



Threshold Compliance Statement

**Second Assessment
as at 31 March 2004**

**Issued 20 May 2004
(with additional information dated 28 September 2004 appended)**

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Introduction

Orion New Zealand Limited (Orion) owns and operates the electricity network in central Canterbury between the Waimakariri and Rakaia rivers. We transport electricity from nine Transpower grid exit points to more than 170,000 homes and businesses. On average Orion's charges represent approximately 35% of a consumer's electricity bill.

This threshold compliance statement has been prepared by Orion to demonstrate its compliance, or otherwise, with the Commerce Act (Electricity Lines Thresholds) Notice 2003 (the Notice).

Specifically, this Statement covers the information requirements detailed in clause 7(1) of the Notice, in relation to the "price path threshold" and the "quality threshold" at the second assessment date.

Orion considers that the information disclosed in this statement is complete and meaningful such that no alternative approach is required, and that the detail of this statement is not commercially sensitive. Therefore, clauses 7(2) and 7(4) of the Notice are not applicable to Orion.

Price threshold statement

Clause 5(1)(c) of the Notice requires notional revenue, at any time from the first assessment date (6 September 2003) to the second assessment date (31 March 2004), to not exceed the notional revenue at the first assessment date.

Orion's notional revenue at the first assessment date calculated in accordance with clause 5(1)(c) of the Notice and detailed below in the section headed *Price threshold calculation*, was \$91,960.7k.

Orion's notional revenue at the second assessment date, and at all times prior to the second assessment date but subsequent to the first assessment date, calculated in accordance with clause 5(1)(c) of the Notice and detailed below in the section headed *Price threshold calculation*, was \$92,421.3k.

Therefore, Orion does not comply with the price path threshold prescribed in the Notice. Orion's prices were not altered during the period from the first assessment date to the second assessment date (inclusive) and Orion considers this breach of the threshold to be minor and technical in nature; it directly relates to a 1.2% variance between budgeted and actual local authority rates and transmission costs from Transpower for the year to 31 March 2004.

Quality threshold statement

Reliability

Detailed calculations and information supporting the reliability statements can be found in the section below headed *Quality threshold reliability information*.

Interruption duration

The Notice sets out an interruption duration requirement in clause 6(1)(a) in relation to the System Average Interruption Duration Index (SAIDI) in respect of both planned interruptions by Orion and unplanned interruptions originating within Orion's network. The SAIDI for the year ending on the second assessment date is not to exceed the average SAIDI over the five preceding years.

The SAIDI average for the five years ending on 31 March 1999 through 31 March 2003 is 63.2 minutes. SAIDI for the year ending on the second assessment date is 42.4 minutes. Therefore, Orion complies with the interruption duration requirement in clause 6(1)(a) of the quality threshold.

Interruption frequency

The Notice sets out an interruption duration requirement in clause 6(1)(b) in relation to the System Average Interruption Frequency Index (SAIFI) in respect of both planned interruptions by Orion and unplanned interruptions originating within Orion's network. The SAIFI for the year ending on the second assessment date is not to exceed the average SAIFI over the five preceding years.

The SAIFI average for the five years ending on 31 March 1999 through 31 March 2003 is 0.76 interruptions per year. SAIFI for the year ending on the second assessment date is 0.62 interruptions per year. Therefore, Orion complies with the interruption frequency requirement in clause 6(1)(b) of the quality threshold.

Customer communication

The Notice sets out a customer communication requirement in clause 6(1)(e). How lines businesses can demonstrate compliance with clause 6(1)(e) is detailed in the Commerce Commission's 'Thresholds Decisions' paper, dated 6 June 2003. Orion is required to meaningfully engage with customers to determine their demand for service quality and to reflect these service quality demands in its asset management planning.

With a goal to provide customers with a level of service that meets their needs in the long term, Orion has often engaged in customer consultation. Numerous forms of customer consultation are used by Orion to determine customers' requirements.

The requirements of customers have been incorporated into Orion's asset planning process. Both our asset management plan and our security of supply standard reflect customer requirements. Orion continually endeavours to provide a quality of supply that meets customers' requirements taking into consideration the different categories of customers served.

Orion therefore complies with the customer communication requirement in clause 6(1)(e) of the quality threshold. The section headed 'Quality threshold customer communication' below provides further detail on Orion's compliance with this requirement.

Price threshold calculation

Clause 5(1)(c) of the Notice requires notional revenue, at any time from the first assessment date to the second assessment date (calculated in accordance with the left hand side of the expression below), to not exceed the notional revenue at the first assessment date (calculated in accordance with the right hand side of the expression below).

$$\sum_i P_{i,2004} Q_{i0} - C_{T2004} - C_{R2004} \leq \sum_i P_{i,0} Q_{i0} - C_{T2003} - C_{R2003}$$

Term	Definition	Value (\$000)
i	Denotes each price pertaining to every specified service	
$P_{i,2004}$	The set of i prices at the <i>third reference date</i> .	
Third reference date	The date, between the <i>first assessment date</i> and the <i>second assessment date</i> , that gives rise to the highest value of notional revenue. As Orion's prices did not alter during this period the notional revenue at all points is the same, and the third reference date is taken as the second assessment date (31 March 2004).	
Q_{i0}	The set of i base quantities corresponding to the set of i prices for the year ended 31 March 2003 (as established in the First Assessment Statement).	
$\sum_i P_{i,2004} Q_{i0}$	The total base weighted revenue at the third reference date (31 March 2004). The calculation of this value is shown below under the heading <i>Base Weighted Revenue Calculation</i> .	129,026.8
C_{T2004}	The sum of actual transmission charges for the year ending on the second assessment date.	34,804.9
C_{R2004}	The sum of actual rates for the year ending on the second assessment date.	1,800.6
$P_{i,0}$	The set of i prices at the first assessment date (established in the First Assessment Statement).	
$\sum_i P_{i,0} Q_{i0}$	The total base weighted revenue at the first assessment date (6 September 2003). On the basis that prices on the first assessment date were identical to prices on second assessment date, this expression is equivalent to $\sum_i P_{i,2004} Q_{i0}$ above (the calculation of this value is shown below under the heading <i>Base Weighted Revenue Calculation</i>). Note that this revenue differs from the result given in the First Assessment Statement as a result of: <ul style="list-style-type: none"> a correction to the resolution of the capacity component prices used in the calculation for general connections; and the addition of line prices for embedded generation, irrigation interruptibility, builders' temporary supplies and the monthly invoice charge. The previous value was \$128,913.6k.	129,026.8
C_{T2003}	The sum of transmission charges budgeted for the year ending on the second assessment date, as published in the First Assessment Statement. Note that the avoided transmission cost associated with the credits that Orion gives for embedded generation was not represented in Orion's budget for transmission charges, and is therefore not included in this figure.	35,100.0
C_{R2003}	The sum of rates budgeted for the year ending on the second assessment date, as published in the First Assessment Statement.	1,966.1

Substituting these values in the expression above gives:

$$\begin{aligned} \text{LHS} &= \sum_i P_{i,2004} Q_{i0} - C_{T2004} - C_{R2004} \\ &= \$129,026.8\text{k} - \$34,804.9\text{k} - \$1,800.6\text{k} \\ &= \$92,421.3\text{k} \end{aligned} \qquad \begin{aligned} \text{RHS} &= \sum_i P_{i,0} Q_{i0} - C_{T2003} - C_{R2003} \\ &= \$129,026.8\text{k} - \$35,100.0\text{k} - \$1,966.1\text{k} \\ &= \$91,960.7\text{k} \end{aligned}$$

Hence, as LHS > RHS, Orion does not comply with clause 5(1)(c). However, the difference is minor and relates to the small variance between budgeted and actual local authority rates and Transpower charges.

Price threshold supporting information

Base weighted revenue calculation

This table shows the quantities, prices, and corresponding revenues used in the calculation of $\sum_i P_{i,2004} Q_{i0}$ and $\sum_i P_{i,0} Q_{i0}$ above.

Connection Categories	Base Weighted Quantities Year to 31 March 2003	Assessed Prices As at 6 September 2003 and as at 31 March 2004			Base Weighted Revenue (\$000)		
		Line	Trans- mission	Units	Line	Trans- mission	Delivery
General Connections							
Fixed Component							
Outside Lighting (per connection)	36,750 connections	10.00	-	¢/day	1,341.4	-	1,341.4
Capacity Component							
Zone A all year and Zone B winter: Nights, weekends & public holidays	1,034,281 MWh	0.5100	0.2300	¢/kWh	5,274.8	2,378.8	7,653.6
Working weekdays	825,719 MWh	4.3200	0.9300	¢/kWh	35,671.1	7,679.2	43,350.3
Zone B summer: Any time, any day	245,000 MWh	2.0400	0.5300	¢/kWh	4,998.0	1,298.5	6,296.5
Peak							
Zone A	390,200 kVA	85.00	35.00	\$/kVA/year	33,167.0	13,657.0	46,824.0
Zone B	59,700 kVA	85.00	35.00	\$/kVA/year	5,074.5	2,089.5	7,164.0
Irrigation Special Prices							
Motor pump capacity	10,137 kW	115.630	54.340	\$/kW/year	1,172.1	550.8	1,722.9
Irrigation (disc) volume	45,000 MWh	(2.040)	(0.530)	¢/kWh	(918.0)	(238.5)	(1,156.5)
Peak	12,000 kVA	(85.00)	(35.00)	\$/kVA/year	(1,020.0)	(420.0)	(1,440.0)
PF correction rebate	14,000 kVA	(23.46)	-	\$/kVA/year	(328.4)	-	(328.4)
Interruptibility rebate	1,563 kW	(5.86)	-	\$/kVA/year	(9.2)	-	(9.2)
Major Customer Connections							
Fixed (per connection)	330 connections	500.05	-	\$/year	165.0	-	165.0
Control Period Demand	103,500 kVA	60.00	21.92	\$/kVA/year	6,210.0	2,268.7	8,478.7
Assessed capacity line	184,300 kVA	24.40	-	\$/kVA/year	4,496.9	-	4,496.9
Assessed capacity transmission	199,500 kVA	-	22.00	\$/kVA/year	-	4,389.0	4,389.0
Embedded Generation (line part only)							
Real power component	2,912 kW	(57.00)	¹	\$/kW/year	(166.0)	-	(166.0)
Reactive power component	1,577 kVA	(18.60)	¹	\$/kVA/year	(29.3)	-	(29.3)
Miscellaneous							
Monthly invoice charge	42 invoices/mth	20.00	-	\$/invoice	10.1	-	10.1
Builders' temporary supplies ²	813 connections	88.89	-	¢/day	263.8	-	263.8
Total Base Weighted Revenue (\$000)					95,373.8	33,653.0	129,026.8

Notes

1 The prices for embedded generation differ from those published in Orion's schedule, Export Prices for Distributed Generation, as per note 7 of that schedule. All embedded generation under this assessment was in place prior to 31 March 2004 and prices defined in the document Electricity Pricing for Major Customer Connections apply. These are:

$$95\% \times 60.00 = \$57/\text{kW}/\text{year}, \text{ and}$$

$$31\% \times 60.00 = \$18.60/\text{kVA}/\text{year}.$$

2 Includes administration, electricity supply and electricity delivery. Refer also to *excluded services* below.

3 All prices and revenues exclude GST.

Refer to Appendix A for Orion's price schedules covering the assessment points 6 September 2003 and 31 March 2004.

Transmission charges

Transmission charges for the year ended 31 March 2004 are calculated as Transpower charges plus avoided transmission charges, less the component of Transpower charges passed on transparently to electricity retailers, as follows (excl GST):

	(\$000)	(\$000)
Transpower Charges		
Connection	7,095.9	
Interconnection	31,465.6	
EV Adjustment	(3,869.0)	
New Investment	51.9	
Frequency Control	2,831.5	
Voltage Support	198.3	
Black Start	9.4	
Loss Rental Rebates	<u>(6,017.7)</u>	
		31,765.9
plus Avoided Transmission Charges		
(amounts paid to embedded generators in respect of reduced transmission costs)		
Installation 0005902541RN317	35.7	
Installation 0005882699RN40B	20.3	
Installation 0006087329RN426	1.1	
Installation 0006678963RN383	<u>3.4</u>	
		60.5
less Transparent "pass on" Charges (Payments) to Retailers		
Frequency Control	2,831.5	
Voltage Support	198.3	
Black Start	9.4	
Loss Rental Rebates	<u>(6,017.7)</u>	
		(2,978.5)
gives Transmission Charge		<u>34,804.9</u>

Rates

Rates paid to local and regional Councils in respect of system fixed assets, as follows (excl GST):

Rates		
Substations	\$231.5	
Building Substations	\$20.8	
Other rateable network assets	<u>\$1,548.3</u>	
		\$1,800.6

Price threshold excluded services

Clause 3 of the Notice defines *specified services* that are included in the price threshold assessment. The definition permits certain activities of a lines business to be excluded from the assessment where there is effective competition for those services.

Orion directly charges customers for very few services, and makes extensive use of external contractors rather than maintaining contracting staff in-house. Customers requiring electrical work are generally referred to their own electrical contractor, or to a number of Orion-approved contractors for major work. Customers then pay the contractor directly.

Other services are provided by Orion at no charge. A description follows of the various types of services which are offered and/or provided by Orion, and the reason for their exclusion from the price threshold calculation.

Connection, disconnection or reconnection services

Exclusions under paragraph a(iii) of the definition of *specified services* in clause 3 of the Notice:

- New permanent connections - establishment and enlivening
Orion does not charge for processing applications for new permanent connections to its electricity network.

When connecting to existing boundary boxes, Orion employs contractors to terminate customers' cables at no cost to the customer. When connecting to existing overhead lines, the customers' (Orion-approved) contractors raise and terminate cables and Orion may make a contribution towards this cost.

Orion does not charge for enlivening a new permanent connection.
- Temporary connections - establishment, enlivening and removal
Temporary connections are enlivened (and removed) by any one of three Orion-approved contractors. Orion is billed by the contractor, and recharges this in turn to the customer without adding any margin.
- Disconnections and reconnections
Disconnection and reconnection of customers' premises to Orion's network are mostly undertaken directly by electrical contractors who are employed by the electricity retailers. Some retailer-requested disconnections and reconnections are also performed by Orion's contractors and Orion recharges the costs of undertaking the work to the retailer who requested the work.
- Demolitions
Orion does not charge for the disconnection of a property for demolition purposes provided that adequate notice is given. Where adequate notice is not given, Orion either passes on the charges of an Orion-approved contractor, or charges for an Orion operator at the rate that would be charged by an Orion-approved contractor.

Other goods and services

Exclusions under paragraph a(vi) of the definition of *specified services* in clause 3 of the Notice:

- **Network extensions**
Customer-driven network extensions, such as new subdivisions and individual extensions, are constructed by the developer's electrical contractor, or by a contractor who is employed by the customer. Extensions are connected to Orion's network by an Orion-approved contractor, provided that they comply with the requirements of Orion's published network design standards and Specifications.
- **Dedicated equipment charges to major customers**
Orion charges major customers for equipment that is dedicated in its use to deliver electricity to these customers. Dedicated equipment is owned and maintained by Orion, and includes items such as transformers, switchgear, protection devices, ripple relays and metering interface equipment. Many major customers elect to provide their own equipment or use an alternate provider. As there is effective competition for this service it has been excluded from the price threshold assessment.
- **Replacement of fuses (pole and boundary box)**
Failed fuses are replaced by an Orion-approved contractor, or an Orion operator. There is no charge to the customer for the first visit within a six month period. Orion charges the customer for subsequent visits at the rate billed by the contractor, without adding any margin.
- **Builders' temporary supplies**
Orion administers small capacity, generally single phase builders' temporary supplies and also owns a pool of temporary supply boxes which are offered for use by builders. The service is divided into two parts:
 - The first part relates to administration (including tracking and billing), electricity and electricity delivery, and is included as a *specified service* and considered in the price threshold calculation.
 - The second part of the service is the optional use of an Orion-owned temporary supply box. This part of the service operates in active competition with a significant number of temporary supply boxes owned by other parties, and is excluded from the assessment on this basis.

For large capacity three-phase temporary supplies, the developer employs an Orion-approved contractor for its design and construction. The developer pays all costs.

- **Other services**
Through arrangements with contractors, Orion can organise a number of other services including high load escorts, relocation of overhead mains for bargeboard or fascia replacement, isolation for painting or tree trimming, covering lines for safety, resetting circuit breakers and switches, rewiring central supply fuses and repairs on customer premises.

These services are performed by a number of electrical contractors, and in most cases the customer is invoiced directly by the contractor.

Quality threshold reliability information

Clauses 6(1)(a) and 6(1)(b) of the Notice require that reliability measures in relation to *duration* and *frequency* of planned (class B) and unplanned (class C) interruptions in the assessment period do not exceed the average of the five preceding years.

The Notice provides the option of assessing the current year's reliability measures in relation to either the full year to 31 March 2004, or the part year from 6 June 2003 (the date the Notice was issued) to 31 March 2004. Orion has elected to base this Statement on reliability information collected over the full year.

Interruption duration

This assessment is based on the System Average Interruption Duration Index (SAIDI). Clause 6(1)(a) of the Notice requires that:

$$SAIDI_{2004} \leq \frac{SAIDI_{1999} + SAIDI_{2000} + SAIDI_{2001} + SAIDI_{2002} + SAIDI_{2003}}{5}$$

The individual SAIDI results are:

SAIDI (minutes per year)	Class	Year ending 31 March					
		2004	2003	2002	2001	2000	1999
SAIDI for total number of interruptions (classes B & C)		42.42	96.18	38.20	62.25	51.83	67.71
SAIDI for total number of interruptions within each interruption class (= a/b)	Class B	6.50	10.59	4.91	3.13	6.44	17.55
	Class C	35.93	85.59	33.29	59.12	45.39	50.17
where -							
a = sum of interruption duration factors for all interruptions within the particular interruption class	Class B Class C	1,124,417 6,216,157	1,806,095 14,591,721	826,268 5,599,642	521,074 9,845,244	1,047,025 7,377,331	2,784,242 7,960,050
b = Total consumers		173,028	170,490	168,231	166,538	162,543	158,673

Therefore: $42.42 \leq \frac{67.71 + 51.83 + 62.25 + 38.20 + 96.18}{5}$

$42.42 \leq 63.23$ minutes per year, and the Notice requirement is satisfied.

Interruption frequency

This assessment is based on the System Average Interruption Frequency Index (SAIFI). Clause 6(1)(b) of the Notice requires that:

$$SAIFI_{2004} \leq \frac{SAIFI_{1999} + SAIFI_{2000} + SAIFI_{2001} + SAIFI_{2002} + SAIFI_{2003}}{5}$$

The individual SAIFI results are:

SAIFI (interruptions per year)	Class	Year ending 31 March					
		2004	2003	2002	2001	2000	1999
SAIFI for total number of interruptions (classes B & C)		0.62	0.93	0.60	0.60	0.83	0.84
SAIFI for total number of interruptions within each interruption class (= a/b)	Class B	0.02	0.04	0.02	0.02	0.03	0.09
	Class C	0.59	0.89	0.58	0.58	0.80	0.75
where -							
a = sum of electricity consumers affected by each of those interruptions within that interruption class	Class B Class C	4,094 102,631	6,529 151,227	3,265 97,462	3,163 96,795	4,503 130,525	15,000 118,249
b = Total consumers		173,028	170,490	168,231	166,538	162,543	158,673

Therefore: $0.62 \leq \frac{0.84 + 0.83 + 0.60 + 0.60 + 0.93}{5}$

$0.62 \leq 0.76$ interruptions per year, and the Notice requirement is satisfied.

Quality threshold customer communication

Executive summary

Orion is required to comply with the Commerce Act (Electricity Lines Thresholds) Notice 2003 as notified by the Commerce Commission. Part of this notice sets a threshold for quality, against which the Commerce Commission will assess lines companies, based on:

- engagement with customers to determine their demand for service quality, and
- how lines companies plan to provide future services to reflect customers' demands for quality.

This section details how Orion has complied with the Commerce Commission's requirements.

Orion believes that a continuous process of customer consultation is required for us to provide customers with a level of service that meets their needs in the long term. We regularly undertake five main customer engagement exercises. We:

- involve customers in the setting of our security of supply standard
- undertake customer surveys
- engage with customers via retailers
- obtain direct customer feedback
- consult customers on selected major projects.

We incorporate customers' views on the quality of service that we supply and the price-quality trade-offs that surround this decision into our asset planning process. Both our asset management plan and our security of supply standard reflect customer requirements.

Orion endeavours to provide a quality of supply that meets customers' requirements taking into consideration the range of customers we serve.

Based on all available information, Orion believes the large majority of customers are satisfied with the level of service that we provide and the asset planning decisions we have made.

Orion will continue to engage with customers to ensure our future asset planning decisions continue to reflect their requirements.

Requirement

Part 4A of the Commerce Act 1986 sets a requirement for the targeted control of electricity lines businesses with the purpose statement:

"..to promote the efficient operation of markets directly related to electricity distribution and transmission service through targeted control for the long-term benefit of consumers..."

After consulting with interested parties the Commerce Commission decided on the form of 'thresholds' it would set to ensure this purpose statement is met. Both a price and a quality threshold have been introduced.

This paper is in response to the quality threshold. Specifically the following sub-clause of The Commerce Act (Electricity Lines Thresholds) Notice 2003¹:

(6) Quality Threshold

- (1)(e) customer communication: the lines business, during the period from the publication date to the second assessment date, is to –*
- (i) properly advise (or ensure that another person properly advises on its behalf) its customers about the price-quality trade-offs available to them in relation to the goods and services provided by the lines business; and*
 - (ii) consult (or ensure that another person properly consults on its behalf) with its customers about the quality of goods and services that they require, with reference to the prices of those goods and services; and*
 - (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.*

In Clause 80 of its 'Thresholds Decisions' paper², the Commerce Commission stated that "the purpose of the consumer engagement criterion is to encourage lines businesses to engage with their consumers and to plan future services to reflect their consumers' demand for quality". This paper, in clauses 90-92, explains the 'consumer engagement criteria' envisaged by the Commission. This is necessarily non-prescriptive as to how the lines business can satisfy this part of the quality threshold. The paper states "For the avoidance of doubt, the Commission does not require lines businesses to embark upon exhaustive or comprehensive research into customers' willingness to pay for different levels or quality of line services".

Orion's asset management planning process

Orion's asset management planning process has the following purpose:

"To provide, maintain and operate Orion's electricity network while meeting agreed levels of service, quality, safety and profitability."

Our customers fall into four groupings:

- residential customers (approximately 130,000). The majority of these are situated in Christchurch.
- rural customers (approximately 20,000). These are located throughout our network (which runs between the Waimakariri and Rakaia rivers) and reside in varying topography, from Banks Peninsula to the Canterbury plains and the Southern Alps.
- irrigation customers. There are approximately 400 farms with large irrigation connections on our network. Few networks outside of Canterbury supply this type of customer to the scale supplied by Orion.
- business customers (approximately 25,000). These cover a broad range of size from small/medium sized businesses to large, high electricity usage businesses. The largest 350 of our business customers are regarded as major customers.

¹ Released Friday 6 June 2003 – issue no. 62.

² Dated 6 June 2003

Each of these four customer groups has different needs in regard to the quality and level of service they require of the Orion network. They also have different views on the price they are willing to pay for that quality of service. Even within these groups opinions vary between customers.

Given these differing views, the setting of 'agreed levels of service, quality, safety and profitability' is not a simple process.

We undertake extensive consultation to ensure that, as far as practicable, all customer groups are satisfied and that no one party is unfairly advantaged or disadvantaged.

Orion utilises five different methods of customer consultation. We

- involve customers in the setting of our security of supply standard
- undertake customer surveys
- engage with customers via retailers
- obtain direct customer feedback
- consult customers on selected major projects.

We adopt these approaches to ensure we are fully aware of customer needs. By using a range of techniques, Orion often obtains information from customers that could be missed if we only carried out customer surveys or only undertook specific consultation with certain groups.

Although the core results of the different methods of consultation are 'aligned', each has provided a slightly different level of understanding of particular customer groups and issues.

Each year Orion publicly discloses an asset management plan. The plan looks ahead for a period of at least 10 years and identifies the principles we use for maintaining our existing network and the basis for future extensions to the network.

Our customer consultation has helped define the asset management plan process Orion has used over the last few years and helped confirm that this process is what customers want.

In the following pages, we detail the different methods of customer consultation Orion undertakes and the means by which we plan future services to reflect our customers' demand for quality.

Security of supply standard – customer involvement

Security of supply is the ability of an electricity network to meet the demand for electricity when a significant item of network equipment fails. The more secure an electricity network, the greater the ability of that network to 'keep the lights on' or the quicker it can recover from a fault or a series of faults.

In 1998 we 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 company³, and involved consultation with local stakeholders including consumer groups.

³ UK based EA Technology.

The adoption of a security of supply standard was considered prudent by Orion and local stakeholders after the Mercury Energy power supply failure in Auckland in early 1998. Detail on Orion's security of supply standard can be found in Appendix B.

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.

In order to ensure that our security of supply standard is set at a level that properly considers customer requirements over the quality and price of service that we provide, Orion took the following three steps upon its adoption in 1999:

Step 1 - As there was no New Zealand security of supply standard, we based our security of supply standard on a UK standard (P 2/5).

The UK P 2/5 standard was founded on the underlying philosophy that "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".

In order to determine the benefit obtained by customers, 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.

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 by the customer.

Step 2 - We then adapted the UK standard for local conditions, prices and customer expectations.

The first part of this process of adaptation 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 set at as high a level as the UK standard. This was due to local conditions. Consequently we set less stringent standards for some aspects of our network, such as busbar security criteria.

The second part of the process was customer consultation. We prepared a paper titled "Proposals for a Security of Supply Standard"⁴ and distributed this to a number of local stakeholders. We also prepared and gave a presentation on the proposed standards.

Stakeholders consulted included:

- local councils
- electricity retailers
- Canterbury Manufacturers Association
- Major Electricity Users Group
- small consumer representatives⁵

⁴ Available from Orion upon request

⁵ 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.

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 - 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 standard⁶.

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

A 'Supply Security Investment Cost/Benefit Study'⁷ 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.

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.

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.

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

In May 2004 Orion commissioned Australian economics consultancy company NERA, to undertake a review of international economic studies on VoLL and also regulated wholesale electricity market price caps that are based on VoLL.

Based on this review, which is attached as Appendix D, the figure of \$5 to \$15/kWh that is 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.

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".

⁶ Orion undertakes similar cost benefit analyses on other major projects. This analysis is detailed on pages 20 and 21.

⁷ Available from Orion upon request

Price caps are therefore typically not based on “true” VoLL, but are set at a rather lower level. In August 2003 consultants to the Ministry of Economic Development 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 Morrison & Co investigated both New Zealand and overseas jurisdictions and placed the average value of lost load to be 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 definitely at the lower end of “true” VoLL estimates.

Given recent studies the cost benefit analysis used by Orion to support the security of supply standard and other selected major projects, as detailed on pages 20 and 21, is very conservative and further investment in our network could be justified by ‘economic analysis’. However Orion believes customer consultation must also occur before significant investment is undertaken.

In summary, Orion actively engaged in customer consultation when setting its security of supply standard, the primary standard around which we base our asset management planning and investment initiatives. This customer engagement involved:

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

Customer surveys

Over the last few years Orion has undertaken:

- face to face interviews with over 300 residential customers
- face to face interviews with 300 business customers
- telephone interviews with 30 rural landowners
- a telephone survey of approximately 1,000 Christchurch residential customers.

Highlights of these surveys are:

1) *“Service delivery performance for residential customers”*

This survey was undertaken for Orion by independent company Research International NZ in July 1998. It involved face to face interviews with 301 randomly selected residential customers located both in Christchurch and in rural areas.

The survey concluded that ‘consistency of supply’ was the most important service issue for customers. Their most significant areas of concern were ‘no major breaks in power supply’ and ‘respond quickly to no power’.

The results indicated that Orion should concentrate its efforts for residential customers on providing a reliable supply of electricity. Any efforts to lower network reliability and security levels would be unwelcome.

2) *“Service delivery performance for business customers”*

In 1998, Research International NZ undertook an in-depth face-to-face survey of 300 business customers for Orion. One of the key questions asked was “what one service attribute do you most desire improvement in by Orion?”. The results were as follows:

	%
Consistency of supply	28
Response to faults	22
Informing customers of maintenance work	16
Response to repairs and maintenance	15
Pricing	15
Other	<u>5</u>
	100

Results showed that approximately 65% of business customers placed top priority on improvement in the ‘reliability’ of their electricity supply. Only 15% of business customers placed top priority on improvement in pricing (presumably lower pricing).

3) *“Research into the strengthening of relationships with landowners”*

This survey was undertaken in February 2003 for Orion by independent company Peter Glen Research 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.

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).

4) *“Network reliability customer survey”*

Our most recent survey was undertaken in February 2004 for Orion by independent company Business Improvement Group. It surveyed approximately 1,000 households in the Christchurch area by telephone and had a margin of error of 3%.

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

- 87% of respondents considered rapid restoration of power either important or very important

- 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?”, an ‘average’ residential customer is willing to accept between 7 and 43 minutes of power interruption per annum⁸.
- 92% of respondents were either satisfied or very satisfied with the current reliability of their power supply
- asked “what, if any, concerns do you have about the quality/reliability of your power supply”, only 10% of respondents had any concerns whatsoever. Half of these were concerned about power price but there was no differentiation by the customers between Orion’s pricing and the pricing of electricity retailers.

Given the results from these four surveys, it is apparent the large majority of customers are satisfied with the level of service that we provide and the price-quality trade-offs we make.

As previously stated, Orion serves a diverse customer base and, as with all electricity distributors, we are unable to deliver the exact level of service that every customer wants. This is because different customer groups have varying dependence upon electricity supply⁹. A balancing of differing customer expectations is therefore required.

Based on feedback from residential, rural and business customers, no group is dissatisfied with the level of quality of service that we provide or the price-quality trade-off that we make.

Customer engagement via retailers

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 a direct contractual relationship with customers on our network^{10,11}.



We therefore view our relationship with each energy retailer as an important link between ourselves and customers.

On a daily basis, the retailer represents the customers connected to our network so we rely, in part, on retailers to let us know about how their customers are feeling about the price and quality of the delivery of our network service. Currently we provide our delivery service to five retailers.

We 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.

⁸ Orion’s 5 year urban average SAIDI is 20 minutes per annum. Orion’s 10 year urban average SAIDI is 36 minutes. Our quality of supply performance therefore falls within the range preferred by residential customers.

⁹ This is recognised in the Centre for Advanced Engineering study of 1993. This study showed that business customers find power interruptions 3 to 4 times more inconvenient than residential customers.

¹⁰ 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 few years.

¹¹ We recognise that the Consumers Guarantee Act stipulates that such “use of system” agreements do not remove Orion’s liability to consumers.

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

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:

- network performance
- response to enquiries
- reporting unplanned interruptions to delivery
- fault call receipt and field service despatch.

Based on our dealings with retailers, Orion is not aware of any systematic concerns with the quality or price of service provided by Orion.

Direct customer feedback

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

- major customer contact
- stakeholder meetings
- direct customer feedback
- invitation to comment on asset plans and target levels.

These are explained in the following sections.

- **Major customer contact**

Orion has approximately 350 major customers. These major customers typically have loads large enough to require a dedicated transformer and approximately 60 of them contract directly to Orion for their delivery service.

All of Orion's major customers are invited to at least two seminars a year. During these seminars we take the opportunity to explain the quality of our delivery service and the level and structure of our pricing. Our senior management team attend these seminars in order to answer any questions from major customers.

Seminars are also used as an opportunity to address other pertinent issues. Topics we have covered in recent seminars include Environment Canterbury's Clean Air Plan, the 2003 winter electricity shortage, night load switching and energy efficiency initiatives.

We are very pleased with the relationship Orion has with major customers. Both parties obtain benefit and understanding from our regular seminars and while each seminar discusses pricing and quality levels, at no seminar has Orion been alerted to any fundamental concerns about its quality and price of supply.

Orion's charging basis to major customers is quite different to that offered by the majority of other network companies in New Zealand. Orion's prices to major customers reflect Orion's true marginal cost of supply during times of peak loading. For approximately 50-100 hours per winter, major customers face significantly higher prices for network supply. During these hours, which we notify in advance to the major customers, the major customers have the opportunity to shed load and save money.

This 'saving' can be used by major customers to purchase and operate diesel generation. This diesel generation is then used by the major customers to effectively replace shed electrical load. Further, as diesel generation is now economic to purchase, our pricing encourages an alternative form of energy supply and allows major customers to choose a greater security of supply. Our pricing effectively allows major customers to make a price-quality tradeoff¹².

- **Stakeholder meetings**

Over the last two years Orion has had annual meetings with the following groups¹³:

- Christchurch City Council
- Banks Peninsula District Council
- Selwyn District Council
- Major Electricity Users Group
- Christchurch Power Customers Trust
- Solar Action
- Federated Farmers
- Central Plains Irrigation Association
- Dunsandel Groundwater User Association

This year a meeting will also be held with the Canterbury Chamber of Commerce.

These meetings 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). Orion has received positive feedback with regard to the quality and price of supply Orion provides.

Discussions with the rural groups showed some irrigators were willing to accept a lower level of reliability in return for a lower price. Orion has subsequently developed and implemented a pricing option to accommodate these irrigators. An emergency 'interruptibility rebate' is now provided to irrigators who are willing to have their load shed in order to maintain supply to their area. This negotiated arrangement has worked well and typically operates once or twice a summer.

- **Direct customer feedback**

This generally occurs through two methods:

- telephone calls to our call centre, and
- contact with our connections department.

Through this contact customers have an opportunity to voice their concerns over our level of pricing and service.

Our call centre operates 24 hours a day, seven days a week. We have received extremely few calls regarding dissatisfaction with the level of reliability of electricity supply or the price of network services.

¹² We note that our structure of pricing for non-major customers also encourages retailers to offer price-quality tradeoff 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.

¹³ Some of these groups are met with more than once per annum.

Our connections department has a staff of 20 and communicates with and assists new customers to our network.

When a new customer puts in an application to Orion for connection, often the customer will overestimate the size or type of connection they require. When this occurs our connections department discusses the situation with the customer and recommends an alternative option that will be cheaper for the customer. Upon activation of the connection, should the Orion recommended option not turn out to be suitable for the customer, Orion will upgrade the connection at Orion's expense.

We recognise that our connections department has skills in this area that customers often do not have and we use these skills to ensure that our customers save money.

- **Invitation to comment on asset plans and target levels**

Every year customers are invited to comment on Orion's asset plans and target levels of performance in a variety of ways:

- We publicly release an asset management plan each year and welcome comments and suggestions on this plan. The plan details Orion's approach to the management of our electricity network and how we will manage and invest in our network to meet customer requirements regarding quality of supply.

In the asset management plan Orion details target levels of performance. These target levels of performance cover both reliability criteria and power quality criteria. Our target levels of performance as detailed in our asset management plan for the year to 31 March 2004, 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 2004	Outcome	New Zealand average (year ended 31 March 2003**)
Reliability	Faults/100km of circuit	< 11.0	7.1	Achieved	8.3
Reliability	Faults/100km of underground cable	< 3.0	3.2	Not achieved*	2.9
Reliability	Faults/100km of overhead line	< 13.0	9.3	Achieved	11.1
Reliability	SAIDI ¹⁴	< 63	42	Achieved	184
Reliability	SAIFI ¹⁵	< 0.75	0.62	Achieved	2.4
Reliability	CAIDI ¹⁶	< 83	69	Achieved	83
Efficiency	Capacity utilisation	> 33%	36%	Achieved	33%
Power quality	Proven voltage complaints	< 64	22	Achieved	Not available
Power quality	Harmonics (wave form)	< 2	0	Achieved	Not available
* This target was not met due to a high number of 11kV cables faults in the year to 31 March 2004. Only one 33kV cable fault occurred and there were no 66kV cable faults. We are investigating the reason(s) for the high number of 11kV faults.					** latest available figures

¹⁴ SAIDI - System average interruption duration index. This is the average total duration of interruptions of supply that a consumer experiences in a period.

¹⁵ SAIFI - System average interruption frequency index. This is the average number of interruptions of supply that a consumer experiences in a period.

¹⁶ 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.

Asset planning decisions are also discussed in our annual report.

Each year we detail 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. We also occasionally detail the trade-offs we face in managing our network, such as the cost, reliability and price effects of further undergrounding. We welcome invitation from customers on such discussions.

- Orion publishes a 'Quality of Supply' statement, which is available on our website, which states Orion's practices with respect to security, reliability, voltage regulation, losses and asset requirements. This document provides the basis for optimisation when valuing Orion's assets. We also welcome comments and debate from all interested stakeholders with regard to this document, but Orion has not received any criticism since it was first published in 2001.
- This year, in May 2004, Orion also became the first electricity distributor in New Zealand to publicly release a 'Network Quality Report'. This report is devoted to discussion about Orion's performance at providing a reliable and secure electricity network. It details, in plain english language, our performance at meeting service targets, urban and rural reliability issues, how we rate against other networks both nationally and internationally and our efforts to improve reliability.
- This report and our annual report are sent out to approximately 400 interested parties and are also displayed on our website (www.oriongroup.co.nz).

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

The final way we engage with customers about the quality of goods and services they require and the pricing trade-offs available, is through consultation over selected major projects.

Orion spends some \$25m to \$35m per annum on capital projects of which \$5m to \$10m 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 load¹⁷. Major projects are identified in our disclosed asset management plan.

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

¹⁷ The capital spend of \$25m to \$30m per annum over the next ten years is higher than that experienced historically. This is a direct result of forecast greater than average load growth occurring. A primary cause of this is the introduction of the Clean Air Plan by Environment Canterbury. This is a local issue which has wide ramifications for the supply of electricity to Christchurch.

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

- electricity retailers
- local councils
- Canterbury Employers Chamber of Commerce
- Canterbury Manufacturers Association
- Greypower Superannuitants Association
- John Noble¹⁸.

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.

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, on pages 13 and 14.

Summary

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 this decision.

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, say, business customers.

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:

- customer involvement in the setting of our security of supply standard
- customer surveys
- engagement with customers via retailers
- direct customer feedback
- customer consultation over selected major projects.

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

Orion will continue to consult with customers in the future and will endeavour to further improve our level of understanding of our customers' requirements.


¹⁸ John Noble is a Christchurch based energy expert who advises both Greypower and the Energy Trust.

Directors' certificate of threshold compliance statement

We, Peter Rae and Craig David Boyce, being directors of Orion New Zealand Limited certify that, having made all reasonable enquiry, to the best of our knowledge and belief, the attached threshold compliance statement of Orion New Zealand Limited, and related information prepared for the purposes of the Commerce Act (Electricity Lines Thresholds) Notice 2003 complies with the requirements of that Notice.



Director



Director

20 May 2004



Report of the Auditor-General

To the readers of the threshold compliance statement as at 31 March 2004 of Orion New Zealand Limited

We have examined the attached threshold compliance statement (the "Statement") in respect of a price path threshold that was prepared by Orion New Zealand Limited for assessment on 31 March 2004 and dated 20 May 2004 for the purposes of information requirements set out in clause 7 of the Commerce Act (Electricity Lines Thresholds) Notice 2003 ("the Notice").

Directors' Responsibilities

Clause 7(1)(a) of the Notice requires the Directors of Orion New Zealand Limited to prepare a Statement that reports Orion New Zealand Limited's compliance, or otherwise, with the thresholds set out in clauses 4, 5 and 6 of that Notice.

Auditor's Responsibilities

Section 15 of the Public Audit Act 2001 and clause 7(1)(b) of the Notice require the Auditor-General to examine the Statement. It is the responsibility of the Auditor-General to express an independent opinion on the Statement prepared by the Directors and report that opinion to you.

The Auditor-General has appointed K J Boddy of Audit New Zealand to undertake the examination.

Basis of Opinion

Our examination included reviewing, on a test basis, evidence relevant to the amounts and disclosures in the attached Statement. It also included assessment of the significant estimates and judgements, if any, made in the preparation of the Statement and assessment of whether the basis of preparation had been adequately disclosed.

We planned and performed our examination so as to obtain all the information and explanations which we considered necessary. We obtained sufficient evidence to give reasonable assurance that the Statement is free from material misstatements, whether caused by fraud or error or otherwise. In forming our opinion we also evaluated the overall adequacy of the presentation of information in the Statement.

Other than in our capacity as auditor acting on behalf of the Auditor-General, we have no relationship with or interests in Orion New Zealand Limited.

Unqualified Opinion

We have obtained all the information and explanations we have required. In our opinion, having made all reasonable enquiry, to the best of our knowledge, the attached threshold compliance statement of Orion New Zealand Limited, and related information has been prepared in accordance with the Notice, and gives a true and fair view of the performance of Orion New Zealand Limited as required by the Notice against the threshold set out in the Notice for assessment on 31 March 2004.

Our examination was completed on 20 May 2004 and our unqualified opinion is expressed as at that date.

K J Boddy
Audit New Zealand
On behalf of the Auditor-General
Christchurch, New Zealand

Matters Relating to Electronic Presentation of the Audited Threshold Compliance Statement

This audit report relates to the threshold compliance statement of Orion New Zealand Limited as at 31 March 2004 included on Orion New Zealand Limited web site. The Orion New Zealand Board is responsible for the maintenance and integrity of the Orion New Zealand Limited web site. We have not been engaged to report on the integrity of the Orion New Zealand web site. We accept no responsibility for any changes that may have occurred to the threshold compliance statement.

The audit report refers only to the threshold compliance statements named above. It does not provide an opinion on any other information which may have been hyperlinked to/from these financial statements. If readers of this report are concerned with the inherent risk arising from electronic data communication they should refer to the published hard copy of financial statements and related audit report dated 20 May 2004 to confirm the information included in the audited financial statements presented on this website.

Legislation in New Zealand governing the preparation and dissemination of statements may differ from legislation in other jurisdictions.

Appendix A – Delivery and export price schedules



Delivery Price Schedule

Applicable from 1 April 2003 to 31 March 2004

General Connections	Line	Transmission	Delivery	
Fixed				
Outside Lighting (per connection)	10.00	-	10.00	c/day
Peak³				
Both Zones	85.00	35.00	120.00	\$/kVA/yr
Capacity³				
Zone A all year and Zone B Winter⁴:				
Nights, weekends & public holidays	0.51	0.23	0.74	c/kWh
Working weekdays	4.32	0.93	5.25	c/kWh
Zone B Summer⁴:				
Any time, any day	2.04	0.53	2.57	c/kWh
Irrigation Connections				
Transitional Irrigation Package <i>(Net effective price. For irrigation in zone B only. See document "Transitional Irrigation Package" for full details and conditions)</i>	115.63	54.34	169.97	\$/kW/yr
Irrigation Power Factor Correction Rebate <i>(See document "Irrigation Power Factor Correction Rebates" for full details and conditions)</i>	(23.46)	-	(23.46)	\$/kVA/yr
Irrigation Interruptibility Rebate <i>(Not available to connections on the Transitional Irrigation Package. For irrigation in zone B only. See document "Irrigation Interruptibility Rebates" for full details and conditions)</i>	(5.86)	-	(5.86)	\$/kW/yr
Major Customer Connections				
Fixed	500.05	-	500.05	\$/yr
Control period demand ⁵	60.00	21.92	81.92	\$/kVA/yr
Assessed capacity - Line ⁵	24.40	-	24.40	\$/kVA/yr
Assessed capacity - Transmission ⁵	-	22.00	22.00	\$/kVA/yr
Miscellaneous				
Provision of Equipment - refer to Schedule B of the document "Electricity Delivery Pricing For Major Customer Connections"				
Charge to the purchaser of Delivery Services - Electricity Retailers and some Major Customers	20.00		20.00	\$/monthly invoice
Charges for associated services - refer to the document "Charges for Associated Services"				

Notes

1. GST is payable in addition to these prices.
2. Orion's documents "Application of Electricity Delivery Prices" and/or "Electricity Delivery Pricing for Major Customer Connections" apply.
3. Peak and Capacity prices for general connections are applied to peak loadings and volumes derived from measurements taken at Grid Exit Points. Zone A is the area supplied by Addington, Arthur's Pass, Bromley, Castle Hill, Coleridge, Islington and Papanui Grid Exit Points. Zone B is the area supplied by Hororata and Springston Grid Exit Points.
4. Winter is defined as the period April - September inclusive, summer is October - March inclusive. Night is defined as the period from 9pm to 7am, day is the period from 7am to 9pm.
5. Demand and Capacity prices for Major Customer Connections are applied to measurements taken at the connection.
6. The estimated number of (energised) connections to which these charges apply as at 1 February 2003 were:

Outside Lighting Connections	36,802
General Connections	169,212 (plus Outside Lighting connections)
Major Customers Connections	401



Export Prices for Distributed Generation

Applicable from 1 April 2003 to 31 March 2004

The prices below represent Orion's credit to Electricity Retailers reflecting the benefit to Orion from embedded generation. The credit does not represent the purchase of this electricity. The retailer receiving the credit is the retailer who has contracted to purchase the output from the generator. For pricing purposes, generators are grouped according to their generator output ratings in kilowatts (kW):

Distributed Generator Output Rating	Line	Transmission	Delivery	
Small (0 - 5 kW) ²	<i>Standard 'General Connection' delivery prices apply at all times</i>			
During Chargeable Peak Periods Only				
Medium (5 - 30 kW) ³	45.00	23.00	68.00	c/kWh
Large (> 30 kW) - Real Power ³	66.70	33.30	100.00	\$/avg kW/yr
Large (> 30 kW) - Reactive Power ³	21.70	10.90	32.60	\$/avg kVAr/yr

Notes

- GST is credited in addition to these prices.
- For Small generators, export volumes are not included with a retailer's chargeable GXP volumes and are therefore not charged. This is effectively a credit to the retailer at the delivery prices applying to general connections.
- For Medium and Large generators the prices relate to Orion's Chargeable Peak Period only, defined as complete half hour periods (beginning or ending on the hour) occurring while Orion is undertaking load management to control peak loading. If there are fewer than ten such half hours in a season, the difference will be made up using the half hours of highest loadings during the season.
- The same prices apply in all of Orion's zones.
- The retailer is responsible for ensuring that appropriate metering is in place to record the exported quantities, and for providing the quantities to Orion for Orion to apply the credits.
- Minimum metering required is:
 - For Small generators - Import & export kWh meters with reverse stops or a combined import/export kWh meter that records import and export volumes separately (that is, 'net metering' is not permitted).
 - For Medium generators - As for small generators for low exported kWh volumes and/or where the retailer agrees. Otherwise, import/export half-hour recording kWh meter.
 - For Large generators with a capacity between 30 kW and 350 kW connected to Orion's low voltage network - Import/export half-hour recording kWh meter.
 - For Large generators where exported reactive power is to be considered, or where the capacity exceeds 350 kW, or where the generator is connected to Orion's high voltage network - 4-quadrant meter that records, for every half-hour:
 - Net real energy (kWh) imported or exported; and
 - Net reactive energy (kVArh) imported or exported.
 Note that any net import of reactive power during the Chargeable Peak Period is charged at the prices above, rather than credited.
- These prices do not apply to exporting generators in place prior to 31 March 2004 and electing to stay on the pricing basis described in section 10 of the document "Electricity Delivery Pricing for Major Customer Connections".
- These prices apply to export from distributed generators of up to 1 megawatt output rating.

Appendix B – Orion’s security of supply standard

Orion’s security of supply standard outlines the length of time that customers can expect to be without power after an 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 standards require circuits to be designed to provide higher levels of security where they meet the largest demands. The standards are less rigorous where the size of electrical demand served by a circuit is small.

The standard is shown on the next page.

Orion's network supply security 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

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 C – Legal requirements for service standards

While Orion views consultation with customers as a vital part of how we determine levels of service we are also subject to certain regulation regarding the quality of our electrical supply. This legislation effectively provides a minimum standard that we must meet. The primary regulatory requirements are:

- **Steady state voltage**

The range of steady state voltage supplied to customers is mandated in Clause 53 of the Electricity Regulations, as 230 volts \pm 6%. We design and operate our network to meet this requirement.

- **Harmonics/distortion**

The allowable level of harmonic voltages and currents passed into connected customers' installations is set by the Limitation of Harmonic Levels Notice 1993, Electrical Code of Practise 36, or any notice of substitution thereof. We monitor power quality issues using these code levels.

Appendix D – NERA report on value of lost load

**VALUE OF LOST LOAD AND PRICE CAPS IN
WHOLESALE ELECTRICITY MARKETS**

A Report for Orion

Prepared by NERA

**May 2004
Sydney**

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An MMC Company

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1. INTRODUCTION

This report responds to a request from Orion New Zealand to provide information on studies that have established a value of lost load (VoLL), and subsequently the extent to which VoLL is used to determine price caps in wholesale electricity markets around the world.

In economic terms, VoLL is the price at which customers would prefer to reduce their demand than continue purchasing electricity. This value rises as the extent of the demand reduction increases, with the maximum value being the point of “lost load”, or the value a customer places on avoiding a complete outage. Although the economic concept of VoLL is relatively clear, electricity markets often operate under price caps that are determined by a much wider set of considerations.

2. AVAILABLE STUDIES

Two major studies have been completed in Australia which attempt to gauge the value customers place on reliability for the purpose of transmission investment decisions. The first of these studies was completed in 1997 by Monash University and was commissioned by the Victorian Power Exchange (VPX). The second, completed in 2002, was commissioned by VPX's then successor, VenCORP,¹ and undertaken by Charles River Associates (CRA). The second study used the term “value of customer reliability” (VCR) to distinguish this value from the price cap in the wholesale market, which is referred to as VoLL (see Appendix A). However, where VoLL is referred to below it is intended to be interpreted in the economic sense, not as a price cap.

The studies were undertaken using similar methodologies, since the project brief for the 2002 study required CRA to generally use the same framework as adopted in the previous study. Nevertheless, the CRA study notes:

There were a number of fundamental differences between how the two studies were conducted which makes comparison of the two results difficult. These differences mainly related to differences in project scope, sample size, project timeframe and survey technique.²

Both studies were undertaken using market research via quantitative surveys on the cost impact of electricity supply interruptions. Each study comprised residential, commercial, agricultural and industrial consumers. The results of each study are outlined in the table below:

¹ VenCORP is a non-profit organisation responsible for energy network planning in Victoria, in addition to its role as the Independent System Operator for both electricity and gas markets.

² CRA, *Assessment of the Values of Customer Reliability (VCR)*, December 2002, p.1, available at www.vencorp.com.au

Comparison of the Value of Lost Load - A\$/MWh

Study	Residential	Commercial	Agricultural	Industrial	Aggregate
Monash	\$740	\$75,960	\$96,190	\$11,190	\$28,890
CRA	\$11,880	\$56,670	\$55,490	\$18,540	\$29,600

The aggregate figures were calculated by weighting the sector values by electricity consumption. CRA was unable to explain the differences in the values calculated for each sector, but noted that the overall figure was very similar.

A number of other international studies attempting to measure VoLL have been completed. The most extensive of these is a study of British electricity company areas undertaken in 1996, on which the methodology employed for the Monash study was heavily based. The analysis, performed by Kariuki and Allan, estimated VoLL to be US\$18,500/MWh (in 1999 dollars).³

A Finnish study undertaken in 1977 was used as the basis for the VoLL in the Pool in England and Wales until 2001. This value was £2000/MWh (1989 pounds).

A Canadian study reported in 1989 found that the average VoLL for commercial and industrial users was around US\$17,000/MWh (in 1999 dollars), with residential users valuing lost load at around US\$2,000/MWh.

A study of industrial firms commissioned by London Electricity in 1995 revealed an implied VoLL in excess of US\$20,000/MWh (1999 dollars). This value has been viewed with some scepticism by some who believe that if industrial firms truly valued lost load that highly they would have invested in their own generation plant.⁴

The University of Canterbury undertook a study of VoLL in New Zealand in 1993. The results of the studies indicated a range of VoLLs from NZ\$1,500/MWh to \$5,000/MWh for residential consumers, and up to \$70,000/MWh for industrial customers. These results were considered to be highly variable since they largely depended on time of day and season. However, the Electricity Corporation of New Zealand interpreted the results as ranging from \$5,000/MWh to \$15,000/MWh for interruptions of up to 2 hours.⁵

³ Crampton, Peter and Lien, Jeffrey, *Value of Lost Load*, Unpublished study from the University of Maryland, February 2000

⁴ Crampton, Peter and Lien, Jeffrey, *Value of Lost Load*, Unpublished study from the University of Maryland, February 2000

⁵ University of Canterbury Centre for Advanced Engineering, *Reliability of Electricity Supply: Project Report*, December 1993

A summary of these studies in approximate current New Zealand dollars is given below.

Study	VoLL (2004 \$ NZ/MWh)
1977 Finnish study	\$8,390
1989 Canadian study	\$3,677/\$31,251
1993 New Zealand study	\$6,195/18,586
1995 London electricity study	\$36,766
1996 Kariuki and Allan study	\$34,008
1997 Monash study ⁶	\$34,787
2002 CRA study	\$35,642

With the exception of the Finnish and New Zealand studies, each of the analyses has produced a result in the vicinity of NZ\$31,000 to \$36,000/MWh. Whether or not these studies are directly comparable is questionable. The CRA report, for example, noted that the similarity of its aggregated figure with that derived in the Monash study seemed “more coincidental than necessarily reinforcing the original VoLL”.⁷

Further, a lack of detailed information makes it difficult to establish on exactly what basis the values have been derived. The New Zealand study, for example, was based on interruptions of up to 2 hours. This duration of interruption was not available for the other studies, although some did provide a breakdown of other durations. Similarly, as noted in the New Zealand study, results are highly dependent on many factors that may or may not have been accounted for in the various studies. However, the similarity of results from five out of the seven studies tends to suggest more than just coincidence.

3. APPLICATION OF VOLL IN WHOLESALE MARKETS

In Australia, the cap on the spot price of wholesale electricity is currently set at \$10,000/MWh. CRA noted in its final report:

*The results confirm that the current value of VoLL of \$10,000/MWh used as the cap in the electricity market price is not reflective of network customer valuations. This is consistent with the determination of the Reliability Panel when it noted the energy market VoLL was targeted at facilitating voluntary balancing of supply and demand on a regional and national level and is best viewed as a price cap rather than an indicator of customer valuations of supply reliability.*⁸

⁶ Note that the results from the Monash study were obtained from the CRA report. Although it was not specifically stated, it has been assumed that these figures were expressed in 2002 dollars to enable comparisons to be made.

⁷ CRA, *Assessment of the Values of Customer Reliability (VCR)*, December 2002, p.6

⁸ CRA, *Assessment of the Values of Customer Reliability (VCR)*, December 2002, p.6

This seems to be the trend in electricity markets around the world. In every jurisdiction we examined,⁹ 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.

Further information on price caps in the jurisdictions we considered is appended below.

⁹ The jurisdictions we looked at included the UK, North America and Spain.

APPENDIX A. PRICE CAPS IN WHOLESALE ELECTRICITY MARKETS

In many wholesale electricity markets around the world a cap is placed on the level to which prices can rise, particularly where demand-side participation is limited and customers cannot signal the price at which they would be willing to reduce their demand for electricity.

The purpose of capping prices is generally to reduce the risk to consumers of unacceptably high electricity prices, particularly in markets that are yet to become demand-side responsive. As with any price cap, however, the existence of a maximum price can have a distorting effect on the market. Specifically, where the cap is set too high, generators may over-invest in peaking plant generation to take advantage of high prices and, where they enjoy a degree of market power, may attempt to ‘game’ the market to encourage high prices, consequently increasing risks for customers who are not able to respond.

Alternatively, if the cap is set too low, new investment in peaking plant generation will be discouraged since investors will not be able to make commercial returns. Consequently there will be insufficient generating capacity and instances of supply/demand imbalances will occur with greater frequency. This distortion to long-term investment signals will result in reduced reliability.

The remainder of this appendix outlines the level of price caps in wholesale electricity markets in Australia, North-Eastern US, Texas, Ontario, US areas not deregulated, England and Wales, and Spain.

A.1. Examples from Australia, the US and Europe

A.1.1. Australia

The Australian Competition and Consumer Commission (ACCC) was responsible for setting a price cap¹⁰ on the spot price in the wholesale electricity market at the inception of the Australian National Electricity Market in 1998.¹¹ In its determination, the ACCC noted that the level at which the cap should be set was an arbitrary decision which it was not qualified to make, and consequently accepted the National Electricity Code Administrator’s (NECA) proposal of A\$5,000/MWh. The ACCC also noted that the maximum price is a critical aspect of providing appropriate signals to ensure reliability of supply, and therefore required it to be reviewed on an annual basis by NECA’s Reliability Panel.

¹⁰ Note that the price cap in the Australian electricity market is termed “VoLL”, however this is not to be interpreted as the “true” economic VoLL. To avoid confusion this report simply refers to the maximum price as a price cap.

¹¹ Australian Competition and Consumer Commission, *Applications for Authorisations: National Electricity Code*, 10 December 1997

In its first review of the price cap, the Reliability Panel recommended increasing the level to A\$10,000/MWh followed by a further increase to A\$20,000/MWh, on the basis that it would increase demand-side response and investment. The ACCC accepted the first increase, agreeing that an increase of A\$5,000/MWh would increase investment and consequently reliability. However the ACCC rejected the proposal to increase the cap by a further A\$10,000/MWh, arguing that the potential for generators to take advantage of market power outweighed any benefits to increasing reliability beyond that achievable by a smaller increase in the price cap.

In its most recent review, the Reliability Panel decided not to recommend an increase from A\$10,000/MWh after conducting an analysis of new investment and demand-side response in the market. The Panel found that the previous increase in the price cap had stimulated new investment and thus a further increase was not required at this stage. On the other hand, a decrease in the cap would jeopardise planned investment.

Although the price cap is currently set at A\$10,000/MWh, studies have been completed which suggest that the economic value of lost load is between A\$10,000 and A\$100,000/MWh.

A.1.2. North-Eastern United States

There are three independent system operator (ISO) organised power markets in the Northeast of the United States: the ISO New England (ISO-NE); the New York ISO (NYISO); and the PJM ISO, which encompasses Pennsylvania, New Jersey and Maryland. Generators are prevented from offering prices greater than US\$999/MWh¹² into these energy markets. This price is not intended to reflect the economic interpretation of VoLL, but to curb market clearing prices.

Although energy prices are capped at US\$999/MWh, generators also receive capacity payments to compensate them for investment in generation. This is to recognise that the level of the energy market price cap is not sufficient to allow full cost recovery and therefore does not provide incentives for generators to invest in generation capacity. New York and PJM base the compensation payment on the expectation that curtailment will not exceed 1 day in ten years, with a cap in the PJM capacity market of about US\$188/MW day. Thus the effective maximum price for peak energy is greater than the bare energy price.

The concept of VoLL is therefore implicitly incorporated into the market through the capacity payments to generators. While it is possible to calculate the expected unserved energy at the required level of capacity and translate the cap on the capacity market into an

¹² Note that this is not the highest price at which energy may be purchased. In the event that there was a potential shortage of supply, the ISOs would buy power from external resources which are not subject to the offer cap at a higher price. There is no limit established whereby load would be curtailed rather than continue to be purchased at a higher price, however, a price above the offer cap would not affect the clearing price.

implied VoLL, these calculations have not been performed by these ISOs. If the calculations were to be performed the implied VoLL associated with meeting the 1 day in 10 year adequacy standard is likely to be in the range of US\$5,000 to \$25,000/MWh.

A.1.3. Texas

The Texas electricity market (ERCOT) has established a cap of US\$1000/MWh on offers into and prices in its balancing market.¹³ The cap does not in any way appear to be related to VoLL, but is designed to prevent exploitation of market power by generators who may control a large quantity of surplus supply during times when the market is tight.

Unlike the Northeast ISOs, the ERCOT market has no capacity requirement. However, since the energy market is a balancing market, not a spot market, the price cap in the energy market has less impact on investment incentives. Rather, incentives are presumed to come from bilateral contracts.

A.1.4. Ontario

Ontario has the only example of a VoLL-type price limit in use in North America. The Ontario ISO a provincial spot market. As part of the market design there is a maximum market-clearing price (MMCP) of CDN\$2,000/MWh. The intent is that load would be economically curtailed rather than let prices rise this high. Ontario has no capacity market.

The Ontario ISO has the discretion to make out-of-market purchases (eg, imports) at higher prices, and has done so, but it will curtail prior to letting the price rise above the MMCP.

A.1.5. US Regions not Deregulated

In much of the United States, electricity is supplied by vertically integrated electric utilities that own generation, transmission and distribution and sell a bundled product at regulated retail prices. These utilities generally seek to have adequate resources to meet load requirements. However, there have been periods of time when supplies were short and these utilities had to rely on the market for supply. Wholesale markets in these areas are bilateral and there is no central market with formal rules or clearing prices. Prices in these markets have risen as high as US\$8,000/MWh. Utilities have bought at these prices rather than curtail load, and there are no provisions for utilities to curtail rather than pay a high spot price.

¹³ The ERCOT market rules specify the balancing market is not a spot market and is not to be relied on for supply or as a market to sell large volumes, but is to be used to produce a balanced schedule of generation and load.

A.1.6. England and Wales

Under the current market arrangements known as the New Electricity Trading Arrangements, there is no explicit value for VoLL. There is an implicit level set through the maximum allowed offer price for electricity, which is a software constraint, set at £99,999.99 per MWh. However, this level is set so high that it is unlikely to affect peak electricity prices.

Under the former electricity trading arrangements that operated from 1990 to 2001, known as the Pool, there were two types of capacity payments to generators:

- the capacity payment in the pool purchase price which was paid to the generators included in the day-ahead dispatch; and
- the availability payment which was paid to plant that was not included in the day-ahead schedule but declared itself available to produce in the next day.

Generators included in the day-ahead dispatch were paid the Pool Purchase Price (PPP), made up of the energy price (System Marginal Price or SMP) and a capacity payment. The Pool designers recognised that SMP by itself would understate the likely future value of energy, since it failed to recognise instances where there was insufficient generation capacity. Consequently a capacity payment designed to reflect VoLL was added to allow cost recovery for generation capacity. The Pool Rules specified that VoLL would be £2/kWh (or £2000/MWh), to be updated by inflation in subsequent years. In order to smooth payments, the formula for PPP set day ahead prices equal to the *expected* value of electricity on the following day by introducing the 'loss of load probability' into the calculation.

Generation capacity that was declared available a day in advance, but which was not needed to meet expected demand, did not receive PPP but a separate 'availability payment' (AP) in return for staying available to generate if called upon by the system operator. If the system operator called upon such a generator, it received its own offer price for any output produced. The formula for AP only calculated the probability-weighted value of capacity in times when load is being lost and the value of electricity is VoLL. The Pool paid this amount to every MW of capacity accepted as having been declared available a day in advance, and remaining available on the day.

A.1.7. Spain

The Spanish market does not use a VoLL parameter for its electricity price, however, it has imposed an electricity price cap of €180 per MWh in each settlement period. The market price for electricity is based on the marginal cost of production and so the €180 per MWh level has not yet been reached as the highest bidding unit is an OCGT¹⁴ at €120 per MWh. Any prices bid above marginal cost are viewed as exercising market power by the Spanish

¹⁴ Open Cycle Gas Turbine

regulator. In addition, for companies with CTC entitlements (based on having assets stranded as a result of liberalisation) when a company recovers more than €36 per MWh on average over the year, the excess income is deducted from outstanding CTC payments. This effectively works as a cap on prices, but as some generators do not receive CTC payments, there have been some years where average annual prices have gone above €36 per MWh. To compensate for the cap on prices, a capacity payment to generators has been implemented.

At the time of the liberalisation of the market in January 1998, the capacity payment was defined as being equal to €78/MWh. The amount collected from consumers is distributed among qualified available generators according to their share of the total entitlements. The payment has been *reduced* several times (first in January 2000, and then again in June 2001) and now stands at the equivalent of €48/MWh of total final demand, in spite of a substantial reduction in the reserve margin (which in December 2001 even led to some short-lived supply interruptions).

The calculation behind the level of this payment has never been made public. Its level seems to be related to the annuity costs of investing in a peaking plant (so that plant would be built even if it had low expectations of being dispatched, as befits reserve plant). It may be that reduction in the payment has been due to the fall in interest rates, which reduces the cost of financing and thus the annuity cost of peaking plant. However, some analysts consider that the government may have reduced the payment in order to be able to keep reducing tariffs in the face of increasing wholesale prices due to the tightening of the demand and supply balance.

A.1.8. Ireland

The Republic of Ireland is a very small electricity market and its size has meant introducing effective competition has been difficult. The electricity market operates with a single market price based on the marginal cost of energy plus a capacity payment. The capacity payment uses VoLL multiplied by the loss of load probability (LoLP) for that time period. For Ireland, the VoLL is set at €7,550 per MWh.

Statement of Additional Information

Issued 28 September 2004

The Commerce Commission has reviewed Orion's Second Assessment Threshold Compliance Statement dated 20 May 2004 and has requested additional information pursuant to section 57U(1)(b) of the Commerce Act 1986. This statement provides this additional information.

Orion's threshold compliance statement for the first assessment, dated 22 October 2003, stated Orion's notional revenue at the first reference date as \$128,913,600, and notional revenue at the first assessment date (6 September 2003) as \$129,035,200.

In Orion's second assessment, dated 20 May 2004, the table on page 3 incorrectly refers to the previous value of notional revenue on the first assessment date as being \$128,913,600, whereas it should have read \$129,035,200 (as above).

In the time between the preparation of the first and second assessments we reconsidered a number of minor components of delivery revenue and some other services, which we believed should be incorporated within the derivation of total base weighted revenue.

Accordingly, we restated the notional revenue at the first assessment date to be consistent with notional revenue at the second assessment date. These minor adjustments are detailed below:

Notional Revenue at 6 September 2003 (as detailed in Orion's first assessment)	\$129,035,200
Correction of Capacity Prices Orion publishes and applies capacity prices that are rounded to hundredths of a cent (per kWh). The worksheet in appendix 1 of Orion's first assessment correctly displays rounded capacity prices but the calculation of notional revenue is incorrectly based on un-rounded prices (taken from Orion's price derivation model). The transmission capacity prices of 0.23 c/kWh and 0.93c/kWh were incorrectly applied as 0.234 c/kWh and 0.9344c/kWh respectively. The reduction to Orion's notional revenue in correcting this error is given by: $(0.23c - 0.234c) / 100 \times 1,034,281,000 \text{ kWh} + (0.93c - 0.9344c) / 100 \times 825,719,000 \text{ kWh}$	(\$77,700)
Inclusion of Embedded Generation[#] While it is not clear that payment for provision of embedded generation is a <i>specified service</i> , Orion closely associates embedded generation payment prices with its prices for distribution services. In many cases, Orion's payments for embedded generation effectively offset charges for distribution services. On this basis, and to the extent that the payments do not represent an avoided transmission charge (ie the line portion of the payment only), the notional revenue has been corrected to include these payments. The reduction in Orion's notional revenue is $2,912 \text{ kW} \times 95\% \times \$60/\text{kW}/\text{year} + 1,577 \text{ kVAr} \times 31\% \times \$60/\text{kVAr}/\text{year}$	(\$195,300)
Inclusion of Irrigation Interruptibility Rebates[#] This distribution service optional rebate was newly introduced in October 2002 and the take-up rate has been slow; it was overlooked in preparation of Orion's first assessment, but is now included. The reduction in Orion's notional revenue is $1,563 \text{ kW} \times \$5.86/\text{kW}/\text{year}$	(\$9,200)
Inclusion of Builders' Temporary Supplies[#] Although there is competition for provision of builders' temporary supply boxes, Orion has identified that the portion of this service relating to administration and electricity supply is provided as a monopoly activity, and has corrected the notional revenue to include this service. The increase in Orion's notional revenue is $813 \text{ connections} \times 88.89 \text{ c}/\text{day} \times 365 \text{ days}/\text{year}$	\$263,800
Inclusion of Monthly Invoice Charge[#] In the thorough review of services to include in the threshold assessment, Orion identified that the \$20 monthly invoice charge had been overlooked in the first assessment. Although not a material amount, for completeness it has now been included in the calculation of notional revenue. The increase in Orion's notional revenue is $42 \text{ invoices}/\text{month} \times 12 \text{ months} \times \20	\$10,100
Calculation Rounding The revised calculation results in a difference when rounding to the nearest \$100.	(\$100)
gives Corrected Notional Revenue at 6 September 2003 (as detailed in Orion's second assessment)	\$129,026,800

Base quantities for all services added have been taken from the quantities for the year to 31 March 2003

Prices for the newly included items have not altered throughout the assessment periods. That is, they act equally on Orion's notional revenue calculation at the first reference date, the second reference date, the third reference date, the first assessment date, the second assessment date and the publication date. As a result, inclusion of the adjustments does not affect the magnitude of Orion's breach in the second assessment.