

**Paper for**

**TRANSPORT WORKING GROUP**

**TWG Sub-group's Proposed  
Set of Transmission Service Definitions and  
Measures**

**29 JULY 2002**

# CONTENTS

<b>1. INTRODUCTION</b> .....	<b>4</b>
<b>2. GENERAL CONDITIONS</b> .....	<b>5</b>
2.1 ACKNOWLEDGEMENT .....	5
2.2 SERVICE LEVELS SUBJECT TO TRANSMISSION CONTRACT .....	5
2.3 EXCLUSIONS OF LIABILITY .....	5
<b>3. GENERAL UNDERTAKING</b> .....	<b>6</b>
<b>4. MENU OF SERVICE DEFINITIONS AND SERVICE MEASURES</b> .....	<b>7</b>
4.1 CONNECTION .....	7
4.1.1 <i>Current Service: Permit Connection of Customers' Assets</i> .....	7
4.1.1.1 Service Measures .....	7
4.1.2 <i>SCADA System Interconnection</i> .....	8
4.1.2.1 Current Service: Permit SCADA Connection .....	8
4.1.2.2 New Service .....	8
4.1.2.3 Service Measures.....	8
<u>4.2 TRANSPORT – OUTPUT FOCUSED</u> .....	9
4.2.1 <i>Reliability</i> .....	9
4.2.1.1 Current Service .....	9
4.2.1.2 New Service.....	9
4.2.1.3 Service Measures .....	9
4.2.2 <i>Power Quality</i> .....	11
4.2.2.1 Current Services .....	11
4.2.2.2 New Service.....	11
4.2.2.3 Service Measures .....	11
<u>4.3 TRANSPORT – INPUT FOCUSED</u> .....	13
4.3.1 <i>Capacity Installed at a Point of Service</i> .....	13
4.3.1.1 Current Service .....	13
4.3.1.2 Service Measures .....	13
4.3.2 <i>Security</i> .....	13
4.3.2.1 Current Services .....	13
4.3.2.2 New Service.....	14
4.3.2.3 Service Measures .....	14
<u>4.4 TRANSPORT – PACKAGED SERVICE (NEW SERVICE)</u> .....	15
4.4.1 <i>Meet Offtake Demand</i> .....	15
4.4.1.1 New Service.....	15
4.4.1.2 Service Measures .....	15
<u>4.5 MANAGEMENT OF OUTAGES</u> .....	15
4.5.1 <i>Publish Outage Protocol</i> .....	15
4.5.2 <i>Meet Outage Protocol requirements</i> .....	15
4.5.3 <i>Consult Customers about proposed material changes to Outage Protocol</i> .....	16
4.5.4 <i>Service Measures</i> .....	16

<b>4.6</b>	<b>ADDITIONAL SERVICES</b> .....	<b>16</b>
4.6.1	<i>Provision of Special Information</i> .....	16
4.6.1.1	Provision of Special Information .....	16
4.6.1.2	Power System Investigation, Analysis and Reporting .....	16
4.6.1.3	Service Measures .....	17
4.6.2	<i>Metering</i> .....	17
4.6.2.1	Provide Compliant Metering .....	17
4.6.2.2	Service Measures .....	17
4.6.3	<i>Financial Products</i> .....	17
4.6.3.1	Service Measures .....	18
<b>5</b>	<b>GLOSSARY OF TERMS</b> .....	<b>19</b>

# 1. Introduction

This set of proposed transmission service definitions and measures has been prepared by the Transport Working Group (TWG) in a manner equivalent to that envisaged under Clause 2.6 of Section 1 of Part F of the Rules.

Section 2 of this proposal outlines the general conditions that will apply to Transpower's obligation to achieve the Service Levels.

Section 3 contains a general undertaking by Transpower in relation to its management of the Grid.

The main content of the Proposal is given in Section 4, including:

- the proposed service definitions; and
- tables setting out the proposed service measures and the measurable quantities for each proposed service measure. Indicative units of measure have been added as a guide.

Section 1 of Part F of the Rules covers the development of service definitions, service measures and Service Levels relating to current services provided by Transpower to its Customers. Section 2 of Part F of the Rules covers how current services are to be changed (in the absence of agreement of all relevant parties and in the absence of specific provisions in any contract between Transpower and its Customers), and how new services could be introduced to Customers (in the absence of agreement between all relevant parties).

During development of current service definitions and service measures, the TWG sub-group identified several new services that would be meaningful to both Transpower and Transpower Customers, and these have been included. They are clearly identified as new services.

With some service measures it is less clear whether they are current or new, and the TWG has chosen not to identify them as either current or new. This will be up to Transpower and its Customers to resolve bilaterally. Transpower, however, has produced a Guideline containing its views on which of the remaining services are "current" and on methods for determining current Service Levels. (Note: \* identifies issues explained in the Guideline.)

It should be noted that although Customers may wish to include New Services in the Transmission Contract they negotiate with Transpower, only Service Levels for current services can be covered by the processes outlined in Section 1 of Part F. Service levels for New Services must be negotiated bilaterally. If agreement is not reached, processes under Section 2 of Part F can apply.

A Glossary of Terms is provided in Section 5, giving definitions for the list of terms used in the previous sections.

As far as possible, this set of transmission service definitions and measures is self-contained. However, parties should read the Commentary for further background and contextual information.

---

In some instances, it has been necessary to refer to other documents such as Transpower's Connection Policy, and Transpower's Outage Protocol, which are available at [www.transpower.co.nz](http://www.transpower.co.nz) and the Rules.

Terms that have been defined in the Glossary of Terms are in upper case.

## **2. General Conditions**

Except where Transpower and its Customer have agreed otherwise in writing, Transpower's obligation to achieve the Service Levels is subject to the following general conditions:

### **2.1 Acknowledgement**

**2.1.1** This proposal, and the transmission services set out in it, relate to Transpower's acting in its capacity as transmission provider solely. It excludes any services that Transpower provides, or could provide, in performing the functions of System Operator (other than maintenance of voltage at a Point of Connection where the System Operator has granted Transpower a Local Quality Agreement).

### **2.2 Service Levels Subject to Transmission Contract**

**2.2.1** Transpower's obligation to achieve the Service Levels is subject to the terms (including, without limitation, terms relating to limitation of liability and force majeure) of the existing Transmission Contract between Transpower and its Customer. The existing contract is either: (a) the signed written contract between Transpower and its Customer; or (b) the Posted Terms Contract between Transpower and its Customer.

### **2.3 Exclusions of Liability**

**2.3.1** Transpower will not be liable for any failure to achieve the Service Levels where any of the following events or circumstances has a significant effect on Transpower's ability to achieve the Service Levels:

**2.3.1.1** Transpower complying with its obligations as System Operator or Grid Owner (or both) under the Rules; and

**2.3.1.2** a Connected Party failing to comply with the Connection Policy, the Transmission Contract between Transpower and the Connected Party, or the Rules; and

**2.3.1.3** the System Operator not granting Transpower a Local Quality Agreement (or when the previously granted Local Quality Agreement ceases to be in full force and effect) provided that Transpower has used its reasonable endeavours to obtain and retain the Local Quality Agreement; and

---

- 2.3.1.4 a Connected Party providing Transpower with incorrect information; and
  - 2.3.1.5 a change to the Rules; and
  - 2.3.1.6 the de-energisation of a Point of Connection by Transpower under the Transmission Contract between Transpower and its Customer, or the Rules; and
  - 2.3.1.7 an item of plant or equipment managed by a party other than Transpower that also needs to be available and in operation for delivery of the Service Levels not being available to fully perform its intended function.
- 2.3.2 In the event 2.3.1 applies, Transpower will use reasonable endeavours to mitigate the effects of the event which has a significant effect on Transpower's ability to achieve the Service Levels.
- 2.4 If the Customer believes it is entitled to compensation for loss, injury, damage or expense (howsoever caused) (together "Loss") as a result of an alleged failure by Transpower to achieve the Service Levels in relation to an event or series of related events which may also be a breach of the Rules:
- (a) Transpower and the Customer must pursue the matter to a conclusion under the Rules before any claim is brought under the Transmission Contract; and
  - (b) Subject to clause 2.4(a), the Customer may only seek compensation under the Transmission Contract for Loss if the maximum amount of compensation able to be awarded by the Rulings Panel is limited by a liability cap, and such liability cap is less than the maximum liability of Transpower under the Transmission Contract; and
  - (c) Subject to clause 2.4(b), the Customer shall not recover compensation under the Transmission Contract for Loss in relation to which it has already received compensation (by way of compensation order or otherwise) under the Rules.

### 3. General Undertaking

Transpower will make the Grid Assets available for the conveyance of electricity in accordance with Good Industry Practice. Transpower's general undertaking under this section is subject to Transpower's specific service undertakings (as set out in section 4). Where there is any conflict between Transpower's general undertaking and its specific service undertakings, the specific service undertakings will take precedence.

---

## 4. Menu of Service Definitions and Service Measures

### Services

The proposed service definitions describe the following services:

- Connection
  - ⇒ Connect Customer's Assets
  - ⇒ SCADA System Interconnection
- Transport - Output Focussed
  - ⇒ Reliability
  - ⇒ Power Quality
- Transport – Input Focussed
  - ⇒ Capacity Installed
  - ⇒ Security
- Transport – Packaged Service
  - ⇒ Meet Off-take Demand
- Management of Outages
- Additional Services

### 4.1 Connection

#### 4.1.1 Current Service: Permit Connection of Customers' Assets

**Service Definition:** Transpower will permit the Customer's Assets to be physically connected to, to remain connected to, and to be disconnected from the Grid Assets, at Points of Connection in accordance with the terms and conditions of the relevant transmission services contract for the purposes of enabling the transfer of electricity between the Grid Assets and the Customer's Assets subject to:

- (1) the general conditions specified in the Transmission Contract between Transpower and its Customer; and
- (2) the specific condition listed below:

**Specific Condition:** The Customer must comply with the Connection Policy.

#### 4.1.1.1 Service Measures

Service Measures: <b>Connection</b>		Indicative Units of Measure *
Description	Measurable Quantities	
The ability of the Customer's Assets to be connected to, or disconnected from, the Grid Assets at the Points of Connection	<ul style="list-style-type: none"> <li>• Transpower enables connection and disconnection in this manner</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

Service Measures: <b>Connection</b>		Indicative Units of Measure *
Description	Measurable Quantities	
Points of Connection	<ul style="list-style-type: none"> <li>• Number at each Point of Service</li> <li>• Location of each Point of Service</li> </ul>	<ul style="list-style-type: none"> <li>• Number</li> </ul>

#### 4.1.2 SCADA System Interconnection

A SCADA System Interconnection means any interface between Transpower's SCADA system and a Customer's SCADA system that allows certain substation information, controls and indications to be exchanged between the two SCADA systems.

##### 4.1.2.1 Current Service: Permit SCADA Connection

**Service Definition:** Transpower will use reasonable endeavours to achieve the Service Levels relating to SCADA System Interconnection for Current Services subject to:

- (1) the general conditions specified in the Transmission Contract between Transpower and its Customer; and
- (2) the specific conditions listed below:

**Specific Conditions:**

- (1) Transpower will not be liable for any failure to achieve the Service Levels where a Planned Outage has a significant effect on Transpower's ability to achieve the Service Levels.
- (2) In the event that clause (1) applies, Transpower will use reasonable endeavours to mitigate the effects of the event which has a significant effect on Transpower's ability to achieve the Service Levels.

##### 4.1.2.2 New Service

**Service Definition:** Transpower will achieve the Service Levels relating to the SCADA system interconnection service measures for New Services to a performance standard to be agreed between Transpower and its Customer (subject to any conditions (including, without limitation, exclusions of liability) agreed between Transpower and its Customer).

##### 4.1.2.3 Service Measures

Service Measures: <b>SCADA System Interconnection</b>		Indicative Units of Measure *
Description	Measurable Quantities	
Information from Transpower's SCADA system to the Customer's SCADA system	<ul style="list-style-type: none"> <li>• % time available for the agreed interfaces *</li> <li>• reported incidences of malfunction*</li> </ul>	<ul style="list-style-type: none"> <li>• %</li> <li>• number</li> </ul>

\* See Transpower Guideline



## **4.2 Transport – Output Focussed**

### **4.2.1 Reliability**

Reliability means the degree of continuity of the conveyance of electricity at a Point of Service.

#### **4.2.1.1 Current Service**

**Service Definition:** Transpower will use reasonable endeavours to achieve the Service Levels which relate to Reliability for Current Services at a Point of Service subject to:

- (1) the general conditions specified in the Transmission Contract between Transpower and its Customer; and
- (2) the specific conditions listed below:

#### **Specific Conditions:**

- (1) Transpower will not be liable for any failure to achieve the Service Levels where any of the following has a significant effect on Transpower's ability to achieve the Service Levels:
  - (a) insufficient generating units being available to be dispatched; and
  - (b) the Customer not maintaining a power factor equal to or greater than 0.95 leading or lagging at the Customer Point of Service.
- (2) In the event that clause (1) applies, Transpower will use reasonable endeavours to mitigate the effects of the event which has a significant effect on Transpower's ability to achieve the Service Levels.

#### **4.2.1.2 New Service**

**Service Definition:** Transpower will achieve the Service Levels relating to Reliability for New Services to a performance standard to be agreed between Transpower and its Customer (subject to any conditions (including, without limitation, exclusions of liability) agreed between Transpower and its Customer).

#### **4.2.1.3 Service Measures**

<b>Service Measures: Reliability</b>		<b>Indicative Units of Measure *</b>
<b>Description</b>	<b>Measurable Quantities</b>	
The extent of Unplanned Interruptions	<ul style="list-style-type: none"> <li>• Duration*</li> <li>• Frequency*</li> </ul>	<ul style="list-style-type: none"> <li>• Minutes</li> <li>• Number</li> </ul>
The provision of information to Customers regarding the duration, frequency, magnitude, extent and date/time of Unplanned Interruptions*	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

Service Measures: <b>Reliability</b>		Indicative Units of Measure *
Description	Measurable Quantities	
The extent of Planned Interruptions	<ul style="list-style-type: none"> <li>• Duration*</li> <li>• Frequency*</li> </ul>	<ul style="list-style-type: none"> <li>• Minutes</li> <li>• Number</li> </ul>
The provision of information to Customers regarding the duration, frequency, magnitude, extent and date/time of Planned Interruptions*	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The extent of Unserved Energy	<ul style="list-style-type: none"> <li>• Magnitude category to which the Point of Service belongs*</li> <li>• Range and variability of category*</li> </ul>	<ul style="list-style-type: none"> <li>• To be developed</li> </ul>
The provision of information to Customers regarding the magnitude of Unserved Energy	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The extent of Momentary Interruptions	<ul style="list-style-type: none"> <li>• Frequency*</li> </ul>	<ul style="list-style-type: none"> <li>• Number</li> </ul>
The provision of information to Customers regarding the frequency, magnitude and date/time of Momentary Interruptions	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The extent of Load Reduction*	<ul style="list-style-type: none"> <li>• Frequency*</li> </ul>	<ul style="list-style-type: none"> <li>• Number</li> </ul>
The provision of information to Customers regarding the frequency, magnitude, duration and date/time of Load Reduction*	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The extent of required use of Generation Constraint for System Protection Schemes*	<ul style="list-style-type: none"> <li>• Frequency*</li> </ul>	<ul style="list-style-type: none"> <li>• Number</li> </ul>
The provision of information to Customers regarding the frequency, duration, location affected and date/time of operation of Generation Constraint for System Protection Schemes*	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The provision of information to Customers on the occurrence and durations of Overruns of Planned Interruptions*	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

\* See Transpower Guideline

## 4.2.2 Power Quality

Power Quality means the extent to which voltage magnitude and waveform shape and current waveform comply with Service Levels and where there are no Service Levels, with Good Industry Practice, at a Point of Service.

### 4.2.2.1 Current Services

**Service Definition:** Transpower will use reasonable endeavours to achieve the Service Levels which relate to Power Quality for Current Services at a Point of Service subject to:

- (1) the general conditions specified in the Transmission Contract between Transpower and its Customer; and
- (2) the specific conditions listed below:

**Specific Conditions:**

- (1) Transpower will not be liable for any failure to achieve the Service Levels where any of the following has a significant effect on Transpower's ability to achieve the Service Levels:
  - (a) a Planned Outage; and
  - (b) insufficient generating units being available to be dispatched; and
  - (c) the Customer not maintaining a power factor equal to or greater than 0.95 leading or lagging at the Customer Point of Service.
- (2) In the event that clause (1) applies, Transpower will use reasonable endeavours to mitigate the effects of the event which has a significant effect on Transpower's ability to achieve the Service Levels.

### 4.2.2.2 New Service

**Service Definition:** Transpower will achieve the Service Levels relating to Power Quality for New Services to a performance standard to be agreed between Transpower and its Customer (subject to any conditions including, without limitation, exclusions of liability agreed between Transpower and its Customer).

### 4.2.2.3 Service Measures

Service Measures: <b>Power Quality</b>		Indicative Units of Measure *
Description	Measurable Quantities	
The extent of deviations from the Voltage Range (around nominal) in Steady State	<ul style="list-style-type: none"> <li>• Magnitude*</li> <li>• Duration*</li> <li>• Frequency*</li> </ul>	<ul style="list-style-type: none"> <li>• kV over or under range</li> <li>• Minutes</li> <li>• Number</li> </ul>
The provision of information to Customers regarding Voltage Range in Steady State	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

Service Measures: <b>Power Quality</b>		Indicative Units of Measure *
Description	Measurable Quantities	
The extent of Step Change in Voltage	<ul style="list-style-type: none"> <li>• Magnitude*</li> <li>• Frequency*</li> </ul>	<ul style="list-style-type: none"> <li>• %</li> <li>• Number</li> </ul>
The provision of information to Customers regarding Step Changes in Voltage	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The extent of Momentary Voltage Fluctuations	<ul style="list-style-type: none"> <li>• Divergence from nominal voltage range greater than given percentage*</li> </ul>	<ul style="list-style-type: none"> <li>• Number</li> </ul>
The provision of information to Customers regarding Momentary Voltage Fluctuations	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The extent of flicker outside the limits set out in Part C of the Rules	<ul style="list-style-type: none"> <li>• Number of deviations from standard</li> </ul>	<ul style="list-style-type: none"> <li>• Number</li> </ul>
The provision of information to Customers regarding the extent of flicker	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The extent of harmonics outside the limits set out in Part C of the Rules	<ul style="list-style-type: none"> <li>• Harmonic content in excess of standard</li> </ul>	<ul style="list-style-type: none"> <li>• %</li> </ul>
The provision of information to Customers regarding the level of harmonics and the extent of non-compliance with Part C standard	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
The extent of voltage imbalance outside the limits set out in Part C of the Rules	<ul style="list-style-type: none"> <li>• Duration*</li> <li>• Magnitude*</li> <li>• Frequency *</li> </ul>	<ul style="list-style-type: none"> <li>• Minutes,</li> <li>• %</li> <li>• Number</li> </ul>
The provision of information to Customers regarding the level of voltage imbalance and the extent of non-compliance with the limits set out in Part C of the Rules	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

\* See Transpower Guideline

## **4.3 Transport – Input Focussed**

### **4.3.1 Capacity Installed at a Point of Service**

Capacity installed at a Point of Service refers to the maximum rate of energy transfer measured in megawatts (at 0.95 lagging power factor), at which the Grid Assets at a Point of Service are capable of simultaneously conveying electricity to or from all a Customer's Points of Connection.

#### **4.3.1.1 Current Service**

**Service Definition:** Transpower will maintain the Grid Assets, and design and construct any replacement Grid Assets, so as to meet the Required Service Capability in accordance with Good Industry Practice; and

**Required Service Capability** means at any time the lesser of:

- (a) the capability of the Grid Assets to convey electricity to and from each of the Customer's Points of Service as at the preceding 1 April ("Existing Service Capability"); and
- (b) the capability of the Grid Assets to convey electricity to and from each of the Customer's Points of Service required to meet the Security Guidelines for Transmission Planning taking into account Transpower's reasonable forecast of load and generation scenarios for the next 10 years (the "Ideal Service Capability").

#### **4.3.1.2 Service Measures**

<b>Service Measures: Capacity Installed at a Point of Service</b>		<b>Indicative Units of Measure *</b>
<b>Description</b>	<b>Measurable Quantities</b>	
The extent of required Service Capability	<ul style="list-style-type: none"> <li>• Existing Service Capability</li> <li>• Ideal Service Capability</li> </ul>	<ul style="list-style-type: none"> <li>• MW @ given power factor</li> </ul>
The provision of information and communication about Capacity	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

### **4.3.2 Security**

Security refers to the expected ability of the Grid Assets at the Point of Service and specified Grid Assets to convey energy to or from the Point of Service, under various Contingencies.

#### **4.3.2.1 Current Services**

**Service Definition:** Transpower will use reasonable endeavours to achieve the Service Levels which relate to Security for Current Services at the Point of Service subject to:

- (1) the general conditions specified in the Transmission Contract between Transpower and its Customer; and
- (2) the specific conditions listed below:

**Specific Conditions:**

- (1) Transpower will not be liable for any failure to achieve the Service Levels where any of the following has a significant effect on Transpower's ability to achieve the Service Levels:
  - (a) insufficient generating units being available to be dispatched.
- (2) In the event that clause (1) applies, Transpower will use reasonable endeavours to mitigate the effects of the event which has a significant effect on Transpower's ability to achieve the Service Levels.

**4.3.2.2 New Service**

**Service Definition:** Transpower will achieve the Service Levels relating to Security for New Services to a performance standard to be agreed between Transpower and its Customer (subject to any conditions (including, without limitation, exclusions of liability) agreed between Transpower and its Customer).

**4.3.2.3 Service Measures**

Service Measures: <b>Security</b>		Indicative Units of Measure *
Description	Measurable Quantities	
Design Redundancy Level at Point of Service	<ul style="list-style-type: none"> <li>• Level of Design Redundancy of specified Grid Assets at Point of Service under defined conditions</li> </ul>	<ul style="list-style-type: none"> <li>• N Redundancy</li> <li>• N-1 Redundancy</li> <li>• N-2 Redundancy</li> </ul>
Extent of Planned Outages of specified Grid Assets	<ul style="list-style-type: none"> <li>• Frequency*</li> <li>• Duration*</li> </ul>	<ul style="list-style-type: none"> <li>• Number</li> <li>• Minutes</li> </ul>
The provision of information to the Customer regarding the frequency, duration, and date/time of Planned Outages for specified Grid Assets	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
Extent of Unplanned Outages of specified Grid Assets	<ul style="list-style-type: none"> <li>• Frequency*</li> <li>• Duration*</li> </ul>	<ul style="list-style-type: none"> <li>• Number</li> <li>• Minutes</li> </ul>
The provision of information to the Customer regarding the frequency, duration and date/time of Unplanned Outages for specified Grid Assets	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

Service Measures: <b>Security</b>		Indicative Units of Measure *
Description	Measurable Quantities	
The provision of information to Customers regarding attendance times at the Customer's Point of Service	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

\* See Transpower Guide

#### **4.4 Transport – Packaged Service (New Service)**

##### **4.4.1 Meet Offtake Demand**

Meet Offtake Demand, in relation to an Offtake Customer Point of Service means meeting the Demand (in megawatts) at that Customer Point of Service in a defined period, while maintaining an agreed Redundancy level, and within an agreed Voltage Range.

###### **4.4.1.1 New Service**

**Service Definition:** Transpower will achieve the Service Levels relating to Meet Offtake Demand, at the Point of Service, to a performance standard to be agreed between Transpower and its Offtake Customer (subject to any conditions including, without limitation, exclusions of liability agreed between Transpower and its Customer).

###### **4.4.1.2 Service Measures**

Service Measures: <b>Meet Offtake Demand</b>		Indicative Units of Measure *
Description	Measurable Quantities	
The extent to which : <ul style="list-style-type: none"> <li>• Demand is met</li> <li>• The redundancy levels are met and</li> <li>• The voltage range objective is achieved</li> </ul>	<ul style="list-style-type: none"> <li>• Duration that Demand in MW is not met*</li> <li>• Duration that redundancy level is not met*</li> <li>• Duration that voltage is outside the range*</li> </ul>	<ul style="list-style-type: none"> <li>• Hours/minutes</li> </ul>

#### **4.5 Management of Outages**

##### **4.5.1 Publish Outage Protocol**

**Service Definition:** Transpower will publish on its website the Transpower Outage Protocol.

##### **4.5.2 Meet Outage Protocol requirements**

**Service Definition:** Transpower will manage Planned Outages and Unplanned Outages of Grid Assets that may affect the Service Levels at the Point of Service in accordance with the Transpower Outage Protocol.

---

### 4.5.3 Consult Customers about proposed material changes to Outage Protocol

**Service Definition:** Transpower will consult with Customers before making any material change to the Outage Protocol.

### 4.5.4 Service Measures

Service Measures: Management of Outages		Indicative Units of Measure *
Description	Measurable Quantities	
Publication of Outage Protocol	<ul style="list-style-type: none"> <li>Publication</li> </ul>	<ul style="list-style-type: none"> <li>Yes/No</li> </ul>
Compliance with the published Outage Protocol	<ul style="list-style-type: none"> <li>Compliance</li> </ul>	<ul style="list-style-type: none"> <li>Yes/No</li> </ul>
Consultation with Customers about material changes to Outage Protocol	<ul style="list-style-type: none"> <li>Consultation</li> </ul>	<ul style="list-style-type: none"> <li>Yes/No</li> </ul>

## 4.6 Additional Services

### 4.6.1 Provision of Special Information

Special information is information additional to that provided by Transpower as part of any other transmission service.

#### 4.6.1.1 Provision of Special Information

**Service Definition:** Transpower acting reasonably, will consider and may agree to provide the Special Information requested, and if it does so, it will specify a time or frequency for the provision of the Special Information, its financial terms for providing the Special Information, and any other conditions it may wish to impose. Transpower will give reasons for declining to provide any Special Information sought.

#### 4.6.1.2 Power System Investigation, Analysis and Reporting

**Service Definition:** Transpower acting reasonably, will consider and may agree to provide a range of power system investigation, analysis and reporting services to Customers. If Transpower undertakes to provide a report, it undertakes to do so within the timetable agreed with the Customer. Transpower will give reasons for declining to provide any requested report.



#### 4.6.1.3 Service Measures

Service Measures: <b>Special Information</b>		Indicative Units of Measure *
Description	Measurable Quantities	
Provision of Special Information requested when Transpower has agreed to provide this information	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
Power system investigation, analysis and reporting when Transpower has agreed to provide a service	<ul style="list-style-type: none"> <li>• Provided or not</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

#### 4.6.2 Metering

Metering means the provision of compliant revenue metering and measurement of other electrical quantities in a manner consistent with Part D of the Rules.

##### 4.6.2.1 Provide Compliant Metering

**Service Definition:** Transpower will provide demand and energy metering in terms of the Rules and Part B of Connections and may provide measurement of other quantities as an additional service.

##### 4.6.2.2 Service Measures

Service Measures: <b>Metering</b>		Indicative Units of Measure *
Description	Measurable Quantities	
Provision of metering installations	<ul style="list-style-type: none"> <li>• Provision of service</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>
Report on compliance of metering installations with standards	<ul style="list-style-type: none"> <li>• Provision of report(s)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes/No</li> </ul>

#### 4.6.3 Financial Products

**Service Definition:** Transpower acting reasonably, will consider and may agree to provide certain financial products to its Customers subject to any conditions Transpower may agree with the Customer.

#### 4.6.3.1 Service Measures

Service Measures: <b>Financial Products</b>		Indicative Units of Measure *
Description	Measurable Quantities	
Projections of maximum Grid Component Outage Performance as per Contact Energy Ltd "Injection Contract", with associated penalties	<ul style="list-style-type: none"> <li>• (Max) hours per year per component</li> <li>• Penalty per hour above threshold</li> <li>• Cap on penalties</li> </ul>	<ul style="list-style-type: none"> <li>• Hours</li> <li>• \$ per hour</li> <li>• \$ per annum</li> </ul>
HVDC availability as per Contact Energy Ltd "Injection Contract", with associated penalties	<ul style="list-style-type: none"> <li>• MW capacity available</li> <li>• Penalty per day for days that capacity is below threshold</li> </ul>	<ul style="list-style-type: none"> <li>• MW</li> <li>• \$ per day</li> </ul>

## 5 Glossary of Terms

Term	Definition
Additional Services	Refer to 4.6.1.
Attendance Time	The time to attend a Point of Service including the duration between the callout notification of a contractor until attendance on site.
Connected Party	Any person who has assets physically connected to the Grid Assets.
Connections	The contract for transmission services between Transpower and its Customers.
Connection Policy	The policy prepared by Transpower, as amended or replaced by Transpower from time to time in accordance with the contract for transmission services between Transpower and its Customer relating to the requirements for connection of a connected Party's assets to the Grid Assets and including requirements in circumstances of a grid emergency.
Contingency	The unexpected failure or Outage of one or more components of the Grid Assets.
Current Services	The transmission services provided by Transpower to its Customers on the earlier of the date that Service Levels are agreed in respect of those transmission services or the date that the Rules come into effect.
Customer	The party or parties directly connected to the Grid Assets and invoiced by Transpower for transmission services.
Customer Point of Service	Each of the Points of Service specified in the Points of Service Schedule.
Customer's Assets	The lines, equipment and plant owned or managed by the Customer which are used for the consumption, conveyance or generation of electricity.
Demand	A measure of the rate of consumption of electrical energy.
Design Redundancy Level	The Security level to which the transmission service assets are designed and installed (as opposed to how they are actually operated in practice). Since the Design Redundancy Level is based on the transmission service assets as designed and installed it is not reduced by equipment outages for maintenance or project work, even if equipment is removed from site, as long as this outage is temporary and the item or its equivalent replacement is returned to service at the completion of the maintenance or project work.
Event	An undesired or untoward operational happening that affects the Power Quality without disconnecting demand.
Financial Products	Refer to 4.6.3.

Term	Definition
Generation Constraint	Occurs when generation being injected into the Grid System is restricted or reduced by the operation of System Protection Schemes.
Good Industry Practice	In the case of Transpower when performing the functions of manager of the Grid Assets, the exercise of that degree of skill, diligence, prudence, foresight and economic management, as determined by reference to good international practice, which would reasonably and ordinarily be expected from a skilled and experienced asset owner engaged in the management of a transmission network under the same or similar circumstances as apply in New Zealand at the time.
Grid Assets	At any time, the plant, transmission lines and other facilities owned or managed by the Grid Asset Owner which are used to interconnect all the Points of Connection for connected parties.
Grid Asset Owner And Grid Owner	Transpower New Zealand Limited.
Grid System	That part of the New Zealand electric power system, which electrically interconnects any or all Points of Service.
Interruption	<p>An interruption in the conveyance of electricity between the Customer's Assets and the Grid Assets at a Customer Point of Service for a period of one minute or longer, other than by reason of:</p> <p>(a) Transpower exercising its rights under a transmission services contract to disconnect or de-energise a Point of Connection because the Customer is in breach of its obligations; or</p> <p>(b) Transpower being directed to de-energise a Point of Connection.</p> <p>For the avoidance of doubt, an interruption does not include disconnection of contracted interruptible load, or controllable load such as water heating or interruptions of service for faults in any Customer's system, or for breach of the Connection Policy.</p>
Interruption Duration	The period in minutes between the beginning of an Interruption and when Transpower is ready to restore full or partial service including supply by backfeed.
Interruption Frequency	The number of Interruptions in a defined period.
Interruption Magnitude	Transpower's estimate of the electricity, measured in either megawatts or megawatt-minutes, that was not injected onto or taken off the Grid System because the Interruption occurred. (see also Unserved Energy).
Load Reduction	Occurs when Customer is asked to restrict load to an upper limit. Load Reduction may occur as a result of a Planned Outage or an Unplanned Outage.
Local Quality Agreement	An agreement granted by the System Operator to Transpower under rule 4 of Section III of Part I of the Rules.

Term	Definition
Meet Offtake Demand	Refer to 4.4.1.
Metering	Refer to 4.6.2.
Momentary Interruption	An Interruption in the conveyance of electricity between the Customer's Assets and the Grid Assets at a Customer Point of Service for a period of less than one minute.
Momentary Voltage Fluctuation	Any occurrence where the voltage magnitude deviates from the Voltage Range in Steady State for less than 10 seconds but is restored as soon as is reasonably practicable.
N Redundancy	Where the Grid System or an area of the Grid System is operating in a Steady State but cannot withstand a Contingency while maintaining other dimensions of the agreed service.
N-1 Redundancy	Where the Grid System or an area of the Grid System can withstand any single Contingency while maintaining other dimensions of the agreed service.
N-2 Redundancy	Where the Grid System or an area of the Grid System can withstand two contingencies or a single Contingency when another item is out of service for maintenance while maintaining other dimensions of the agreed service.
New Services	Transmission services not currently provided by Transpower.
Outage	Circumstances where an item of Transpower's equipment is not available to fully perform its intended function. An Outage may or may not cause an Interruption.
Outage Duration	The period from the initiation of an Outage until the affected item or its replacement becomes available to perform its intended function.
Outage Protocol	The Transpower Outage Protocol specifies the way Transpower communicates and provides information to its Customers on planned and unplanned outages of grid assets. It covers the roles and responsibilities of the Transpower Field Services Office, the Regional Operating Centre and the Customer. It describes the documentation and methods used to liaise and communicate with Customers affected by these outages. A copy of the Outage Protocol may found at <a href="http://www.transpower.co.nz">www.transpower.co.nz</a> .
Planned Interruption	Any Interruption in respect of which not less than 24 hours notice is given to the Customer.  By way of clarification, the period of 24 hours notice is used to match the definitions of planned and unplanned used in the Electricity (information disclosure) Regulations 1999.
Planned Outage	A deliberate outage in respect of which Transpower is to give not less than 24 hours notice to the Customer.

Term	Definition
Point of Connection	A connection terminal on equipment forming part of the Grid Assets where the Customer's Assets are physically connected to the Grid Assets.
Point of Service	An electrical busbar of a particular voltage where Transpower as the manager of the Grid Assets has agreed to provide services to one or more Connected Parties.
Posted Terms Contract	The terms notified to a Customer by Transpower which sets out the terms and conditions on which Transpower will provide particular transmission services to that Customer, where the terms have become a contract between Transpower and that Customers, by the operation of law or by agreement.
Power Quality	Refer to 4.2.2.
Projections of Maximum Grid Component Outage Performance	Transpower's best estimate of the minimum performance of specific Grid Components expressed in terms of expected maximum number of hours p.a. of unplanned outage duration, and the expected maximum number of hours per annum of total unavailability.
Provision of Special Information	Refer to 4.6.1.
Redundancy	Ability of the Grid System or an area of the Grid System, to withstand one or more Contingencies.
Rules	The draft "Rules of the [New Arrangement]" marked "Commerce Commission Application" and dated 6 December 2001".
SCADA	Supervisory Control and Data Acquisition.
Security	Refer to 4.3.2.
Security Guidelines for Transmission Planning	The guidelines for that description in the ODV Handbook published by the Ministry of Economic Development, as amended from time to time.
Service Levels	The service levels agreed or determined under Part F of the Rules that Transpower and its Customer have incorporated into a Transmission Contract.
Special Information	Refer to 4.6.1.
Steady State	An operating state in which any disturbances occurring have only small rates of change and small relative magnitudes.
Step Change in Voltage	A variation in Steady State voltage magnitude between two adjacent levels, each of which is sustained for definite but unspecified times.

Term	Definition
System Operator	The person responsible for the operation of the Grid System. The [current] System Operator is Transpower New Zealand Ltd.
System Protection Scheme	A scheme designed to detect abnormal system conditions and take predetermined corrective action (other than the isolation of faulted elements) to preserve system integrity and provide acceptable system performance.
Transmission Contract	A signed written contract for transmission services or a Posted Terms Contract.
Transport	The conveyance of electricity using Grid Assets.
Unplanned Interruption	Any Interruption in respect of which less than 24 hours notice, or no notice, is given to the Customer.  By way of clarification, the period of 24 hours notice is used to match the definitions of planned and unplanned interruptions used in the Electricity (information disclosure) Regulations 1999.
Unplanned Outage	An Outage (whether deliberate or not) in respect of which Transpower gives the Customer less than 24 hours notice or no notice at all.
Unservd Energy	Transpower's best estimate of the amount of electricity that would have been conveyed from a Customer Point of Service to the Customer's Assets during a specified period, but due to an Interruption, was not conveyed. This is expressed as a percentage of the total amount of electricity conveyed.
Voltage Range in Steady State	The voltage range specified in the voltage schedule of the Connections contract for the nominal voltage existing at that Customer Point of Service.
Year	Transpower's financial year commencing on 1 July and ending on 30 June of each year.