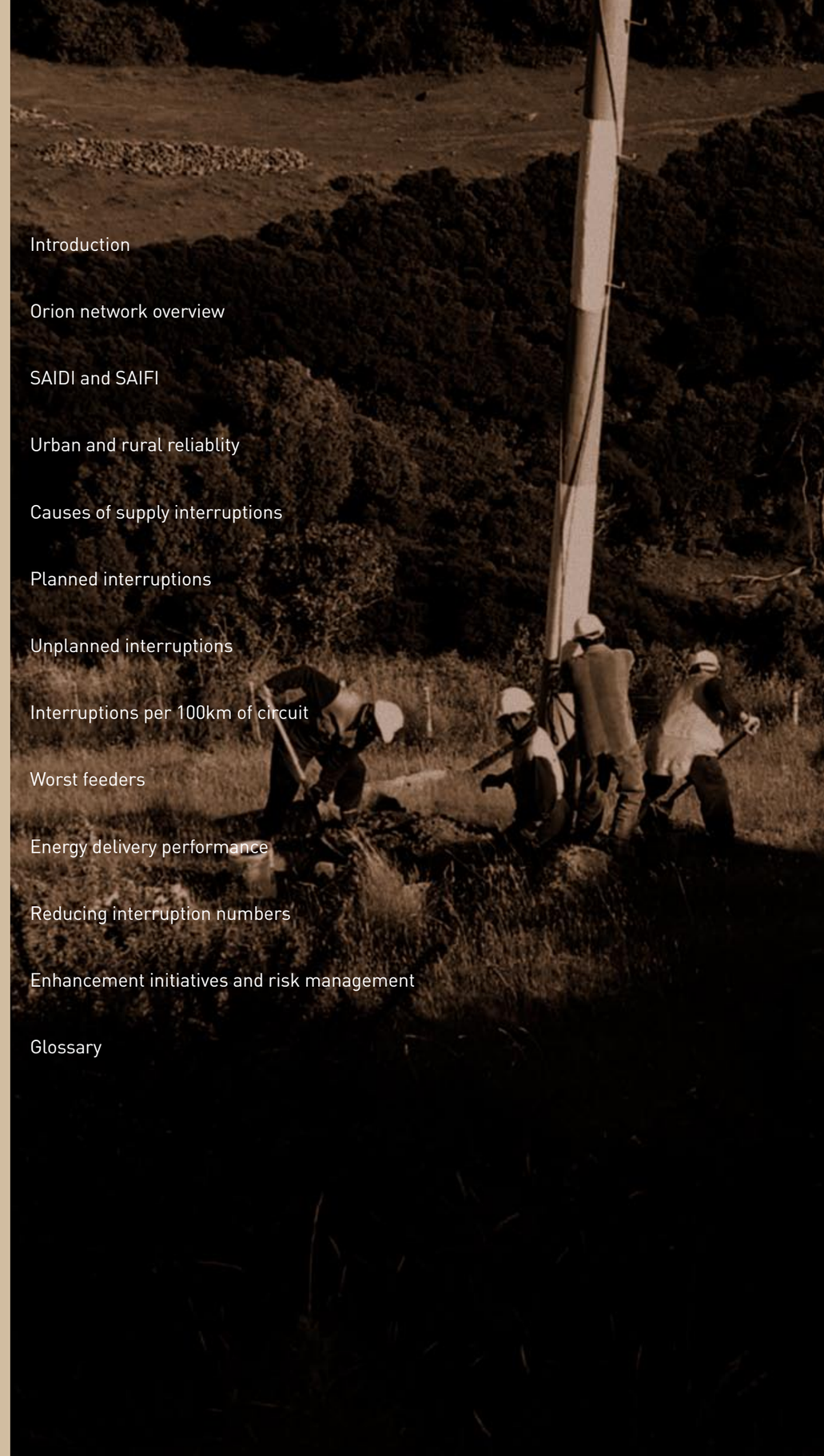


This report details Orion's achievements in meeting our primary goal – to provide our community with a reliable supply of electricity. It examines the initiatives we undertake to measure and improve the performance of our network and is the second annual Network Quality Report we have produced. Its overall purpose is to let our consumers, our owners and all of our stakeholders know how well we are doing at 'keeping the lights on'.

As you will see, Orion ranks as one the country's best performing electricity distribution networks. Over the last five years there have been fewer power outages per consumer in our network area than in any other area in New Zealand. Also, our consumers have been without power for a much shorter length of time – we have kept their lights on for 99.989% of the time.

Importantly we have achieved this excellent reliability performance while keeping our prices at below average levels. Over the last five years Orion's prices have fallen by over 15% in real terms, with the increase in electricity prices seen by consumers over the last few years being a result of higher costs imposed by generators and retailers.

We hope you find this Network Quality Report of interest. I welcome any comment you may have on it or any other aspect of Orion's performance.

Roger Sutton
CHIEF EXECUTIVE OFFICER

Orion network overview

Orion operates one of New Zealand's largest electricity distribution networks. We distribute electricity to over 175,000 consumers spread over approximately 8,000 square kilometres in the central South Island.

The vast majority of our consumers – over 86% - are domestic households; with the remainder being commercial or industrial premises.

Orion's network covers a varied area – densely populated residential neighbourhoods through to a widely dispersed rural population. To reach all of our consumers, Orion manages a sophisticated network of electrical assets, load control equipment and multiple computer systems.

Our network is continually growing. In the last few years there has been a strong growth in demand for electricity caused by increased irrigation in Canterbury's rural districts and high levels of construction activity in urban areas. Growth in demand for electricity is the principal driver of network investment by Orion.

NETWORK SUMMARY AS AT 31 MARCH 2005

Number of customer connections	177,500
Network maximum demand (MW)	577
Electricity delivered (GWH)	3,190
Total kilometres of lines and cables	13,300
Capital expenditure	$30.0m (forecast in year to 31 March 2006)
Network maintenance expenditure	$14.6m (forecast in year to 31 March 2006)
Value of network assets	$580m (as at 31 March 2004)

Over the last five years, our electricity distribution network has been the most reliable in New Zealand – we provided an electricity supply that was available 99.989% of the time. Also in that period, our operating costs were more than 20% below the New Zealand average. Our top priority is to continue to cost effectively improve the performance of our network.

To define what levels of service are expected of us, we undertake many consumer surveys and hold extensive discussions with network users. All feedback highlights the importance of 'continuity of power supply'. In particular, consumers expect:

- a continuous, uninterrupted electricity supply, and
- if interruptions do occur, a quick restoration of power.

Orion meets these expectations. On average, our consumers experience fewer than one interruption in power supply a year. When an interruption did occur last year, 71% of consumers affected had their power restored within one hour and 94% within three hours.

To help us achieve such impressive figures, we continually analyse the performance of our network. In other words we analyse how 'reliable' it is. This information is then used to target areas for improvement. The most important reliability performance measurements are detailed in this report.

A summary of some of this year's performance statistics is shown in the table.

Key service criteria	Quality characteristic (per annum unless otherwise stated)	Target level of service	Level of service for the year ended 31 March 2005	Outcome	New Zealand average (year ended 31 March 2004**)	Wellington and Auckland average (year ended 31 March 2004**)
Reliability	Interruptions per 100km of circuit	< 11.0	8.0	Achieved	8.6	14.5
Reliability	Interruptions per 100km of underground cable	< 3.0	3.1	Not achieved*	2.9	6.0
Reliability	Interruptions per 100km of overhead line	< 13.0	10.8	Achieved	10.9	22.9
Reliability	SAIDI[1]	< 63	52	Achieved	186	104
Reliability	SAIFI[2]	< 0.76	0.74	Achieved	2.3	1.4
Reliability	CAIDI[3]	< 83	70	Achieved	83	72
Efficiency	Capacity utilisation	> 33%	36%	Achieved	33%	40%
Power quality	Proven voltage complaints	< 70	18	Achieved	Not available	Not available
Power quality	Harmonics (wave form)	< 2	0	Achieved	Not available	Not available

* This target was not met due to the number of interruptions on 33kV and 11kV cables in the year to 31 March 2005 – although the number of 11kV interruptions has improved significantly since the previous year.

** latest available figures

Our targeted levels of service are based on an 'average' year of weather, not a year of unusually severe weather conditions. As a result we are unlikely to meet our targeted levels of service when severe climatic events occur. Such events generally occur every five or so years. For example when a severe snow storm hit Canterbury in 2002, we were unable to meet our targeted levels of service for the year ended 31 March 2003.

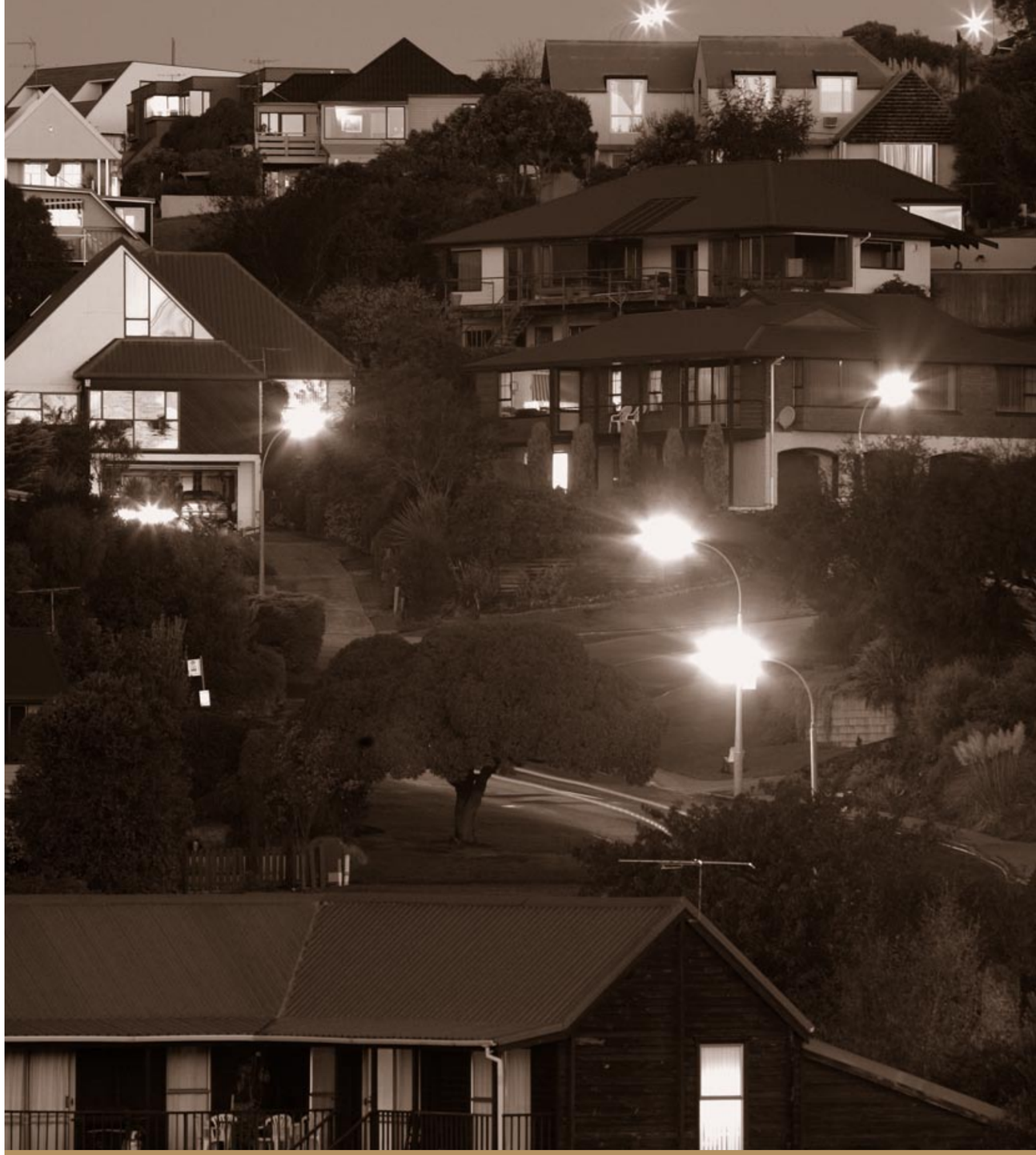
In the year ended 31 March 2005 no particularly severe weather storms occurred. As a result Orion was able to operate its network to very high levels of service.

More information on our network can be found in our publicly released Asset Management Plan and on our website (www.oriongroup.co.nz).

[1] SAIDI – System average interruption duration index. This is the average total duration of interruptions of supply that a consumer experiences in a period.

[2] SAIFI – System average interruption frequency index. This is the average number of interruptions of supply that a consumer experiences in a period.

[3] CAIDI – Customer average interruption duration index. This is the average duration of an interruption of supply for consumers who experienced an interruption of supply in the period.



We have been the most reliable electricity distribution network in New Zealand over the last five years.

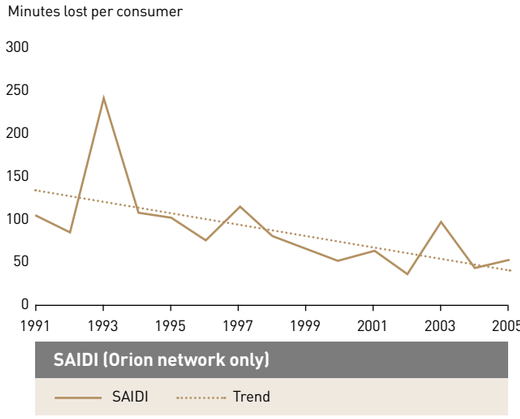
SAIDI and SAIFI

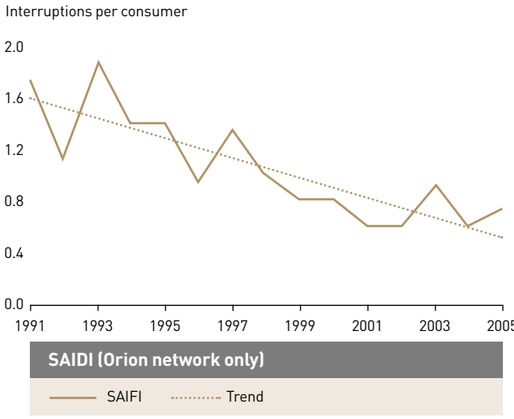
Two measures are accepted internationally as the most important indicators of electricity network reliability - SAIDI and SAIFI.

- SAIDI, or System Average Interruption Duration Index, measures the average number of minutes per annum that a consumer is without electricity.
- SAIFI, or System Average Interruption Frequency Index, measures the average number of times per annum that a consumer is without electricity.

As noted in the previous section, extreme weather events can have a major impact on the performance of an electricity network. When considering performance it is therefore more meaningful to look at the long term trend in an electricity network's SAIDI and SAIFI figures, rather than the figures for an individual year.

Looking at the trend of our network reliability performance figures since the early 1990s, we have significantly improved our performance.





Over the last five years Orion has been the:

- best performing New Zealand lines company in terms of the frequency of interruptions per consumer (SAIFI)
- the second best performing New Zealand lines company in terms of the duration of interruptions (SAIDI)[4].

[4] The only company with superior SAIDI results to Orion's is an urban-only network. Orion operates both an urban and a rural network. Rural networks usually have a greater number of interruptions than urban networks. There are 28 electricity distribution networks in New Zealand.

Orion's position relative to other New Zealand network companies, SAIDI (2000-2004)

Orion's position relative to other New Zealand network companies, SAIFI (2000-2004)

Internationally, Orion's network reliability also compares favourably based on the latest available five yearly average figures[5].

Network[6] (including transmission)	Five year average SAIDI (number of minutes of interruptions per annum)	Five year average SAIFI (number of interruptions per annum)
Orion	61	0.78
New Zealand average	176	2.33
Wellington and Auckland*	108	1.50
Australia average	199	2.44
United Kingdom average	86	0.84

* Wellington and Auckland figures are for the year ended 31 March 2004 only. This is due to no other figures for these areas combined being available prior to the purchase of United Networks by Vector in 2002.

With a five year SAIFI figure of 0.78, the average customer on Orion's network experiences fewer than one interruption per year.

[5] International comparisons should only be used to provide a general comparison of performance between different networks and countries. Various networks use different methods for the calculation of reliability data and thus the figures are approximate indicators only.

[6] New Zealand network figures from the Electricity Line Business and Gas Pipeline Business 2004 Information Disclosure Compendium, PricewaterhouseCoopers; Australian and United Kingdom data from Brian McGlinchy Consulting.

Urban and rural reliability

Orion's electricity network serves areas from high-density urban to medium-density rural and remote rural countryside. Each is served by a technically different type of electricity network.

In urban areas, Orion's electricity network is characterised by a network of 11kV 'primary' rings. These rings of 11kV (high voltage) cables connect our district substations to several hundred network substations. Network substations in turn supply power to a 'secondary' 11kV cable network to which several thousand distribution transformers are connected. These distribution transformers supply our low voltage network to which most of our consumers are connected.

This system is a very secure system because most of Orion's urban network substations have at least two sources of supply. If one source fails, a network substation can still be fed from an alternate source without a break in electricity supply.

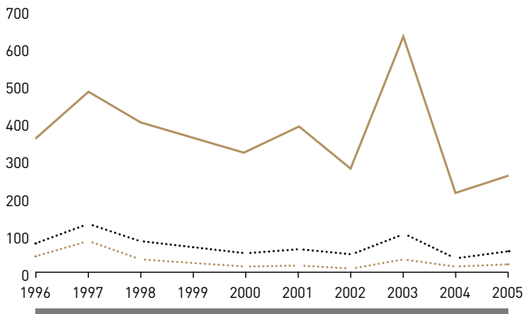
It is notable that over 40% of Christchurch's streets have underground electricity cables, rather than overhead lines. Overhead lines typically suffer more faults because they are exposed to the weather, to tree and animal related damage and traffic accidents. However, when underground cables do fault, they generally take longer to repair.

In contrast, Orion's rural network is mostly based on overhead 11kV power lines that serve diverse geographic locations such as Banks Peninsula, the central Canterbury plains and the Canterbury high country. In many instances, because of the distances involved and the number of consumers affected, it is not financially viable to have two sources of electricity supply, as we do in urban areas. This means that if supply to a rural consumer is interrupted there is no other means of getting power to that consumer. Interruptions in rural areas therefore generally result in the need to isolate the portion of our network causing the interruption, and repair it, before power can be restored.

The long circuit lengths and small consumer loads that are typical of rural networks mean it is uneconomic for Orion to install underground cables. Revenue from rural consumers is currently approximately $13m per annum, and at an estimated cost of $400m undergrounding Orion's rural network would result in very large price increases for our rural consumers.

The overall differences in network structure mean our urban network is more reliable than our rural network. On average, rural consumers experience around eight times more interruptions each year than urban consumers. Each interruption typically lasts about two times the duration of urban interruptions[7].

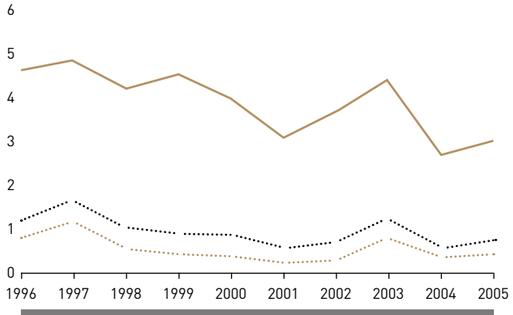
Minutes lost per consumer



Urban and rural SAIDI (Includes interruptions caused by Transpower)

Urban Rural Total

Interruptions per consumer



Urban and rural SAIFI (Includes interruptions caused by Transpower)

Urban Rural Total

[7] These relative differences between urban and rural reliability are thought to be typical of that experienced by other networks which service a diverse landscape. However it is impossible for Orion to confirm this as to the best of our knowledge Orion is the only New Zealand network company to publicly release separate urban and rural reliability figures.

Although the differences between the reliability of urban and rural sections of our network are quite pronounced, the reliability of our rural network is in line with the reliability of other rural networks in New Zealand. This is despite many of these other rural networks having sizeable townships in their area[8].

Rural network	Consumers per kilometre of circuit	Minutes without power per annum*	Number of interruptions per annum*
Orion (rural network only)	5.2	360	3.4
The Power Company (Southland)	3.8	203	3.8
Centralines (Hawkes Bay)	4.6	339	6.7
Mainpower (North Canterbury)	7.0	128	1.6
The Lines Company (King Country)	5.3	492	5.6
Electricity Ashburton	5.5	199	1.4
Top Energy (Northland)	7.1	379	5.6
Network Waitaki (North Otago)	5.9	95	1.2
Westpower (West Coast)	6.0	162	1.7

* Based on latest available five year average figures.

* Excludes transmission.

Urban network	Consumers per kilometre of circuit	Minutes without power per annum*	Number of interruptions per annum*
Orion (urban network only)	19	22	0.43
Electricity Invercargill	25	47	1.32
Vector (Auckland and Wellington)	23	108	1.50
Nelson Electricity	36	62	1.26
London Electricity	204	42	0.41
CitiPower (Melbourne)	72	42	0.78

* Based on latest available five year average figures with the exception of figures for Vector (Auckland and Wellington) whose figures are for the year ended 31 March 2004 only. This is due to no other figures for these areas combined being available prior to the purchase of United Networks by Vector in 2002.

* Includes transmission. Overseas comparables are not available excluding transmission. Comparable figures for Dunedin are not available as they do not publicly release separate urban and rural reliability figures.

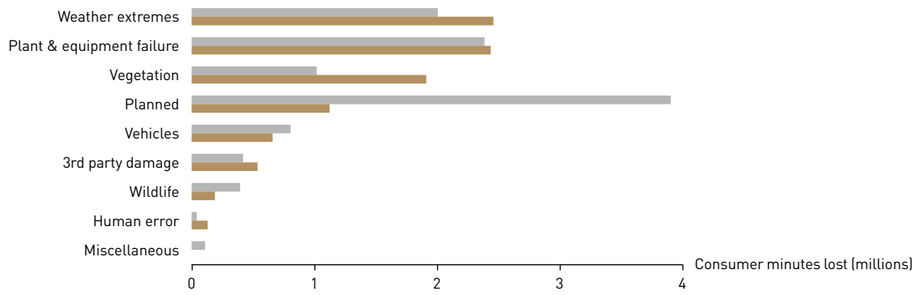
[8] The largest township in our rural network area is Lincoln with a population of 2,300 (2001 census).

On average Orion's customers experience fewer than one interruption to their electricity supply per year.

Causes of supply interruptions

No electricity supply system is perfect. Periodic loss of supply can be caused by circumstances beyond a power company's control (wind, snow, equipment failure, traffic accidents, a shortfall in power generation etc.) or by planned interruptions when the power company needs to turn the power off for a purpose.

Five years ago the primary cause of interruption on our network was planned (or programmed) interruptions, such as where we purposely turned off the power to complete maintenance. Today however most interruptions are caused by severe weather, with plant and equipment failure second and tree problems third.



Cause of interruptions on Orion's network

1996-2000 average 2001-2005 average

The reduced impact of planned interruptions over the last five years is due to improved maintenance techniques by Orion. We have increased 'live-line' working practices and altered our maintenance programme for aging equipment. In the last year we have also introduced the use of a high technology 'corona camera' which can detect defective equipment on the network that the naked eye and other commonly-used maintenance techniques cannot.

Additional performance improvements have been achieved by shortening existing feeders as additional district substations have been installed. This means that fewer consumers are affected by any one interruption, unless the number of consumers on that line increases dramatically.

When an interruption does occur, our website (www.oriongroup.co.nz) displays details on what area is affected, the reason for the interruption and an estimate of the length of time before power supply will be restored. This information can also be obtained by telephoning Orion (03-363-9898).

Opposite: An Orion engineer looking for defective equipment with a corona camera.

Planned interruptions

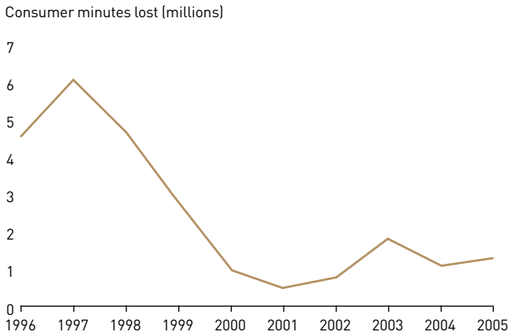
In general, Orion prioritises the maintenance of assets that supply the greatest number of consumers.

As Orion's distribution network is hierarchical with the highest voltage at a few input points (Transpower grid exit points) and the lowest voltage at the many output points (consumer connections), those parts of the network that operate at higher voltage are given higher maintenance priority.

We typically schedule around 70% of our annual network maintenance expenditure in advance (ie. 'planned' work). Another 15% of maintenance is required but not planned for, such as pole relocation for road works, with the balance allocated to emergency work to keep the network in service.

Consumers affected by planned interruptions are notified at least five days in advance by Orion or an Orion authorised contractor of the outage. This allows households and businesses time to prepare for the loss of power supply.

During the year to 2005 there were 316 planned interruptions to our network. Of these the top ten interruptions accounted for just under 28% of the total number of consumer minutes lost through planned interruptions. The longest any consumer was without power was just over 11 hours. This interruption related to a major refurbishment of high voltage lines by Transpower and Orion in an area where there was no alternative supply available.



Total minutes lost through planned interruptions

The five largest planned interruptions on the Orion network in the year to 31 March 2005

Date	Area(s) affected	Reason for interruption	Interruption duration	Number of consumers affected	Total consumer minutes lost*
17 Sep – 6 Oct 2004**	Lake Coleridge	Major refurbishment of lines by Transpower and Orion in an area with no alternative supply available	30 hrs 23 mins	104	189,592
12 Oct 2004	Rolleston-south	Pole replacement as part of programmed maintenance	6 hrs 46 mins	90	36,540
12 Aug 2004	Kaituna/Birdlings Flat	Pole replacement as part of programmed maintenance	6hrs 3 mins	98	35,574
1 Feb 2005	Purau-east/Port Levy	Maintenance of transformer on overhead line	7 hrs 51 mins	71	33,441
23 Feb 2005	Lake Coleridge	Further maintenance on Transpower equipment	4 hrs 34 mins	104	28,496

* The 'total consumer minutes lost' calculation assumes that all consumers whose supply of electricity is affected by the interruption are actually affected. In reality some homes and businesses will not be using electricity at the time of these interruptions, some people may be at work or the dwellings may be holiday homes. The total consumer minutes lost figure therefore overstates the actual number of minutes lost.

** The work that gave rise to this planned interruption took place over four separate days that were spread over three weeks.

Unplanned interruptions

Electricity supply interruptions that cannot be predicted account for approximately 15% of Orion's annual maintenance expenditure. These 'unplanned interruptions' are generally the result of plant and equipment failure, severe weather, and trees hitting lines.

When unplanned interruptions occur, our aim is to get the power back on as soon as possible. Orion's consumer surveys show that approximately 90% of our consumers consider rapid restoration of power important. While we appreciate that very short interruptions can be inconvenient, in most cases a short interruption is less problematic to consumers than a longer interruption to supply.

In recent years Orion has substantially increased the number of line circuit breakers on our rural overhead lines. Line circuit breakers help reduce the disruption caused by lightning and other transient events, like branches hitting wires.

When these events happen line circuit breakers quickly cut off the power so that no permanent damage is caused to the line. After a few seconds, when the lightning has ended or the branch falls away, the circuit breakers switch back on and power is automatically restored. If the cause of the interruption remains, the line circuit breaker 'locks-out', cutting off the supply until the cause is found and rectified.

Orion's use of technology, such as line circuit breakers, and advanced network planning have meant we have considerably reduced the effect of unpredictable events on our network over the last ten years. In that period we have also improved our approach to tree maintenance. Advance cutting of trees and branches reduces the probability of tree debris causing interruptions during storms.

In the year ended 31 March 2005, 71% of consumers who experienced an interruption had their power supply restored within one hour. 94% were restored within three hours.

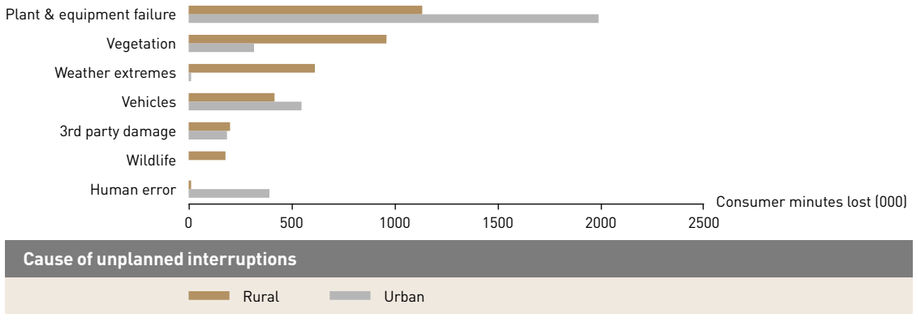
The following table shows the five largest unplanned interruptions that occurred on the Orion network in the year ended 31 March 2005.

The five largest unplanned interruptions on the Orion network in the year to 31 March 2005

Date	Area affected	Reason for interruption	Interruption duration	Number of consumers affected	Total consumer minutes lost*
12 Jan 2005	Lyttelton	Control equipment did not operate properly following a cable fault and resulted in a loss of supply	1 hr 25 mins	6,674	320,601
18 Sep 2004	Prebbleton	High voltage cable fault	5 hrs 9 mins	1,400	289,635
18 Sep 2004	Leeston/ Southbridge	Strong winds caused a tree to fall onto 33kV line. Restoration was hampered by windy conditions	3 hrs 37 mins	1,857	245,194
18 Sep 2004	Templeton-south	Substation control equipment failed	5 hrs 9 mins	851	243,506
2 Jul 2004	Redcliffs/Sumner	A major transformer failed while the back-up transformer was undergoing scheduled maintenance	0 hrs 43 mins	6,583	217,545

* The 'total consumer minutes lost' calculation assumes that all consumers whose supply of electricity is affected by the interruption are actually affected. In reality some homes and businesses will not be using electricity at the time of these interruptions, some people may be at work or the dwellings may be holiday homes. The total consumer minutes lost figure therefore overstates the actual number of minutes lost.

The following chart shows the causes of unplanned interruptions on Orion's rural and urban networks in the year ended 31 March 2005. It shows that weather and trees have a greater effect on the rural network than the urban network. This reflects the higher proportion of overhead lines in Orion's rural network.



Interruptions per 100km of circuit

Orion uses 'interruptions per 100km of circuit' statistics to help determine which areas of our network require maintenance or upgrading.

We gather these statistics each year across the following asset categories:

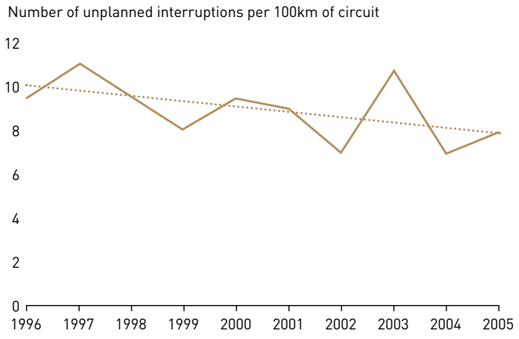
- 66kV, 33kV, and 11kV
- line and cable
- urban and rural

In the year ended 31 March 2005 Orion achieved the following interruptions per 100km of circuit results.

Interruptions per 100km of circuit (planned & unplanned interruptions)

Voltage	Category	Length (km)	Approx % urban/rural	Urban	Rural	Total
66kV	Line	104	53/47	0.0	2.0	1.0
	Cable	63	100/0	1.6	0.0	1.6
33kV	Line	318	13/87	0.0	4.3	3.8
	Cable	25	92/8	4.3	0.0	4.0
11kV	Line	3,255	10/90	30.1	18.4	19.5
	Cable	2,009	99/1	5.4	99.6	6.3

The chart below shows Orion's performance over the last ten years with regard to the number of unplanned interruptions per 100km of circuit[9].



Comparisons with other New Zealand network companies (with broadly similar types of network to Orion) show that we currently perform well on this statistic[10].

[9] This statistic differs slightly from those in the table on this page, in that it only details unplanned interruptions. Comparisons with other New Zealand network companies can only be made on an unplanned interruption basis. Comparable planned interruption statistics are not available.

[10] Orion has a consumer density ratio of approximately 13 consumers per kilometre of circuit. Eight other New Zealand network companies have a consumer density ratio of between 10 and 20 consumers per kilometre of circuit. Of these eight companies only one had a better interruption per 100km of circuit record than Orion in the year ended 31 March 2004 (latest available figures).

Worst feeders

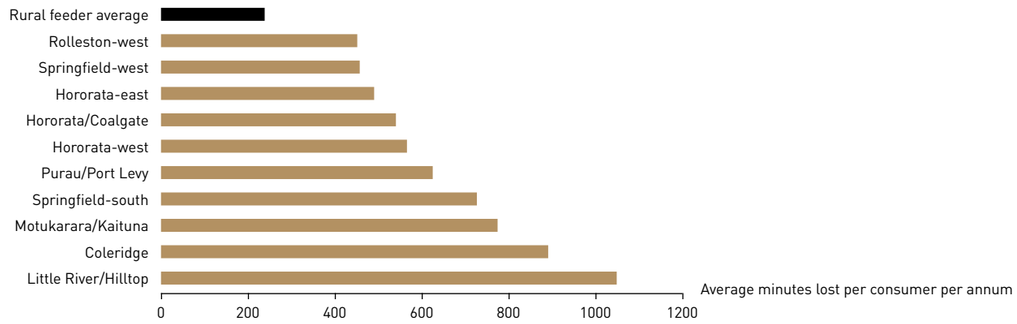
Generally speaking a feeder is defined as a circuit that originates at a district substation and supplies several households or businesses.

Orion's network has both 11kV feeders and 400 volt feeders. An 11kV feeder on our network typically serves more consumers than a 400 volt feeder. Our network has 74 rural 11kV feeders and 336 urban 11kV feeders originating from our district substations.

Each year different 11kV feeders on our urban network feature as having the worst performance. For instance in one year an 11kV feeder in Hoon Hay may be the worst performing but the following year it is an 11kV feeder in Brighton. This reflects the fact that one-off incidents, generally caused by equipment failure, dictate the performance of our urban network.

In a consumer survey of 1,000 urban consumers undertaken by Orion in 2004, over 90% of urban consumers expressed satisfaction with the reliability of their power supply. A consumer survey of rural consumers will be undertaken in 2005.

The ten worst performing feeders on our rural network are shown below. Typically they are the rural feeders which are most adversely affected by storm damage in any year. Of these ten, two were hit by wind storms in 2001 and the remaining eight by snow storms in 2003. If the impact of these storms is removed the results for these ten feeders are in line with the rural feeder average.



Orion's 10 least reliable rural feeders (SAIDI) – 2001-2005 average (unplanned interruptions only)

Energy delivery performance

Line losses

As electricity passes through lines, cables and transformers it creates a small amount of heat which is effectively lost into the surrounding air. Such 'losses' are natural physical phenomena and are experienced by all electricity distribution networks. They cannot be avoided completely and mean that electricity retailers must purchase more energy from generators than is actually delivered to households and businesses.

Orion's policy is to maintain what is termed a 'low loss network', where overall losses are estimated at below 5% of energy delivered. We do this by following good industry practice with respect to sound network design principles. These principles are laid out in our Asset Management Plan.

For instance, when purchasing transformers we take into account the 'loss factors' of the different transformers available, as well as their price.

Line losses on our rural network can also be limited by maintaining relatively close control of operational voltage levels. We choose transmission and distribution voltages and conductor sizes to best suit the load density as overloaded conductors produce more line losses.

Orion's extensive urban cable network is inherently a low loss system.

Load factor

An electricity network does not always have the same amount of electricity passing through it. In Christchurch for instance, the demand for electricity is higher on cold winter days than warm summer days. The average load that passes through a network divided by the maximum load the network experiences that year produces a statistical measure called a network's 'load factor'. Load factor measures the constancy of load on an electricity network throughout a year.

Load factors always vary across different networks. This is a function of varying weather conditions and each network having a different mix of industrial, residential and rural consumers. For instance a network in an area that generally has an even climate throughout the year will typically have a higher load factor than networks in areas with large temperature variances.

Nevertheless, all networks seek to maximise their load factor. This is because a high load factor indicates a better utilisation of network assets (ie. their assets are more frequently utilised up to their electrical rating).

For the year ended 31 March 2005 Orion's load factor was over 63%. It has trended upwards over the last 10 years by 0.68% per annum.

It is unlikely that this trend will continue however, as our load factor cannot increase indefinitely. This is a reflection of Canterbury's temperature fluctuations and our mix of electrical consumers. Also, Christchurch's clean air initiatives will cause an increase in Orion's peak demand as people switch to electrical heating and, in time, cause Orion's load factor to decline.

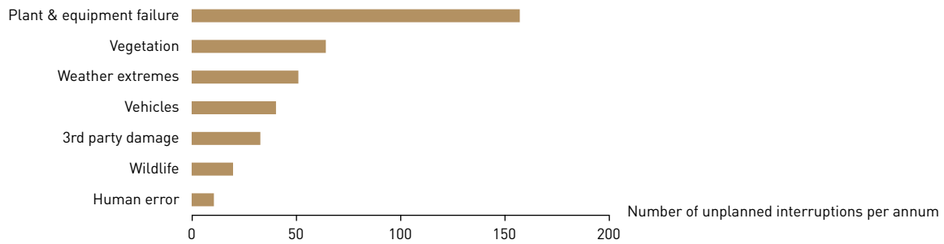
Capacity utilisation

Capacity utilisation is a measure of how well a network's transformers are utilised. It is calculated as the maximum demand experienced on an electricity network in a year divided by the transformer capacity on that network.

In the year ended 31 March 2005 our capacity utilisation factor was 36%. The average capacity utilisation factor of New Zealand's electricity distribution companies was 33% in the year to 31 March 2004 (the latest available comparable figure).

Over the last five years Orion has kept the lights on for 99.989% of the time.

Reducing interruption numbers



Cause of unplanned interruptions – 2001-2005 average

Three factors cause approximately 70% of Orion's unplanned interruptions; plant and equipment failure, trees and weather.

Plant and Equipment Failure

Plant failure is always going to happen. However certain actions can be taken that reduce the frequency.

Orion has a policy of buying reliable equipment rather than the cheapest equipment. We also place great importance on effective maintenance regimes.

Regular monitoring allows us to prioritise replacement and refurbishment based on the actual condition of equipment rather than just its age. Our maintenance programme has been proved to reduce the failure of plant and equipment and prolong the life of our assets, hence reducing long term replacement costs.

In addition to maintenance, Orion also continues to investigate the manner in which equipment is used and installed. We continually look for ways to improve our plant reliability. For example, Orion carries out thermal engineering checks of underground cables and recently put in place several initiatives to reduce problems experienced with metal-clad switchgear and associated terminations. Our approach to improving the reliability of our plant and equipment also includes inspecting overhead lines and substations using state of the art technology such partial discharge tests, corona camera visual checks and infra-red camera checks.

Weather

Strong wind, heavy rain and lightning can damage equipment and cause interruptions to power supply. While the weather is beyond our control, Orion ensures it selects plant and equipment that is able to withstand most of the vagaries of our local climate.

Unlike overhead lines, underground cables are generally not affected by weather and other environmental factors. This is why, in partnership with our local councils, Orion spends approximately $3 million each year on 'undergrounding'. As more overhead lines are replaced, interruption rates from weather and the environment will fall. While desirable, it is unlikely that the rate of undergrounding in urban areas will increase above current levels as it is very expensive and local councils must also consider other community projects that could utilise this money.

Other measures that Orion applies to reduce the effect of weather on its network include installing more line circuit breakers, continuing to shorten feeder lengths and replacing existing bare conductors with covered conductors.

As travelling time can have a significant impact on the time it takes to repair faults, particularly in rural areas, we are continuing to expand the remote control capabilities of our network. This will allow us to more quickly restore electricity supply to consumers affected by an interruption.

Trees

An effective way to reduce the number of interruptions on overhead lines is to keep tree branches at a safe distance. Our expenditure on tree trimming is approximately $800,000 per annum and this expenditure is estimated to reduce annual consumer minutes lost by 500,000 to 1 million. This equates to reducing total unplanned interruptions on our network by up to 15% per annum. To ensure that we carry out tree trimming in an environmentally responsible and safe manner, Orion uses the services of qualified arborists.

In July 2005 new tree trimming legislation comes into effect. This legislation clearly establishes safe distances between trees and lines, establishes land owner's responsibilities for keeping their trees clear of lines and clarifies network companies rights to trim trees. Orion welcomes the new legislation.

Other

Just under 30% of unplanned interruptions are due to causes other than those described above. They include vehicle accidents, wildlife and human error. Orion continues to examine the reasons for these interruptions and look for ways to reduce their incidence in the future.

Enhancement initiatives and risk management

Orion's enhancement initiatives are driven by three aims – to improve reliability, improve security of supply and reduce the risk of catastrophe.

Catastrophes include natural disasters (such as earthquakes and storms) or major asset failure.

Earthquakes

All of Orion's district substations have been assessed for likelihood of damage in the event of an earthquake. Where necessary, district substations have been strengthened to bring them into compliance with current building codes. With regard to Transpower's network, on which we are heavily dependent, two of Transpower's sites (Addington and Bromley) have ground conditions which may be susceptible to liquefaction.

Severe Weather

Orion's network is not exposed to any significant risk from flooding. A wind storm is likely to cause considerable damage. Snow storms pose some short term risk but no long term risk.

Major Asset Failure

In recent years, Orion has reduced the risk of a major asset failure affecting our network through the application of partial discharge testing, our 66kV joint replacement programme (to protect against the risk of thermal expansion of conductors) and the introduction of an 11kV ripple control system.

A number of major projects have been identified as necessary expenditure in the next year. The five largest projects (by expenditure) are explained below.

The five largest (by expenditure) projects in the year to 31 March 2006

	$000
Hororata to Greendale 66kV line and substation – to meet new irrigation load and relieve load on the Highfield, Bankside and Darfield district substations. In the short term, it will also provide additional capacity security during Hororata 33kV GXP contingencies.	3,790
11kV ripple plant in the Islington area – to improve security of supply, via permanent and temporary load transfers, to areas around Islington. 175Hz 11kV ripple plants will be installed at six district substations. Three (at Moffett, Harewood and Sockburn district substations) in 2006 and three in 2007.	990
Hornby/Sockburn transformer alterations – to utilise spare transformer capacity at Hornby district substation and relieve load on the fully utilised 33kV Sockburn and Moffett district substations. 11kV cables will be laid between substations. This project also enables relief of the Prebbleton 11kV feeder out of Shands Road district substation.	811
Barnett Park transformer – over the next 5-10 years, major half life transformer maintenance is required at all of Orion's urban 66/11kV district substations. To maintain security during maintenance, the existing Barnett Park transformer (40MVA) will be shifted around each of the sites as required. The purpose of this project is to replace that transformer with a new 23MVA transformer (with installation scheduled for 2007).	600
Reinforce the Hornby 33kV feeder – transformer capacity at Shands and Hornby district substations currently exceeds the 33kV subtransmission capability. This project will lay a new 33kV feeder from Islington to Hornby district substation, which will provide sufficient capacity for 3-5 years load growth in the area.	595
	6,786

In addition, Orion will spend a further $23m in the next year on other capital expenditure projects that connect new consumers, reinforce the network and replace aging equipment. We will also spend over $14m on maintenance. More information on our capital expenditure and maintenance plans can be found in our Asset Management Plan.

A summary of the expenditure forecast to be spent on capital and maintenance over the next five years is shown below.

	2006	2007	2008	2009	2010
Capital expenditure ($m)	30.0	32.7	28.8	30.5	38.1
Maintenance expenses ($m)	14.6	13.8	13.7	13.8	13.5

Orion's investment and maintenance expenditure is characterised by:

- increased expenditure in Christchurch city – due to urban growth/infill and Environment Canterbury's impending Clean Air Plan
- steady medium term investment in rural areas - to meet increasing irrigation load
- increasing capital expenditure in the longer term - to replace assets installed during the growth bulge of the 1960s which are now reaching the end of their service life

Orion's highest priority remains the continued cost-effective improvement in the performance of our network.

Glossary

CAIDI: an index which measures the average duration of interruptions to supply for consumers that have experienced an interruption to supply, in a period. Usually calculated on a per annum basis.

Capacity utilisation: a ratio which measures the utilisation of transformers in the system. Calculated as the maximum demand experienced on an electricity network in a year divided by the transformer capacity on that network.

Conductor: includes overhead lines which can be covered (insulated) or bare (not insulated), and underground cables which are insulated.

Distribution transformer: a device that changes voltage up to a higher voltage or down to a lower voltage.

Feeder: a physical grouping of conductors that originate at a district substation and supply a number of consumers.

Grid exit point: a point where Orion's network is connected to Transpower's transmission network.

Harmonics (wave form distortion): a distortion to the supply voltage which can be caused by network equipment and equipment owned by consumers including electric motors or even computer equipment.

High voltage: voltage exceeding 1,000 volts, generally 11,000 volts or 11kV.

Line circuit breaker: a device which quickly cuts off power to a line after a fault so that no permanent damage is caused to the line. It switches power back on to the line after a few seconds if the cause of the fault has gone (eg. a branch has blown off a line).

Low voltage: voltage not exceeding 1,000 volts, generally 230 or 400 volts.

Maximum Demand: the maximum demand for electricity during the course of the year.

Network deliveries: total energy supplied to our network through Transpower's grid exit points. Usually measured as energy supplied over the course of a year.

Outage: an interruption to the supply of electricity.

Proven voltage complaint: a complaint from a consumer concerning a disturbance to the voltage of their supply which has proven to be caused by the network company.

Rural: the rural network covers all areas other than Christchurch city and includes rural towns.

SAIDI: an index which measures the average duration of interruptions to supply that connected consumers experience in a period. Usually calculated on a per annum basis.

SAIFI: an index which measures the average number of interruptions to supply that connected consumers experience in a period. Usually calculated on a per annum basis.

Distribution substation: a major building substation and/or switchyard with associated high voltage structure where voltage is transformed from 66 or 33kV to 11kV, two or more incoming 11kV feeders from a grid exit point are redistributed or a ripple injection plant is installed.

Network substation: a building substation which is part of the 11kV network and provides protection to connected cables and overhead lines.

Ripple control system: a system used to control the electrical load on the network by, for example, switching load such as domestic water heaters off, or signalling to large users they are in a high price period (thereby encouraging them to use as little power as possible during that time).

Transpower: the state owned enterprise that operates New Zealand's transmission network. Transpower delivers electricity from generators to various networks around the country.

Urban: the urban network largely covers Christchurch city.

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