

Commerce Act (Electricity Distribution Thresholds) Notice 2004

Threshold Compliance Statement

Consumer Engagement

Fourth assessment (31 March 2006)

(issued 12 May 2006)

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SUMMARY

- 1 This report details Orion's compliance with the customer communication requirements of section 6(1)(c) of the Commerce Act (Electricity Thresholds) Notice 2004 (the *notice*).
- 2 We outline:
 - 2.1 the consumer engagement requirements of section 6(1)(c);
 - 2.2 the consumer engagement best practice recommendations identified in the Parsons Brinckerhoff Associates report (*the PBA report*) prepared for the Commerce Commission in April 2005¹;
 - 2.3 Orion's main customer groups;
 - 2.4 Orion's asset management planning process and customer involvement in that process;
 - 2.5 Orion's security of supply standard and customer involvement in that standard;
 - 2.6 customer engagement carried out via retailers;
 - 2.7 customer surveys undertaken by Orion;
 - 2.8 direct customer feedback; and
 - 2.9 customer consultation over pricing and major projects.
- 3 Orion believes that a continuous process of customer consultation is necessary to provide customers with service levels that meet their long term needs. We regularly undertake the customer engagement exercises listed above in sub-paragraphs 2.4 – 2.9 to ensure that we know customers' views and preferences.
- 4 Both our asset management plan and our security of supply standard reflect customer requirements. Our asset planning process incorporates customers' views on:
 - 4.1 the quality of service that we supply, and

¹ Parsons Brinckerhoff Associates, *Electricity Distribution Business and Asset Management Plans and Consumer Engagement: Best Practice Recommendations*, April 2005

- 4.2 the price-quality trade-offs that surround our service quality level.
- 5 We endeavour to provide a quality of supply that meets customers' requirements while taking into consideration the range of customers that we serve.
- 6 Based on all available information, we believe the large majority of our customers are satisfied with the level of service that we provide and our asset planning decisions.
- 7 We will continue to engage with customers to ensure our future asset planning decisions reflect customer requirements.

QUALITY THRESHOLD - CONSUMER ENGAGEMENT CRITERION

Section 6(1)(c)

- 8 The Commerce Commission's quality threshold (as set out in the thresholds decisions paper² and the notice) specifies the consumer engagement criterion in relation to quality. Section 6(1)(c) of the notice states:

(6) Quality Threshold

(1)(c) customer communication: at least once during the period of 2 years ending 31 March 2006, and at least once during the period of 2 years ending 31 March 2008, a distribution business is to –

- (i) properly advise (or ensure that another person properly advises on its behalf) its customers (or another person that accurately reflects the interests of those customers) about the price-quality trade-offs available to them in relation to the goods and services provided by the distribution business; and*
- (ii) consult (or ensure that another person properly consults on its behalf) with its customers (or another person that accurately reflects the interests of those customers) about the quality of goods and services that they require, with reference to the prices of those goods and services; and*

² Commerce Commission, *Regulation of Electricity Lines Businesses Targeted Control Regime Thresholds Decisions (Regulatory Period Beginning 2004)*, 1 April 2004

- (iii) *properly consider the views expressed by customers during and after that consultation; and*
- (iv) *adequately take these views into account when making its asset management decisions.*

9 The Commission acknowledged that the method of meeting the requirements of section 6(1)(c) is not clear-cut, and stated in its thresholds decisions paper³ that:

In the case of the consumer engagement criterion, the Commission does not intend to prescribe the manner in which lines businesses demonstrate compliance. The Commission is aware that distribution businesses are required to disclose asset management plans annually, and considers that consumer engagement should be central to the asset management planning process. Therefore, the documented asset management plans are likely to be an important component for demonstrating compliance with the consumer engagement criterion, provided the Commission is satisfied with the scope and detail of such plans, and with the nature of engagement with consumers.

10 The Commission also noted:⁴

...lines businesses should be able to demonstrate:

- *how they engage with consumers, directly or indirectly, to explain the trade-offs between quality and price, and to assess consumers' willingness to pay for different quality levels;*
- *what service offers or commitments they make to consumers, directly or indirectly, in response to information obtained during these engagements;*
- *how they make decisions about target quality levels;*
- *what types of contractual or other arrangements, if any, they enter into in relation to quality; and*
- *how they plan to deliver the target quality in terms of medium-term service delivery.*

³ Ibid, para 83

⁴ Ibid, paras 93 - 95

For the avoidance of doubt, the Commission does not require lines businesses to embark upon exhaustive or comprehensive research into consumers' willingness to pay for different levels or quality of line services. However, the Commission does require lines businesses to demonstrate that they have well developed business processes directed at understanding and responding to the preferences of consumers.

Distribution businesses may choose to engage directly with consumers and/or consumer groups, and/or via the retailers with which they have use of system agreements. However, in the latter cases, distribution businesses should be confident, and should seek to demonstrate to the satisfaction of the Commission, that the retailers or consumer groups accurately reflect the interests of the consumers which they supply or represent.

The PBA report - best practice recommendations

- 11 The PBA report identified best practice recommendations for consumer engagement by lines businesses.
- 12 In particular, the PBA report recommended that consumers be divided into two categories – large and small users. In general, large users are supplied by dedicated assets or assets engineered to meet a consumer's specific requirements and small users are supplied from the shared distribution network.⁵
- 13 The report acknowledged that not all the engagement options may be feasible in all circumstances – lines businesses should identify what is practical in their situation.⁶
- 14 The following three main components were identified for best practice engagement with small consumers:⁷
 - 14.1 regular one-way communication between a distribution business and all small consumers on service levels provided. Where practical, this should be broadly segmented by network area so the indicators are more closely related to the service levels experienced by individual consumers;

⁵ Parsons Brinckerhoff Associates, *Electricity Distribution Business and Asset Management Plans and Consumer Engagement: Best Practice Recommendations*, April 2005, p 63

⁶ Ibid

⁷ Ibid

- 14.2 provision of a communication channel whereby individual consumers can provide direct feedback on the service levels received; and
 - 14.3 a demonstrated willingness by a distribution business to be responsive to feedback received. Often the problem will relate to an asset problem at a specific location that can be readily addressed.
- 15 The following tables set out the best practice recommendations for engagement with large consumers:⁸

⁸ Ibid, p 64

Table 1: Engaging with large consumers: providing information

Information to be provided to large consumers	Recommended means of communication	Comments
<p>Definition of service levels offered (in general, or as agreed for specific supplies)</p> <p>(to be provided annually)</p>	<ul style="list-style-type: none"> • Direct relationships using dedicated staff • Mailed information pieces • Individual meetings by key account managers • Published AMPs • Trade-fairs or seminars 	<p>Service levels offered should be consistent with the distribution business AMP, tariff schedules, or as negotiated with the consumer</p>
<p>Actual performance against service level targets</p> <p>(to be provided annually)</p>		<p>Actual performance of the distribution businesses against the service levels offered should be described, for the last year</p> <p>Performance descriptions should correspond with that in the AMP, or the measures negotiated with the consumer</p>
<p>Price/quality options:</p> <ul style="list-style-type: none"> • Negotiated, tailor-made connections/supply networks (at desired reliability level) • Demand control • Time-of-use prices • Fail-safe supplies • Power factor correction options • Harmonic filtering options • Split quality supplies 		<p>In general, the supplies to large industrial consumers should be individually negotiated, advising consumers of the available price/quality alternatives</p>
<p>Contact details or feedback mechanism (if not through key account manager)</p>		<p>Large consumers should have direct access to key account managers</p>

Table 2: Engaging with large consumers: obtaining information

Information to be obtained from commercial consumers	Recommended means of communication	Comments
Consumer satisfaction levels (to be assessed at least annually)	<ul style="list-style-type: none"> • Feedback sessions with key account managers • Mail-out surveys • Phone surveys 	<ul style="list-style-type: none"> • See survey design criteria (section 6.3.4 of PBA report) • General trends may be more important than absolute information • Individual problems to receive direct technical attention • Satisfaction with service levels to be recorded in AMP
General desire for change to service levels	Should form part of survey questions, or as negotiated with individual consumer	<ul style="list-style-type: none"> • Questions guided by actual service levels experienced • Performance descriptions should correspond with that in the AMP, or the measures negotiated with the consumer
Frequency/type of complaints received (as these arise)	<ul style="list-style-type: none"> • Through key account managers or call centre • Other consumer communication received • Web-logged complaints 	Valid complaints should be tracked as a consumer service performance measure. May have contractual implications
Requests for service level changes by individual consumers	<ul style="list-style-type: none"> • Through key account managers • Direct approaches 	Changes in consumption patterns by large consumers could have major network implications – to be accommodated in forecasts and AMPs

16 We outline below our compliance with the customer communication requirements of section 6(1)(c). In doing so, we detail our compliance with the PBA report best practice recommendations identified above.

ORION'S CUSTOMERS

- 17 Orion's customers comprise the following four main groups:
- 17.1 residential customers (approximately 135,000). Most of these customers are in Christchurch;
 - 17.2 rural customers (approximately 20,000). These customers are located throughout our network (which runs between the Waimakariri and Rakaia rivers) in varying topography, from Banks Peninsula to the Canterbury plains and the Southern Alps;
 - 17.3 irrigation customers. Orion's network serves approximately 1400 irrigation installations. These installations vary from small scale domestic pumps of a few kW to large scale deep well pumps of 200-300kW. Many farms contain several deep-well pumps and total connected load per farm can exceed 1MW. Approximately 860 irrigation installations have pump capacities exceeding 20kW. Orion's rural network reinforcement over the last six years has largely been driven by the installation of deep-well pumps along the north bank of the Rakaia river and the upper plains between Darfield and Burnham. Approximately \$13m of rural 66kV and 33kV subtransmission and district substation capital investment has occurred over the last six years. New irrigation connections also require an extension of the existing 11kV distribution network, and sometimes also require upgrades to historic 11kV network capacity. Few networks outside of Canterbury supply this type of customer on this scale; and
 - 17.4 business customers (approximately 25,000). These customers vary in size from small/medium sized businesses to large, high electricity usage businesses. The 375 largest business customers are regarded as major customers.
- 18 We engage with these groups collectively, and separately, in a variety of ways. Our extensive consultation ensures that, as far as practicable, all customer groups are satisfied and no one party is unfairly advantaged or disadvantaged. The sections below set out methods of engagement for the different customer groups, and how feedback gathered from customers is taken into account and incorporated into Orion's asset management process.

ASCERTAINING ‘AGREED LEVELS OF SERVICE AND QUALITY’

- 19 Each of our four customer groups has different needs in regard to the quality and level of service they require from Orion’s network. Their views also differ on the price they are willing to pay for that quality of service. Even within these groups, customer opinions vary.
- 20 Each year Orion publicly discloses an asset management plan. The plan looks ahead for at least 10 years and identifies the principles we use for maintaining our existing network and the basis for future network extensions.
- 21 The purpose of Orion’s asset management planning process is:
- To provide, maintain and operate Orion’s electricity network while meeting agreed levels of service, quality, safety and profitability.*
- 22 Setting ‘agreed levels of service, quality, safety and profitability’ is not a simple process as the diverse range of customer groups exists, each with different views and preferences.
- 23 Our customer consultation has helped define our asset management plan process over the last few years and has helped confirm that this process is what customers want.
- 24 We adopt varied engagement approaches to ensure we are fully aware of customer needs. By using a range of techniques, we often obtain information that could be missed if we only carried out customer surveys or only undertook specific consultation with certain groups.
- 25 Although the core results of the different consultation methods are ‘aligned’, each provides a slightly different level of understanding of particular customer groups and issues.
- 26 We briefly outline below the engagement methods used for each of these customer groups, and then describe these methods in more detail later in the report.

SUMMARY OF ENGAGEMENT METHODS

Summary of residential customer engagement methods

- 27 Residential customers are directly engaged through a number of methods, such as surveys, invitations to comment on asset plans and target levels, Orion’s website and interactions with the Orion call centre.

- 28 Orion also directly engages residential customers via publications, such as the *Orion Network Quality Report*⁹ and *Pricing Guide*¹⁰, which are updated annually.
- 29 Orion indirectly engages residential customers through representative groups such as Greypower Superannuitants' Association, Christchurch Power Consumers' Trust and Solar Energy Action and through Territorial Local Authorities and Environment Canterbury.
- 30 Orion's relationship with electricity retailers is also an important link between Orion and residential customers, as we do not have direct contractual relationships with our residential customers.
- 31 These methods of engagement provide regular one-way communication between Orion and residential customers on service levels provided. They also provide a communication channel whereby individual consumers can provide direct feedback on the service levels received.

Summary of rural customer engagement methods

- 32 Rural customers are also directly and indirectly engaged using the methods listed above for residential customers.
- 33 Representative groups/entities engaged to express rural customers' views include Federated Farmers, Greypower Superannuitants' Association, Environment Canterbury and Selwyn District Council¹¹.

Summary of irrigation customer engagement methods

- 34 Irrigation customers are also directly and indirectly engaged using the methods listed above for residential customers and rural customers.
- 35 Representative groups engaged to express irrigation customers' views include the Central Plains Irrigation Association and the Dunsandel Groundwater User Association.

⁹ First published in 2004. Attached in Appendix 1.

¹⁰ First published in 2005. Attached in Appendix 2.

¹¹ The Selwyn District Council area encompasses 6492 square kilometres of predominantly rural land. The majority of Orion's rural connections are within the Selwyn District Council boundaries.

- 36 In addition, in 2005 Orion met with irrigation customers to specifically seek their views on price and quality of service¹². The results of that meeting were published on Orion's website and interested parties were invited to comment.

Summary of business customer and major customer engagement methods

- 37 Business customers are also directly and indirectly engaged using the methods listed above for residential customers and rural customers.
- 38 Representative groups engaged to express business customers' views include the Canterbury Employers' Chamber of Commerce and Canterbury Manufacturers' Association.
- 39 In relation to major customers (typically with loads large enough to require a dedicated transformer), Orion engages the Major Electricity Users Group and invites major customers to seminars at least twice a year. These seminars provide an opportunity to define and explain the quality of our delivery service and the level and structure of our pricing, and also enable Orion to obtain information from major customers on their level of price/quality satisfaction.
- 40 Orion also carried out an extensive written and verbal pricing and peak load management consultation process with major customers in 2005¹³.
- 41 We also send the *Pricing Report* and *Network Quality Report* directly to major customers each year.
- 42 A Billing and Support Manager coordinates the relationship with major customers and is the direct contact for any major customer queries or complaints.

METHODS OF CONSULTATION/ENGAGEMENT

- 43 We expand below on the five main methods of customer consultation/engagement which we undertake:

43.1 customer involvement in setting our security of supply standard;

¹² This consultation is detailed further in paragraphs 115 – 122.

¹³ This consultation is detailed further in paragraphs 123 – 125.

43.2 engaging with customers via retailers;

43.3 customer surveys;

43.4 obtaining direct customer feedback; and

43.5 consulting customers on selected major projects and pricing.

Customer input to Orion's security of supply standard

- 44 Security of supply is an electricity network's ability to meet electricity demand when a significant item of network equipment fails. The more secure the network, the greater the ability of that network to 'keep the lights on' or recover quickly from a fault or a series of faults.
- 45 In 1998 Orion adopted a security of supply standard after a detailed review of our 10 year asset management plan. This review was undertaken by Orion and an independent expert engineering company¹⁴, and involved consultation with local stakeholders including consumer groups.
- 46 Adopting a security of supply standard was considered prudent by Orion and local stakeholders after the Mercury Energy Auckland power supply failure in early 1998. Orion's security of supply standard is detailed in Appendix 3.
- 47 Orion's security of supply standard underpins and strongly influences our 10 year asset management plan. We engineer our network and invest in it according to this standard.
- 48 In order to ensure that our security of supply standard is set at a level that properly considers customer requirements for the quality and price of service that we provide, Orion took the three steps outlined below when adopting the standard in 1999.

Step 1

- 49 As there was no New Zealand security of supply standard, we based our security of supply standard on a UK standard (P 2/5).
- 50 The UK P 2/5 standard was founded on the underlying philosophy that:

¹⁴ UK based EA Technology

The aim of the electricity industry should be to match its marginal costs of preventing loss of supply to the marginal benefit consequently obtained by customers.

- 51 In order to determine the benefit obtained by customers from investments in security, the UK regulators made an estimate of the average customer's valuation of a 'kWh saved'. This estimate was based on both local UK information and international information.
- 52 The UK P 2/5 standard, on which Orion's standard is based, considers the price-quality trade-off. It recognises that quality of supply standards should not be set at such a high level that the costs to the customer of implementing them outweigh the benefits obtained from them by the customer.

Step 2

- 53 We then adapted the UK standard for local conditions, prices and customer expectations.
- 54 The first part of this adaptation process was a rigorous review of the UK standard by Orion and our independent consultants. The review found that our local standard did not need to be as high as the UK standard. This reduction was due to local conditions. Consequently, we set less stringent standards for some aspects of our network, such as busbar security criteria.
- 55 The second part of the process was customer consultation. We prepared a paper titled *Proposals for a Security of Supply Standard*¹⁵ and distributed it to a number of local stakeholders. We also prepared and gave a presentation on the proposed standard.
- 56 Stakeholders consulted included:
- 56.1 local councils;
 - 56.2 electricity retailers;
 - 56.3 Canterbury Manufacturers Association;
 - 56.4 Major Electricity Users Group; and

¹⁵ Available from Orion on request

56.5 small consumer representatives.¹⁶

- 57 Stakeholders welcomed a security of supply standard as it gave them criteria to judge our performance, allowed them to know what to expect in terms of supply security and allowed them to ensure the needs of the local community were met.

Step 3

- 58 As a check to ensure that our proposed security of supply standard would yield real benefits for our customers, we completed a cost benefit analysis of the primary investments required under the standard.

- 59 These investments in security related to constructing a cross-city 66kV interconnection to reduce the Christchurch central business district's dependence on only one grid exit supply point.

- 60 A *Supply Security Investment Cost/Benefit Study*¹⁷ was distributed to stakeholders. This study found that for a cost of \$9.4m, Christchurch city would derive a benefit of between \$16 and \$98m, with a likely benefit figure of \$49m. The primary supply security enhancements were therefore considered economically justifiable and were again supported by stakeholders following this report.

- 61 To determine the worth or benefit of the cross city interconnection, Orion placed a value on the load that would effectively be 'saved' from being lost as a result of the cable. This value represents the value our local community puts on electricity supply and was based on an extensive Centre for Advanced Engineering (University of Canterbury) study undertaken in 1993.

- 62 The *Reliability of Electricity Supply* study concluded that the cost of non-supply for residential customers is typically \$1.50 to \$5.00/kWh and sometimes up to \$10/kWh. For business customers the cost of non-supply is in the order of \$10 to \$70/kWh. We interpreted this to suggest, as did ECNZ, that a power cut costs a customer between \$5 to \$15/kWh of load not supplied.

¹⁶ Small consumer representatives are often not elected representatives but parties who are interested in the effects of electricity proposals on smaller consumers. While we recognise they are not elected by the general public we believe they often provide the best point of contact for smaller consumers.

¹⁷ Available from Orion on request.

63 The figure of \$5 to \$15/kWh is considered low, based on international studies into the value of lost load (VoLL).

64 In May 2004 Orion commissioned Australian economics consultancy company NERA to review:

64.1 international economic studies on VoLL; and

64.2 regulated wholesale electricity market price caps that are based on VoLL.

65 Based on this review¹⁸, the figure of \$5 to \$15/kWh used by Orion for security of supply purposes is very conservative. Recent international studies, including two comprehensive Australian studies, have indicated a value of around \$35/kWh would be more appropriate.

66 The NERA report also noted that:

In every jurisdiction we examined, the price cap in the wholesale market was not intended to be based on the “true” VoLL. This reflects the fact that the level at which price caps are set depends on a much wider range of considerations, namely to reduce market power in generation and to prevent unacceptably high prices for consumers.

67 Price caps are therefore typically not based on “true” VoLL, but are set at a lower level. In August 2003 consultants to the Ministry of Economic Development (MED) provided further evidence that a figure of \$5-15/kWh, as used by Orion, is a conservative figure for VoLL. In examining the issue of dry year generation, the MED’s consultants¹⁹ investigated both New Zealand and overseas jurisdictions and placed the average VoLL in the region of \$5 to \$15/kWh. However, many of the figures on which they based this finding were in fact not VoLL figures but rather price caps put on generation by regulators. This suggests that a figure of \$5-15/kWh is at the lower end of “true” VoLL estimates.

68 In summary, while VoLL is important, Orion also believes that customer consultation must occur before significant investment that is primarily for security purposes is undertaken. Orion actively engaged in customer consultation when setting its security of supply standard, the primary

¹⁸ Available from Orion on request.

¹⁹ Morrison & Co Limited

standard around which we base our asset management planning and investment initiatives. This customer engagement involved:

- 68.1 customer input through direct customer consultation on what our standards should be; and
- 68.2 financial justification based on conservative estimates of the value our customers place on lost load.

Proposed amendments to security of supply standard

69 Orion proposes to amend its security of supply standard in 2007 following a recent review of:

- 69.1 the range of VoLL for different customer groups;
- 69.2 credible alternative network architectures (designs) and costs; and
- 69.3 assessment of an 'optimum network' using an economics and reliability model.

70 The purpose of the review was to assess relevant developments in the eight years since Orion's security of supply standard was adopted, with a view to identifying whether the security of supply standard could be improved. As a result of the review, Orion proposes some amendments that primarily relate to:

- 70.1 the architecture of Orion's outer urban 11kV network; and
- 70.2 the level of duplication of transformers at district substations.

71 Adopting a revised security of supply standard incorporating the proposed amendments may result in slightly lower level of reliability for outer urban customers; however it would also lead to less upward pressure on future prices.

72 Orion will consult with local stakeholders before any decisions are made on the proposed amendments, to confirm whether the proposed amendments reflect the views and preferences of the community in relation to security of supply. Consultation is scheduled for late 2006 with a view to reflecting the consultation results in the subsequent asset management plan. Orion has engaged Sinclair Knight Merz Consulting to assist with the consultation.

Customer engagement via retailers

- 73 Orion’s contractual relationship with electricity retailers and connected customers is depicted in the diagram below. Aside from direct relationships with approximately 60 major business customers, we do not have direct contractual relationships with customers on our network^{20,21}. We do however initiate and receive direct customer feedback on our performance as outlined in paragraphs 85 – 108.



- 74 We view our relationship with each energy retailer as an important link between us and our customers. We currently provide our delivery service to five retailers.
- 75 On a daily basis, the retailer represents the customers connected to our network so we rely, in part, on retailers to let us know how their customers feel about the price and quality of delivery of our network service.
- 76 We consider that retailers are in a position to ascertain the quality and reliability requirements of customers as retailers regularly engage with consumers through surveys, and through consumer complaints and queries. This engagement ensures that retailers are aware of consumer preferences.
- 77 Orion interacts with retailers through its day-to-day business activities, including requests for customer service in respect of new connections or faults and billing. The relationship with retailers is coordinated by a Billing and Support Manager.

²⁰ Orion charges electricity retailers on the basis of electricity volume and demand that passes through our grid exit points. We do not charge via each connection. This charging system works very well and assists us to send correct pricing signals to users. The contractual relationship with retailers, not customers, is one of the reasons why Orion has achieved very large energy efficiency savings and reduced network costs. This has been recognised in our winning numerous environmental awards over the last five years.

²¹ We recognise that the Consumers Guarantee Act stipulates that such “use of system” agreements do not remove Orion’s liability to consumers.

78 We also hold regular meetings with retailers. At these meetings retailers have an opportunity to discuss the level of service and the price of service that we provide.

79 Our contractual relationship with retailers is formalised in a network delivery services agreement. This agreement sets out the terms and conditions under which we provide distribution services.

80 Schedule B of the agreement refers to our *Network Code* which was written to provide guidance to customers, retailers and contractors on how we manage our network. The code sets out standards for Orion and the connected customer in accordance with good industry practice. Section five of the code also deals with our obligations regarding:

80.1 network performance;

80.2 response to enquiries;

80.3 reporting unplanned interruptions to delivery; and

80.4 fault call receipt and field service despatch.

81 Based on our dealings with retailers, we are not aware of any systematic customer concerns with the quality or price of our line delivery service. We recognise that consumer engagement via retailers is not in itself sufficient to comprehensively ascertain customer views on price and quality, therefore we also undertake the other forms of engagement outlined in this statement.

Customer surveys

82 Over the last few years Orion has undertaken:

82.1 face to face interviews with over 300 residential customers;

82.2 face to face interviews with 300 business customers;

82.3 telephone interviews with up to 400 rural landowners; and

82.4 telephone surveys of up to 1,000 Christchurch residential customers.

83 Highlights of the more recent surveys are:

83.1 “Network reliability customer survey”

This survey was undertaken in December 2005 for Orion by independent company Business Improvement Group Limited. It surveyed a random sample of 400 urban and 400 rural households in the Orion network area, and had a margin of error of five per cent (at the 95 per cent confidence level). It followed an initial survey undertaken in February 2004 of a random sample of 1000 Christchurch residents.

A number of results were obtained from this survey, including information on energy efficiency and different forms of home heating in Christchurch. In relation to the quality of service Orion provides, and the price-quality trade-off, the following results are relevant:

- (a) 88 per cent of urban respondents considered rapid restoration of power either important or very important (compared to 87 per cent of all respondents in 2004);
- (b) 83 percent of rural respondents considered rapid restoration of power either important or very important;
- (c) based on the question “given the impact of power cuts upon you, if a power cut lasts for 1 hour, how many would you be willing to accept?”:
 - (i) an ‘average’ residential customer was willing to accept between 5 and 43 minutes of power interruption per annum (compared with between 7 and 43 minutes in 2004)²²; and
 - (ii) an ‘average’ rural customer was willing to accept between 10 and 60 minutes of power interruption per year,²³

²² Orion’s 5 year urban average SAIDI is 22 minutes per annum. Our quality of supply performance therefore falls within the range preferred by residential customers.

²³ Orion’s 5 year rural average SAIDI is 360 minutes per annum. Our quality of supply performance therefore suggests that we may not be delivering the level of reliability that rural customers want, however:

- only 1.9 per cent of rural respondents indicated they were willing to pay more for improved reliability; and
- 85 per cent of rural respondents were either satisfied or very satisfied with the current reliability of their power supply.

- (d) 94 per cent of urban respondents were either satisfied or very satisfied with the current reliability of their power supply (compared with 92 per cent of all respondents in 2004);
- (e) 85 per cent of rural respondents were either satisfied or very satisfied with the current reliability of their power supply;
- (f) from the total survey, the seven per cent of respondents who were dissatisfied or neutral about the reliability of their power supply were given the opportunity to indicate whether or not they would be prepared to pay for improved reliability of their power supply. The survey results show:
 - (i) 99 per cent of urban respondents were not prepared to pay more for improved power supply reliability; and
 - (ii) 94 per cent of rural respondents were not prepared to pay more for improved power supply reliability;
- (g) when there is an interruption to electricity supply, the vast majority of both rural and urban respondents consider that restoring the power is more important than getting information about what caused the interruption. However, when customers do want information about outages, it is usually in relation to when the electricity supply will be restored, rather than what caused the outage.

83.2 *“Research into the strengthening of relationships with landowners”*

This survey was undertaken in February 2003 for Orion by independent company Peter Glen Research Limited to better understand rural landowners’ satisfaction with Orion and the service we provide. It involved phone interviews with a random sample of 30 rural landowners, who had had contact with Orion during the previous year.

These figures illustrate the conflicting results that sometimes arise in surveys, and that it is important to engage in various forms of consumer consultation, rather than rely solely on surveys.

We are currently investigating new technologies to see if there is a relatively low cost way of improving rural reliability.

Amongst other questions the survey asked “if Orion could improve just one aspect of its relationship with the landowner, what aspect would you choose?”

One-third of respondents stated that no improvement was necessary. Only two (7%) respondents stated concerns regarding our pricing while four respondents stated our quality of supply was not high enough.

These results indicated the majority of rural landowners were satisfied with the quality of Orion’s products and services. Of those who were dissatisfied in some way, a ratio of two to one landowners preferred an increase in reliability over a lowering of reliability (and consequent lower prices).

- 84 We note that the PBA report recommends that mail-out surveys and phone surveys be carried out annually to assess large consumers’ satisfaction levels.²⁴ Orion does not carry out formal surveys of these types targeted at major customers, as we consider that our face-to-face interaction with our major customers (through seminars and interaction with the Billing and Support Manager) provides comprehensive information about satisfaction levels.

Direct customer feedback

- 85 Orion receives direct customer feedback on its performance in four main ways:

85.1 major customer contact initiated by Orion, including seminars, telephone calls and meetings;

85.2 stakeholder meetings initiated by Orion;

85.3 direct customer feedback initiated by the customer through avenues provided by Orion; and

85.4 invitations from Orion to comment on asset plans and target levels.

- 86 These methods are explained in the following sections.

²⁴ Parsons Brinckerhoff Associates, *Electricity Distribution Business and Asset Management Plans and Consumer Engagement: Best Practice Recommendations*, April 2005, p 64

Major customer contact

- 87 Orion has approximately 375 major customers. These major customers typically have loads large enough to require a dedicated transformer and approximately 60 of them contract directly with Orion for their delivery service.
- 88 All of Orion's major customers are invited to at least two seminars a year. These seminars are typically very well attended. Our senior management team attends the seminars in order to answer major customers' questions. During the seminars we frequently explain the quality of our delivery service and the level and structure of our pricing. In 2005 the seminars were used to consult with customers about proposed changes to Orion's pricing and peak load management²⁵, and to explain further steps in that consultation process, including alerting major customers to further opportunities for them to participate in the process.
- 89 Seminars are also used as an opportunity to address other pertinent issues. Topics covered in recent seminars include Environment Canterbury's Clean Air Plan, the possible winter electricity shortage, night load switching and energy efficiency initiatives.
- 90 We are very pleased with Orion's relationship with major customers. Customers and Orion obtain benefit and understanding from our regular seminars, and while each seminar discusses pricing and quality levels, Orion has not been alerted at these seminars to any fundamental concerns about its quality and price of supply.
- 91 In addition to opportunities at major customer seminars, major customers can directly contact Orion staff at any time about reliability issues. In the last two years two major customers have contacted Orion expressing concern about the reliability of their power supply. The first of these concerns was investigated by Orion and was identified as being caused by internal factors at the customer site (that is, non-Orion related). The concerns of the other customer have only been expressed to Orion recently, and are currently being investigated.
- 92 If major customers wish to increase or decrease the quantity or reliability of supply to their site, they contact Orion. Orion then works with the customer to provide the best solution to the customer's needs.

²⁵ Described in more detail in paragraphs 123 – 125.

- 93 In regard to pricing, Orion's major customer charging basis differs from that offered by most other network companies in New Zealand. Orion's prices to major customers reflect Orion's marginal cost of supply during times of peak loading. Major customers have a relatively low network supply price for most of the year, and for approximately 80 hours per winter, face significantly higher prices for network supply. During those 80 hours (which we notify in advance to major customers), major customers have the opportunity to:
- 93.1 continue their usual electricity use;
 - 93.2 shed load (through measures such as turning off non-essential load); and/or
 - 93.3 generate electricity on-site, through using diesel generators (which are economic to operate given our marginal cost pricing during these 80 hours).
- 94 If the customer decides to shed load and/or generate electricity on-site, they can save significant electricity delivery costs.
- 95 For example, if a major customer with 1 MVA of load stops drawing that load from our network during times of peak loading, that customer will save a peak load line price of \$71.20 per kVA which equates to a saving of \$71,200 per annum, over the 80 hours of peak load. Including transmission costs, the delivery charge equals \$112,300 per annum. If the customer chooses to shed its entire load during times of peak loading, the customer will effectively save \$112,300 in delivery charges²⁶. This saving equates to a 70 per cent reduction in the customer's total annual delivery charges.
- 96 If, alternatively, the customer decides to shed its entire load during times of peak loading and use a diesel generator to maintain its 1MVA of electricity supply, the customer will save \$83,800 after subtracting the cost of operating the diesel generation (assuming that running the diesel generation costs 30 cents per kWh being \$28,500 in total)²⁷.
- 97 We have found that, due to our marginal cost pricing approach, many major customers have installed diesel generation on-site. This alternative form of energy supply gives major customers greater security of supply

²⁶ The customer will also 'save' the retail energy charge.

²⁷ Ibid.

than would be the case if Orion adopted a pricing system similar to the large majority of other New Zealand network distribution companies. Our pricing has effectively given major customers greater security of supply for no net additional cost. Orion's pricing offers major customers an excellent price-quality trade-off option.²⁸

Stakeholder meetings

- 98 Since Orion's last threshold compliance statement in 2004, Orion has met with the following groups:²⁹
- 98.1 Christchurch City Council (which now incorporates the Banks Peninsula District Council);
 - 98.2 Selwyn District Council;
 - 98.3 Environment Canterbury;
 - 98.4 Canterbury Chamber of Commerce;
 - 98.5 Canterbury Manufacturers' Association;
 - 98.6 Major Electricity Users Group;
 - 98.7 Greypower Superannuitants' Association;
 - 98.8 Christchurch Power Consumers Trust;
 - 98.9 Solar Action;
 - 98.10 Federated Farmers;
 - 98.11 Central Plains Irrigation Association; and
 - 98.12 Dunsandel Groundwater Users Association.

²⁸ We note that our structure of pricing for non-major customers also encourages retailers to offer price-quality trade-off decisions to non-major customers. Our prices allow retailers to present to customers whatever tariff structures they want. For instance, retailers offer tariffs with night rates for 6,7 or 8 hours and cheaper rates for hot water control.

²⁹ We meet with some of these groups more than once per annum.

99 The purpose of these meetings was to discuss Orion's position with regard to the quality of electricity supply that we provide, the price that we charge, how efficiently we operate our business, and the impact we have on our community (including environmental impact). Overall, Orion has received positive feedback with regard to the quality and price of supply we provide. We have not received any indication that we are either under-investing or over-investing in our network. In some instances, we have received feedback that we need to continue to invest in the network because of the increase in products with electronic components that require a reliable electricity supply.

Direct customer feedback

100 Direct customer feedback generally occurs through three methods:

100.1 telephone calls to our call centre;

100.2 contact with our operations field staff and contractors; and

100.3 contact with our distribution services staff.

101 Customers can use these methods to discuss issues relating to service levels and pricing, and in particular, our distribution service staff assist customers to set an appropriate level of supply that meets their needs.

102 Our call centre operates 24 hours a day, seven days a week to take general calls and fault calls from customers.

103 Our operational field staff (12) and contractors work in the community and actively respond to electricity network and installation supply issues. These issues can be of a highly technical nature, and our trained staff use appropriate diagnostic equipment to determine and if possible resolve issues, even when issues are caused from within a customer's installation³⁰.

104 Our distribution services section has 20 staff members. This section interfaces directly and indirectly with customers to manage works. Works include capital installation and maintenance projects, customer driven work

³⁰ Most electricity distributors maintain electrical equipment up to the boundary of a property. Beyond the boundary it is the property owner's responsibility. Orion however commits to maintaining the lines, poles and all other electrical equipment up to the point of entry to the house or building. We do this regardless of whether the electrical equipment between the boundary and the building is owned by Orion, the property owner or some other third party.

and all new connections to Orion's network. A focus of the distribution services section is to communicate with all affected customers to discuss and minimise the impact of works.

- 105 When a new customer applies to Orion for a connection to our network, our distribution services section works with that customer (or their approved agent) to identify the most cost-effective options that meet the customer's requirements. This work often includes providing design/build solutions to assist in customers' decision-making. Customers can get competitive pricing for works from approved contractors.
- 106 We recognise that our distribution services team has experience in this area that may not be shared by customers or their agents. This experience and skills are used to ensure that our customers achieve their electricity supply goals in a timely manner.

Invitation to comment on asset plans and target levels

- 107 Every year customers are invited to comment on Orion's asset plans and performance target levels in a variety of ways. In particular:
- 107.1 we publicly release an asset management plan each year and welcome comments and suggestions on the plan. The plan details:
- (a) Orion's approach to managing our electricity network and how we will manage and invest in our network to meet customers' requirements regarding quality of supply; and
 - (b) performance level targets. These targets cover both reliability criteria and power quality criteria. Our performance target levels as detailed in our asset management plan for the year to 31 March 2006, and our actual level of performance against those targets, are detailed in the table below;

Key service criteria	Quality characteristic	Target level of service (per annum)	Level of service for the year ended 31 March 2006	Outcome	New Zealand average (year ended 31 March 2005*)
Reliability	Faults/100km of circuit	< 11.0	8.6	Achieved	8.0
Reliability	Faults/100km of underground cable	< 3.0	2.7	Achieved	3.3
Reliability	Faults/100km of overhead line	< 13.0	12.0	Achieved	9.5
Reliability	SAIDI ³¹	< 63	59	Achieved	145
Reliability	SAIFI ³²	< 0.76	0.74	Achieved	2.0
Reliability	CAIDI ³³	< 83	80	Achieved	75
Efficiency	Capacity utilisation	> 33%	37%	Achieved	33%
Power quality	Proven voltage complaints	< 70	35	Achieved	Not available
Power quality	Harmonics (wave form)	< 2	0	Achieved	Not available
* latest available figures					

³¹ SAIDI - System average interruption duration index. This is the average total duration of interruptions of supply that a consumer experiences in a period.

³² SAIFI - System average interruption frequency index. This is the average number of interruptions of supply that a consumer experiences in a period.

³³ 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.

- 107.2 major asset planning decisions are discussed in our annual report. We invite feedback from customers on such discussions. The annual report details:
- (a) major network enhancements that have occurred in the last year, what our focus will be in the coming years and projected capital expenditure and maintenance budgets; and
 - (b) occasionally details the trade-offs we face in managing our network, such as the cost, reliability and price effects of further undergrounding;
- 107.3 we publish a *Quality of Supply* statement and welcome comments and debate on the statement from all interested stakeholders. The *Quality of Supply* statement is available on our website³⁴. It states Orion's practices with respect to security, reliability, voltage regulation, losses and asset requirements. The statement provides the basis for optimisation when valuing Orion's assets. Orion has not received any negative feedback on the content of the statement since it was first published in 2001;
- 107.4 in May 2004, Orion became the first electricity distributor in New Zealand to publicly release a *Network Quality Report*.³⁵ This report is updated annually and discusses Orion's performance in providing a reliable and secure electricity network. It is targeted at people who are unfamiliar with the electricity industry. It details, in plain English language, our performance at meeting service targets, urban and rural reliability issues (including identifying the parts of our network that have the lowest reliability), how we rate against other networks both nationally and internationally and our efforts to improve reliability;
- 107.5 in 2005 Orion produced and publicly released a *Pricing Guide*.³⁶ This guide is also targeted at people who are unfamiliar with the electricity industry. It details, in plain English language, Orion's pricing principles and categories. It is intended to help our customers understand our prices, how our prices compare with those of other New Zealand electricity distributors and enable

³⁴ The *Quality of Supply Statement* forms part of our *Network Code*, available on our website

³⁵ Attached in Appendix 1

³⁶ Attached in Appendix 2

customers to better judge our overall performance. This guide will be updated annually;

107.6 the *Network Quality Report* and *Pricing Guide* are the most comprehensive and accessible documents of their kind in New Zealand. They, together with our annual report, are sent out to approximately 400 stakeholders, interested parties, and public libraries throughout the region. We also display them on our website (www.oriongroup.co.nz). These documents allow our customers to access readily understandable information on the price/quality trade-off.

108 With four significant documents inviting comment from customers on Orion's quality of supply, we believe the lack of feedback we receive further demonstrates our customers' satisfaction with current service levels.

Customer consultation over major projects and pricing

Major projects

109 We also engage with customers about the quality of goods and services they require and the pricing trade-offs available, through consultation over selected major projects.

110 Orion spends approximately \$30m per annum on capital projects. Five to ten million dollars of this expenditure relates to major projects. Major projects are generally classed as those which have the potential to affect a large group of customers. They are typically required to reinforce the existing network or to provide additional network to supply new load. Major projects are identified in our disclosed asset management plan.

111 A recent example of how Orion consults with customers on major projects is the \$1m project to upgrade the security of supply at Transpower's Bromley grid exit point. This project affected about 45,000 customers in the eastern part of Christchurch.

112 Before the project commenced we consulted the following groups over the proposal:

112.1 electricity retailers;

112.2 local councils;

- 112.3 Canterbury Employers Chamber of Commerce;
 - 112.4 Canterbury Manufacturers Association;
 - 112.5 Greypower Superannuitants' Association; and
 - 112.6 industry consultants.
- 113 The consultation included discussion of the issue, possible alternatives to the upgrade and a cost-benefit analysis. We also discussed improvements the project would bring and the resulting price increase impact it would have. No objections were raised.
- 114 We base cost-benefit analysis on the monetary value that customers place on lost load. This monetary value is based on extensive research as discussed in the section on Orion's security of supply standard, in paragraphs 44 - 68.

Irrigation customer price/quality consultation

- 115 In 2001 we consulted with irrigation customers about their reliability levels and pricing. This consultation showed that some irrigators were willing to accept a lower level of reliability in return for a lower price. Orion subsequently developed and implemented a pricing option to accommodate those irrigators. An emergency 'interruptibility rebate' is provided to irrigators who are willing to have their load shed in order to maintain supply to their area. Approximately 40 per cent of irrigation customers have accepted the rebate. This negotiated arrangement has worked well and typically operates once or twice a summer. The 'interruptibility rebate' is an example of how pricing can be used to enable customers to make their own price/reliability trade-off.
- 116 In addition, in late 2004 Orion met with a widespread group of irrigation customers to again seek their views on price and quality of service. Orion presented the following two options to irrigation customers:

Option 1

- 116.1 further Orion investment in additional district substations and 11kV regulators (as identified in historical asset management plan investment levels), leading to:
- (a) a reduction in the number and duration of electricity interruptions that irrigators' experience; and

- (b) significant upward pressure on irrigation prices as a result of the new investment; or

Option 2

116.2 less additional investment by Orion than that contemplated in the above option, leading to:

- (a) irrigators being exposed to a (conservative estimate) one-in-ten-year two day outage; and
- (b) significantly less pressure on irrigator prices.

117 The preference indicated at the meeting was for option 2 above.

118 Following that meeting, Orion commissioned an independent report on the value of lost electricity load to irrigators³⁷. That report, which indicates that Orion's existing 'interruptibility rebate' more than compensates all types of irrigators for the risk of losing the ability to irrigate for up to two days per annum, together with further discussion over the options for future electricity reliability, was presented in July 2005³⁸ to a meeting with irrigation customers, including sheep and beef, dairy and arable irrigators.

119 The meeting agreed that the second option was preferable. The results of the meeting were published on Orion's website and interested parties were invited to comment.

120 Orion also provided the following information on its website to assist irrigation customers in:

120.1 assessing the likely effects of the two different options; and

120.2 determining their preferred price/quality trade-off:

³⁷ The AgriBusiness Group, *The Value of Lost Load to Irrigators*, May 2005. (Located on our website www.oriongroup.co.nz.)

³⁸ At the time of this meeting the results of a nationwide Consumers' Institute *Dairy Farm Electricity Supply Survey* had just been published (22 June 2005). The Consumers' Institute sent out surveys to 8,550 dairy farmers in January 2005, with a response rate of 53%. Lines businesses were ranked on providing 'trouble-free' service ('trouble' meaning power cuts, interruptions, voltage fluctuations and other supply problems) and on speed of problem resolution. Orion ranked 8th out of the 23 lines businesses included in the survey. Fifty out of 93 respondents in the Orion rural network area identified a problem with their electricity supply. These figures show the inconsistencies that can arise in survey results (see the section on customer surveys included in paragraphs 82 – 84 for comparative results) and therefore the difficulties lines businesses have in accurately assessing customers' quality issues through simple surveys alone.

Impact on irrigation prices

Orion estimates that option 1 would lead to line price increases of approximately 15 per cent for those irrigators on our transitional irrigation package, approximately 5 percent for irrigators currently receiving the 'interruptibility rebate' and 3-5 percent for all other irrigators.

Option 2 would not lead to any direct pricing changes (prices may increase or decrease for other normal business reasons). The period for the interruptibility rebate would increase from its current 8 hour basis to 48 hours.

What time of year are 48 hour outages most likely to occur?

Option 1 would reduce the duration of and, to a lesser degree, the number of interruptions irrigators would experience. Multiple major equipment failure would be required for outage lengths of more than 8 hours to occur.

However option 2 could see irrigators without power for up to 48 hours if a transformer failed completely and needed full replacement. Orion has conservatively estimated the likelihood of a 48 hour outage occurring at once every ten years.

For irrigators the effect of any 48 hour outage is greatest during the dry summer months (see The AgriBusiness Group report). In theory a piece of electrical equipment (eg. a transformer) is more likely to fail when under greatest load. In the rural area Orion's load peaks during the summer. Therefore the probability of a 48 hour outage occurring should in theory be greatest during the summer months. However offsetting this is the risk of equipment failure due to severe weather conditions.

Typically in central Canterbury inclement weather occurs either in winter (snow) or spring (lightning/high winds). Orion is therefore unable to accurately estimate what time of year a two day outage is most likely to occur, however we believe the risk is spread relatively evenly throughout the year although to be conservative we assume it is slightly higher in summer.

The only two day outages witnessed in the Orion network area in the last 15 years were due to winter weather conditions.

- 121 A number of investments and ongoing maintenance costs would be avoided by option 2. We have calculated the net present value of the

avoided costs to be approximately \$11m³⁹. If we did in fact go ahead and undertake the investment, the revenue required to recoup the \$11m cost would be approximately \$1m per annum. \$1m is significant. It represents approximately 10 per cent of our line revenue from rural customers and one per cent of our total line revenue.

- 122 No comments opposing option 2 have been received. Given that irrigation customers have clearly indicated a preference for less additional network investment leading to slightly lower reliability and less upward pressure on prices, Orion will therefore proceed with option 2. Our next asset management plan will consequently be amended to remove some investments to reflect the results of the irrigator consultation.

Pricing and peak load management consultation

- 123 In 2005 we also undertook extensive consultation on pricing and peak load management. The purpose of that process was to:

- 123.1 consult with interested parties about proposed changes to the way we charge for and manage load; and
- 123.2 gain their views on the service that they require.

- 124 Steps in the process included:

- 124.1 notifying retailers and directly contracted major customers in January 2005 that Orion was considering changing some of its pricing and associated arrangements;
- 124.2 presenting preliminary proposals to a major customer seminar in May 2005;
- 124.3 issuing a consultation paper, *Pricing and Peak Load Management*, in July 2005;⁴⁰
- 124.4 accepting submissions on the consultation paper until October 2005; and

³⁹ This \$11m is significant in terms of our capital expenditure to meet load growth. Our 2006 asset management plan proposes to spend a total of \$23m over the next 10 years (once the \$11m above is subtracted) on rural subtransmission to meet load growth. It proposes to spend a total of \$64m over the next 10 years (once the \$11m is subtracted) on subtransmission to meet load growth across the entire network.

⁴⁰ Attached in Appendix 4

124.5 publishing a *Pricing and Peak Load Management Decisions Paper* in January 2006.⁴¹

125 This formalised consultation process ensured that we could objectively consider our stakeholders' views. Significant changes to some of our initial proposals resulted from this consultation.

CONCLUSION

126 In making asset management decisions, Orion takes into account the views of customers in relation to the quality of service that we provide and the price-quality trade-offs that surround the decision.

127 Orion endeavours to provide a quality of supply that meets customers' requirements taking into consideration the different range of customers we serve. For example, we recognise that residential customers have different requirements to business customers.

128 In determining the quality of service that our customers require we perform a number of consultation exercises. Orion's process of customer engagement has five elements:

128.1 customer involvement in the setting of our security of supply standard;

128.2 engagement with customers via retailers;

128.3 customer surveys;

128.4 direct customer feedback; and

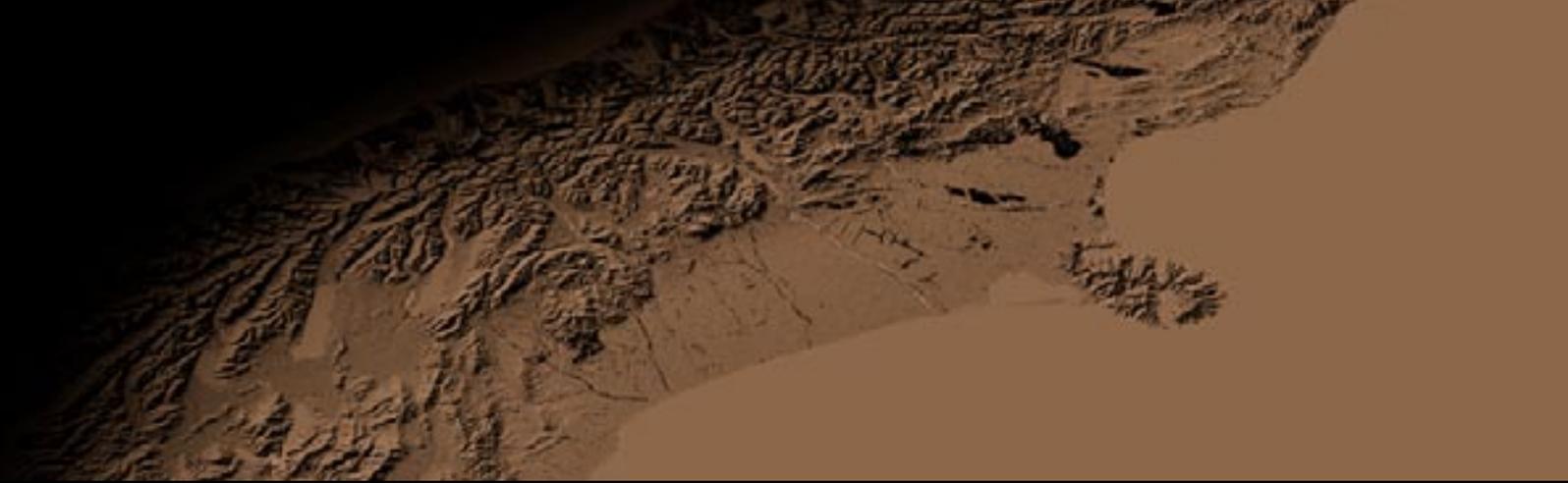
128.5 customer consultation over selected major projects and pricing.

129 The views we receive from customers during these consultation exercises are appropriately considered by Orion and form the basis of our asset management planning. A copy of Orion's asset management plan is located on our website (www.oriongroup.co.nz) or is available on request.

130 Orion will continue to consult with customers in the future. We are confident that we currently meet customers' requirements.

⁴¹ Attached in Appendix 5

APPENDIX 1
NETWORK QUALITY REPORT



NETWORK QUALITY REPORT

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



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:

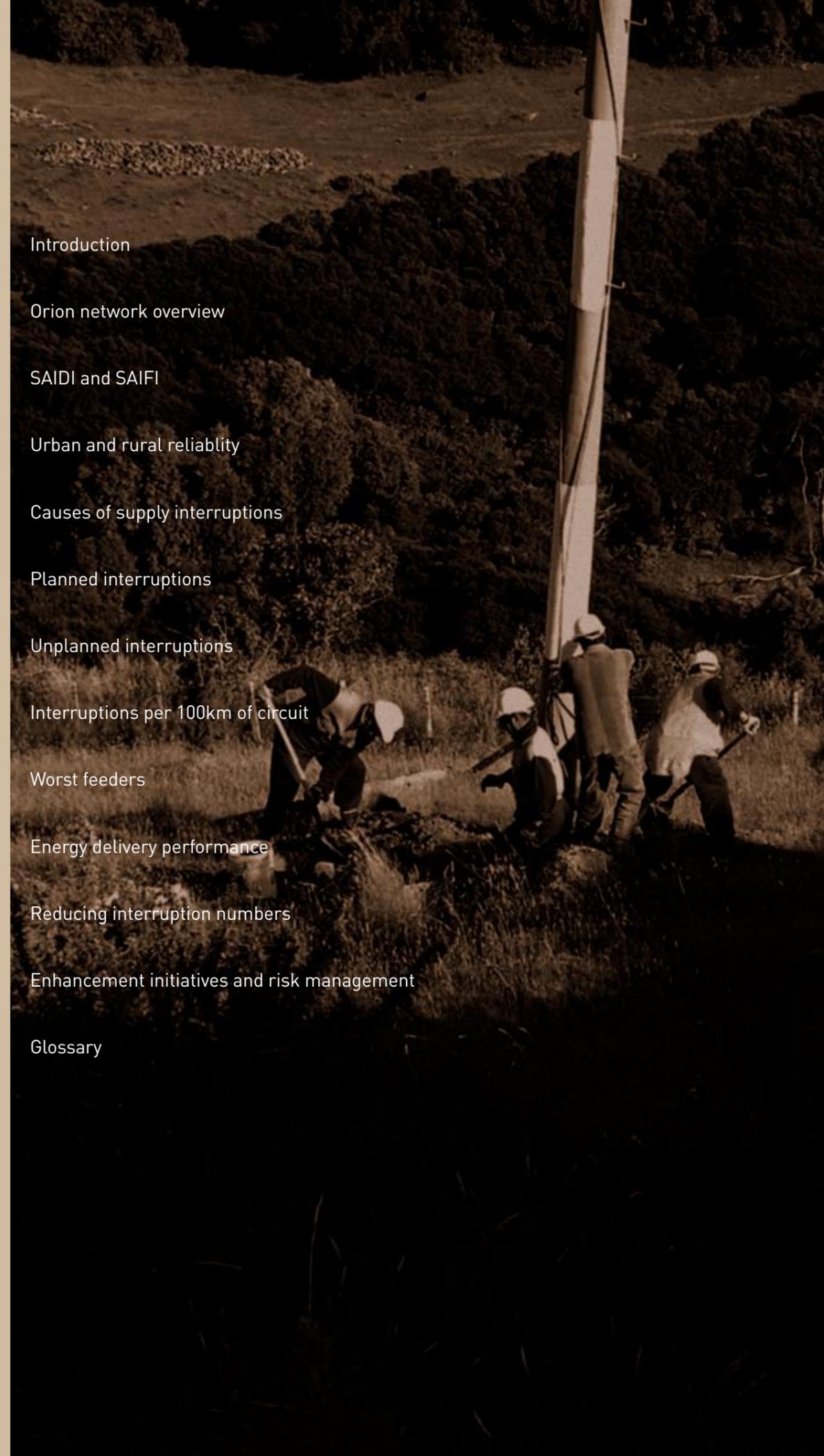
- Christchurch City Council 87.625%
- Selwyn District Council 10.725%
- Banks Peninsula District Council 1.650%

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



2	Introduction
3	Orion network overview
6	SAIDI and SAIFI
8	Urban and rural reliability
11	Causes of supply interruptions
12	Planned interruptions
14	Unplanned interruptions
16	Interruptions per 100km of circuit
17	Worst feeders
18	Energy delivery performance
20	Reducing interruption numbers
22	Enhancement initiatives and risk management
24	Glossary



Introduction



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 of 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

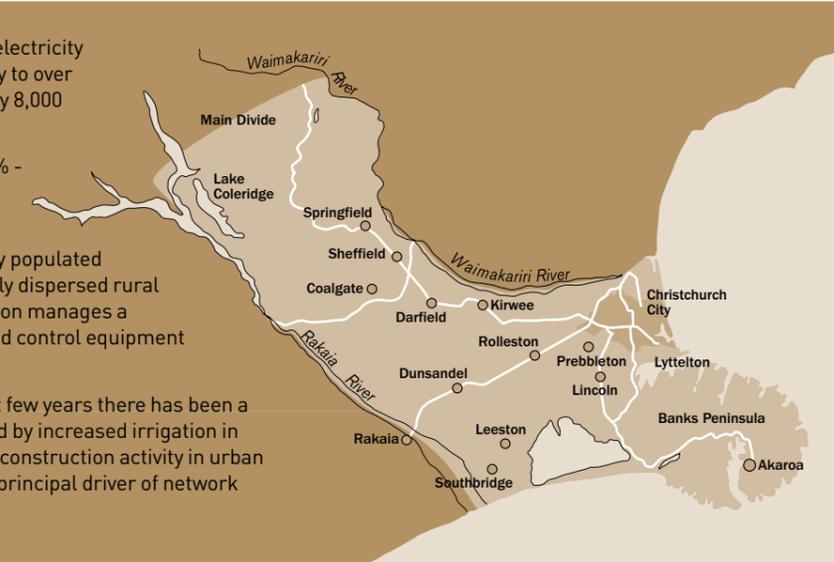
Orion network overview

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.

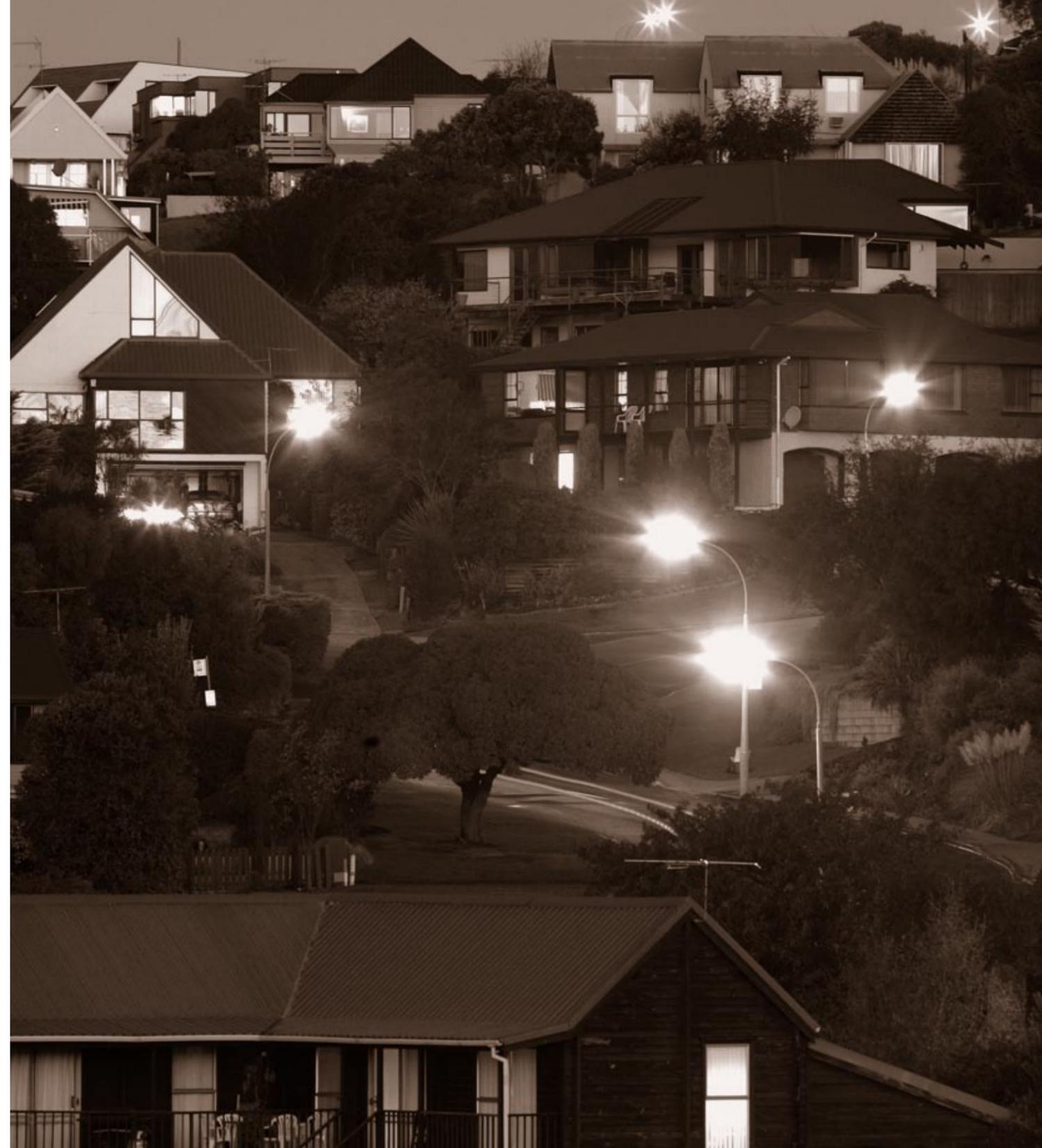
In the year ended 31 March 2005 no particularly severe weather storms occurred. As a result Orion was able to operate its network to very high levels of service.

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.

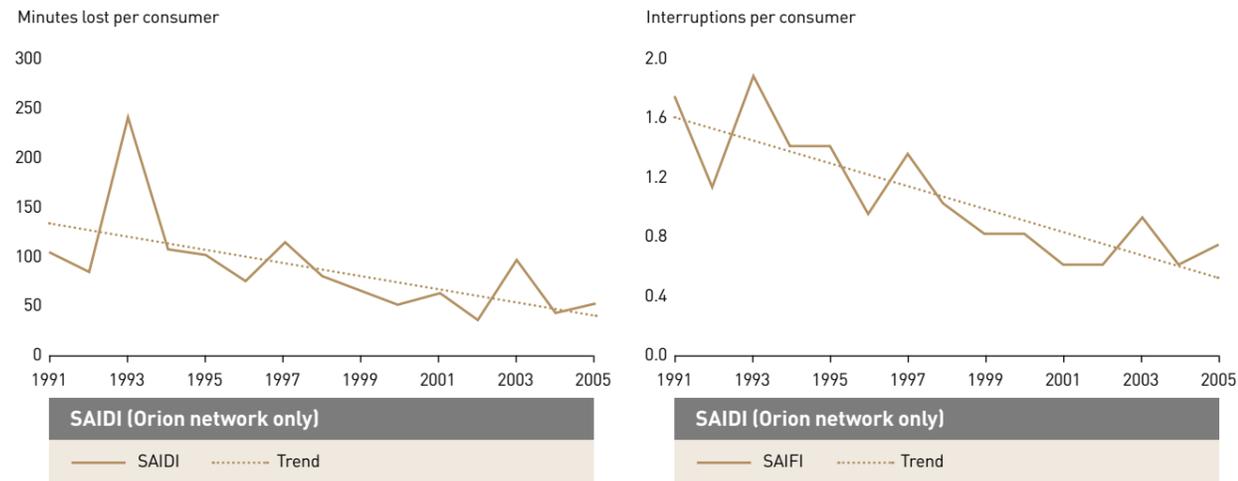
SAIDI and SAIFI

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.

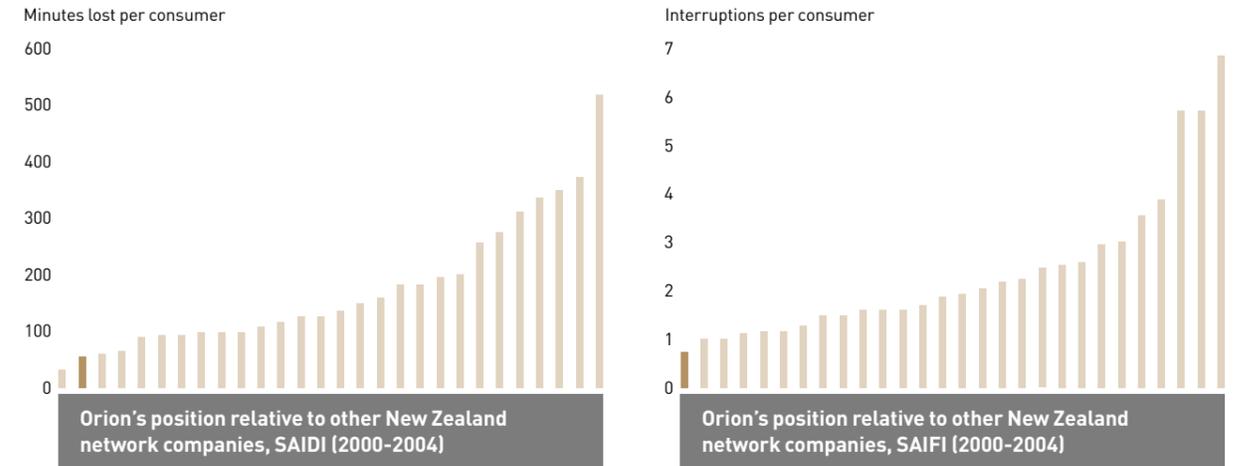
Looking at the trend of our network reliability performance figures since the early 1990s, we have significantly improved our performance.



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.



Internationally, Orion's network reliability also compares favourably based on the latest available five yearly average figures⁵.

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.

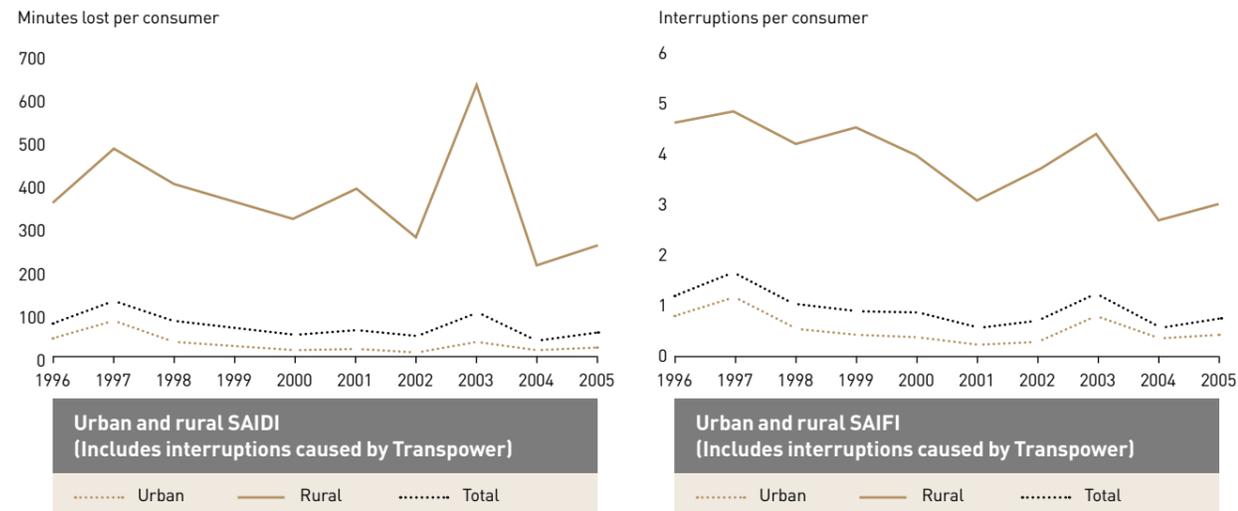
This system is a very secure system because most of Orion's urban network substations have at least two sources of supply. If one source fails, a network substation can still be fed from an alternate source without a break in electricity supply.

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 interruptions⁷.



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 area⁸.

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.

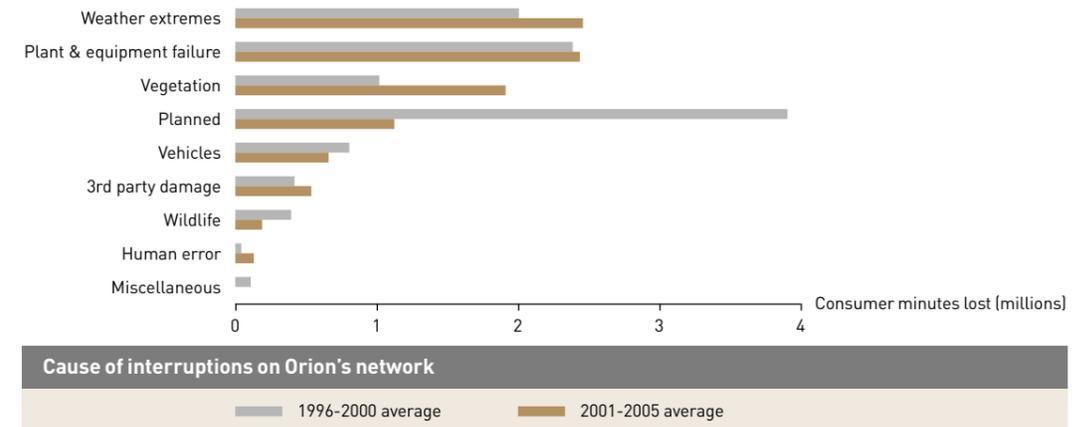
⁸ The largest township in our rural network area is Lincoln with a population of 2,300 (2001 census).



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.



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).



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

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.

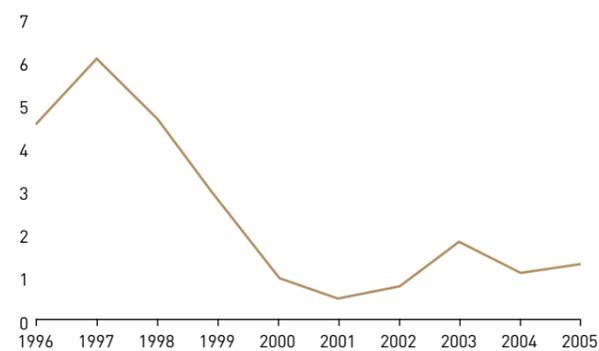
As Orion's distribution network is hierarchical with the highest voltage at a few input points (Transpower grid exit points) and the lowest voltage at the many output points (consumer connections), those parts of the network that operate at higher voltage are given higher maintenance priority.

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.

Consumer minutes lost (millions)



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.

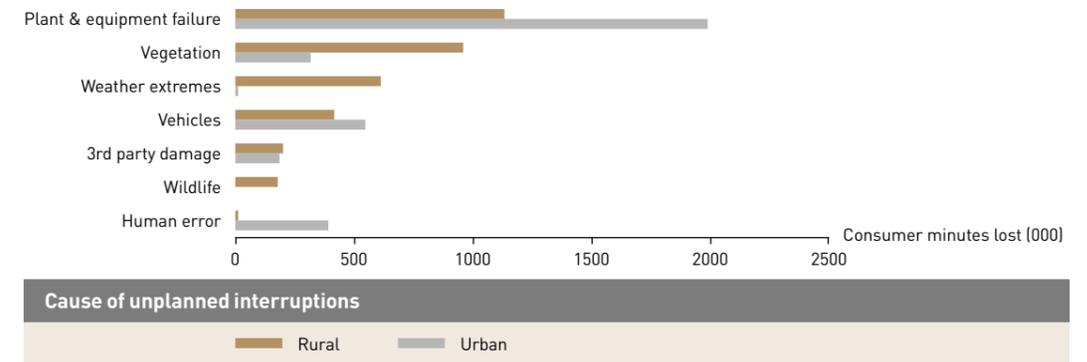
The following table shows the five largest unplanned interruptions that occurred on the Orion network in the year ended 31 March 2005.

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:

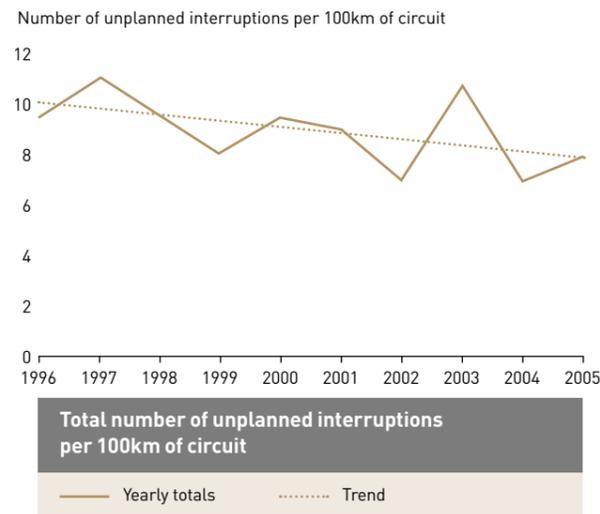
- 66kV, 33kV, and 11kV
- line and cable
- urban and rural

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 circuit⁹.



Comparisons with other New Zealand network companies (with broadly similar types of network to Orion) show that we currently perform well on this statistic¹⁰.

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

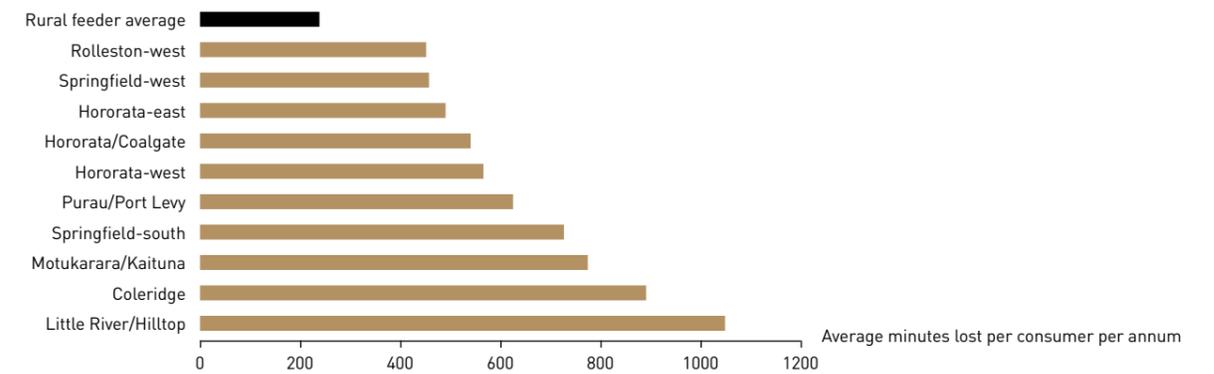
Generally speaking a feeder is defined as a circuit that originates at a district substation and supplies several households or businesses.

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

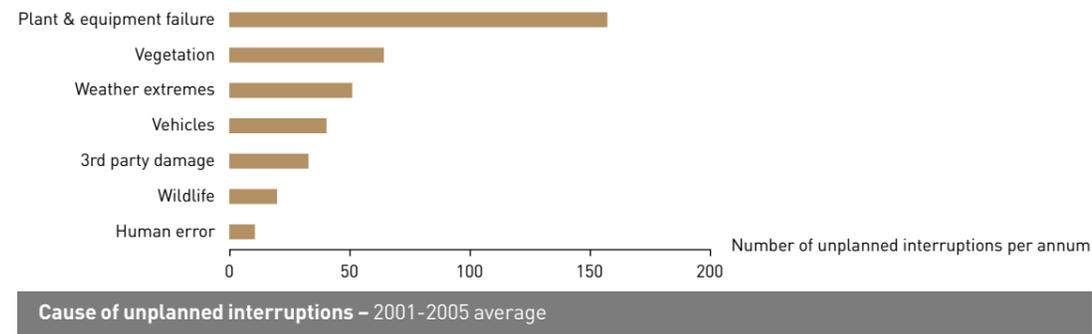
Capacity utilisation is a measure of how well a network's transformers are utilised. It is calculated as the maximum demand experienced on an electricity network in a year divided by the transformer capacity on that network.

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



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 as 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.

Directory

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www.oriongroup.co.nz

**APPENDIX 2
PRICING GUIDE**

PRICING GUIDE

A guide to Orion's pricing for **2005**



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.

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
- Network Quality Report – a report that examines how well Orion performs at providing a reliable electricity distribution system.

Network summary for year ended 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
Asset value (as at 31 March 2004)	\$580m

A large helicopter is shown in flight against a blue sky with light clouds. It is carrying a large metal bucket suspended from its hoist, which is used for laying power lines. The helicopter is viewed from a high angle, showing its rotors and tail.

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Introduction



It is my pleasure to release Orion's first network Pricing Guide. We hope this guide will help customers understand our prices, how our prices compare with those of other electricity distributors in New Zealand and enable customers to better judge our overall performance.

Our community rightly expects Orion to 'keep the lights on', keep our prices down and deliver electricity safely. However there is often a trade-off between these requirements.

Our ability to keep the lights on mostly relates to how much we spend on network maintenance and capital expenditure. The more we spend, the more reliable our community's electricity supply becomes. However, the more we spend the higher our prices also need to be (to recover our costs).

The trade-offs between price and electricity supply reliability are constant issues for Orion. We want to ensure our prices and performance are at levels that our customers desire.

This guide only describes Orion's prices – we do not attempt to describe the pricing of other industry participants such as electricity generators, Transpower or electricity retailers. Orion's prices typically amount to less than 30% of a household's electricity bill.

As this guide is a plain English attempt to explain our pricing methodology, some technicalities are not covered. A fuller explanation can be found on our website at www.oriongroup.co.nz

We hope you find this guide of interest and we welcome any comment you may have on it or any other aspect of Orion's performance.

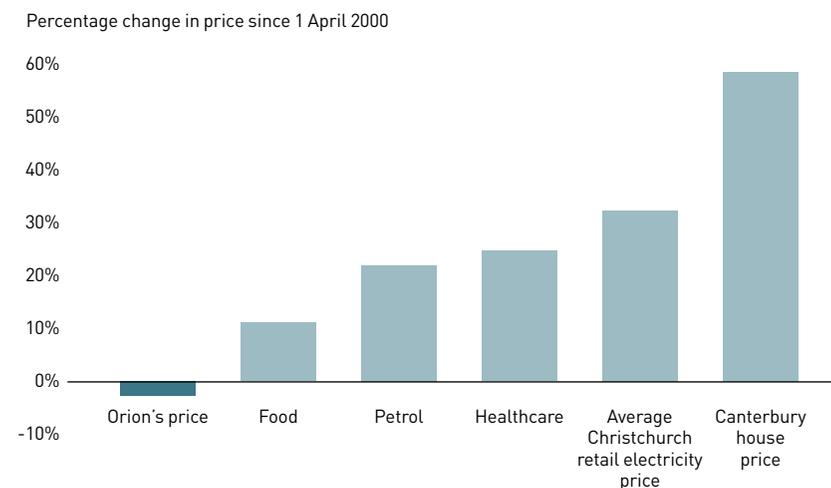
Roger Sutton
CHIEF EXECUTIVE OFFICER

Pricing highlights

Five key principles guide us in our pricing:

- We aim to make a rate of return that is appropriate for the commercial risk of our business.
Our rate of return typically results in Orion having below average prices (compared with other New Zealand electricity distributors) even though we provide one of the most reliable electricity networks in the country.
- We try to signal to customers what it costs to deliver electricity to them at different times of the day and year.
For example, we believe customers should be aware that it typically costs more to deliver electricity to them at 5pm on a winters evening than at midday on a summers day.
- We give customers the opportunity to reduce their electricity costs significantly, if they reduce their electricity usage when our costs are high.
We signal when it costs us more to deliver electricity to customers, providing the opportunity for customers to reduce their power usage if they wish. By doing so, customers can save money and help the environment.
- Unlike many electricity distribution companies, we do not apply a fixed per day charge.
- Our pricing does not differentiate between rural and urban customers.

Over the last five years our prices have reduced by over 15% in real, inflation adjusted terms (or 2.3% in nominal non-inflation adjusted terms). This compares with large price increases for a number of other essential household items.



Percentage change in price of household expenditure items since 1 April 2000

Sources: Schedule of Domestic Electricity Prices, Ministry of Economic Development; Consumer Price Index, Statistics New Zealand; "Market Facts", Real Estate Institute of NZ



The electricity industry

In order to understand how we set our prices, a basic understanding of New Zealand's electricity industry is needed.



Generation

Power plants that make electricity, eg. hydro dams, windfarms.

Several private and government owned companies generate electricity in New Zealand – they include Contact Energy, Genesis Power, Meridian Energy, Mighty River Power, Todd Energy and TrustPower.



Transmission

The national grid of high voltage power lines and tall pylons that transport electricity from where it is generated to key points around the country, mostly near towns and cities.

The grid is owned and operated by the state-owned enterprise, Transpower.



Distribution

Local electricity distribution networks of lower voltage overhead lines and underground cables which distribute electricity from the Transpower grid to homes and businesses.

Orion is one of 28 electricity distributors in New Zealand.



Retailers

Companies which sell electricity direct to households and businesses.

There are five electricity retailers operating in central Canterbury – Contact Energy, Genesis Power, Meridian Energy, Mighty River Power and TrustPower.



Consumers

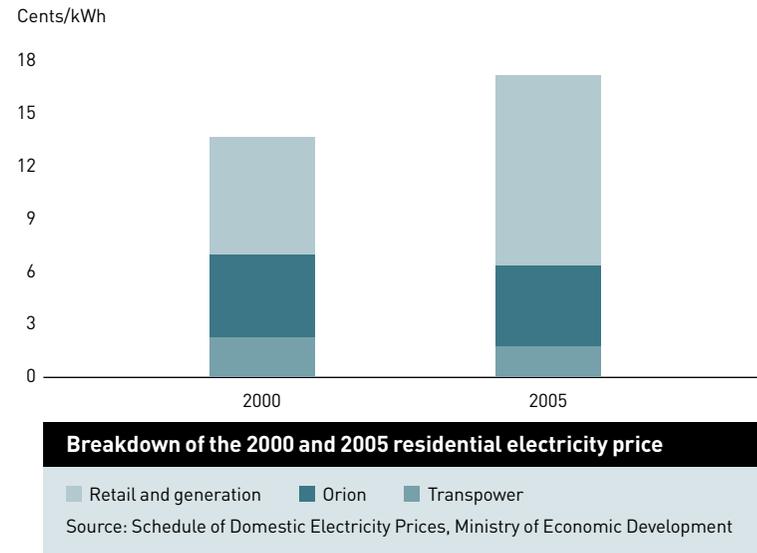
Household, business and industrial users of electricity.

Aviemore Power Station pictured above, image provided by Meridian Energy.

The electricity bill you receive each month covers the cost of:

- generating the electricity
- transmitting the electricity
- distributing the electricity
- retailing services including metering costs

This Pricing Guide details how we determine Orion's charges for distributing electricity via our network (the third bullet point above). It does not discuss the charges of other industry participants.



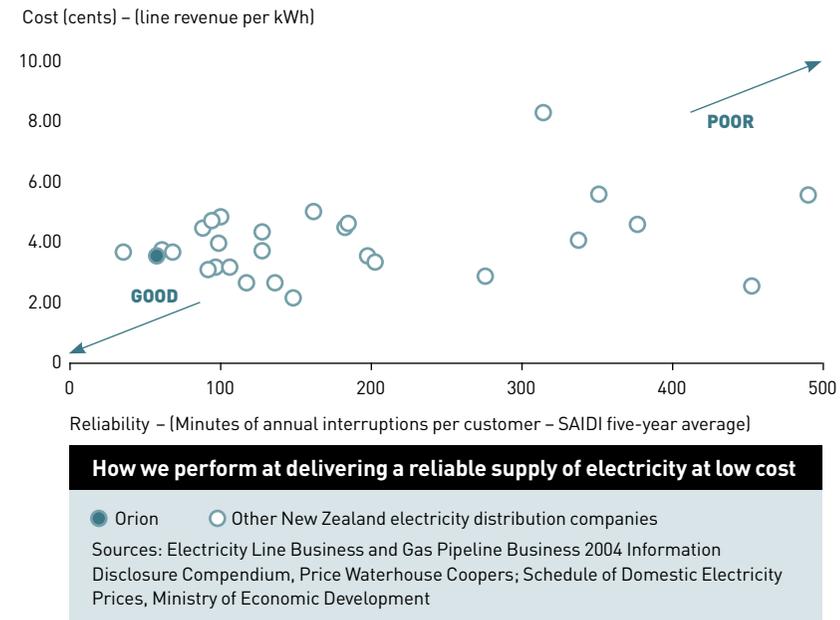
Our pricing philosophy

Like roads, electricity networks have a limit to their capacity. Orion's 'rush hour' typically occurs on very cold winter evenings when people arrive home from work and turn on their lights and heaters. If electricity demand gets too high during this period we run the risk of power cuts.

One solution is to expand our network's capacity – much like making roads bigger to handle the traffic. But this is very expensive and would mean we would have to put up our prices to cover the cost. We think it makes better sense to promote other cheaper options – for example, during periods of high or 'peak' electrical demand, Orion uses 'ripple control' to turn off household electric hot water cylinders automatically.

We also use 'price signals' that reflect the significant investment that would be required to expand our network's capacity. By price signals we mean charging higher prices during periods of high electricity demand and lower prices during low demand periods. This approach leads electricity retailers to encourage their household and business customers to turn off appliances that don't need to be on while the network is heavily loaded.

Our pricing structure is designed to reflect the actual cost of delivering electricity across Orion's network. This results in savings to end users who reduce their load during peak demand periods, encourages greater energy efficiency and minimises the effect on our environment¹. Our primary business objective is to keep prices low for customers while still providing our community with the quality of electricity supply they require. Our pricing philosophy of charging higher prices during periods of high electrical demand helps us to achieve that goal².



¹ As a result of our efforts to reduce peak electricity demand in our network area over the last 15 years, Orion has won numerous environmental awards, including New Zealand's highest environmental award for businesses – the Green Ribbon 'Business Caring for the Environment Award'. By reducing peak demand we have saved the use of many thousands of tonnes of aluminium, steel and copper.

² An independent discussion on the benefits of Orion's pricing methodology can be found on www.ipart.nsw.gov.au (IPART is the New South Wales electricity regulator) and www.energy.qld.gov.au/pdf/detailed_report.pdf (a Queensland Government paper).

How we price

Orion's approach to pricing is that if customers choose to use electricity when the network is heavily loaded, they should pay a premium over and above the normal price. We can then use this premium, or extra revenue, to upgrade our network.

However, if a customer avoids using electricity during peak demand times, Orion receives no additional revenue and we don't have to spend millions of dollars expanding our network's capacity unnecessarily. The customer could also save money by not using higher priced electricity.

Working out how much extra to charge customers during periods of high electricity demand is quite complicated. Elements of our network cost more than others, and varying parts are used to deliver electricity to each of our more than 175,000 individual customer connections. Individual customer pricing is therefore not feasible.

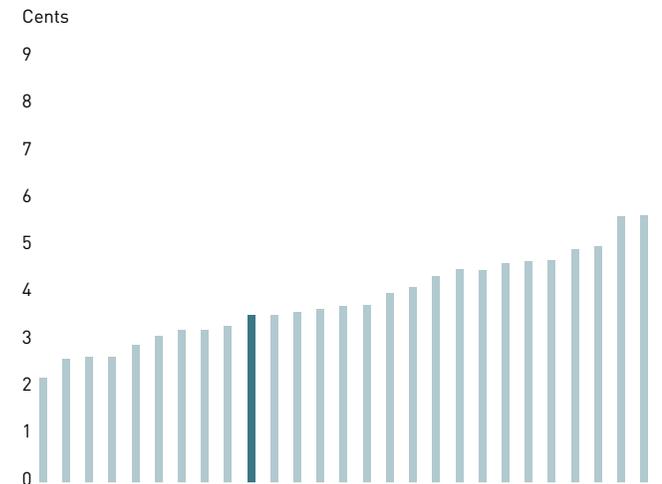
To recognise the key differences in the use and cost of our network, we separate customer connections into various categories for pricing as follows:

- residential and smaller business connections in areas where maximum electricity use is in winter – these areas are classified 'Zone A' and include Christchurch city
- residential and smaller business connections in areas where maximum electricity use is in summer – primarily rural areas where summer irrigation occurs, classified 'Zone B'
- major customers – businesses that are major electricity consumers; Orion has lower prices for these customers because it costs less to deliver lots of energy to one place than it does to deliver the same amount of energy to hundreds of places
- farms with large irrigation requirements
- outside lighting – a price for city councils for the cost of delivering electricity to their thousands of street lights³



³ As street lighting is a unique type of electricity connection we do not discuss its pricing elsewhere in this guide.

It is very difficult to compare our prices with other New Zealand electricity distribution companies because they use different customer price groupings to ours. One of the best price indicators available is shown in the graph below.



Orion's position relative to other New Zealand network companies – line revenue per unit (kWh) 2004

Source: Electricity Line Business and Gas Pipeline Business 2004 Information Disclosure Compendium, Price Waterhouse Coopers

Considering our proven track record in delivering electricity consistently and reliably (see our Network Quality Report which shows Orion's performance in this area ranks among the best in the country), we believe our pricing compares very favourably with other New Zealand electricity distributors.

Furthermore, our pricing covers a cost that, to the best of our knowledge, no other electricity distributor incurs. Most other distributors maintain electrical equipment up to the boundary of a property – beyond the boundary it is the property owner's responsibility. Orion however commits to maintaining the lines, poles and all other electrical equipment right up to the point of entry to a house or business building⁴. We do this regardless of whether the electrical equipment between the boundary of the property and the building is owned by Orion, the property owner or some other third party. Orion maintains this policy as we wish to provide our community with the best possible service.

⁴ This service covers fair wear and tear, including storm damage, but does not cover damage caused by the customer or a third party. Further information on this service can be found in Section 4.7 of our Network Code which is available on our website www.oriongroup.co.nz

Residential and small business pricing

Two features make our pricing for residential and small business customers (Orion calls these customers 'general connections') quite different to that of other electricity network companies:

- In 2001, we became the first distribution company in New Zealand to remove fixed 'per day' charges for general connections. While retailers still charge residential and small business customers a 'per day' charge, this is not a result of Orion's pricing structure.
- We do not charge each home or business individually. Instead, we charge retailers for the total electricity used by all their residential and small business customers combined.

We do this by charging retailers for the:

- total amount of electricity that comes into our network from the Transpower grid⁵,
- less the amount of electricity our major customers use⁶.

The result represents the total electricity consumed by homes and small businesses.

Charging retailers for their customers' combined electricity use, rather than charging each home and business separately, has several advantages:

- Instead of calculating charges for over 175,000 individual connections on Orion's network, we only have to invoice the five electricity retailers operating in our region – Contact Energy, Genesis Power, Meridian Energy, Mighty River Power and TrustPower. This process is considerably cheaper.
- The majority of households and small businesses have a one or two-register electricity meter. One-register meters record total electricity use at that connection, while two-register meters record total day use on one register and total night use on another register.

Because these meters have limited recording abilities, only limited pricing information can be passed on to the majority of customers. A customer can't be charged one price at 3pm, then another price at 5pm and a third price at say 7pm.

In contrast, the meter systems at Transpower grid exit points (where electricity is transferred from the national transmission grid to Orion's distribution network) measure electricity throughput every half hour. This allows Orion to charge retailers different prices every half hour. We utilise this facility to charge retailers a higher price during high electricity demand periods.

This encourages retailers to install more sophisticated meters at homes and businesses so that they can pass on to their customers the higher prices they incur at peak times as well as the lower prices available during non-peak times.

Our pricing structure for general connections has two components – a 'capacity price' and a 'peak price' – each of which we charge to retailers.

Orion's general connection distribution prices as at 1 April 2005 (excluding gst)

Capacity price	
For general connections in Zone A	
7am to 9pm on working weekdays	4.25 cents/kWh
9pm to 7am and on weekends or public holidays	0.50 cents/kWh
For general connections in Zone B	
During winter (Apr to Sept)	
- 7am to 9pm on working weekdays	4.25 cents/kWh
- 9pm to 7am and on weekends or public holidays	0.50 cents/kWh
During summer (Oct to Mar)	
	2.01 cents/kWh
Peak price	
Both zones	\$95.60 per kVA per annum

The capacity price component is simply a price for the amount of electricity used, but is charged at differing 'cents per kWh'⁷ depending on the 'zone', month and time of day. We generally charge less at night to encourage retailers to, in turn, encourage households and businesses to use their appliances at night-time when our network is not so heavily loaded.

The revenue received by Orion from the capacity component covers many of our costs including the operating, maintenance and capital costs that we incur regardless of how much electricity is being used at any particular time.

The peak price component recovers our other costs and signals to retailers the expense we will incur (which will ultimately be passed onto homes and businesses) if we need to expand our network's capacity. This price is only charged during periods of high load on our network. We call these periods 'peak periods'⁸. On average, they occur for around 150 hours during winter in Zone A and also for around 150 hours during summer in Zone B. The peak charge is based on the average demand during peak periods.

During a peak period, a customer's electricity use effectively costs around 85 cents/kWh. This compares to a cost of around 0.5-4.5 cents/kWh during non-peak period times.

Charging high prices during peak periods encourages retailers to persuade their customers to reduce their electricity consumption during electrical 'rush hours'. This reduces the need for us to expand our network's capacity through the building of extra power lines.

⁵ The points where electricity leaves the Transpower transmission grid and enters the Orion distribution network are known as grid exit points (GXP). There are 14 GXPs on Orion's network.

⁶ Including electrical losses associated with delivering electricity from the GXP to these customers.

⁷ The kilowatt-hour (kWh) is a unit of energy equivalent to one kilowatt of power expended for one hour of time. The kWh is commonly used in electrical applications.

⁸ Just when a peak period occurs is determined by the 'load threshold setting' in our ripple control system, which is determined in consultation with retailers. Please refer to our website www.oriongroup.co.nz for more information on how a peak period is determined.

Irrigation pricing

Irrigation connections are a subset of general connections in Zone B, where there is an irrigation pump motor with a rating of at least 5kW which is only used for pumping water. Some special pricing arrangements apply for irrigation connections:

1 A rebate for capacitors

The overhead power lines that are typical in rural electricity networks cause voltages to drop – principally because of the long lengths of these wires. If voltages drop too low, the quality of electricity supplied to rural homes and businesses can suffer. To reduce the impact of irrigation loads on this voltage drop, farmers must install capacitors on their pump motors⁹. Orion credits the irrigation customer's retailer with a rebate for the installation of these capacitors.

2 A charge based on the 'nameplate rating' of pump motors

Some irrigation connections that have been on our network for a number of years have an alternative price whereby they are charged according to the nameplate rating of their pump motors¹⁰. To qualify, the connection must feature a ripple relay¹¹ that Orion can use to interrupt the supply of electricity in the event of an emergency. This pricing arrangement is not available to new irrigation customers.

3 A rebate if we can interrupt the power supply

Orion will credit a rebate to the retailers of irrigators who are prepared to accept occasional interruptions to their power supply in the event of an emergency.

Examples of emergencies include:

- a car hitting a pole causing a fault on our network
- failure due to an overheated transformer
- a capacity shortage on Transpower's grid that affects Orion's ability to supply power

The rebate is designed to reduce the need for Orion to invest in additional and costly back-up systems. It means that, in the event of a fault, Orion can interrupt the supply of electricity to irrigation systems and divert any power remaining in the network to more essential areas such as dairy sheds and rural homes.

Irrigators are otherwise charged the same prices as general connections. Further details of irrigation prices can be found in our 'Delivery Pricing Schedule' which is available on our website www.oriongroup.co.nz



⁹ A capacitor is a device that is fitted to improve the power factor of an installation and thus reduce voltage fluctuations.

¹⁰ Nameplate rating is the output of the pump motor as specified by the manufacturer.

¹¹ A ripple relay is an electrical switch that is remotely controlled by the injection of a coded signal into the electrical network.

Major customer pricing

Of the 177,500 connections on our network, approximately 360 are categorised as major customer connections. While they make up only 0.2% of our customers by number, major customers use around 25% of the total electricity that we deliver over our network.

To qualify as a major customer, a business needs to have a maximum demand for electricity of at least 250kVA¹². This compares to the maximum electricity demand of a typical house of about 10kVA.

Such companies can choose between Orion's general connection pricing or major customer pricing.

Major customer pricing has four components:

- a customer-specific charge for the equipment provided by Orion that is dedicated to delivering their electricity
- a fixed per annum price for their connection(s)
- a 'control period demand' price of \$66.40 (excl GST) per kVA of demand they incur during control periods¹³
- an 'assessed capacity' price of \$24.40 (excl GST) per kVA of their assessed capacity¹⁴

We do not charge major customers a 'cents per kWh' charge. Instead we have two charges – the control period demand charge and the assessed capacity charge. These 'peak charges' are based on the major customer's contribution to our peak network loads and their own maximum power demands in the previous 12 months. This provides major customers with some cost certainty and Orion with some revenue certainty.

During periods of high electricity demand, Orion uses ripple control signals to communicate to major customers that they are in a high price period.

This gives them the opportunity to reduce their electrical use through such means as turning off boilers, turning off freezers and running generators. This in turn reduces their following year's chargeable kVAs and minimises their future power bills.

If a customer responded to Orion's pricing signals by turning off all their electrical load during control periods it would reduce their following year's charges from Orion by around 70%. Even modest efforts to reduce electrical load during control periods can result in significant savings for major customers.

Several of Orion's major customers respond to our pricing signals. A good example is the Chateau on the Park which has, as a result of our control period pricing, invested over \$150,000 in an energy management system and a diesel generator. Their investment in this technology was paid back in around three years through savings in ongoing energy costs, due to Orion's pricing.

¹² A kilovolt-amp (kVA) is 1,000 volt-amps. A volt-amp is the measurement of electrical power that is computed by multiplying volts times amps.

¹³ Control periods are similar in concept to general connection peak periods, with control periods being those hours with the very highest demand on our network. There are typically about 80 hours of control period per annum.

¹⁴ Assessed capacity is calculated annually for each major customer as the average of their 12 highest kVA demands during the previous 12 months on working days between 7.30am and 8.30pm.

Retailer pricing options

Orion's charges for distributing electricity to homes or businesses are just one of many costs retailers pass on in their bills to customers. The other costs are:

- the cost of generating the electricity
- Transpower's cost for transmitting the electricity
- the retailer's own costs to create each electricity bill, process money received and communicate with existing and potential customers

Retailers look at all of these costs, and return on investment requirements, and 'rebundle' them into various pricing plans, which they then charge residential and business customers.

Five retailers supply customers on Orion's network. Because they have different pricing plans it is not always easy to know which retailers plan is best for you.

One way of saving money is to consider whether you would be prepared to accept the occasional interruption to part of your electricity supply. For example, retailers sometimes offer cheaper prices if you are willing to accept the occasional interruption to electricity powering your hot water cylinder.

Cheaper pricing plans are also often available if you:

- do not use much electricity (less than 8,000kWh per annum)
- are willing to have a two-register meter and do some household activities at night (such as clothes washing or water heating)

Not only do these measures deliver savings to households, they also help Orion. They transfer demand for electricity to times of the day or night when our network is not heavily loaded and reduce the need for us to expand our network's capacity.

For detailed information about retail pricing, including how to work out which retailer's pricing plan is the cheapest for your home or business, we recommend you visit the Consumers' Institute website www.consumer.org.nz

Payment for distributed generation

Our pricing signals are not only designed to encourage electricity users to use less electricity during peak demand periods, they also encourage 'distributed generation' within our network.

Distributed generators are generators located at a home or business which are capable of generating electricity for that home or business's own use, and are also capable of putting surplus electricity back onto our network. Distributed generators can take many forms but diesel generators, wind mills and solar panels are the most common.

Distributed generators assist Orion in two main ways:

- they add security to our community's electricity supply
- they delay the need for Orion to expand the capacity of our network by providing their own electricity supply and being located close to where the power is consumed

Because of these benefits, Orion passes on whatever financial saving they provide us to the owner of that generator. We do this by paying them for their generation during our peak periods.

Small scale generators (less than a 5kW rating), which are typically residential solar panels, receive the same price for the electricity they 'export' to our network as what we charge for the electricity they take from our network. Other prices apply for medium and large scale distributed generators.

Not all network companies in New Zealand pay for distributed generation and few, if any, pay as much as we do¹⁵. However we believe distributed generation should be encouraged as it makes our community's electricity supply more reliable and secure.

While encouraging distributed generation, one of our key pricing principles is that we do not want one group of customers to subsidise another group of customers. Consequently if a distributed generator imposes costs upon Orion – for instance a windmill is erected away from our existing network and we need to build new lines to connect up that windmill – then we will seek to recover those costs from that generator. This ensures that established customers do not cross-subsidise new customers.

Further information on distributed generation can be found on our website www.oriongroup.co.nz

¹⁵ A 2002 independent study of the six largest New Zealand electricity networks concluded that Orion's pricing offered the greatest reward for wind power generation. This study can be found on our website.

Photograph at right shows Thomas Cameron's 95kW distributed generator at the mouth of the Rakaia River.



Directory

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CHAIRMAN

Peter Rae
DEPUTY CHAIRMAN

Craig Boyce

John Dobson

Don Elder

George Gould

Gail Sheriff

CORPORATE MANAGEMENT

Roger Sutton
CHIEF EXECUTIVE OFFICER

Brendan Kearney
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Rob Jamieson
GENERAL MANAGER COMMERCIAL

Craig Kerr
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www.oriongroup.co.nz

**APPENDIX 3
SECURITY OF SUPPLY STANDARD**

Orion's security of supply standard outlines the length of time that customers can expect to be without power after interruption(s) to supply, caused by a fault or incident on our network.

The standard identifies various classes of supply from small rural to large urban substations and prescribes a length of time to restore supply given the size of the power interruption. In general, the standard requires circuits to be designed to provide higher levels of security where they meet the largest demands. The standard is less rigorous where the size of electrical demand served by a circuit is small.

The standard is shown below.

Security of supply standard

KEY

1. Time allowed to restore supply after one interruption (n-1 event/contingency).
2. Time allowed to restore supply if a second interruption occurs in same area (n-2 event/contingency).
3. Time allowed to restore supply after single busbar fault.

CLASS D - Loads up to 200MW i.e. CBD or major sector of city

1. Immediately restore 100%.
2. Immediately restore 50% and the rest within 1 hour.
3. Immediately restore 50% and the rest in the time taken to complete repairs.

CLASS C2 - Loads 10 to 60MW i.e. special industrial/commercial load, CBD and Transpower GXP's

1. Immediately restore 100%.
2. Within ½ hour restore 95% and the rest in the time taken to complete repairs.
3. Within 2 hours restore 95% and the rest in the time taken to complete repairs.

CLASS C1 - Loads 10 to 60MW i.e. primary urban network including district and network substations

1. Immediately restore 100%.
2. Within 2 hours restore 95% and the rest in the time taken to complete repairs.
3. Within 2 hours restore 95% and the rest in the time taken to complete repairs.

CLASS B - Loads 2 to 10MW i.e. major overhead lines, single transformer district substations and large urban radial feeders

1. Within 1½ hours restore 50%, within 3 hours restore 95%, and the rest in the time taken to complete repairs.
2. Restore 100% in the time taken to complete repairs.
3. Restore 100% in the time taken to complete repairs.

CLASS A3 - Loads 1 to 2MW i.e. urban secondary feeder

1. Within 1 hour restore 50%, within 2 hours restore 95%, and the rest in the time taken to complete repairs.
2. Restore 100% in the time taken to complete repairs.
3. Restore 100% in the time taken to complete repairs.

CLASS A2 - Loads 1 to 2MW i.e. rural feeder

1. Within 2 hours restore 50%, within 6 hours restore 95%, and the rest in the time taken to complete repairs.
2. Restore 100% in the time taken to complete repairs.
3. Restore 100% in the time taken to complete repairs.

CLASS A1 - Loads 0 to 1MW i.e. Remote rural feeder & very small Transpower GXP.

1. Restore 100% in the time taken to complete repairs or switching.
2. Restore 100% in the time taken to complete repairs or switching.
3. Restore 100% in the time taken to complete repairs or switching.

APPENDIX 4
PRICING AND PEAK LOAD MANAGEMENT CONSULTATION PAPER



**Pricing and peak load management
consultation paper**

1 July 2005

Orion New Zealand Limited

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Summary

This consultation paper – *Pricing and peak load management* – explains some pricing changes that Orion proposes to introduce from April 2006 and/or April 2007. The paper forms part of Orion's customer and stakeholder consultation about price and quality.

The purpose of this consultation is for stakeholders (principally retailers and major customers) to have their say on the proposals and ensure that any changes create optimum benefit for all concerned. The paper explains our pricing objectives and includes the following sections:

- major customer connections
- general connections
- interruptible load
- distributed generation and credits for export.

Orion's approaches to distribution service pricing and load management are closely interdependent. Our key pricing component is a charge for customers' contributions to *peak power loading* on Orion's network. We manage load when peaks occur. The price at that time is Orion's marginal cost to provide capacity during peak load. That cost in turn determines the investment required in Orion's network, which is the dominant driver of Orion's costs.

For charging purposes, Orion has two network connection categories; *general* and *major customer*. Each category has a peak charge component of pricing. That peak charge component is determined by measuring the average power loadings created by the category when Orion is actively managing load. Our load management is dynamic; we broadcast signals via ripple control to denote chargeable periods.

Orion initiated its existing load management and charging arrangements when it became a distributor in April 1999. Since that time Orion has predominantly injected ripple from three 66kV injection plants. Recently we commissioned many new ripple injection plants that inject at 11kV. These new plants replace our aging 66kV plant and allow more flexibility with signalling at the lower network level. This development was a catalyst for this review.

For **major customer connections**, Orion currently signals a 15 minute warning followed by a control period. This sequence can commence at any time. Consumer response has grown so much in recent years that the resulting load shift has become too large for Orion to manage in one channel. Orion proposes:

- to synchronise the control period with real-time half-hours and send an alert signal prior to the first half-hour to reduce metering and associated costs, and
- to reduce the size of the load shift by either splitting the channel in two or by introducing an option with an extended control period.

We also propose the extended control period option as a means of rewarding consumers who run their embedded generators for longer periods, particularly on those cold winter days when we need to alleviate hot-water control.

For **general connections**, we currently signal a peak period whenever we actively manage load. We then identify the chargeable peak period as integral half-hours over the signalled period. We charge retailers for their contribution to our peak loading on the basis of their average loadings, as reconciled at the grid exit point (GXP), less the loadings of their major customers, during the chargeable peak period. This charging basis applies separately over two zones – A (urban), and B (rural).

Orion proposes to refine its existing arrangements to separately manage loads to achieve preset load limits for individual GXPs, the total system and possibly smaller 11kV districts, while continuing to identify the chargeable peak period and manage the load to achieve an agreed limit for the zone. Orion also seeks feedback on the impact of waterheater control, and the daily and annual duration limits on this control.

For **interruptible load**, we seek feedback from major customers regarding their interest in contracting with us to interrupt sizeable amounts of their load during fault contingencies. These contracts would be short-term arrangements (up to 3 years). They would apply in selected areas from time to time to enable us to meet our supply security standards until major upgrades are implemented. The facility might also be used to temporarily reduce load during a capacity constraint on Transpower's grid.

For **distributed generation**, Orion credits large distributed generators (between 30kW and 1000kW) for their electricity exports into the network. On 31 March 2004 we introduced a new basis for these credits. We continue to credit exporting customers that were in place prior to this date on the basis of their contribution during Orion's *control period*. However, in line with our introduction of credits for smaller generators, we changed our crediting basis for large generators to reflect their contribution during the somewhat longer *peak period*.

We propose:

- to rationalise this arrangement so that credits only accrue in major customer control periods and in the proposed extended control period (if that proposal is adopted)
- that large generators (between 30kW and 1000kW) that export electricity into the network be classified as major customer connections.

We wish to encourage consumers to invest in distributed (ie embedded within our network) generation that can run for extended periods on cold winter days.

We invite interested parties to provide submissions on these proposals by **1 August 2005**. Submissions should be in writing and sent to:

General Manager Commercial
Orion New Zealand Limited
PO Box 13896
Christchurch

or email to comments@oriongroup.co.nz

Part 1: Overview

1.1 Introduction

The purpose of this consultation paper is to consult with interested parties about proposed changes to the way we charge for and manage peak load. We have recently upgraded and commissioned a significant number of ripple injection plants resulting in an opportunity to subdivide the ripple signalling into 23 discreet areas. We also wish to utilise every opportunity to improve our price signals and the load management arrangements that we have with electricity retailers and major customers.

The paper is structured in five parts:

1. Overview
2. Major customer connections
3. General connections
4. Interruptible load
5. Distributed generation and credits for export

We expect that electricity retailers will be interested in all parts of the paper, however we anticipate that major customers' primary interest will be in parts 2, 4 and 5.

1.2 Context and timeframes

Orion wishes and is committed to consult over new price details and any variations to its pricing and peak load management approaches. This consultation process is also required by Orion's contracts with electricity retailers¹ and major customers². We will consider all submissions in good faith. Submitters should clearly indicate any information that is provided to Orion on a confidential basis, as submissions may be made public.

This consultation paper is part of the required consultation process in anticipation of changes that Orion may introduce from 1 April 2006 and/or possibly 1 April 2007.

Details of Orion's pricing and associated practices are provided in two further documents – one for overall pricing³ and one for major customer connections⁴. Orion will update these documents to incorporate any pricing changes resulting from this review.

All of the documentation mentioned above is available on Orion's website at www.oriongroup.co.nz.

¹ *Delivery Services Agreement*, current precedent revised 20 October 2004, clause 14.1.3

² *Terms and conditions of providing delivery services to major customers*, current precedent 24 March 2000, clause 11.1.3

³ *Application of Electricity Delivery Prices, applicable from 1 April 2002*, issued 31 January 2005

⁴ *Electricity Delivery pricing for major customer connections, applicable from 1 April 2005*, issue 5, revised 31 January 2005

1.3 Our overall objectives with pricing

Orion's core business is delivering electricity. Delivery includes *distribution* (delivering electricity over our network to many thousands of residential and business connections) and purchasing the *transmission* service from Transpower. Transpower delivers electricity from generators to the 14 grid exit points (GXPs) feeding Orion's network.

There are many similarities between distribution and transmission. Both involve capital-intensive networks, are natural monopolies and have reliability and security as paramount considerations. In Orion's view, the nature of distribution and transmission is similar enough to warrant similar pricing structures. Therefore, in most situations, the distribution and transmission parts of the delivery service add directly to produce a total delivery price. In terms of Orion's revenue, the distribution/transmission split for the year ending 31 March 2005 was:

	\$m	Proportion
Distribution	105.6	73%
Transmission	<u>39.4</u>	27%
Delivery	145.0	

Our key objectives in structuring and setting prices are as follows:

(i) Achieve appropriate revenue

Orion sets price levels to achieve revenue to recover its running costs and achieve an appropriate return for shareholders (which may be influenced by our price threshold set by the Commerce Commission).

(ii) Achieve allocative efficiency in local marketplace

Prices must be set (with reference to appropriate chargeable quantities) at a level that enables those who use Orion's service to make appropriate economic decisions. This pricing facilitates allocative efficiency within the local economy because people can objectively purchase the appropriate service to meet their needs, based on cost.

(iii) Achieve dynamic efficiency

To achieve dynamic efficiency, Orion's prices must reflect the marginal cost of providing its service. Dynamic efficiency is the act of achieving both allocative and productive efficiency over time. Dynamic efficiency is achieved through pricing that reflects the marginal cost incurred by an efficient service provider. Productive efficiency is the state of producing goods and services at least cost. It is measured by the unit cost to provide the delivery service and is not discussed further in this paper.

In line with the government's policy objective⁵ for the Electricity Commission, Orion needs to set and structure its prices to enable or assist retailers to signal "*the full costs of producing and transporting each additional unit of electricity*" to their customers.

As most of our costs are determined by what we invest in the network assets needed to deliver electricity during peak loading, the price needed to achieve dynamic economic efficiency is the marginal cost of providing the delivery service. This cost varies considerably across the network and over time, depending on the details of every situation. In pursuit of this ideal, Orion uses the long run average incremental cost (LRAIC) of load-dependent network assets, recognising their long term nature. If the peak price is set at the correct level (that is, at LRAIC), then consumers can objectively consider the benefits of alternatives (other fuels), or ways of avoiding the cost (for example, by reducing load during peak periods).

(iv) Relate to appropriate chargeable quantities

The cost of Orion's delivery service relates primarily to its network investment which is determined by power loading, not by energy throughput. Therefore, power loading (kW or kVA) is generally the most appropriate chargeable quantity for recovering load-dependent costs.

Orion considers that its other costs (which are fixed or independent of loading) should be recovered in an equitable manner from all those who use our service. This cost recovery can be achieved via fixed (daily) charges or through energy volume (kWh) based charges that measure each user's reliance on the network. For example, a fixed daily price recovers the costs of lighting connections and the additional assets used to supply them. For general connections, we recover these additional costs via a volume (kWh) based pricing structure. The volume-based price allows Orion to reinforce its peak pricing signal by applying different day and night prices. This differential encourages consumers, who generally have a low elasticity of demand for electricity, to shift load into the night period.

(v) Be compatible and workable with established systems and practices

For pragmatic reasons and in order to reduce costs, Orion's pricing must be compatible with established metering, reconciliation, billing and commercial practices.

(vi) Encourage competition

Under the current industry structure, Orion's pricing structures and practices should encourage retailers to compete. Furthermore, under our interposed agreements with retailers, the delivery pricing structure must give retailers the freedom to pass on the delivery costs in whatever way or form they choose, and to repackage costs to suit the marketplace.

⁵ Government policy statement on electricity governance, issued October 2004, paragraph 2e

(vii) Enable choice for retailers and consumers

Orion's pricing should enable retailers and consumers to make choices when purchasing Orion's delivery service. For example, consumers should be able to choose whether to:

- use alternative fuels
- defer electricity use for a lower charge
- avoid charges, for example through minimising fixed or daily prices or charges based on fixed capacity.

(viii) Wholesale, not retail

Orion prices its delivery service at the wholesale level for all connections except major customer connections. This wholesale pricing is appropriate as we provide our delivery service in bulk to retailers and it reflects our interposed agreements with retailers. Retail and wholesale forms of delivery pricing merge for major customers as major customers buy in bulk and we recognise the economy of scale within the delivery service (for example, the low voltage network is not required).

(ix) Minimise differential variations

Orion has to considerably average its prices in response to the practical limitations of differentiating prices within the local marketplace. Orion must also respond to and follow political demands and preferences. As a result, we generally cannot differentiate in price between urban and rural areas or between areas with high and low density loading.

(x) Provide a basis for embedded generation

Orion recognises that pricing/crediting structures and values must reward embedded generators that partially meet their own load requirements and/or export during peak loading to meet other consumers' load requirements. Embedded generation is similar to demand-side management in that it is a form of 'negative' load. This 'negative' load can only be commercially profitable if the appropriate pricing or crediting structures are in place. If the embedded generator delays the need for investment in the distribution network, then there is a win-win opportunity for all involved. Therefore, the pricing/crediting structures must signal value under the appropriate conditions which, for distribution, are generally during times of peak loading.

1.4 Associated implementation issues

Our experience shows that pricing and pricing structures must remain stable as it takes a long time (that is, years) for consumers to respond to pricing structures.

In the electricity market, consumer price elasticity is minimal in the short-term, but consumer response occurs in the long-term. Consumers require confidence that in the future they can enjoy the rewards of their decisions and their investments in appliances.

While it is essential for monopoly providers that pricing reflects costs, our experience shows that consumers generally need assistance from consultants, retailers and distributors (and maybe other agencies such as the Energy Efficiency and Conservation Authority) to help them respond to price signals. An appropriate response may involve considerable expenditure on equipment such as a new load management system, larger capacity water-heaters or storage spaceheaters, better insulation, alternative fuel installation or different appliances. It may be a long time (such as 10 years) before the consumer's existing installation needs refurbishment. Therefore, it is essential that we sustain consistent price signalling for many years to enable customers to receive an appropriate return on their investments and/or to identify when an installation needs refurbishing.

Such measures taken by consumers are commonly referred to as demand-side management or response. Orion believes that catalysts/incentives are needed to give some impetus to changes made by consumers. Orion also believes that commercial incentives (that is, financial rewards) for consumers must underpin these changes. This demand-side response will not occur unless the pricing structure provides the appropriate rewards.

We believe that pricing must look forward, particularly given New Zealand's pattern of loading growth which started in the mid 1950s and is expected to continue for the foreseeable future. The cost of future required investment in capacity must be signalled through peak load pricing. We consider that pricing on the basis of sunk costs, and recovering these via a 'tax', does not acknowledge the dynamic nature of capital development and the growth in our economy.

We consider that we must provide incentives for retailers to install, maintain and monitor ripple relay receivers in order to maximise the benefit of load control for all parties (Orion, retailers and consumers). In addition, we intend to prepare clear documentation, in straightforward terms, on the use and purpose of ripple channels, and the appropriate programming of ripple receivers.

1.5 Invitation for submissions

We invite all interested parties to make submissions on any aspect of this consultation paper by **1 August 2005**. Submissions should be in writing and sent to:

**General Manager Commercial
Orion New Zealand Limited
PO Box 13896
Christchurch**

or email to:

comments@oriongroup.co.nz

For any enquiries, please contact:

Neville Ross, Contracts and Pricing Manager, on 363 9870,
Alex Nisbet, Commercial Analyst, on 363 9737, or
Mario Perrone, Billing and Support Manager, on 363 9752.

Part 2: Major customer connections

2.1 Existing pricing

Orion's existing prices for major customer connections, applicable from 1 April 2005, are as follows:

Major customer connections	Distribution	Transmission	Total/Delivery	
Fixed (standard connections)	500.05	-	500.05	\$/yr
Fixed (secondary connections)	266.30	-	266.30	\$/yr
Control period demand	66.40	34.40	100.80	\$/kVA/yr
Assessed capacity – line	24.40	-	24.40	\$/kVA/yr
Assessed capacity – transmission	-	17.70	17.70	\$/kVA/yr

These prices are included in the delivery price schedule under 'pricing' on Orion's website at www.oriongroup.co.nz. Their application and further explanations are given in Orion's publication on major customer connection pricing⁴.

2.2 Objectives

Orion's general pricing objectives are set out in section 1.3 of this paper. Our specific objectives for major customer connection pricing are to:

- reflect economic costs; and
- recognise the economy of scale created by delivering the relatively large major customer electricity load. In particular, we do not use our low voltage network to deliver to major customers and therefore we exclude low voltage network costs.

The pricing components have further purposes, as outlined in the following table:

Pricing component	Purpose
Fixed	To recover account administration costs, such as data processing management.
Control period demand	To reflect the marginal cost to expand the network at peak load. In economic terms, this is the LRAIC (long-run average incremental cost), expressed in annual terms. Orion estimates its own LRAIC and a value for Transpower's network.

Pricing component	Purpose
Assessed capacity	<p>To recover overheads and the balance of costs that are not dependent on loading. These include the fixed costs of assets such as cable trenching, poles and insulators.</p> <p>The lines and transmission parts of this price component cannot strictly be added together to form a single delivery price as some customers have different bases for each assessed chargeable quantity. For example, customers close to a grid exit point (GXP) have an adjusted (reduced) chargeable line quantity (kVA) to recognise the lower cost to provide Orion's network when in close proximity to a GXP.</p>
Equipment	To cover the cost of equipment that is dedicated to serving the customer.

2.3 Consultation

Orion observes shifts in loading of approximately 15MW at the start and end of control periods. Clearly, the load management arrangement is working and as a group major customers respond significantly. This load shift compares with about 50MW of dynamic waterheating load. The interactive arrangements with major customers and retailers for managing the control periods have been developed and refined over a decade. However, we consider that there is room for further improvements. In the following paragraphs we outline the issues relating to control periods, any options we have developed, and our proposals to address the issues.

a) Control period start and stop flexibility

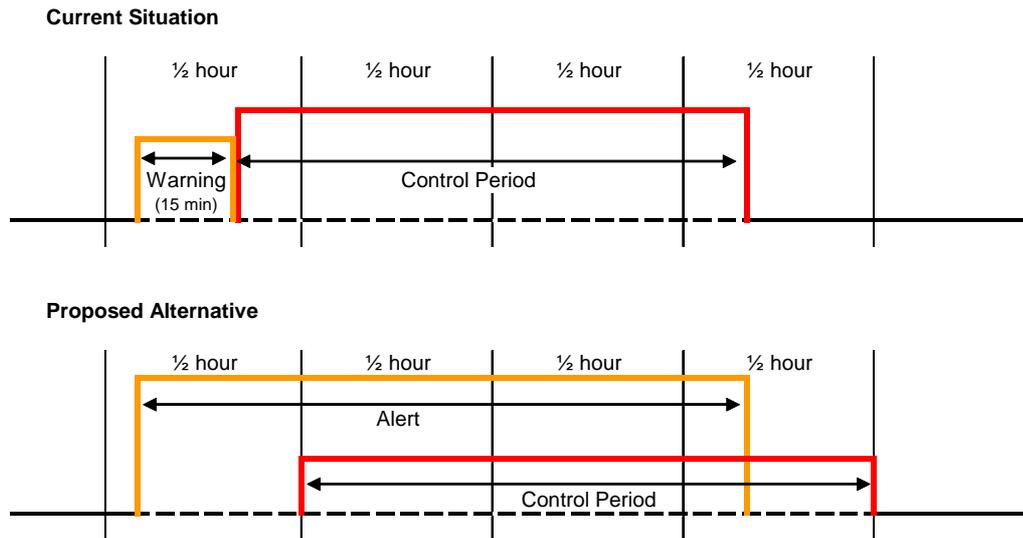
Issues

The current control period may start and stop at any time, subject to the broad constraints of 7:30 am to 8:30 pm on working weekdays during May to August for Zone A and November to February for Zone B. This flexibility with timing was developed to focus the period into the times of high loading and to minimise its length. However, the following two issues arise:

- major customer metering records use in real-time half-hours. Accommodating Orion's approach (which is not synchronised with half-hours) creates some additional meter and data processing costs; and
- Orion's timing of ripple signals for the start and stop of the control period varies by up to two minutes. While this variance is not significant overall (especially as the delays are generally consistent) there can be discernible differences in the chargeable demand for some customers because Orion uses a common accumulated control period duration to calculate all chargeable demands.

Proposal

We propose to simplify the arrangement by separating control period signals from chargeable quantity recording. The following diagram illustrates a possible alternative, which synchronises the control period with real-time half-hours.



Features include:

- Replacing the existing warning with an alert signal commencing during the half-hour prior to the control period (but not in the last two minutes) and finishing during the last half-hour of the control period (again, not in the last two minutes). The customer would receive advance notice of both the start and end of the control period.
- The control period signal (in red above) would not be strictly necessary, but would be maintained for those customers that wish to use it for direct load switching (although the signal would not exactly coincide with the beginning and end of the control period).
- Every control period duration would be for at least one half-hour.
- The timing accuracy for the control period would be determined by the EC-certified metering equipment.

b) Size of load in response*Issue*

Major customers currently respond to Orion's signals by switching approximately 15MW of load. This entire load is on one ripple channel. (In comparison, the dynamic waterheating load that Orion switches is typically 50MW, but this is switched in relatively small amounts over the 18 different channels.) Consequently, the relatively large amount of switched major customer load creates some instability for the load manager software. The block of load needs to be split to counteract this problem and to enable us to continue to encourage and provide opportunities for more load management response from major customers.

Options

We have considered two options to subdivide the control period load. These options are to either:

- (i) split major customers into two control period groups/channels, or
- (ii) introduce an extended control period option.

Option (ii) would also provide a basis for rewarding embedded generators (as identified in overall objective 1.3(x) and issue 2.3(c) in this paper).

We also considered introducing a chargeable shoulder period to the existing control period. With the right pricing, this option would effectively divide the load response as some (but not all) customers would choose to respond to the weaker shoulder pricing signal. It would also reward those customers who were able to respond for longer periods. However, this option would impact on the pricing to all major customers and would require customers to modify their response in order to maintain any existing load deferral benefits. We are concerned that a change of this nature would not demonstrate the long-term pricing stability that customers look for when investing against our prices. We are also concerned that the spread of pricing into the shoulder period would weaken the core control period signal to the extent that some customers would choose not to respond at all. Given these issues, we do not intend to pursue this option further.

We expand our two proposed options further below.

- (i) Split control period channel in two

This option would randomly assign customers to either of two channels, which would halve the amount of switched load for each channel. Orion would stagger the operation of the two channels to smooth the impact of the load response. We envisage that the operation of the two channels would usually overlap and that the staggering would occur mainly during restoration of load to reduce the impact of customers switching their loads on, all at once. All customers would experience the same service on average and the same price. We would manage the incidence and duration of the two sets of control periods to be as similar as possible.

- (ii) Introduce extended control period option

This option would offer customers an extended control period pricing option. Customers could choose to move to this option with an annual review. Orion would signal the extended control period with earlier starts and later ends, depending on the circumstances. On 'regular' load management days the extension might be minor, or not at all, while on very cold winter days the extension could be considerable, such as 10 hours through the day or 5 hours through the evening. We expect that we would initiate the extended control period early on extremely cold days when we anticipate prolonged waterheating cuts. Overall, we expect the average accumulated extended control period to be no more than 150 hours per season, compared with 100 hours for the standard control period.

We intend to design this option to suit customers with embedded generators who will receive direct reward for running their generators for longer periods. Under normal circumstances these customers will be financially better-off on the extended option than on the standard option.

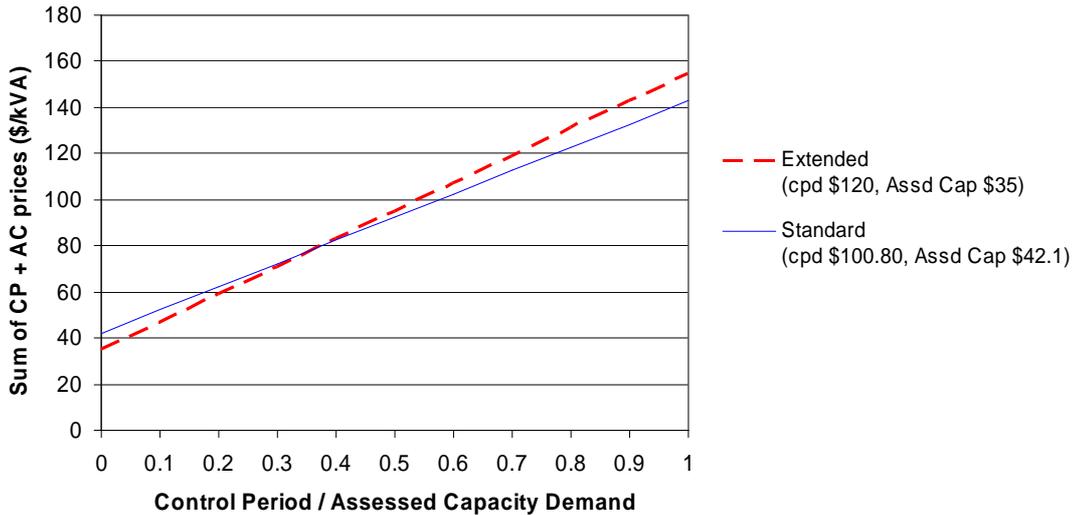
In this option, the extended control period demand price would be higher while the assessed capacity prices would be lower. The overall charges would be lower for those customers who reduce their loading over the longer period. As an illustration (but not calculated with any precision at this stage) the prices might be:

	Current/standard CP (\$/kVA/yr)	Extended CP (\$/kVA/yr)
Control period demand (Delivery)	100.80	120.00
Assessed capacity (Distribution)	24.40	17.30
Assessed capacity (Transmission)	17.70	17.70

We note that the assessed capacity chargeable quantity is always larger (often double) the control period demand chargeable quantity.

The differentiation between the two options is illustrated in the following graph:

Price for Control Period options



Where the control period demand is a low proportion of the assessed capacity demand (as is often the case for customers with embedded generators) the sum of prices is lower and therefore the charges will be lower. This graph is indicative only because some customers do not have the same chargeable quantity for their line and transmission assessed capacities and consequently the prices cannot simply be added.

Comparing these two options:

Measure	(i) Split control period channel in two	(ii) Offer extended control period
Customer choice	None	Either / or, but only annual consideration
Impact on customers	Simple metering change (i.e. a change of ripple relay) for half the customers, but operationally the same as existing	Impacts only on customers who choose to move – those who can control or generate for longer
Signalling	Pair of channels, as existing	Existing channel plus other channel(s) for extended control period.
Changes to metering equipment	Simple, but would have to be applied to half of the customers	Only for customers choosing the extended control period option
Incentive / reward for longer load control	None	Direct and simple
Cost to implement	Moderate	Minimal
Complexity	Moderate	Moderate

Proposal

Because of the added benefits and ease of implementation, we propose to implement the second option - introduce an extended control period pricing option.

c) Opportunity to defer load for longer periods

Issue

Currently there is no reward available for customers who could defer load for longer periods. From time to time it would be beneficial if customers chose to defer load for longer, particularly where Orion needs to restore waterheater supply in order to maintain adequate waterheating service. There appears to be a win-win opportunity here and we consider that an option is needed to facilitate this opportunity.

Proposal

We propose to develop the extended control period option (described in (b)(ii) above) to address this issue. If this option is not adopted, we intend to consult further with customers (particularly those with embedded generators) to seek an alternative solution.

d) Control period demand price*Issue*

The current control period demand (cpd) price is below the LRAIC by approximately \$20/kVA/yr (\$14 for distribution and \$6 for transmission). On this basis, Orion is not signalling the true incremental cost of delivery as described in our pricing objectives in section 1.3(iii) of this paper.

Proposal

Whenever future price increases are applied, we propose to increase the cpd price to reduce this discrepancy.

2.4 Feedback and summary of proposals

Orion welcomes feedback on these suggested changes to arrangements for major customer connection pricing and peak load management. We do not have specific questions for interested parties to answer, but would find it helpful if submissions were structured according to the numbered considerations (2a to 2d) in this paper. We would also welcome comments on any other associated aspects, such as our pricing objectives.

In summary, our proposals are:

a) Control period start and stop flexibility

Separate recording chargeable quantities from signalling control periods by aligning chargeable control periods with real-time half-hours.

b) Size of load in response and c) Opportunity to defer load for longer periods

Introduce an extended control period pricing option with a higher cpd price and lower assessed capacity prices. Customers who can respond to the longer control period (including those with embedded generation) may elect to shift to this alternative pricing option.

d) Control period demand price

Focus general price rises over time on the control period demand price to eliminate the current incremental cost of delivery discrepancy.

Part 3: General connections

3.1 Existing pricing

Orion's pricing for general connections is applied to chargeable quantities measured at the GXPs, less the sum of quantities measured at major customer connections (with additions for losses). The prices, applicable from 1 April 2005, are as follows:

	Distribution	Transmission	Total/ Delivery	
General Connections				
Fixed				
Outside lighting (per connection)	11.30	-	11.30	c/day
Peak				
Both zones	95.60	39.40	135.00	\$/kVA/yr
Capacity				
Zone A all year and Zone B Winter:				
Nights, weekends & public holidays	0.50	0.15	0.65	c/kWh
Working weekdays	4.25	1.01	5.26	c/kWh
Zone B Summer:				
Any time, any day	2.01	0.50	2.51	c/kWh

Zone A is the area supplied by Addington, Arthur's Pass, Bromley, Castle Hill, Coleridge, Islington and Papanui.

Zone B is the area supplied by Hororata and Springston grid exit points.

Winter is defined as the period April – September inclusive, summer is October – March inclusive.

Night is defined as the period from 9 pm to 7 am; day is the period from 7 am to 9 pm.

These prices are included in the delivery prices schedule under 'pricing' on Orion's website at www.oriongroup.co.nz. The prices and their application are further explained in Orion's publication on applying electricity delivery prices³.

We note that other prices exist that relate specifically to irrigation connections – a transitional pricing package that is now closed, and rebates for power factor correction and interruptibility. These prices are not considered further in this paper as they are outside the scope of this review. The prices for outside lighting tabled above are also not considered further.

This part of the paper is limited to the pricing and load management arrangements for Orion's approximately 175,000 general connections. These connections are predominantly retailers' "mass-market" customers.

3.2 Objectives

The pricing objectives outlined in section 1.3 apply to this section. Orion meets these objectives by implementing pricing using chargeable quantities derived from GXP-metered quantities. More specifically, the purposes of the pricing components are summarised as follows:

Pricing component	Purpose
Fixed	Applicable only to outside lighting connections to recover Orion's additional costs to provide its lighting subnetwork.
Peak	To reflect the marginal cost to expand the network at peak load. In economic terms and in Orion's view, the LRAIC (long-run average incremental cost), expressed in annual terms, provides the best basis for this price. Orion estimates its own LRAIC and the value for Transpower.
Capacity	To recover overheads and the balance of costs that are not dependent on loading. These include the fixed costs of assets such as cable trenching, poles and insulators. For general connections, these prices are expressed in c/kWh during broad time periods – day, night and weekends. While a flat price might be applicable in cost-reflective terms, the differential reinforces the peak price signalling, recognising the low elasticity of demand in the short term. For Zone B, in summer, the price is flat to allow implementation of the transitional irrigation pricing structure.

For this review, we have identified the following further specific objectives for general connection pricing:

- to improve the dynamic efficiency of peak load management;
- to manage the maximum loadings at other voltage levels in the network; and
- to maximise the effectiveness of load management.

3.3 Consultation

Orion's delivery service sales for the year ending 31 March 2005 were split as follows:

Category	Connections		Revenues	
	Number	Proportion	\$m	Proportion
General connections (excl. lighting)	174,504	99.8%	122.6	85.4%
Major customer connections	411	0.2%	20.9	14.6%
Totals	174,915		143.5	

Orion's dominant business activity is by far its service to general connections. General connections therefore deserve full consideration. The following issues arise from this review in relation to general connections:

- a) chargeable peak period;
- b) control of hot water; and
- c) minimising Orion's total network loading and Transpower's charges.

a) Chargeable peak period

Issue

Orion considers that the chargeable peak period must be a set of integral half-hours that identify the corresponding loading at the GXPs. This data is the level at which retailers' volumes are reconciled and identified by the market reconciliation manager. Orion does not consider that it is feasible to assess retailers' contributions at a level lower than the GXP as reconciliation information is not available at the lower level.

Another constraint within this issue is that Orion wishes to retain dynamic load management whereby loading is managed when the network loading level is high, not over predetermined fixed time periods.

Proposal

Currently we indicate (that is, signal) a peak period whenever load is shed within a zone. To date, the shed load has been spread over all districts within the zone. The signal is available for use with retail pricing options.

We propose to adopt a similar approach to indicating the peak period in future. Each zone's peak period would be indicated when load is shed in response to the zone's loading. We would not indicate a peak period when shedding load for other reasons. These 'other reasons' would include automated or manual load shedding for emergencies, to limit district loadings, to limit the GXP or to limit total system loading (including any out-of-season load management of the summer-peaking zone B during winter transmission peaks). We would also aim to retain the total chargeable peak period duration from our existing practice (averaging 150 hours per annum).

The chargeable peak period covers all of the half-hours for which Orion has indicated a peak period for at least 15 minutes of the half-hour, as at present.

b) Control of hot water

The vast majority of the controllable load on Orion's network is electric storage hot water heating. The economic benefits of load management are only available to the extent that this load exists and Orion is aware that other forms of waterheating compete in this market.

Orion wishes to maintain storage waterheating as an attractive option for existing and new houses and commercial installations.

Issue

Orion aims to minimise any adverse impact of load control by limiting the reduced service to waterheaters under dynamic control. The current target is to impose less than two hours of control during any one morning or evening, and to limit the total annual duration of control to less than 100 hours per individual waterheater.

Orion maintains a set of ripple channels to provide dynamic control and these channels are associated with retail electricity pricing options.

Proposal

We seek feedback on its targets for maximum duration of control. For many consumers this represents a price-quality trade-off and we are seeking feedback to gauge the appropriate level of service. At this stage we are not proposing to alter the maximum duration parameters.

We would also like to rationalise the number of ripple channels available and we seek feedback from retailers on pricing options that might be considered obsolete. At the same time, we are prepared to develop new ripple channels to support new pricing options.

We also propose to tune and develop our load management system to achieve equitable services to consumers and reduce the load management operation instability. We favour changing the load management basis for the zone from a half-hour demand target to a simple load limit. This would often result in half-hour demands below the limit but would also reduce the incidence of high instantaneous power loadings within the half-hour.

c) Minimising Orion's total network loading and Transpower's charges*Issue*

Orion's total network loading is applied to Transpower's grid. The effectiveness of managing load increases with voltage level, therefore managing load at the distribution network total level has a proportionally high impact (almost direct) on the need to invest in transmission capacity. Furthermore, backup capacity/contingent assets for system security at the transmission level cannot be used during normal operations because of the need for grid voltage stability. There is insufficient time to shed or transfer deferrable load to stabilise the voltage, following a fault contingency.

The maximum loading on Orion's network therefore directly impacts on the need to invest in Transpower's grid, particularly as Orion's load dominates the upper South Island grid loading.

The peak component for the transmission part for general connections is significant at \$39.40/kVA/yr (refer to section 3.1). As explained in section 3.2, Orion has rebundled Transpower's charging and used valuation information to arrive at this price and its basis. Transpower charged Orion for its transmission service, as follows, for the year ending 31 March 2005:

Component	Charge \$m	Proportion	Basis
Connection (incl. new investment charges)	7.3	19%	Fixed
Interconnection	32.0	81%	Average of 12 highest kW demands over 12 months, per GXP, charged at \$50.62/kW
Total	39.3	100%	

The basis for Transpower's charging is the maximum loading at each GXP. In Orion's view, this emphasis is not ideal because most of the investment is in the interconnected grid (as reflected in 81% of the charges above) and the need for this investment arises from Orion's maximum network loading as explained above. Consequently, a more cost-reflective basis would be for Transpower to base its price on Orion's aggregated maximum network loading.

In the context of this review, the issues are:

- should Orion respond to Transpower's charging basis by minimising the maximum loading per GXP; or
- should Orion continue its present emphasis of minimising and charging for the peak loadings by Zones A and B; or
- should Orion limit its maximum network loading, knowing that this is the driver for upstream investment in Transpower's grid?

Options

As explained above in section 3.3(c), incentives exist to minimise:

- total network loading (for grid voltage stability and to minimise long-term investment); and
- individual GXP loadings (to minimise Transpower's current charges).

To an extent, these incentives are mutually exclusive, such that optimising for one incentive will come at the expense of the other.

Proposal

From an overall long-term economic viewpoint, we favour the first option - to minimise total network load. However, from an immediate contractual basis we have to accept the second rationale. Therefore, we propose to have over-riding limits on the GXP loadings. These limits would also operate as a secondary basis for load management and would not contribute towards the chargeable peak periods, as already described in section 3.3(a).

Orion's total network loading peaks during winter. During winter we propose to continue to manually operate waterheating control in Zone B (the summer peaking zone) only in response to grid emergencies and constraints. If we routinely managed load in Zone B in winter, then those consumers would experience considerably more waterheating control over the whole year than their counterparts in Zone A.

We note that these proposed arrangements are much the same as at present, although Orion has usually, but not always, counted any load management to limit a GXP loading as part of the peak period.

3.4 Feedback and summary of proposals

We welcome feedback on these suggested changes to arrangements for general connection pricing and peak load management. We do not have specific questions for interested parties to answer, but would find it helpful if submissions were structured according to the numbered considerations (3a to 3c) in this paper. We would also welcome comments on any other associated aspects, such as our pricing objectives.

In summary, our proposals are:

a) Chargeable peak period

Indicate (signal) whenever load is shed to meet the zone target. Do not signal when Orion sheds for other reasons (for example, emergencies or to limit loading at a rippled area (district) or GXP or system total). Ensure an equitable and acceptable level of service to consumers.

b) Control of hot water

Continue to operate dynamic load control of waterheating to a maximum of 2 hours in any morning or evening, and to a total duration of 100 hours per year.

c) Minimise Orion's total network loading and Transpower's charges.

Orion to manage GXP loadings routinely, via limits, and total network loadings, for contingencies.

Any resulting shedding will not be part of the zone's peak period.

Level of control to be secondary to zone load limiting, and impact on service is to be minimised.

Part 4: Interruptible load

Our pricing structure focuses on the long-run average costs associated with our delivery service. This structure provides long-term pricing stability against which consumers can invest. While this is an appropriate approach, the resulting price signals do not reflect the shorter term costs Orion faces when it must provide a step/major increase in network capacity in a specific area. Access to interruptible load may also be valuable if there is a short-term capacity constraint on Transpower's grid.

This section briefly outlines our initial proposals for consultation.

4.1 Objectives

Our objectives in seeking access to interruptible load are as follows:

- To secure access to interrupt predetermined and pre-selected load at any time, in order to delay the need for Orion to invest in additional capacity in the short-term. The value to Orion of delaying capital expenditure would be the basis for suitable commercial reward to participating consumers.
- To contract directly with consumers for interruptible load for periods of up to 3 years, with annual reviews. Orion would require priority access to the load.
- To switch this interruptible load on-line and in real-time via ripple control.

4.2 Consultation

Issue

As an example of the need for access to interruptible load, Orion currently faces an issue in the Sockburn and Middleton areas where Orion could better maintain its security of supply leading up to an upgrade for supply to these areas, and could gain savings associated with deferring the upgrade, if it had access to interruptible load.

Orion is considering ways in which it might contract with larger consumers to provide this additional load response (particularly with consumers in the Sockburn and Middleton areas) over the next three years. This opportunity would only ever occur in a few specific areas. It would not occur in the CBD area where security of supply is at a higher level.

We would also consider contracting more generally for access to interruptible loads for activation during transmission grid capacity constraints.

We recognise that one difficulty with this approach would be the way in which we measure a load response and distinguish it from normal loading changes.

We are particularly interested in receiving submissions from consumers who consider they might be in a position to provide a significant load response (greater than 250kVA) in exceptional circumstances.

Proposal

Orion, with the assistance of retailers, proposes to approach consumers located in areas that are at risk of short-term overloading with a view to negotiating commercial contracts that could provide Orion with access to interruptible load. The value to Orion of delaying capital expenditure would be the basis for a suitable commercial reward to participating consumers.

We would seek the following conditions on the load:

- a minimum nominal contracted interruptible load of 250kVA;
- guaranteed access to at least 50% of the nominal load, at any time;
- the load would not be part of the consumer's deferrable peak period or control period load. That is, the interruptible load must be an additional portion of load that would not normally be deferred under Orion's load management arrangements; and
- Orion must have priority access to the load if the consumer contracts with other parties to interrupt any portion of the same interruptible load.

The load would only be interrupted in the event of a fault on the network or a capacity constraint on the transmission grid. The interruption would only continue until the fault was rectified, or the load was switched to alternative supply routes. The interruptions would be rare in comparison with existing control periods.

Orion's payment for access to interruptible load might include a fixed amount over the period and/or a payment depending on the incidence or duration of interruptions.

4.3 Feedback and summary of proposals

We welcome comments on the objectives and proposal outlined above.

Part 5: Distributed generation and credits for export

5.1 Existing arrangements

Orion currently credits major customers who were in place prior to 31 March 2004 with any exports during the control period on the same basis as they purchase control period demand. This process is detailed in section 9 of Orion's document on major customer connection delivery pricing⁴.

Orion's pricing for exports from any connections (including smaller general connections) introduced since that date are detailed on Orion's website, under pricing. Briefly, these are:

Distributed generator output rating	Distribution	Transmission	Total/ Delivery	
Small (0 - 5 kW)	Standard 'General Connection' delivery prices apply at all times			
During Chargeable peak periods only				
Medium (5 - 30 kW)	45.00	24.40	69.40	c/kWh
Large (30 kW to 1,000 kW)				
- Real Power	67.50	36.60	104.10	\$/avg kW/yr
- Reactive Power	22.00	11.90	33.90	\$/avg kVAr/yr

The key difference in approach (compared to the previous arrangement with major customers) is that the longer peak period applies rather than the control period.

5.2 Objectives

- To provide consumers with large generators (30kW to 1,000 kW) with economically attractive incentives to export electricity to the network.
- To ensure pricing is compatible with the pricing arrangements for major customer connections.
- To provide exporters with some certainty as to when Orion will reward their exports, similar to the arrangements which Orion has with major customers with respect to advising the control period.
- To provide incentives to consumers with embedded generators to run the generators for extended periods, such as all day during very cold winter days.

5.3 Consultation

Issues

The current payment basis requires that embedded generators export for the longer peak period, rather than the control period. While the longer period benefits Orion, it has not proven sufficiently attractive for generators. Several prospective generators have identified difficulties in responding to the peak period. For example, no warning is given, it starts and stops more frequently than the control period and the signalled peak period does not exactly match the chargeable peak period.

Proposal

In conjunction with introducing an extended control period option (2.3(b)(2) above), we propose to revert to the control period as the basis of payment for large exporting generators (>30kW). Depending on their circumstances, generators could choose either the standard control period or the extended control period. All generators in this category would be classified as major customer connections, and would be exposed to the appropriate major customer connection prices for any load when not exporting.

We do not propose any change to the pricing arrangements for small (0-5kW) and medium (5-30kW) generators at this point. We will review arrangements after the New Zealand electricity industry agrees on and clarifies the requirements for these smaller generators.

5.4 Feedback and summary of proposals

We welcome comments on the objectives and options outlined above.

APPENDIX 5
PRICING AND PEAK LOAD MANAGEMENT DECISIONS PAPER

**Pricing and peak load management
decisions paper**

20 January 2006

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1 Introduction and context

Orion issued its consultation paper, "*Pricing and peak load management*", on 1 July 2005 after indicating to retailers and directly contracted major customers, by letter dated 31 January 2005, that Orion was considering making some changes to its pricing and associated arrangements. We also presented some preliminary proposals to a Major Customer seminar on 17 May 2005.

This review was aimed at providing incremental improvements to the existing arrangements, rather than overhauling Orion's pricing and peak load management arrangements.

Compared with prior reviews, this more formalised consultation process has ensured that Orion can objectively consider the views of its stakeholders. Orion also acknowledges the requirement to consult with customers on matters of price and quality under the Commerce Commission's Electricity Distribution Thresholds.

We very much appreciate the interest taken and feedback provided by many of our stakeholders. As a result of their efforts, we have been persuaded to alter direction on some proposals (eg we no longer intend to synchronise the major customer control period with real-time half-hours).

This paper explains Orion's decisions, which are based on both external and internal feedback. References to the corresponding sections of the consultation paper are provided in the left margin, where relevant.

This paper documents the framework for Orion to implement the changes. We will issue formal notice of these changes to retailers and consumers via our contractual documentation, in due course.

Terminology

In this paper:

- 'peak period' means the period applicable to the peak component of pricing for general connections. This is qualified with 'signalled' or 'chargeable', as necessary
- 'control period' means the period applicable to the peak component of pricing for major customer connections
- 'generator period' means the period applicable to the new separate generator option.

2 Summary of decisions

General connections

- Continue to charge for and control peak loadings by zone (A & B).
- Change the basis of peak load control from a half-hourly average target to an instantaneous loading limit.
- Allow control for reasons other than to limit the zone's peak loading, without impacting on chargeable peak periods. This will allow us to control individual GXP loadings to minimise Transpower charges, control total network load in response to a grid emergency, or control a localised area of the network in response to a contingency.
- Define the chargeable peak period as the integral half-hours within the signalled peak period, and apply a minimum chargeable peak period of 30 minutes.
- Establish and monitor hot water control service levels in consultation with retailers, initially:
 - minimum 17 hours on per day (maximum 7 hours off per day),
 - maximum 4 hours off continuously.

Set and maintain load limits in relation to these service levels.

Major customer connections

- Major customer control period:
 - retain existing 4 month control period seasons (May to August in Zone A, November to February in Zone B),
 - remove time-of-day and day-of-week restrictions in Zone A,
 - reduce warning to 10 minutes,
 - increase minimum duration from 15 to 30 minutes, and
 - don't align with real-time half-hours.
- Separate major customer connections into two homogeneous control period groups, rather than introducing an extended control period option. Stagger the control period endings to smooth their load restoration on the network.
- Develop a separate payment for generation by customers outside the control period (cents per kWh), for load management purposes.

- Hold back on increasing the control period price component (as previously indicated) pending more detailed economic analysis.

Control for transmission

- Implement secondary GXP load limits to control for cost, rather than controlling total network load. This is similar to the current approach, but Orion will be in a position to control load more actively without affecting its chargeable peak period.

Export pricing

- Revert to control period based pricing.
- Decouple pricing by publishing export prices independent from delivery prices. Review basis and reduce export prices (relative to delivery prices), over time.
- Include exporting connections with generators >30kW as major customers (but exempt from minimum capacity charges).
- Change the export price schedule to apply to approved generation only. Orion's approval will be based on the longer term benefit to the network, considering location and the likely diversity of loading and embedded generation output during high loading periods. Establish a streamlined internal process for assessing and approving generation proposals, based on broad attributes.

Other

- Develop a new optional "Business TOU (Time-of-Use)" pricing category with ICP-based pricing based on general connection prices. This will allow general connections to explicitly benefit from Demand Side Management (DSM) - aim to implement from 1 April 2007.
- Develop an in-house TOU data collect, validation and analysis process.

3 Review of feedback

We distributed our consultation paper “*Pricing and peak load management*” dated 1 July 2005, as follows:

Distributed to	Discussion meetings	Written feedback
Electricity retailers:		
Meridian Energy	✓	✓
Contact Energy	✓	✓
TrustPower	✓	✓
Genesis Energy	✓	x
Mighty River Power	✓	x
Local consultants:	✓ (five)	✓ (one)
Major customer connection customers:		
22 direct major customers (with 32 ICPs)	<ul style="list-style-type: none"> • Major customer seminar 17 May 05 (~50 customers) • Focus group meeting 18 Aug 05 (7 customers) 	3 submissions
245 interposed major customers (with 372 ICPs)		
General connection customers:		
Christchurch City Council	✓	✓
Chateau-on-the-Park	✓	✓
Other:		
Electricity Commission	✓	x
Transpower	x	x
EECA (Energy & Environment Conservation Authority)	x	x
Environment Canterbury	x	x
NGC Metering	x	✓
Posted on Orion’s website	x	✓

Where relevant, throughout this paper, we have responded to particular points that were raised in submissions.

4 General connections

4.1 Control and price for zone loading

Orion will continue to signal, charge and manage load for its peak delivery pricing component (for charging general connections), based on *zone* loadings. The zones will remain unchanged – Zone A for winter-peaking GXPs (mainly urban) and Zone B for summer peaking GXPs (Springston and Hororata). We reached this decision after considering the economic benefits available by assessing and controlling loads at other network levels.

4.2 Change half-hourly target to instantaneous loading limit

Orion will change to initiating the signalled peak period based on an instantaneous loading limit for the zone (rather than a half-hour average target load for the zone). Orion's load manager software will therefore shed and restore load management channels to endeavour to ensure that the zone loading does not exceed the set limit. We anticipate that this change will provide a more stable overall system load. Orion will negotiate its service levels with retailers and set load limits to achieve these service levels. Refer also to section 4.5 of this decisions paper.

The advantages of this change are:

- More effective control of instantaneous peak loadings than the current target based approach, which allows load to significantly exceed the target as it attempts to achieve the target average load for a half-hour.
- Fewer ripple signal injections. The current system actively restores load (even when current loading levels are above the target) in order to achieve the target; it then sheds the load to achieve the target in the next half-hour. On several occasions our ripple injectors have reached the maximum of their duty cycle, and this can delay subsequent signalling. A simple limit will remove these unnecessary ripple signal injections.
- Stabilised load for system operator - the Transpower system operator must dispatch generation to match Orion's load changes. Moving to a load limit will improve stability, assisting the system operator.
- Avoid exceeding upper SI constraints - the upper SI margins are calculated on an instantaneous loading basis, corresponding to the new focus of our load shedding algorithms.

4.3 Control for other reasons with no impact on chargeable peak periods

Orion will exercise control for reasons other than for zone load management without having any impact on its chargeable peak periods. The consultation paper highlighted that the relationship between load shedding and the chargeable peak period would be weakened if shedding was allowed for other reasons (see consultation paper, pages 17 and 20). While technically difficult to implement, this control for reasons other than zone load management will provide more flexibility for Orion to derive the full benefit from available controllable load.

The initiation of the major customer control period will also be adjusted so that shedding for reasons other than zone loading does not trigger the control period.

4.4 Redefine chargeable peak period

In response to submissions, we will redefine the chargeable peak period to be the complete integral real-time half-hours within the signalled peak period. We will also introduce a half-hour minimum chargeable period and, therefore, the signalled peak period must also be at least 30 minutes.

Currently, a half-hour becomes a chargeable peak period if more than 15 minutes of the half-hour is signalled peak period. With the current approach, signalled peak periods can be as short as a few minutes, and both *signalled* and *chargeable* periods average the same total duration in a season.

This change:

- Improves the ability for customers to respond to the pricing signal as the chargeable half-hours will occur only within each signalled period.
- Ensures a chargeable period always follows a signalled period.
- Reduces the total duration of chargeable peak period in comparison to the signalled peak period.

4.5 Criteria for control of residential hot water

Orion will establish a residential hot-water service level target, initially set as:

- minimum 17 hours on per day, (maximum 7 hours off per day) and
- maximum 4 hours off continuously.

In its consultation paper, Orion proposed to retain the existing targets for control of hot water - no more than two hours per morning or evening, and no more than 100 hours per annum.

With the exception of Contact Energy, who supported the status quo, those that submitted on this issue suggested limits based on daily service, where the accumulated annual duration is not relevant. TrustPower considered the reheat window to be a key determinant of service, indicating that a minimum of 3 hours reheat is appropriate. We considered this service level target, but decided not to include it because it needed some qualification (depending on the off-time) and it was too complicated to monitor and/or automate.

Overall, Orion's aim is to ensure that where electric storage hot-water heating is managed by the distributor, it is done in such a manner that controlled water-heating remains an attractive means of hot-water heating for consumers.

Orion will negotiate the targets each year with retailers, on behalf of their consumers, and then set and adjust its load management limits as necessary to achieve these service level targets.

In association with this process, Orion will also adjust the major customer control period trigger parameters with the aim of achieving (but not exceeding) 100 control period hours in the season.

4.6 Summary for general connections

In summary, load control and chargeable peak periods will continue to be based on zone loading levels, but load management will be based on an instantaneous load limiting approach, rather than a half-hour average target, and control for other reasons will be accommodated without interfering with the pricing signal.

Overall, our approach will be to negotiate with retailers and set a load limit for the season based on the projected achievable load limiting (considering only the maximum daily off-hours, as outlined in section 4.5 above). Orion will then operate dynamic load shedding in relation to this limit, with appropriate deadbands and delays.

During the season, in order to keep within the maximum off-hours on cold days, Orion will:

- adjust the load limit (usually up, but sometimes down).
- call on generators (refer to section 5.3) in response to extended periods of shedding on very cold days.

5 Major customer connections

5.1 Major customer control period parameters

Orion has decided to:

- retain the existing 4 month seasons,
- remove the time-of-day and day-of-week restrictions in zone A,
- reduce the control period warning to 10 minutes,
- increase the minimum control period duration from 15 to 30 minutes, and
- not align the control period with real-time half-hours.

Retain the existing seasons

The 4 month control period seasons provide some certainty for major customers, allowing them to focus their Demand Side Management (DSM) response during a set period when it is of most benefit to the network. Any extension would weaken this interaction. Further, the 4 month season is critical to the process of establishing and applying chargeable quantities in line with financial half-years. Orion will manage the loadings resulting from rare out-of-season extreme weather events by other means.

Remove time-of-day and day-of-week restrictions (Zone A)

Control periods in Zone A are currently restricted to working week-days from 7:30am to 8:30pm. Sometimes control is needed to limit the zone loading beyond these periods. The removal of these restrictions will simplify the “rules”, aligning with the approach in Zone B. In any event, we expect that only a small fraction of each season’s control period will fall outside the existing windows, so this change will have only a very limited/small impact on customers.

Reduce warning period to 10 minutes

Following detailed discussion on response times and generator start-up processes, it is clear that the warning period is an important feature of Orion’s arrangements, and that the majority of customers can accommodate a shorter warning than the existing 15 minutes. This change will improve the timing of load response and will also reduce the ability of some customers to load-up during the warning period (a behaviour that is detrimental as it impacts on Orion’s load management of water-heaters of other customers and could contribute to excess loading levels).

Increase minimum control period duration to 30 minutes

The current minimum control period duration is 15 minutes. Orion will increase this minimum to 30 minutes in response to customers who have indicated that the increase would be of benefit because:

- it will provide more certainty in the control period duration, allowing customers to better plan their load response measures (eg thermal storage capacity),
- a customer's initial load response will provide a greater relative contribution to the chargeable control period demand (calculated as the average for the season),
- 15 minute control periods are currently viewed as false alarms and as a nuisance. Customers responding to 30 minute control periods are less likely to feel "short changed".

Although Orion will need to consider the control period triggers more carefully, we expect the longer minimum control period will ultimately promote an enhanced response from customers.

Non-alignment of control period with real-time half-hours

Orion has decided to retain the status quo with the non-alignment of control periods with real-time half-hours. On this issue, we received divergent views within Orion, between retailers, between consultants and between customers. On balance, and considering that the existing basis already provides a fall-back possibility of using integral half-hour volumes to determine chargeable quantities, we have decided to retain the status quo.

Orion proposed that the chargeable control period be aligned with real-time half-hours in response to comments from retailers. Retailers' concerns relate to the difficulties associated with metering and administering quantities for periods other than half-hours, especially as Orion is the only distributor to require this. This issue evoked the most discussion.

In summary:

Points in favour of alignment with half hours

Chargeable quantities that are aligned with energy reconciliation quantities should provide a more reliable source of information. Orion observes a high error rate in the existing Time-of-use (TOU) dataset.

Associated move to a minimum control period duration of 30 minutes is generally seen as an advantage for customers.

Simplified metering requirement, simplified data administration for retailers and for Orion's billing agent.

Ability to retrospectively determine chargeable quantities.

Removes reliance on the timing and reliability of ripple signalling (which raises issues on a regular basis).

Variable length warning may limit the perverse incentive to "load up" during the warning period.

Points in favour of status quo

Existing metering and systems are sunk.

Provides optimal (shortest) control period duration.

Fixed warning period (15 min) superior to variable warning period.

New meter technology can accommodate the extra channel easily, and is currently being rolled out for other reasons.

Avoids cost to implement a change.

5.2 Separate major customers into two channels

Orion has decided to introduce a second channel and administer two separate control periods that, on average, will receive the same control period incidence and duration. We will provide an approximately random (homogeneous) split of loads. We regard this as the simplest method to reduce the impact of the relatively large increase in load (20MW and growing) that occurs at the end of the control period as load is restored.

To simplify administration and reduce costs to implement, fewer than half of existing customers will be shifted to the new channel, but all new customers will be added to this channel.

5.3 Separate generator option

To encourage generation by customers who can generate over longer periods, Orion has decided to introduce a separate generator option with a simple payment per kWh of generation. The major customer focus group supported our suggestion of this option. Some customers currently contract with retailers on this basis and have found it to be very workable.

Section 2.3 b (i)

Section 2.3 b (ii) and 2.3 c

The consultation paper sought alternative methods to encourage longer periods of generation. We proposed and preferred an extended control period as an alternative to the split above (section 5.2). However, feedback from customers and consultants has highlighted numerous difficulties with implementation and pricing for an extended control period option. Considerations regarding an extended control period option were:

Points in favour of an extended control period option

Provides choice for customers.

“Smarter” to separate into two groups based on attributes.

Allows those with DSM to respond for longer periods (not just generators).

Generally supported by retailers.

Points against an extended control period option

Generators experience significant variation in cost to run, which are highly dependent on the duration.

Added risk for customers that choose the higher price option then fail to reduce their chargeable quantity as much as expected.

With resource consent issues and fuel storage, customers may not be able to generate for all extended control period and would be penalised if they can't.

Added complexity – some customers already do not always understand our pricing and Orion would be promoting an option that carries a *higher* control period price.

Customer would bear the risk of any fuel cost increase during the season.

Magnitude of saving is not sufficient to motivate a change (based on indicative prices provided).

No practical way to limit the total duration (in comparison with the standard control period duration) and still ensure that it is available when needed.

Cannot be implemented for *part* of a connection's load (eg where one of several totalised ICPs might be able to respond).

Not supported by major customer focus group.

Our plan of the initial parameters for this separate generator solution is as follows:

- Payment per kWh of generation (rather than export) during Orion's signalled Generator period (ripple signalled).
- We will set prices annually in advance, with other delivery prices.
- To qualify, the customer must have a minimum of a 30kW generator and we will offer this option to customers at general connections as well.

- We will require customers to advise the size of their committed generation, but customers can elect not to run (without notice). Orion can average this “risk” across a number of customers. We understand that individual customers may elect not to run for various reasons such as high diesel prices, maintenance constraints, because they might exceed the running hours allowed in the terms of their operating resource consent, or because they cannot run at certain times of day or days of the week.
- To comply with resource consents, we will signal generator periods only in relation to load management (in response to peaks or constraint situations), but we will also include an allowance to test the response. There will be a minimum “on” time of 30 minutes and generator periods can occur at any time of day, any day of the year, with no warning.
- We will apply estimated monthly credits based on Orion’s record of run-time and customers’ indicative committed generation. These will be washed-up 6-monthly, based on the metered quantity that is recorded at the generator.
- The minimum metering requirement will be a switched kWh accumulation meter that measures generator output only when activated by Orion’s generator period ripple signal (metering class 2.5, signed-off by a recognised metering contractor).
- Orion acknowledges that customers may be paid by other parties for the same generation. Orion would not activate generator periods on the request of, or for the benefit of, a retailer in relation to energy pricing.
- We will minimise the period of overlap between Generator periods and major customer control periods, and apply the two pricing components separately and independently. On the few occasions when overlap does occur, the customer may benefit from generated volumes and a reduced contribution to control period demand at the same time.

We have yet to consider the contractual arrangement with customers and retailers. We will prefer to contract directly with customers rather than via retailers who are interposed between Orion and the customers.

5.4 Control period price for major customers

We have decided to leave the control period price, relative to other component prices, approximately at its current level in the meantime. In the consultation paper, we advised that the price was below the economic level determined in Orion’s latest pricing review and that we had limited our increases for this pricing component on the basis that we had not signalled any increase in advance. However, several factors now influence Orion’s calculation of the economic basis for this component, principally:

- WACC (Weighted average cost of capital)

The control period demand price depends on the cost of providing load-dependent assets, which is sensitive to the required WACC. The Commerce Commission is currently consulting on the WACC that is appropriate for Orion and other distributors.

- Risk

This price component is the cost of delivery during peak loading but it also effectively recognises DSM as an alternative to delivery. However, Orion provides delivery with an appropriate degree of security whereas DSM is provided with much less security (eg it is exposed to customers' decisions not to respond). This risk associated with DSM response is reduced via loading diversity as it is aggregated across many customers, however DSM is not a one-for-one substitute for delivery. In particular, at lower levels in Orion's network, close to a customer, DSM is a very poor substitute for delivery. Consequently, from this point of view, the control period demand is overpriced. This aspect had not been recognised in setting the control period price.

- Constraints

Orion's DSM for major customers is limited to winter working weekdays. Although it is priced (ie rewarded for reduction) as an alternative to delivery, it is not available outside these times in response to constraints (for emergencies or for maintenance).

- Long run or short run

Orion's price focuses on the long-run average incremental cost (LRAIC). In comparison with the short-run, this tends to over-price when there is spare capacity and under-price when there is a shortage. Orion has experienced continuous steady growth in peak loading on its network, so the LRAIC is appropriate for the distribution part. We are now approaching a significant shortage of capacity on the transmission system and we must decide if, having over-priced the part for transmission during an earlier period of surplus capacity, it is now appropriate to move to a higher short-run based price to defer this upgrade.

The first three factors act to reduce the control period demand price, the last factor acts to increase it. These are complex issues which need to be fully developed and considered. In the meantime, we will leave the control period demand price, relative to other component prices, approximately at its current level.

5.5 Summary for major customer connections

In summary, for major customer connections, we have decided to:

- retain the existing 4 month seasons in both zones A and B,
- remove the time-of-day and day-of-week restrictions in zone A,
- reduce the control period warning to 10 minutes,
- increase the minimum control period duration from 15 to 30 minutes,
- not align the control period with real-time half-hours,
- separate major customers into two control period channels,
- introduce a separate generator option with a simple payment per kWh of generation,
- leave the control period price approximately at its current level,
- retain the existing method for triggering major customer control periods (based on the proportion of controllable load shed), restricted to apply only during a signalled chargeable peak period. Refer to section 4.3.

During the season, Orion will:

- adjust the major customer control period trigger parameters with the aim of achieving/ not exceeding 100 control period hours in the season. Refer to section 4.5 of this decisions paper.
- call on generators in response to extended periods of shedding on very cold days. Refer to section 5.3 of this decisions paper.

6 Load control for transmission

We have decided to configure the load manager software to control to pre-determined GXP load limits via secondary load limiting algorithms acting on individual zone load limit without affecting the chargeable peak period or the control period. In due course, we expect to shift to total network load limiting when appropriate incentives become available from Transpower.

In our consultation paper, we proposed that load be controlled to minimise cost by minimising GXP loadings independently, rather than to minimise total grid investment by limiting total network loading. Meridian and Contact agreed with this proposal. Christchurch City Council would prefer Orion to minimise total network loading for the wider economic benefit.

With the change to the signalled peak period trigger, we will be able to implement load management with reference to factors other than just zone loading without affecting the peak or control periods. Consequently, to a large extent, we will be able to independently limit both GXP and total system loads.

7 Pricing for export

We have decided to:

- categorise all exporting customers with embedded generation greater than 30kW as major customer connections, and
- reinstate the major customer control period as the basis for payment for their exports.

Note also our decision to introduce a separate explicit generator option with a simple payment per kWh of generation (refer to section 5.3 of this decisions paper).

Orion's current pricing basis for export has been in place since 1 April 2004. Few customers have been willing to generate against this pricing basis. It has proven to be unsuccessful and unworkable because:

- it is too complex to meter anytime half-hour imports and exports, control period imports and peak period exports, and reactive imports during peak period exports
- the peak period does not have a warning, and generators may not know that a half-hour is a chargeable peak period until halfway through the half-hour
- the total annual duration of peak period is greater than some Environment Canterbury resource consents will allow for diesel generators, and
- the payment level is too low for the long duration of generation.

At the same time, through internal work, we have identified that the payment level for the previous "grandfathered" control period based pricing is too high (See section 5.4 of this decisions paper). This old basis has remained in place for 7 exporting major customer connections that were in place prior to 1 April 2004. These prices are expressed as proportions of the control period delivery price which is based on the long-run average incremental cost to deliver and, as such, this export pricing suffers from similar concerns to those noted for control period pricing in section 5.4 (above), namely:

- Risk

The payment effectively prices export as an alternative to delivery. However, Orion provides delivery with an appropriate degree of security, whereas, export is provided with much less security (eg it is exposed to customers' decisions not to respond). This risk associated with export is reduced as it is aggregated across many customers, however it is not a one-for-one substitute for delivery, and there are currently very few exporting customers. At lower points in the network, close to an exporting customer, export is a very poor substitute for delivery. This risk factor had not been recognised in setting the price.

- Constraints

The control period for major customers has been limited to winter working weekdays (May through August). Although it is priced (ie rewarded for reduction) as an alternative to delivery, it has not been available outside these times in response to constraints (for unseasonably bad weather, for emergencies or for maintenance).

Therefore, we have decided to:

- reinstate the control period as the basis for payment. We will extend this to all exporters with generation rated above 30kW, categorising the smaller exporting generators as major customer connections (exempt from the minimum assessed capacity of 300kVA for delivery charging). When a new “Business TOU” pricing category is developed (see section 7.1 below), smaller exporting generators could be allocated to this pricing category instead,
- set export prices independently (to break the fixed link between delivery and export prices),
- lower the export price relative to the delivery price (over a period of time) to reflect the average level of security provided by these smaller generators,
- adjust the conditions to require exporters to use “best endeavours” to generate at a consistent level during control periods, or cap payments to the generation level that generators are willing to commit to,
- consider excluding payment for new wind generation if they provide no benefit to the network. Wind generation output can be highly correlated in any small area and, as a group, they can stop generating entirely. Orion must provide delivery during these times. Further, peak loads can occur in very calm conditions, when it’s cold, frosty and still in the urban area, or hot and still in the inland rural area,
- clarify that the average pricing applies only to sites where the total rated generation capacity does not exceed 1 MW (regardless of the export levels),
- clarify that Orion will individually consider the benefit of total generation rated in excess of the 1 MW limit, and set individual prices and conditions accordingly.

8 Other decisions

8.1 New “Business TOU” category

We have decided to develop and introduce a new “Business TOU” connection category to provide clearer pricing signals to larger general connections with half-hour interval-metering. We will apply specific (ICP-based) prices for this group of customers enabling them to directly benefit from DSM. We realised this opportunity following discussion with the Christchurch City Council (CCC) and TrustPower.

We consider that the following features would be appropriate:

- Optional and available to any TOU interval-metered connection up to 300kVA.
- Capacity (kWh) prices consistent with general prices (adjusted for losses and billed monthly). The charges would be estimated and washed-up in line with the process that Orion has for the capacity charges for general connections.
- peak prices consistent with general peak prices (adjusted for losses). This component may be based on the control period rather than the peak period, with chargeable quantities reviewed and set annually in advance.
- Fixed charge consistent with major customer connections (to reflect the costs of administration of data and billing).

To facilitate this, and to address some issues with major customer TOU data, we plan to develop an in-house system to collect, validate and analyse customer interval-metered data. This would also support network planning and connection audit processes (eg irrigation audits).

8.2 Contracting for interruptible load

We have decided not to proceed with contracting for interruptible load.

Orion proposed that it might contract with a number of larger customers to have their electricity off first, in a contingency. This may allow Orion to meet its security standard (prior to an upgrade) in areas where capacity is short.

While retailers supported this initiative, they expressed considerable doubt during our meetings, suggesting that Orion is unlikely to find customers willing to contract in this way. Only one customer, CCC, indicated they could make a few hundred kW of load available, at a cost, in the areas Orion identified as being short of capacity.

Pricing for this type of load response is difficult. It relies on gauging what a customer's load might have been, had they not reduced it. No submitters provided any suggestions as to how this might be structured.

Given the limited and negative response, we decided not to proceed with this initiative at this time.

9 Other issues

9.1 Seasonal vs annual charging

TrustPower pointed out that retailers face a risk with Orion's seasonal approach to peak charging, particularly Orion's practice of charging all Zone A peak charges during 6 winter months. The only way they can mitigate this risk is by matching our seasonal pricing or by contracting customers on a yearly basis, but retailers believe that customers would not accept the sudden price shock in winter and they are not prepared to attempt to introduce yearly contracts (as it would raise competition issues).

Orion considers that its practice emphasises the timing of its principal cost driver and, consequently provides the appropriate pricing signal to encourage DSM. This is economically efficient. Given this situation, we do not plan to make any changes, except to modify our price schedule to clarify the pricing basis, in the next pricing review.

9.2 Charging in advance

TrustPower noted that Orion's charging is a month in advance of other industry practice. They suggested that it creates complexity and adds costs for them.

Orion's prudential requirements anticipate payment in advance. If Orion moved to billing in arrears, we would need to enhance the value of bonds to maintain the same degree of financial security. Based on our experience so far with making changes to the Delivery Service Agreement (DSA), alterations to the prudential requirements would be difficult to implement.

Given this situation, we do not plan to make any changes.

9.3 Peak pricing for general connections

TrustPower, Contact and Meridian have a view that Orion's peak pricing for general connections is too difficult for them to pass on directly and therefore it is ineffective.

TrustPower noted that customers would select against any retailer that attempts to reflect costs more accurately. That is, customers who contribute more heavily to peak loads will simply shift to "averaging" retailers, and they would be left with a smaller pool of less profitable customers. TrustPower also consider the cost hurdle of changing metering is too great.

Meridian questions what incentive they have to install ripple relays for dynamic control. They support Orion's economic objective.

Contact specifically comments that Orion's proposals fail to address the significant concerns they have with Orion's pricing for non half-hourly connections.

Retailers face an unavoidable basis risk with chargeable quantities. Because we estimate peak demand and wash it up at the end of the season, they do not know their total charges until after the period. For mass market customers, they are not in a position to retrospectively implement such a wash-up (even if customers' contributions to peak demand were measured).

Orion's response to these points is that Orion's price structure must reflect the key drivers of its costs. These are principally power loading during periods of congestion – directly reflected in the peak component and indirectly reflected in the day/night volumes pricing structure of the capacity component. We acknowledge that these cannot easily be reflected in retail pricing, but note that, without cost-reflective pricing, there is very little opportunity for innovation by retailers, especially in regard to facilitating DSM. We therefore consider that retailers should continue to rebundle input costs, including the distribution charges, or whatever else they consider to be prudent in their competitive business. Our role is to facilitate competition amongst retailers and leave them to structure their retail pricing as they wish. If Orion structures its pricing into a retail form, that would interfere with the retailer's freedom to restructure as all retailers would follow the form dictated by Orion. Therefore, we wish to retain the peak pricing component for general connections, in the meantime.

9.4 Reference to PAWG

Meridian queried why our paper does not make any reference to the industry's Pricing Approaches Working Group (PAWG). Orion's GXP-based wholesale pricing is essentially one of the options recognised in the PAWG paper.

Orion's position is that GXP-based pricing is appropriate for a wholesale service provider of distribution services. Model pricing has now been referred to the Electricity Commission and is work-in-progress.

9.5 Improve pricing information on website/registry

TrustPower (and through other work, Contact) suggest some changes to the pricing information we make available. This is being progressed separately.

9.6 Provision of DSM advice

A number of parties commented that pricing signals for DSM are already appropriate, and it is *advice* that is needed. Orion will separately consider its role in this area.

10 Implementation and comments

The following table describes Orion's plan for implementation of the changes.

Introduce from	Change	Section in paper	Category
April 2006	Redefine chargeable peak period as the integral half-hours within the signalled peak period and apply a minimum chargeable period of 30 minutes.	4.4	General connections
April 2006	Allow load control for other reasons without impacting on chargeable peak periods or major customer control periods.	4.3	Major customer & General connections
April 2006	Establish and monitor hot water control performance targets of: <ul style="list-style-type: none"> • minimum 17 hours on per day (maximum 7 hours off per day), • maximum 4 hours off continuously. Set and maintain load limits in relation to these targets, and in consultation with retailers.	4.5	General connections
April 2006	Remove the time-of-day and day-of-week restrictions in zone A	5.1	Major customer connections
April 2006	Reduce the control period warning to 10 minutes	5.1	Major customer connections
April 2006	Increase the minimum control period duration from 15 to 30 minutes	5.1	Major customer connections
April 2006	Export pricing & conditions: <ul style="list-style-type: none"> • Revert to control period based pricing. • Set export prices independent from delivery prices. • Include exporting connections with generators >30kW as major customers (but exempt from minimum capacity charges). • Change the export price schedule to apply to <u>approved</u> generation only. Orion's approval to be based on the longer term benefit to the network, considering location and ability to generate consistently during high loading periods. 	7	Major customer & General connections
April 2006	Separate major customers into two homogeneous groups. Stagger the control period endings to smooth their load restoration on the network.	5.2	Major customer connections
April 2006	Implement secondary GXP limits to control for transmission cost, rather than controlling total network load. This is similar to the current approach, but Orion will be in a position to control load more actively without affecting its chargeable peak period.	6	Major customer & General connections
May 2006	Offer a separate payment for generation by the consumer outside the control period (c/kWh) for load management purposes.	5.3	Major customer & General connections
Oct 2006	Change the basis of peak load control from a half-hourly average target to an instantaneous loading limit. Note: We may be able to implement an interim change from May 2006.	4.2	General connections
April 2007	Offer a new optional "Business TOU" pricing category with ICP based pricing based on general connection prices. This will allow general connections to explicitly benefit from DSM.	8.1	Major customer & General connections