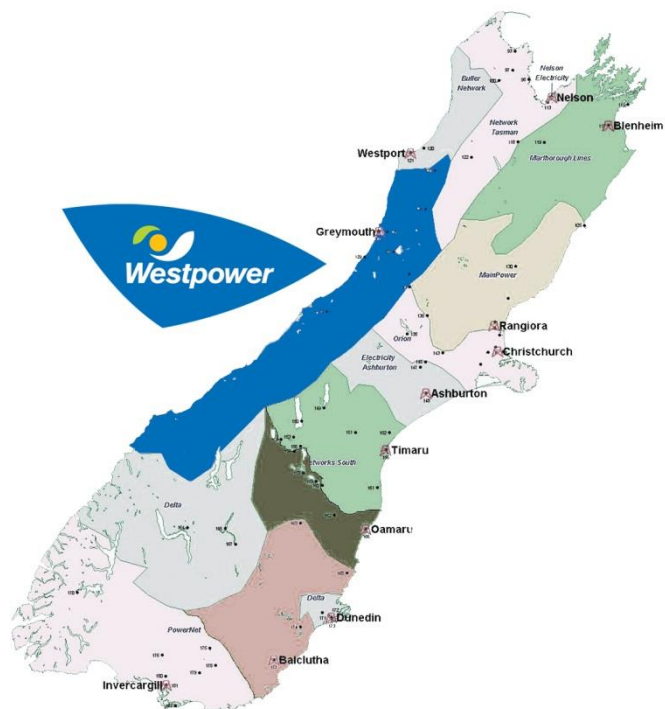




# Pricing Methodology



Effective 1 April 2016

## Contents

|                   |   |           |
|-------------------|---|-----------|
| <b>1</b>          | <b>INTRODUCTION</b>   | <b>4</b>  |
| <b>2</b>          | <b>2016 PRICING SUMMARY</b>                                   | <b>5</b>  |
| 2.1               | Overview of Methodology                                       | 5         |
| 2.2               | 2016 Pricing Changes  | 6         |
| <b>3</b>          | <b>PRICING CONSIDERATIONS AND OBJECTIVES</b>                  | <b>7</b>  |
| 3.1               | Network considerations  | 7         |
| 3.2               | Cost drivers  | 7         |
| 3.3               | Regulatory considerations                                     | 8         |
| 3.4               | Equitable considerations                                      | 8         |
| 3.5               | Consumer consultation   | 9         |
| 3.6               | Interaction with electricity retailers                        | 9         |
| 3.7               | Network extensions policy                                     | 9         |
| <b>4</b>          | <b>TARGET REVENUE</b>   | <b>11</b> |
| 4.1               | Transmission costs  | 11        |
| 4.2               | Distribution costs  | 12        |
| <b>5</b>          | <b>CONSUMER GROUPS</b>  | <b>14</b> |
| <b>6</b>          | <b>ALLOCATION OF COSTS</b>                                    | <b>15</b> |
| 6.1               | Allocators  | 15        |
| 6.2               | Alignment of allocated costs to revenue                       | 17        |
| <b>7</b>          | <b>TARIFF OPTIONS</b>   | <b>18</b> |
| 7.2               | Distributed Generation (DG)                                   | 22        |
| 7.3               | Non-Standard charges  | 22        |
| 7.4               | Changes to prices   | 23        |
| 7.5               | Revenue summary   | 23        |
| <b>8</b>          | <b>PRICING STRATEGY</b>                                       | <b>24</b> |
| <b>9</b>          | <b>ELECTRICITY AUTHORITY PRICING PRINCIPLES CONFORMANCE</b>   | <b>25</b> |
| <b>10</b>         | <b>COMMERCE COMMISSION INFORMATION DISCLOSURE CONFORMANCE</b> | <b>30</b> |
| <b>APPENDIX A</b> | <b>Westpower Pricing Schedule</b>                             | <b>32</b> |

## Revision History

| Version Number | Reviewed By | Review Date | Changes Made to Methodology |
|----------------|-------------|-------------|-----------------------------|
| 11             | R Griffiths | April 2015  | Nil                         |
| 12             | R Griffiths | April 2016  | Nil                         |

## Glossary

|                            |  |
|----------------------------|--|
| <b>AMD</b>                 | Anytime Maximum Demand                                       |
| <b>CMD</b>                 | Coincident Maximum Demand                                    |
| <b>CPI</b>                 | Consumer Price Index   |
| <b>Grid</b>                | Transpower's National Transmission System                    |
| <b>GXP</b>                 | Grid Exit Point  |
| <b>ICP</b>                 | Installation Control Points for each consumer                |
| <b>Kilowatt (kW)</b>       | Measurement of electricity demand at any time (volts x amps) |
| <b>Kilowatt hour (kWh)</b> | Measurement of electrical energy delivered each hour         |
| <b>RAB</b>                 | Regulatory Asset Base  |
| <b>RCPD</b>                | Regional Coincident Peak Demand                              |
| <b>TOU</b>                 | Time of Use (measurements every half hour)                   |

## 1 INTRODUCTION

This document describes the approach that has been developed by Westpower to set charges for electricity distribution services effective from 1 April 2016.

Westpower is one of fourteen distribution companies in the South Island. It owns and operates the electricity distribution network across 18,017 sq kms of the West Coast of the South Island. The network distributes 284GWh of electricity over 2,173 kms of lines and cables to supply 13,410 consumers.

The company is owned by the West Coast Electric Power Trust on behalf of consumers. Excess revenue is given back to consumers in the form of a discretionary discount on lines charges and dividends made to the Trust.

Comments and suggestions for improvement are welcome at any time, addressed to:

*The General Manager*

*Assets and Engineering Services*

*Westpower Limited*

*Greymouth.*

## 2 2016 PRICING SUMMARY

### 2.1 Overview of Methodology

On 1 April each year, Westpower sets charges that seek to recover costs associated with delivering electricity to consumers. 2016/17 target revenue is \$20.8m and includes the following costs:

- Transpower’s charges for use of the transmission system;
- Payments to distributed generators in relation to avoided Transpower charges;
- Operation and maintenance costs;
- Administration costs;
- Capital costs including depreciation and a return on investment; and
- Taxation.

These costs are allocated to consumer groups relative to each consumer groups’ use of the network:

- Transmission costs are allocated based on each consumer group’s share of transmission system’s coincident peak demand (CPD);
- Administration costs are allocated per connection; and
- All other distribution costs are allocated by their asset use, based on the regulatory value of the asset.

Target revenue is recovered through a mixture of fixed, consumption and peak demand charges:

- **Fixed Charges:** Residential consumers are charged a regulated 15 cents per day. Non Residential consumer fixed charges are based on assessed or actual capacity.
- **Peak Demand Charges:** Consumers that have advanced time of use (TOU) meters that measure half hourly usage are charged a peak demand charge based on the share of the transmission system RCPD or Anytime Maximum Demand (AMD)
- **Consumption Charges:** Consumers with non-TOU meters are charged a consumption charge (Kwh).

#### 2016 pricing methodology overview



## 2.2 2016 Pricing Changes

Westpower has used broadly the same pricing methodology for several years. The key changes in 2016 are:

- Distribution prices remain at last year's levels; and
- Transmission prices have increased to recover an overall 4% increase in costs.

While the methodology has not changed, each year revenues within each group move to take account of changes in forecast billed quantities and of changes in allocations of costs which have been updated between consumer groups.

The following table provides an indication of the total change in revenue (including transmission revenue) from the average consumer in common tariff categories.

### *Average revenue change in each nominated consumer group*

| Tariff Category                  | Average Annual consumption (kWh) | Average AMD | Average CPD | 2016/17 annual revenue | 2015/16 annual revenue | \$ Annual Change | % Annual Change |
|----------------------------------|----------------------------------|-------------|-------------|------------------------|------------------------|------------------|-----------------|
|                                  |                                  | (kW)        | (kW)        | (\$'000)               | (\$'000)               | (\$'000)         |                 |
| Category 1 Residential - 24 hour | 4,401                            | NA          | NA          | 5,353                  | 5,106                  | 247              | 4.8%            |
| Category 1 General - 24 hour     | 7,662                            | NA          | NA          | 1,916                  | 1,938                  | (22)             | -1.1%           |
| Category 2 - Medium Load         | 46,102                           | NA          | NA          | 2,702                  | 2,649                  | 53               | 2.0%            |
| Category 2 - Large Load          | NA                               | 2,673       | NA          | 821                    | 990                    | (169)            | -17.1%          |
| Category 3 - Medium Bulk         | NA                               | 16,587      | 9,498       | 3,288                  | 3,475                  | (187)            | -5.4%           |
| Category 4 - Large Bulk          | NA                               | 3,930       | 3,683       | 797                    | 821                    | (24)             | -2.9%           |
| Category 5 - Special Load        | NA                               | 515         | 146         | 351                    | 348                    | 3                | 0.8%            |

**Note 1:** The increase in Residential – 24 hour revenue is partly due to an increase in budgetary consumption from the previous year. Using identical consumption figures to last year, the overall effect of the transmission price increase is 2.2%.

**Note 2:** This table does not show all Westpower revenue across all possible tariffs, but merely demonstrates what an average customer on one of the standard tariffs (e.g. 24-hour) would be paying in terms of volume related charges.

### 3 PRICING CONSIDERATIONS AND OBJECTIVES

#### 3.1 Network considerations

The rugged and remote location of our network, located on the West Coast of the South Island, drives higher costs into our pricing structures:

- **Transmission.** Westpower has one of the highest transmission charges in NZ due to its remote location from the grid. It is almost twice the national average and constitutes 25% of Westpower's line charges.
- **Coastal Terrain.** Salt air corrosion on the West Coast is severe, so all the components of our network require additional protection, such as double dipped galvanising and marine grade stainless steel. These present higher costs than inland areas. Glass insulators are often used and these are more expensive than the traditional polymer insulators.
- **Remote, Rural and Rugged Terrain.** Remote, rural and rugged areas of the network account for 92% of overhead circuit and 40% of connections. Rugged hills, combined with high winds necessitate stronger structures than flat land so the strength and size of network components are determined by physical conditions rather than electrical load, with associated higher cost.
- **Long Narrow Coastal Strip of Land.** Westpower's network comprises one long line from North to South, with meshed networks occurring only within the townships. The distance from end to end is similar to Wellington to Auckland and this necessitates subtransmission lines (66 kV and 33 kV) beyond what would be expected for the size of the electrical load. Subtransmission lines are more expensive than distribution lines and require very expensive zone substations to reduce voltage. Westpower has 338 kilometres of subtransmission line (15% of total lines) and 19 zone substations valued at about \$20m.

The West Coast has mild summers and winters and much of the residential hot water is heated by wood/coal fires. As a result, residential demand is considerably lower than in other centres throughout NZ. Westpower's average residential annual consumption is 6,000 kWh compared with the East Coast of the South Island, where the average load is 9,000 kWh.

While residential consumers account for 80% of connections, they only account for 23% of consumption. The remaining load is spread across some 2,700 non-residential connections, with the 25 largest connections accounting for 46% of consumption.

#### 3.2 Cost drivers

Westpower seeks to set prices to recover the fair and efficient costs associated with operating the business. 83% of these costs are related to operations, maintenance or investment in network assets, as well as Transpower charges. Remaining costs are associated with general management. The key cost drivers relevant to setting prices are therefore network related. Network cost drivers include:

- **Demand:** The common cost driver for all line companies is investment in network capacity to meet demand. Generally speaking, the higher the load factor, the more efficient the use of the network capacity and the more efficient the recovery of the cost. At 64%, Westpower's load factor is slightly above industry average, despite heavy use of load control and good pricing signals to move load from peak periods to off-peak periods. Demand also contributes to Transpower charges.
- **Circuit length:** As discussed above, Westpower's network comprises one long line from North to South with meshed networks in key townships. The cost to serve rural connections in particular, drives significant circuit length related costs into our business.

- **Number of connections:** New connections drive asset-related and ongoing operations and maintenance costs. Westpower's network extensions policy (discussed below) requires consumers to pay for connection related asset costs upfront, subject to certain contributions from Westpower. However, each new connection also creates operating and maintenance costs, including network operations and planning, fault restoration, maintenance and general administration costs. New connections therefore increase operating costs over time, which must be reflected in prices.
- **Consumer requests for dedicated assets or services:** The provision of street-lighting is a service category that has specific assets identifiable to a dedicated consumer group. KiwiRail also have dedicated assets associated with its connections to the national grid at Otira.

### 3.3 Regulatory considerations

Electricity distribution businesses are considered to be natural monopolies, as it is not efficient to replicate the network to provide competition. Recognising this, distribution businesses are regulated by the Commerce Commission (Commission) under Part 4 of the Commerce Act. These regulations ensure that distribution services are delivered at prices that are fair and reasonable and at an acceptable quality.

Westpower is currently exempt from direct price and quality regulation under the Commerce Act due to it being owned by its consumers. However, the Commission maintains oversight by requiring Westpower to disclose information about its network business under the Electricity Distribution Information Disclosure determination 2012, consolidated in 2015 (EDIDD). In particular, clause 2.4.1 of the ID determination requires Westpower to publicly disclose its pricing methodology for determining line charges.

The pricing methodology must also describe the extent to which pricing aligns with a set of distribution Pricing Principles determined by the Electricity Authority. These principles provide guidance for efficient network pricing and other market considerations. The Electricity Authority has also provided guidelines on the content of pricing methodologies.

Section 9 and 10 set out our compliance with these requirements.

Other relevant pricing regulations include:

- **The Electricity (Low Fixed Charges Tariff Options for Residential Consumers) Regulations 2004 (LFC Regulations):** These require Westpower to offer a tariff option to low use residential consumers (defined as using less than 8,000 kWh per annum) with a fixed tariff not exceeding 15 cents per day.
- **Part 6 of the Electricity Industry Participation Code:** Any charges applying to distributed generation (DG) connections must not exceed the incremental costs of connecting this DG to the network, including any avoided costs.

### 3.4 Equitable considerations

Westpower strives to treat all consumers equitably when setting prices. Costs are therefore allocated to consumer groups based on usage of the network. It is also recognised that all consumers benefit from the utilisation of certain shared assets and costs, so prices are averaged over large groups of consumers with similar usage patterns.

One exception is made for rural regions, where the cost to supply these consumers is considerably higher than in urban areas. Despite these costs, Westpower has decided not to distinguish between urban and rural consumers on our network. This recognises the threat of regulation under the Electricity Industry Act 2010, which could be triggered where the change in rural prices significantly exceeds that experienced by urban consumers.



### **3.5 Consumer consultation**

A customer survey was undertaken in December 2014 by Utility Consultants Limited. This was the 6<sup>th</sup> survey performed for Westpower by this company over the last 10 years.

This customer survey represented a continuation of the regular surveys that Westpower uses to remain informed of customer preferences for a range of matters including the former statutory requirement to consult customers on their preference for price and supply reliability.

#### **Market segments sampled**

The segments sampled include the 25 largest customers, along with a random selection of 491 mass market customers pro-rated over the Reefton, Kumara, Hokitika, Greymouth and Dobson GXP areas.

#### **Survey response rate**

Response rates of 36% and 34% were achieved for the large customers and the mass market respectively.

#### **Key findings**

Key findings of the survey in terms of pricing and quality were:

- Confirmation of previously obtained survey results that continuity and restoration are most important.
- A view that Westpower are very good at continuity and restoration.
- A strong preference for paying about the same to receive about the same reliability and a slight preference for sharing efficiency gains as improved reliability rather than as lower prices.

In view of the foregoing, Westpower's current Asset Management Policy of maintaining current levels of service, while capturing any efficiency gains that become available, has been confirmed. Following a careful review by the Board of Directors, Westpower will not be significantly increasing or decreasing levels of investment in the network.

### **3.6 Interaction with electricity retailers**

Westpower notifies all electricity retailers trading on the network sixty days in advance of new prices taking effect.

All retailers using the network repackage Westpower's prices. Accordingly, Westpower publically discloses our pricing in such a manner that delivery costs can be easily calculated from the retailer's electricity invoices to consumers.

### **3.7 Network extensions policy**

In addition to network prices, Westpower's network extension policy requires most costs relating to the extension of the network to be paid for by the consumer, with any assets vested in Westpower.

Westpower will, however, provide a suitable transformer up to a maximum capacity of 200 kVA (where required) at no cost to the consumer. The provision of a transformer of larger capacity will be considered on a case-by-case basis.

Where the network extension results in additional benefits to our network (for instance in terms of network security), we may choose, at our sole discretion, to fund a portion of the extension cost.

Westpower shall ensure that new consumers wishing to connect to network line extensions, previously funded by original consumers, will equitably compensate the original users for the shared line component, as a pre-requisite for supply.

Any capital contributions or vested assets made by new consumers are not included in the calculation of network prices.

Further information on our network extension policy can be found on our website at:

<http://www.westpower.co.nz/sites/default/files/993S008.pdf>

## 4 TARGET REVENUE

Westpower has forecast the following costs for 2016/17, which we will seek to recover through prices. Target revenue has increased only 0.5% in total since 2015/16, resulting from a 4% increase in transmission charges and a 0.6% decrease in distribution costs.

### 2016/17 Target Revenue

|                              | 2016/17<br>(\$000) | 2015/16<br>(\$000) | Change (%)   |
|------------------------------|--------------------|--------------------|--------------|
| <b>Transmission Costs</b>    |                    |                    |              |
| Transmission Charges         | 2,114              | 2,164              | -2.3%        |
| Avoided Transmission Charges | 2,806              | 2,544              | 10.3%        |
| Otira Charges                | 194                | 204                | -4.8%        |
| <b>Transmission Subtotal</b> | <b>5,114</b>       | <b>4,912</b>       | <b>4.1%</b>  |
|                              |                    |                    |              |
| <b>Distribution Costs</b>    |                    |                    |              |
| Administration               | 3,536              | 3,417              | 3.5%         |
| Operations and Maintenance   | 5,100              | 5,709              | -10.7%       |
| Depreciation                 | 4,003              | 3,901              | 2.6%         |
| Return on Capital            | 2,529              | 2,292              | 10.4%        |
| Taxation                     | 539                | 486                | 10.9%        |
| <b>Distribution Subtotal</b> | <b>15,707</b>      | <b>15,805</b>      | <b>-0.6%</b> |
|                              |                    |                    |              |
| <b>Total Target Revenue</b>  | <b>20,821</b>      | <b>20,717</b>      | <b>0.5%</b>  |

### 4.1 Transmission costs

The most significant change has been in the avoided transmission charges in the transmission component. This is driven by the performance of the embedded generators in terms of their generation at the time of the Upper South Island Regional Peak Demands.

While there was an increase in transmission *prices* this year, the transmission *charge* decreased significantly because of quantity changes as discussed below.

#### 4.1.1 Transmission charges (fixed costs)

Transpower costs include interconnection, connection and new investment agreement charges for use of core grid and GXP assets, respectively.

Transpower's 2016/17 Interconnection Charge rate increased from \$110.35 per kilowatt to \$114.64 per kilowatt. However, while these particular charges have increased, Westpower's overall transmission charges have decreased because our transmission system coincident peak demand has decreased from 15,604 kW to 14,710 kW.

#### 4.1.2 Avoided Transmission Costs

Avoided transmission costs are payments made to distributed generators connected to the Westpower network. These generators provide electricity to consumers at times of peak demand, thereby reducing transmission system demand and Transpower charges payable by Westpower. Without distributed generation, Westpower would otherwise pay this amount to Transpower; hence the term "avoided cost".

These costs are highly dependent on the performance of generators each year in supplying the demand at the time of the Upper South Island Peak demand, and may vary significantly depending upon generation capacity available or associated hydrological conditions.

Embedded generators generated a higher proportion of the peak demand during the 2015/16 year and this was partly due to the new 7.6 MW Amethyst Hydro Station being online during a winter peak demand period.

#### 4.1.3 Otira

Otira charges are paid directly to Transpower in relation to grid connection assets at Otira. They are separated here to allow allocation of these costs to KiwiRail, the sole user of the Otira assets.

## 4.2 Distribution costs

Operations and maintenance expenditure is driven by a range of factors including increased compliance costs. An example, Westpower is now required to submit detailed Corridor Access Requests (CARs) for any work that is to be carried out in a road corridor.

This year's AMP expenditure is focused on a proactive reliability centered maintenance approach, where an effort is being made to collect accurate condition assessment data that can be used to support a targeted maintenance regime. While there was a short-term increase in maintenance expenditure as previously hidden deep defects are identified, for example, a need to replace an increased number of defective crossarms, this year's maintenance cost will be reduced by avoiding unnecessary reactive expenditure.

In addition, Westpower is working toward gaining ISO 55000 accreditation for its asset management systems, and this required an increased level of upfront standards development to meet the required assessment level. From a long-term perspective, however, this will provide assurance that Westpower is spending at an optimum level on its assets.

Westpower's capital expenditure is relatively low when compared to other similar sized electricity distribution businesses, following an extensive period of renewal between 2003 and 2012, when many of the ageing assets were replaced as they came to the end of their economic lives. This makes sense when it is considered that most of these assets were originally built around the same time.

The legacy of this investment is that the network is relatively new and its overall condition is very good. Moreover, long run marginal maintenance costs have been reduced, notwithstanding the short term effects from a more proactive maintenance approach discussed above.

Westpower uses distribution automation extensively throughout its network to reduce fault restoration times and costs, and deploys innovative technology solutions to overcome short-term network constraints, which may result in voltage regulation issues, wherever this is economically attractive. Examples of these solutions include automatic switched capacitor banks and STATCOMs to provide voltage support in preference to capital intensive conductor upgrade programs.

Compliance costs continue to represent a significant proportion of Westpower's fixed annual costs. This is exacerbated when changes to reporting requirements are introduced, requiring additional resource to come up to speed, so stability in this area is always welcomed.

Notwithstanding the above, Westpower's operations and maintenance costs are at the higher end of the spectrum, but this is due to the geographical spread of our assets, the relatively low customer density on the network and the difficult environmental conditions that we often have to cope with the terms of network performance.

#### *4.2.1 Administration*

These costs include general management and overheads associated with operating the distribution business. They have increased mainly due to increases in salaries and wages.

#### *4.2.2 Operations and Maintenance*

These costs are associated with operations and maintenance of network assets. They have decreased this year due to a number of factors, such as:

- Productivity improvements in the condition assessment program;
- Unexpected weather related contingency events that are normally included in the budgets have been excluded this year on the understanding the Board would approve such expenditure, post any event unfolding, rather than providing a contingency for these events in the budgets; and
- A number of one-off events included last year are not required this year.

#### *4.2.3 Depreciation*

The return of our capital investment in the network is based on straight line depreciation of our regulated asset base (RAB).

#### *4.2.4 Return on capital*

The return on capital is based on a 2.25% target return on investment (post-tax and net of revaluations and other distribution income) on RAB.

#### *4.2.5 Taxation*

A forecast tax expense associated with the network business. Tax is incurred in proportion to the profit the business earns.

## 5 CONSUMER GROUPS

Consumers are allocated to groups on the basis of their expected load pattern and use of dedicated assets. Non-standard consumer groups are those where prices apply to less than 4 consumers.

### Consumer groups

| Category                           | Standard     | Description                                | Rationale   | ICPs   | GWH |
|------------------------------------|--------------|--|---|--------|-----|
| <b>Category 1</b>                  | Standard     | Consumers with load less than 15 kVA       | All residential and general consumers fall into this category, because their consumption quantities are similar. The two are distinguished because each place different demands on the network and hence have different fixed charges, to recover demand related costs.   | 12,420 | 80  |
| <b>Category 2<br/>Medium Loads</b> | Standard     | Greater than 15 kVA and less than 200 kVA  | Medium size businesses fall into this category as they have a much higher consumption than Category 1 consumers. They do not necessarily place a correspondingly high demand on the network when the network is operating at its peak capacity, for example, at 6pm on a weekday.<br><br>That is not to say there is no demand cost associated with this Category and the demand costs are recovered by a fixed annual amount charged on the nominal demand placed on the network. The consumption tariffs are lower than Category 1 due to the much higher usage this Category reflects. | 814    | 53  |
| <b>Category 2<br/>Large Loads</b>  | Standard     | Greater than 100 kVA and less than 200 kVA | Large businesses with large electrical loads are usually sited not far from zone substations and use less of the network as a result. Their usage is monitored by meters measuring consumption every half hour so the actual demand placed on the network at any given time is easily measured. Specific charges can be applied to demand in consultation with the consumer.  | 17     | 13  |
| <b>Category 3<br/>Bulk</b>         | Standard     | Greater than 200 kVA capacity              | Tariffs are based on demand on the network and coincident demand at the source Grid Exit Point.   | 15     | 73  |
| <b>Category 4<br/>Large Bulk</b>   | Non-Standard | Greater than 2500 kVA capacity             | Tariffs are based on demand on the network and coincident demand at the source Grid Exit Point.   | 3      | 63  |
| <b>Category 5<br/>Otira</b>        | Non-Standard | Supply to the Otira Tunnel                 | Otira constitutes an isolated GXP that is not interconnected with the rest of Westpower's network, and is dedicated almost solely to the supply of KiwiRail infrastructure. This area has been ring-fenced in terms of costs (both fixed and volume related) that can rightly be attributed to the major consumer.  | 1      | 1.5 |
| <b>Street Lighting</b>             | Standard     | Public Utility Lighting                    | Westpower supplies a distribution network for public lighting and recovers costs as part of its community sponsorship through community ownership.  | 85     | 1.3 |

## 6 ALLOCATION OF COSTS

### 6.1 Allocators

The costs represented in Section 4 are considered individually and allocated to consumer group categories using allocators that are consistent with the cost drivers set out in Section 2. Within each consumer category, methods are applied that are economically efficient, equitable and practical. These allocators and allocations of cost are discussed below.

Distribution and transmission costs are allocated as follows:

#### **Cost Allocators**

| Cost item                  | Allocator             | Rationale   |
|----------------------------|-----------------------|---|
| Administration Costs       | Number of connections | Recognises that these costs are generally shared by all consumers   |
| Operations and Maintenance | Asset Allocator       | Maintenance costs are generally incurred in proportion to the value of the asset.   |
| Depreciation               |                       | Depreciation is the return of the capital investment in the asset base.   |
| Return on Capital          |                       | The return on capital is allocated according to asset use, as determined by the asset allocation.   |
| Taxation                   |                       | Tax is allocated on the same basis as the return on capital.  |
| Transmission               | RCPD                  | Transmission costs are allocated by the demand placed on the transmission system as measured by each consumer group category's share of RCPD. |

#### 6.1.1 Number of connections

The measurement for connections is the number of Installation Control Points (ICPs) in each consumer group.

#### **Connections Allocator**

|                     | Lighting | Residential | General | Medium | Large | Bulk | Large Bulk | Otira | Total  |
|---------------------|----------|-------------|---------|--------|-------|------|------------|-------|--------|
| <b>No Consumers</b> | 85       | 10,554      | 1,866   | 814    | 17    | 15   | 3          | 1     | 13,355 |

#### 6.1.2 Westpower Anytime Maximum Demand (AMD)

Measurements of the maximum demand throughout the year are made at all connections with the exception of Category 1 connections. Residential demand is not measured directly at the consumer's meter, but is profiled off a typical residential installation. The total Westpower maximum demand is 41,280 kW and is allocated to tariff categories as follows:

#### **AMD Allocator**

| Demand (kW) | Lighting | Residential | General | Medium | Large | Bulk   | Large Bulk | Otira | Total         |
|-------------|----------|-------------|---------|--------|-------|--------|------------|-------|---------------|
| <b>AMD</b>  | 119      | 8,935       | 4,105   | 12,638 | 1,533 | 16,602 | 3,060      | 559   | <b>47,550</b> |

### 6.1.3 Transpower Regional Coincident Peak Demand (RCPD)

Upper South Island RCPD was 986 MW from May to September 2015. Westpower's share of this was 14.7 MW. This is lower than the previous year, hence the decrease in transmission charges this year. This is allocated to consumer group categories as follows:

#### RCPD Allocator

| Demand (kW) | Lighting | Residential | General | Medium | Large | Bulk  | Large Bulk | Otira | Total         |
|-------------|----------|-------------|---------|--------|-------|-------|------------|-------|---------------|
| <b>RCPD</b> | 30       | 3,900       | 1,093   | 2,860  | 780   | 4,353 | 1,517      | 177   | <b>14,710</b> |

### 6.1.4 Asset allocator

Assets are allocated based on Westpower's assessment of the use of different assets by each consumer group category. Where assets are shared by most categories Westpower will allocate assets based on AMD.

The asset allocation is based on the asset value determined under the Commerce Commission input methodologies for determining RAB. The current asset valuation is \$112.42M as at 31 March 2015.

The result of asset allocation is:

#### Allocation of RAB values to consumer groups

| Distribution Allocation | Lighting<br>\$000 | Residential<br>\$000 | General<br>\$000 | Medium<br>\$000 | Large<br>\$000 | Bulk<br>\$000 | Large Bulk<br>\$000 | Otira<br>\$000 | Total<br>\$000 |
|-------------------------|-------------------|----------------------|------------------|-----------------|----------------|---------------|---------------------|----------------|----------------|
| <b>Subtransmission</b>  | 38                | 2,843                | 1,306            | 4,021           | 488            | 5,282         | 974                 | 0              | 14,952         |
| <b>Substations</b>      | 54                | 4,061                | 1,866            | 5,745           | 697            | 7,546         | 1,391               | 0              | 21,360         |
| <b>Distribution</b>     | 179               | 13,488               | 6,197            | 19,079          | 2,315          | 3,759         | 231                 | 844            | 46,092         |
| <b>Equipment</b>        | 83                | 6,231                | 2,863            | 8,813           | 1,069          | 0             | 0                   | 390            | 19,449         |
| <b>Low Voltage</b>      | 0                 | 3,038                | 1,396            | 4,298           | 521            | 0             | 0                   | 190            | 9,443          |
| <b>Street Lighting</b>  | 787               | 0                    | 0                | 0               | 0              | 0             | 0                   | 0              | 787            |
| <b>Land</b>             | 1                 | 64                   | 29               | 91              | 11             | 119           | 22                  | 0              | 337            |
| <b>Total</b>            | 1,141             | 29,725               | 13,658           | 42,047          | 5,101          | 16,707        | 2,617               | 1,424          | <b>112,420</b> |



## 6.2 Alignment of allocated costs to revenue

Westpower attempts to be accurate in aligning costs with revenue, however this cannot be exactly achieved in any year due to various practical constraints. In particular, applying cost allocations to prices explicitly would result in year on year price volatility, arising from changes to allocators and costs. We therefore attempt to smooth tariff changes to align to costs over time.

Westpower takes this approach as it provides pricing stability and allows consumers to make decisions on long term options with some confidence. However, where usage patterns or revenues diverge considerably from cost allocations, Westpower will consider individual changes to a particular tariff.

In practice, any difference in cost allocations is accounted for by adjusting the return on capital to balance the cost/revenue equation. These adjustments are neutral to revenue, but effectively change the return on capital for each consumer group, albeit by very small amounts. The data, for example, shows the return on capital for the general group is 2.24% against the average return of 2.25% over all assets. This partly reflects the constraints of the LFC regulations, under which Westpower cannot fully recover costs associated with supplying residential consumers.

The following table compares revenue for each consumer group category with cost allocations. The out of balance line highlights the extent of (under)/over recovery of implied cost allocations.

### Cost Allocation Revenue Requirements

|                                  | Lighting | Residential | General | Medium | Large | Bulk  | Large Bulk | Otira | Total         |
|----------------------------------|----------|-------------|---------|--------|-------|-------|------------|-------|---------------|
|                                  | \$000    | \$000       | \$000   | \$000  | \$000 | \$000 | \$000      | \$000 | \$000         |
| <b>Transmission Cost</b>         | 10       | 1,320       | 370     | 968    | 264   | 1,474 | 514        | 194   | 5,114         |
| <b>Target Revenue</b>            | 9        | 1,321       | 370     | 968    | 263   | 1,475 | 514        | 194   | <b>5,114</b>  |
| <b>Out of Balance</b>            | (1)      | 1           | (0)     | (0)    | (1)   | 1     | 0          | 0     | 0             |
| <b>Administration</b>            | 23       | 2,794       | 494     | 216    | 5     | 4     | 1          | 0     | 3,536         |
| <b>Operation and Maintenance</b> | 52       | 1,348       | 620     | 1,907  | 231   | 758   | 119        | 65    | 5,100         |
| <b>Depreciation</b>              | 41       | 1,058       | 486     | 1,497  | 182   | 595   | 93         | 51    | 4,003         |
| <b>Return on Capital</b>         | 26       | 669         | 307     | 946    | 115   | 376   | 59         | 32    | 2,529         |
| <b>Taxation</b>                  | 5        | 143         | 65      | 202    | 24    | 80    | 13         | 7     | 539           |
| <b>Distribution Cost</b>         | 146      | 6,013       | 1,973   | 4,768  | 557   | 1,813 | 284        | 154   | 15,707        |
| <b>Target Revenue</b>            | 146      | 6,012       | 1,971   | 4,767  | 557   | 1,813 | 284        | 157   | <b>15,707</b> |
| <b>Out of Balance</b>            | (0)      | (1)         | (1)     | (0)    | 1     | 0     | (0)        | 2     | 0             |
| <b>Total Target Revenue</b>      | 155      | 7,333       | 2,341   | 5,735  | 821   | 3,288 | 797        | 351   | <b>20,821</b> |
| <b>Return on Asset Value</b>     | 2.11%    | 2.25%       | 2.24%   | 2.25%  | 2.25% | 2.26% | 2.24%      | 2.43% | 2.25%         |

## 7 TARIFF OPTIONS

Westpower adopts the following types of charges:

- **Fixed charges:** All connections are charged a fixed charge per connection or per unit of capacity (kW or kVA);
- **Consumption charges:** Kilowatt hour (kWh) volume charges are applied to all Category 1 and Category 2 medium loads; and
- **Peak demand charges:** Kilowatt (kW) demand charges, as measured by TOU meters or as assessed by Westpower, are applied to Category 2 large loads and Categories 3, 4 and 5.

### 7.1.1 Fixed Charges

Fixed charges are applied to all connections in order to recover a minimum amount of cost, regardless of usage. This is particularly important for low use connections (ie electric fences and holiday homes), where a 100% volume related charge would not recover a reasonable proportion of costs.

Fixed charges broadly increase relative to connection capacity-size across the consumer groups:

- **Category 1 Residential:** The LFC regulations cap the fixed daily charge at 15 cents per day for low use residential consumers. Westpower has chosen to apply this regulated charge to all Category 1 residential consumers in order to avoid price segregation.
- **Streetlights/Category 1 and Category 2 Medium Loads:** The daily fixed charge is set commensurate with the higher assessed capacity requirements of these connections.
- **Category 2 Large Loads and Categories 3, 4 and 5:** Fixed charges are applied per unit of assessed capacity for the coming year (kW or kVA).

Fixed charges are presented in the tables overleaf.

### 7.1.2 Volume Related Charges

Volume related charges are levied on Category 1 and 2 connections as well as on streetlight connections, and include a distribution and transmission component. This recovers the remainder of target revenue not already recovered through fixed charges. Volume charges encourage efficient use of network capacity as the more a consumer uses – the more they pay.

The volume charge is calculated using forecast kWh data for the forthcoming pricing year, but is levied upon actual consumption, measured by meters directly, or derived from the electricity market using default usage profiles provided by electricity retailers.

Overall efficiency is further enhanced if charging structures contain pricing signals designed to incentivise efficient consumption patterns. Westpower has adopted the following volume based charges to signal the peak time periods which drive capacity investments:

- **Load Control Tariffs.** Controlling heating of hot water at peak loading times goes unnoticed by consumers due to the storage capacity of hot water cylinders but greatly decreases the demand on the network. Westpower passes on these savings to consumers who have hot water control by separately metering the hot water supply and charging a lower tariff for the reduced service.
- **Day/Night (Economy) Tariffs.** Night-time network loads are light, so Westpower encourages consumers to transfer load (such as dish and clothes washing and drying) to the night period and provides a low tariff for this service. Further encouragement

for this night service is provided by slightly higher day-time tariffs when this option is chosen. However, the customer may choose when to use the energy.

- **24 hour Supply.** If load transfer tariffs do not suit consumers, they have the choice of a 24 hour tariff. This tariff is slightly higher than average to cover network costs when usage occurs due the peak load time.
- **Night Only Tariffs.** Night only tariffs are provided for loads that can only be supplied during the night-time period and cannot be overridden by the customer for use during the daytime period. This differs from the Economy Night tariff in that the customer is not able to choose when the energy will be used. The rate is higher than the Economy Night tariff because none of the other volume related components are recovered in a related daytime rate.

A balanced marketing approach must be taken when designing the above tariffs to produce pricing signals that are attractive to consumers and which, at the same time, maintain revenue. The percentage variation between the tariffs presented is derived from Westpower's experience operating in this market.

For Category 2 consumers, a volume charge recovers costs incurred on a connection basis, including costs for maintaining distribution substations and low voltage reticulation.

Similarly, fixed costs are determined to a large extent by the capacity of equipment required to supply the consumer, and so the distribution charge is based on the assessed capacity (or Notional Units of Demand) required for the coming year and remains fixed throughout the year.

Fixed and volume tariffs are presented below, along with revenue and chargeable quantities.

### Category 1 – Loads less than 15 kVA

|                       |            | Chargeable Quantity | Distribution Price | Transmission Price | Distribution Revenue | Transmission Revenue | Total Revenue |
|-----------------------|------------|---------------------|--------------------|--------------------|----------------------|----------------------|---------------|
| <b>Residential</b>    |            | kWh                 | c/kWh              | c/kWh              | \$000                | \$000                | \$000         |
| <b>Fixed Charges</b>  | per year   | 10,554              | 15.00              |                    | 578                  |                      | 578           |
| <b>Volume Charges</b> | 24hr       | 38,816,089          | 10.077             | 2.469              | 3,911                | 958                  | 4,870         |
|                       | Controlled | 13,428,461          | 5.997              | 1.470              | 805                  | 197                  | 1,003         |
|                       | Day        | 5,733,247           | 11.755             | 2.881              | 674                  | 165                  | 839           |
|                       | Night      | 3,804,204           | 0.551              |                    | 21                   |                      | 21            |
|                       | Night only | 778,651             | 2.855              |                    | 22                   |                      | 22            |
| <b>Total Revenue</b>  |            | 62,560,652          |                    |                    | 6,012                | 1,321                | <b>7,333</b>  |
| <b>General</b>        |            | kWh                 | c/kWh              | c/kWh              | \$000                | \$000                | \$000         |
| <b>Fixed Charges</b>  | per year   | 1,866               | 70.92              |                    | 483                  |                      | 483           |
| <b>Volume Charges</b> | 24hr       | 12,174,340          | 9.891              | 2.469              | 1,204                | 301                  | 1,505         |
|                       | Controlled | 827,466             | 5.887              | 1.470              | 49                   | 12                   | 61            |
|                       | Day        | 1,986,771           | 11.538             | 2.881              | 229                  | 57                   | 286           |
|                       | Night      | 1,029,355           | 0.541              |                    | 6                    |                      | 6             |
|                       | Night only | 24,549              | 2.802              |                    | 1                    |                      | 1             |
| <b>Total Revenue</b>  |            | 16,042,481          |                    |                    | 1,971                | 370                  | <b>2,341</b>  |

## Category 2 – Loads up to 100 kVA

|                       |            | Chargeable Quantity | Distribution Price | Transmission Price | Distribution Revenue | Transmission Revenue | Total Revenue |
|-----------------------|------------|---------------------|--------------------|--------------------|----------------------|----------------------|---------------|
| <b>Medium Loads</b>   |            | kWh                 | c/kWh              | c/kWh              | \$000                | \$000                | \$000         |
| <b>Fixed Charges</b>  | per year   | 33,540              | 8.00               |                    | 979                  |                      | 979           |
| <b>Volume Charges</b> | 24hr       | 25,125,569          | 8.505              | 2.185              | 2,137                | 549                  | 2,686         |
|                       | Controlled | 2,803,257           | 2.852              | 0.733              | 80                   | 21                   | 100           |
|                       | Day        | 16,780,186          | 9.237              | 2.373              | 1,550                | 398                  | 1,948         |
|                       | Night      | 8,515,172           | 0.241              |                    | 21                   |                      | 21            |
|                       | Night only | 59,319              | 1.073              |                    | 1                    |                      | 1             |
| <b>Total Revenue</b>  |            | 53,283,503          |                    |                    | 4,767                | 968                  | <b>5,735</b>  |

## Street Lights

|                       |  | Chargeable Quantity | Distribution Price | Transmission Price | Distribution Revenue | Transmission Revenue | Total Revenue |
|-----------------------|--|---------------------|--------------------|--------------------|----------------------|----------------------|---------------|
|                       |  | kWh                 | c/kWh              | c/kWh              | \$000                | \$000                | \$000         |
| <b>Fixed Charges</b>  |  | 3,205               | 6.10               |                    | 71                   |                      | 71            |
| <b>Volume Charges</b> |  | 1,357,800           | 5.500              | 0.640              | 75                   | 9                    | 83            |
| <b>Total Revenue</b>  |  |                     |                    |                    | 146                  | 9                    | <b>155</b>    |

### 7.1.3 Peak Charges

A peak demand charge is levied on Categories 2, Large Loads and Categories 3, 4 and 5. They include a distribution and transmission component. The distribution component is recovered based on each connection's AMD. Transmission charges for Category 2 Large Loads are also recovered based on AMD. For the remaining categories, transmission charges are recovered based on the Coincident Peak Demand (CPD), aligning to how transmission charges are calculated.

Transpower's interconnection charges (the major component of Transpower charges) are calculated based on the 12 highest RCPD on the transmission system at all GXP connections in the Upper South Island. Consumers in Categories 3, 4 and 5 all have half-hour TOU metering, so it is possible to calculate the exact contribution each consumer makes to the Transpower Charge. That is, each consumer's CPD is known at the time of the twelve highest RCPD peaks and the contribution towards Westpower's costs can be allocated.

Effectively this means that the same rates will be passed through without markup to bulk consumers and furthermore, any consumers that are able to avoid the RCPD periods will, in future years, reap the benefits of avoiding the related Interconnection Charges that are passed through in Westpower's tariff as a CPD Charge (Tariff codes C3CP, C4CP and C5CP).

The principles applied in allocating transmission costs include:

- Otira is ring-fenced as far as transmission charges are concerned and KiwiRail is expected to provide full revenue recovery for this GXP, as they are the predominant consumer.
- The Interconnection Charge, including the methodology for applying it, is passed directly though to Category 3, 4 and 5 consumers in the CPD charge based upon their demand at the time of the RCPD.
- The Interconnection Charge is passed directly though to Category 2, Large Loads, consumers in the Peak Charge based upon their anytime demand.

## Fixed and Peak Demand Charges – Category 2 Large Loads, and Categories 3, 4 and 5

### Category 2

|                       | Chargeable Quantity | Distribution Price | Transmission Price | Distribution Revenue | Transmission Revenue | Total Revenue |
|-----------------------|---------------------|--------------------|--------------------|----------------------|----------------------|---------------|
| <b>Large Loads</b>    | kW                  | c/kWh              | c/kWh              | \$000                | \$000                | \$000         |
| <b>Fixed Charges</b>  | 2,637               | 8.00               |                    | 77                   |                      | 77            |
| <b>Volume Charges</b> | 2,297               | 57.30              | 31.41              | 480                  | 263                  | 744           |
| <b>Total Revenue</b>  |                     |                    |                    | 557                  | 263                  | <b>821</b>    |

### Category 3

|                       | Chargeable Quantity | Distribution Price | Transmission Price | Distribution Revenue | Transmission Revenue | Total Revenue |
|-----------------------|---------------------|--------------------|--------------------|----------------------|----------------------|---------------|
| <b>Bulk</b>           | kW                  |                    |                    | \$000                | \$000                | \$000         |
| <b>Fixed Charges</b>  | 16,587              | 13.22              | 6.38               | 800                  | 386                  | 1,186         |
| <b>Volume Charges</b> | 20,989              | 13.22              |                    | 1,013                |                      | 1,013         |
|                       | 9,498               |                    | 31.41              |                      | 1,089                | 1,089         |
| <b>Total Revenue</b>  |                     |                    |                    | 1,813                | 1,475                | <b>3,288</b>  |

### Category 4

|                       | Chargeable Quantity | Distribution Price | Transmission Price | Distribution Revenue | Transmission Revenue | Total Revenue |
|-----------------------|---------------------|--------------------|--------------------|----------------------|----------------------|---------------|
| <b>Large Bulk</b>     | kW                  |                    |                    | \$000                | \$000                | \$000         |
| <b>Fixed Charges</b>  | 3,930               | 9.92               | 6.38               | 142                  | 91                   | 234           |
| <b>Volume Charges</b> | 3,909               | 9.92               |                    | 142                  |                      | 142           |
|                       | 3,683               |                    | 31.41              |                      | 422                  | 422           |
| <b>Total Revenue</b>  |                     |                    |                    | 284                  | 514                  | <b>797</b>    |

### Category 5

|                       | Chargeable Quantity | Distribution Price | Transmission Price | Distribution Revenue | Transmission Revenue | Total Revenue |
|-----------------------|---------------------|--------------------|--------------------|----------------------|----------------------|---------------|
| <b>Otira</b>          | kW                  |                    |                    | \$000                | \$000                | \$000         |
| <b>Fixed Charges</b>  | 514                 | 70.40              | 94.66              | 132                  | 178                  | 310           |
| <b>Volume Charges</b> | 508                 | 13.22              |                    | 25                   |                      | 25            |
|                       | 146                 |                    | 31.41              |                      | 17                   | 17            |
| <b>Total Revenue</b>  |                     |                    |                    | 157                  | 194                  | <b>351</b>    |

## 7.2 Distributed Generation (DG)

Under Part 6 of the Electricity Industry Participation Code, charges for distributed generation cannot exceed the incremental cost of connecting DG to the network, taking account of any avoided distribution or transmission costs.

Westpower recognises this pricing principle as follows:

- Smaller generators can connect to the network and utilise the distribution network for delivering their generation to other connections, while only incurring a nominal network charge for the direct incremental costs involved in managing network voltage profiles during times of light load. This implicit discount to normal lines charges recognises the potential avoided transmission costs associated with local generation, which are typically small in nature given small scale DG generation does not always coincide with peak use.
- Large embedded generators are paid avoided transmission charge benefits to encourage such generators to reliably generate during transmission peak periods.

The level of the nominal charge for smaller generators to connect to the network will be carefully analysed during the 2016/17 pricing year and, once calculated, advertised as a new tariff in line with the notification timeframes contained in the EDIDD 2012.

## 7.3 Non-Standard charges

Four connections in Categories 4 and 5 are currently on non-standard tariffs, as each tariff applies to less than 4 connections.

Category 4 was developed in 2000 to recognise a small number of very large consumers who had effectively funded earlier investment in Westpower's network to provide the demands that their business required at the time and it would be inequitable to charge them the full marginal investment costs of providing increased demand to new consumers.

Category 4 is not open to any new customers, in virtue of the fact that they are benefiting from the significant marginal investment that Westpower has put in place since the year 2000.

The methodology for calculating non-standard prices for these groups is discussed in the pricing methodology.

The criteria to be a non-standard consumer is:

- A significant large load (eg. >2500 kVA);
- Significant use of dedicated assets (ie Otira tunnel connections); and
- Non-standard pricing requirements.

Westpower will discuss any non-standard pricing requirements on application.

The obligations and responsibilities to non-standard connections in the event of an interruption to supply are no different to that of standard consumers.

Some customers require additional security, such as an  $n-1$  configuration, and this is funded directly by the customer and generally as a capital contribution.

Category 5 was specifically created for the supply of the fan extraction load at the Otira Tunnel. The associated GXP at Otira is only required because of the tunnel load, and apart from a few residential houses and a small hotel in the area, constitutes the majority of the monthly demand.

Therefore, the charges levied on the sole major consumer, Kiwi Rail, effectively ring fence and recover the Transpower.

## 7.4 Changes to prices

Appendix A sets out the tariffs that apply from 1 April 2016. Details of key changes made to pricing are discussed in Section 2.

## 7.5 Revenue summary

The table below summarises the total projected revenue from both transmission and distribution charges from all consumer categories.

### *Cost Allocators*

|                          | Lighting | Residential | General | Medium | Large  | Bulk   | Large Bulk | Otira | Total   |
|--------------------------|----------|-------------|---------|--------|--------|--------|------------|-------|---------|
| <b>No Consumers</b>      | 85       | 10,554      | 1,866   | 814    | 17     | 15     | 3          | 1     | 13,355  |
| <b>AMD (kW)</b>          | 119      | 8,935       | 4,105   | 12,638 | 1,533  | 16,602 | 3,060      | 559   | 47,550  |
| <b>CMD (kW)</b>          | 30       | 3,900       | 1,093   | 2,860  | 780    | 4,353  | 1,517      | 177   | 14,710  |
| <b>Consumption (GWh)</b> | 1,358    | 62,561      | 16,042  | 53,284 | 13,411 | 72,588 | 63,286     | 1,457 | 283,987 |

### *Revenue from prices*

|                       | Lighting<br>\$000 | Residential<br>\$000 | General<br>\$000 | Medium<br>\$000 | Large<br>\$000 | Bulk<br>\$000 | Large Bulk<br>\$000 | Otira<br>\$000 | Total<br>\$000 |
|-----------------------|-------------------|----------------------|------------------|-----------------|----------------|---------------|---------------------|----------------|----------------|
| <b>Transmission</b>   | 9                 | 1,321                | 370              | 968             | 263            | 1,475         | 514                 | 194            | 5,114          |
| <b>Distribution</b>   | 146               | 6,012                | 1,971            | 4,767           | 557            | 1,813         | 284                 | 157            | 15,707         |
| <b>Target Revenue</b> | 155               | 7,333                | 2,341            | 5,735           | 821            | 3,288         | 797                 | 351            | <b>20,821</b>  |

## **8 PRICING STRATEGY**

This section considers Westpower's pricing strategy over the next five years.

The Electricity Authority has signalled that overall transmission charges on the West Coast may rise dramatically due to a proposed restructure of transmission pricing. Westpower will continue to lobby for a better outcome for its consumers but, regardless of the outcome of this proposal, Westpower will continue to pass through transmission charges at cost.

Smart meters are currently being rolled out across the country that have half hourly remote read and load control functionality. These new meters can facilitate more advanced forms of network pricing, most notably, mass market TOU or peak demand pricing. When and if "smart meters" are introduced to the Westpower network, Westpower will take a circumspect approach to developing and implementing TOU tariffs for Categories 1 and 2 consumers (that are currently on non-TOU meters).

Westpower note that the Electricity Authority is currently encouraging distributors to consider how they will respond to potential disruptive technologies, such as solar photovoltaic (PV) roof-top panels and electric vehicles. At this stage, Westpower is monitoring uptake of these technologies on the network, and will respond accordingly should any significant issues arise.

It is also noted that the Electricity Networks Association's Distribution Pricing Working Group (DPWG) is also investigating distribution pricing solutions to these challenges as part of its terms of reference. Westpower will monitor and consider any outcomes or recommendations from this work stream.



## 9 ELECTRICITY AUTHORITY PRICING PRINCIPLES CONFORMANCE

In this section Westpower sets out how it considers it meets the Electricity Authority's pricing principles. Each principle is stated, followed by Westpower's commentary.

### Signal economic costs

*(a) Prices are to signal the economic costs of service provision, by:*

- i. being subsidy free (equal to or greater than incremental costs, and less than or equal to standalone costs), except where subsidies arise from compliance with legislation and/or other regulation;*

This principle sets out that prices are subsidy free where they fall within the range of incremental cost and stand alone cost:

$$\text{Incremental Cost} \leq \text{Prices} \leq \text{Stand Alone Cost}$$

Westpower considers that, as far as reasonably practical, its prices are subsidy-free as it applies a cost allocation model to allocate costs across the consumer base to determine the revenue requirement, which is then used as a basis for establishing prices for each consumer group.

#### *Incremental Cost*

Incremental cost is the cost incurred in connecting one more consumer to the network. In the long-run, incremental costs include service line connection costs and associated upstream network reinforcement costs, as well as incremental operating expenditure (eg non-network Opex).

The asset based component of incremental cost will exclude any consumer contributions or vested assets, which are paid for by the consumer upfront. Westpower's network extension policy is for the consumer to pay for all costs of connection except for the cost of a transformer and associated equipment, which is paid for by Westpower (up to 200 kVA).

The remaining incremental cost associated with operating expenditure is therefore likely to be low. Our analysis suggests that on average each new connection contributes to a \$260 increase per annum in non-network expenditure (calculated in 2014). Westpower notes a new Category 1, 24 hr residential consumer would need to consume only 2,000 kWh per annum for prices to fall below incremental cost. This highlights the situation where cross-subsidies may arise with low use connections, partly due to the low fixed charge applied under LFC regulations (capped at \$54.75 per year). The option of a higher fixed charge for non-residential consumers goes some way to resolve this issue for larger connections and is likely to mean that prices exceed incremental cost.

As discussed earlier, cross subsidies may also arise between urban and rural consumers, given the higher costs of supplying rural consumers. The table below shows urban revenue far outweighs urban operating costs, while rural revenue is far lower than operating costs.

|        | ICP/km   | Revenue/km  | Revenue | Cost   |
|--------|----------|-------------|---------|--------|
| Urban: | 70.15/km | \$13,113/km | \$1.5M  | \$173K |
| Rural: | 3.72/km  | \$696/km    | \$1.0M  | \$2.2M |

#### *Stand alone cost*

Stand alone cost is the cost of the consumer's next best alternative to distributed supply. The main option available to consumers to bypass the network is with small scale distributed generation (eg an off-grid solar PV plus batteries solution). The cost of installing such PV systems is currently uneconomic in most cases (circa \$50k-\$100k upfront plus ongoing regular replacement of batteries). However, this option may be economic for both the consumer and Westpower for new connections that are remote from distribution circuits. In any case, the costs of PV and battery technologies are rapidly falling. Westpower will monitor uptake of PV on the network to ensure our pricing incentivises efficient distribution investments.

- ii. having regard, to the extent practicable, to the level of available service capacity; and**
- iii. signalling, to the extent practicable, the impact of additional usage on future investment costs.**

Westpower has lightly loaded distribution feeders, due to the very long nature of the area supplied, and the low number of consumers on those long feeders. This requires an unusually high number of zone substations (19 in total). This configuration results in the network capacity being relatively underutilised, in some instances. Added to this, is the recent loss of two significant mining loads which has significantly reduced the load. While there is spare capacity on the network, there is no possibility of utilising this capacity by encouraging additional load, again, due to the vast extent of the network.

Nevertheless, Westpower's pricing structure seeks to signal efficient usage of existing capacity through:

- Consumer groups based on load groups;
- Fixed charges based on actual or assessed capacity requirements;
- Differentials between controlled and uncontrolled usage for Category 1 and 2 consumers; and
- TOU and night/day charges, to signal the value of consuming outside of peak periods when capacity is less constrained.

The impact of such price signals lessens the need to invest further in additional network capacity. That is, as consumers increase their use of network capacity, where practicable, they pay increased line charges:

- For Category 1 consumers there is emphasis on the volume related tariff so, as volumes increase, use of network charges increases. Additionally, because Westpower offers different tariff rates for controlled and uncontrolled use, there are incentives for consumers to have controllable loads (e.g. water heating, which makes up a material proportion of consumption, normally around 40%). In future, as smart meters become available, Westpower will enhance its tariff structures to further encourage consumers to shift discretionary loads outside of peak periods.
- For non-residential consumers, Westpower signals the costs of additional capacity usage through increasing fixed charges as consumers increase their nominated capacity. For

those consumers that have TOU metering, charges are based on on-peak demands, providing a direct price signal to reduce demands in peak periods.

- For large industrial consumers, which require increases in capacity to serve their needs or additional equipment to meet their security of supply objectives, individual prices are provided. Therefore consumers face the costs of their additional requirements directly.

In a consumer survey, conducted in December 2014, consumers were asked about pricing to lessen future investment costs. The survey provided an example of controlling air conditioning units. The survey responses indicated that Westpower should “cautiously consider demand side management initiatives”. This market segment did not reveal an obvious preference for interrupting non-critical air-conditioning if it meant long-term price rises could be avoided.

***(b) Where prices on ‘efficient’ incremental costs would under-recover allowed revenues, the shortfall should be made up by setting prices in a manner that has regard to consumers’ demand responsiveness, to the extent practicable.***

It is currently not practical to assess consumer demand responsiveness to set charges. Westpower, like all distributors, is forced to use tariff structures which use high volume related charges as the only practical means of differentiating consumers’ elasticity or willingness to pay. If demand is reduced, the cost to maintain the existing infrastructure is not reduced accordingly.

However, this principle is also concerned with consumer willingness to pay. Westpower note that Category 1 and 2 consumers have tariff options which weight willingness to pay against quality of supply. For example, consumers with a lower willingness to pay are likely to adopt a controlled tariff or night/day tariff over the higher priced 24 hour tariff, and accept a slightly lower quality of supply. Peak charges also incentivise consumers with a low willingness to pay to shift demand off peak.

***(c) Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to:***

- i. discourage uneconomic bypass;***
- ii. allow for negotiation to better reflect the economic value of services and enable stakeholders to make price/quality trade-offs or nonstandard arrangement for services; and***
- iii. where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives (e.g. distributed generation or demand response) and technology innovation.***

Westpower’s compliance under these guidelines is achieved as follows.

#### *Uneconomic bypass*

The avoidance of uneconomic bypass is partly achieved through Westpower’s cost allocation approach to setting tariffs, whereby pricing is set below stand-alone costs, through the use of a proportional cost allocation approach.

Westpower sets specific charges for large industrial consumers to ensure that charges reflect the economic costs of service provision, thereby discouraging uneconomic bypass and allowing such consumers to negotiate their specific needs. Three years ago, Westpower installed a new zone sub-station at short-notice for a large industrial consumer, providing an enhanced security of supply for that consumer at an increased charge.

As discussed above, it may be possible for a new consumer to gain access directly to distributed generation within the Westpower network and hence by-pass the network (e.g. PV or a large

embedded generator). This is unlikely due to the relatively small size of the embedded generation. If Westpower could not meet the connection costs associated with such a consumer, then this would be uneconomic and we would likely encourage the consumer to proceed, as the benefits to the community at large would outweigh the loss to Westpower.

#### *Price/quality trade-offs*

Almost all consumers have indicated a preference for paying about the same price to receive about the same reliability. This response has proved almost identical over time and across other EDBs.

Westpower provides consumers the opportunities to make price and quality trade-offs, in the design of connection to the network. This may include circuit redundancy or higher capacity transformer connections, for large consumers. The costs of higher quality are paid by the consumer (subject to a potential Westpower rebate) prior to connection of these assets as part of our Network Extensions Policy.

#### *Transmission alternatives*

Westpower offers incentives to distributed generation as a transmission alternative. This includes:

- Paying avoided transmission charge benefits to large embedded generators to encourage such generators to reliably generate during transmission peak periods.
- Allowing smaller generators to connect to the network and utilise the distribution network for delivering their generation to other connections without incurring network charges. Connection costs are applicable, as per Westpower's Distributed Generation Policy.

#### *Distribution alternatives*

Because of Westpower's peak/control-period prices, consumers have a clear value against which to assess network alternatives or behaviour changes. Many consumers, particularly major consumers, have the opportunity to turn on generators, reduce demand, or both in response to Westpower's pricing. Westpower's residential consumers heat their hot water through controlled meters in response to Westpower's very low controlled pricing rate.

#### ***(d) Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact on stakeholders.***

Westpower's development of prices:

##### **1. Is transparent:**

- (i) through this disclosure statement, Westpower provides information on the costs it allocates to different consumer groups; and
- (ii) in addition to this disclosure, Westpower publishes a pricing schedule which details the different charges between tariffs and consumer group categories. Consumers can review charges and weigh up costs for changing capacity requirements or load profile and the resulting benefits. Every other year there is formal consultation between retailers and Westpower on pricing strategy, price category and tariff development.

##### **2. Promotes price stability:** Westpower updates its cost of service model annually. To ensure price stability to consumers, any price changes made attempt to limit price shocks to any particular consumer group to less than 10%. As distribution charges, including transmission charges, make up around 30% of a typical consumer's bill, this ensures no consumer would face significant price increase due to changes in distribution charges.

##### **3. Promotes certainty:** Westpower endeavours to maintain its tariff structures and differentials between tariffs, so that consumers who make investments (for example in

controllable loads) due to the savings between controlled and uncontrolled rates are able to realise the savings expected when the original investment was made. With the introduction of smart meters, Westpower intends to take a circumspect approach to developing and implementing TOU tariffs. This is so that consumers are not unduly disadvantaged by the introduction of smart meters. Consumers will have time to consider behavioural changes and investments to avoid adverse bill impacts.

***(e) Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers.***

Westpower recognises the need to minimise undue complexity for retailers, subject to its legitimate business needs to signal costs to consumers and ensure equity between consumers. 99.68% of connections (and hence retailer invoices) have the same pricing structure and the remaining 0.32% have the same structure, thereby minimising cost for retailers.

All retailers are subject to the same tariff schedules from Westpower. Therefore, Westpower considers that its prices are economically equivalent across all retailers.

## 10 COMMERCE COMMISSION INFORMATION DISCLOSURE CONFORMANCE

In this section Westpower sets out how it considers it meets the EDIDD 2012 requirements. Each disclosure requirement is stated, followed by Westpower's commentary.

The Electricity Authority and the Commerce Commission have very similar disclosure requirements so this section guides the reader to the relevant sections of this methodology to confirm the conformance requirements.

*(a) Prices should be based on a well-defined, clearly explained and published methodology, with any material revisions to the methodology notified and clearly marked.*

This pricing methodology is based on a well-defined methodology that is clearly explained and published on the company's website. There have been no material changes in methodology since the EDIDD was founded in 2012 but this 2016 disclosure has expanded on its explanations and details to better inform readers.

*(b) The pricing methodology disclosed should demonstrate:*

- How the methodology links to the pricing principles and any non-compliance;

See Section 9

- (i) The rationale for consumer groupings and the method for determining the allocation of consumers to the consumer groups;

See Section 3.3

- (ii) Quantification of key components of costs and revenues;

See Section 4

- (iii) An explanation of the cost allocation methodology and the rationale for the allocation to each consumer grouping;

See Section 5

- (iv) An explanation of the derivation of tariffs to be charged to each consumer group and the rationale for the tariff design;

See Section 6

- (v) Pricing arrangements that will be used to share the value of any deferral of investment in distribution and transmission assets, with the investors in alternatives such as distributed generation or load management, where alternatives are practicable and where network economics warrant.

See Sections 5.4 & 6.3

*(c) The pricing methodology should:*

- (i) Employ industry standard terminology, where possible;

See Glossary

- (ii) Where a change to the previous pricing methodology is implemented, describe the impact on consumer classes and the transition arrangements implemented to introduce the new methodology.

See Section 7

# APPENDIX A Westpower Pricing Schedule

## WESTPOWER LTD

### DISTRIBUTION AND TRANSMISSION PRICES

APPLICABLE 01 APRIL 2016

ALL PRICES ARE EXCLUSIVE OF GST

| Consumers   | Tariff code | Units            | TARIFF APRIL 2015              |                                 |                | TARIFF APRIL 2016              |                                 |                |        |
|---|-------------|------------------|--------------------------------|---------------------------------|----------------|--------------------------------|---------------------------------|----------------|--------|
|   |             |                  | Distribution Price (Westpower) | Transmission Price (Transpower) | Delivery Price | Distribution Price (Westpower) | Transmission Price (Transpower) | Delivery Price |        |
| <b>CATEGORY 1: RESIDENTIAL - WP1D</b>   |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>FIXED PRICES</b>   |             |                  |                                |                                 |                |                                |                                 |                |        |
| Distribution Charge   | WP1D        | c/connection/day | 14.95                          |                                 |                | 15.00                          |                                 |                |        |
| <b>VOLUME PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Uncontrolled  | 8819        | D                | c/kWh                          | 10.08                           | 2.20           | 12.28                          | 10.08                           | 2.47           | 12.55  |
| Controlled  | 6688        | DC               | c/kWh                          | 6.00                            | 1.31           | 7.31                           | 6.00                            | 1.47           | 7.47   |
| Day and Night - Day -16 hours   | 1592        | DD               | c/kWh                          | 11.76                           | 2.57           | 14.33                          | 11.75                           | 2.88           | 14.63  |
| Day and Night - Night - 8 hours   | 1592        | DE               | c/kWh                          | 0.55                            | 0.00           | 0.55                           | 0.55                            | 0.00           | 0.55   |
| Night Boost   | 533         | DN               | c/kWh                          | 2.85                            | 0.00           | 2.86                           | 2.85                            | 0.00           | 2.85   |
| Distributed Generation  | 16          | DG               | c/kWh                          |                                 |                |                                | 0.00                            | 0.00           | 0.00   |
| <b>CATEGORY 1: GENERAL ( Up to and including 15 kVA) - WP1N</b>               |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>FIXED PRICES</b>   |             |                  |                                |                                 |                |                                |                                 |                |        |
| Distribution Charge   | WP1N        | c/connection/day | 70.73                          |                                 |                | 70.92                          |                                 |                |        |
| <b>VOLUME PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Uncontrolled  | 1589        | N                | c/kWh                          | 9.89                            | 2.21           | 12.10                          | 9.89                            | 2.47           | 12.36  |
| Controlled  | 302         | NC               | c/kWh                          | 5.89                            | 1.31           | 7.20                           | 5.89                            | 1.47           | 7.36   |
| Day and Night - Day -16 hours   | 172         | ND               | c/kWh                          | 11.54                           | 2.57           | 14.11                          | 11.54                           | 2.88           | 14.42  |
| Day and Night - Night - 8 hours   | 172         | NE               | c/kWh                          | 0.54                            | 0.00           | 0.54                           | 0.54                            | 0.00           | 0.54   |
| Night Boost   | 18          | NN               | c/kWh                          | 2.80                            | 0.00           | 2.80                           | 2.80                            | 0.00           | 2.80   |
| <b>CAPACITY PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Unmetered Supply  | 9           | WPU              | c/kWh                          | 9.89                            | 2.21           | 12.10                          | 9.89                            | 2.47           | 12.36  |
| Phone Booth Charge  | 37          | UPB              | c/kWh                          | 14.84                           | 0.00           | 14.84                          | 14.84                           | 0.00           | 14.84  |
| Phone Cabinet Charge  | 30          | UPC              | c/kWh                          | 6.09                            | 0.00           | 6.09                           | 6.09                            | 0.00           | 6.09   |
| <b>CATEGORY 1: STREET LIGHTING - WPSL</b>                                     |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>FIXED PRICES</b>   |             |                  |                                |                                 |                |                                |                                 |                |        |
| Distribution Charge   | WPSL        | c/connection/day | 6.08                           |                                 |                | 6.10                           |                                 |                |        |
| <b>VOLUME PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Public Lighting   | 59          | SL               | c/kWh                          | 5.50                            | 0.57           | 6.07                           | 5.50                            | 0.64           | 6.14   |
| Under Verandah Lighting   | 0           | UV               | c/kWh                          | 5.50                            | 0.57           | 6.07                           | 5.50                            | 0.64           | 6.14   |
| <b>CATEGORY 2: MEDIUM LOAD - WP2N</b>   |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>FOR LOAD GREATER THAN 15 KVA and UP TO 100 KVA</b>                         |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>CAPACITY PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Distribution Charge   | WP2N        | c/kVA/day        | 7.98                           |                                 |                | 8.00                           |                                 |                |        |
| <b>VOLUME PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Uncontrolled  | 545         | U1               | c/kWh                          | 8.51                            | 1.95           | 10.46                          | 8.51                            | 2.18           | 10.69  |
| Controlled  | 267         | U2               | c/kWh                          | 2.85                            | 0.65           | 3.50                           | 2.85                            | 0.73           | 3.58   |
| Day and Night - Day -16 hours   | 337         | U3N              | c/kWh                          | 9.24                            | 2.12           | 11.36                          | 9.24                            | 2.37           | 11.61  |
| Day and Night - Night - 8 hours   | 337         | U3L              | c/kWh                          | 0.24                            | 0.00           | 0.24                           | 0.24                            | 0.00           | 0.24   |
| Night Boost   | 24          | U5               | c/kWh                          | 1.07                            | 0.00           | 1.07                           | 1.07                            | 0.00           | 1.07   |
| <b>CATEGORY 2: LARGE LOAD - C2F</b>   |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>FOR LOAD GREATER THAN 100 KVA and UP TO 200 KVA</b>                        |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>CAPACITY PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Capacity Charge   | 17          | C2F              | c/kW/day                       | 7.98                            |                | 7.98                           | 8.00                            |                | 8.00   |
| <b>DEMAND PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Peak Demand   | 17          | C2P              | c/kW/day                       | 57.15                           | 30.15          | 87.30                          | 57.30                           | 31.41          | 88.71  |
| <b>CATEGORY 3: MEDIUM BULK LOAD - C3F</b>                                     |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>FOR LOADS GREATER THAN 200KVA</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>CAPACITY PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Capacity Charge   | 15          | C3F              | c/kVA/day                      | 13.18                           | 6.36           | 19.54                          | 13.22                           | 6.38           | 19.60  |
| <b>DEMAND PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Distribution Peak Demand  | 15          | C3P              | c/kW/day                       | 13.18                           |                | 13.18                          | 13.22                           |                | 13.22  |
| Transmission Coincident Peak Demand   | 15          | C3CP             | c/kW/day                       |                                 | 30.15          | 30.15                          |                                 | 31.41          | 31.41  |
| <b>CATEGORY 4: LARGE BULK LOAD - C4F</b>                                      |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>Large Bulk (loads over 2500kVA)</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>CAPACITY PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Capacity Charge   | 3           | C4F              | c/kVA/day                      | 9.89                            | 6.36           | 16.25                          | 9.92                            | 6.38           | 16.30  |
| <b>DEMAND PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Distribution Peak Demand  | 3           | C4P              | c/kW/day                       | 9.89                            |                | 9.89                           | 9.92                            |                | 9.92   |
| Transmission Coincident Peak Demand   | 3           | C4CP             | c/kW/day                       |                                 | 30.15          | 30.15                          |                                 | 31.41          | 31.41  |
| <b>CATEGORY 5: SPECIAL LOAD - C5F</b>   |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>Transrail Otira</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| <b>CAPACITY PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Capacity Charge   | 1           | C5F              | c/kVA/day                      | 70.20                           | 94.40          | 164.60                         | 70.40                           | 94.66          | 165.06 |
| <b>DEMAND PRICES</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Distribution Peak Demand  | 1           | C5P              | c/kW/day                       | 13.18                           |                | 13.18                          | 13.22                           |                | 13.22  |
| Transmission Coincident Peak Demand   | 1           | C5CP             | c/kW/day                       |                                 | 30.15          | 30.15                          |                                 | 31.41          | 31.41  |
| <b>Power Factor Charge</b>  |             |                  |                                |                                 |                |                                |                                 |                |        |
| Annual charge per kVAr of assessed correction required to bring PF up to 0.95 |             | C2PF             | \$/kVAr/year                   | 116.82                          |                |                                | 116.82                          |                |        |