TRANSPOWER NEW ZEALAND LIMITED: NORTH ISLAND GRID UPGRADE PROJECT

BOARD OF INQUIRY HEARING

COMMON BUNDLE OF EXHIBITS

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	VOLUME ONE
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7	*Assessment of HVDC Transmission Options between Whakamaru and Auckland* Transpower, May 2005
8	*ELF Electromagnetic Fields and the Risk of Cancer – Report of an Advisory Group on Non-Ionising Radiation*, National Radiological Protection Board, 2001
9	*Environmental Health Criteria 238 – Extremely Low Frequency Fields*, World Health Organisation, 2007, pages 1 – 20 (Summary and Recommendations for Further Study) (the full report is at: http://www.who.int/peh-emf/publications/Complet_DEC_2007.pdf)

	VOLUME THREE
10	*Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz)*, International Commission on Non-Ionizing Radiation Protection, 1998
11	*IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0-3 kHz*, IEEE Standards Coordinating Committee 28, October 2002
12	*Stakeholder Advisory Group on ELF EMFs (SAGE) – Precautionary approaches to ELF EMFs*, R K Partnership Ltd, April 2007 and *Supporting papers to the First Interim Assessment*

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MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Area Report, September 2004 (Part 1 Report, Part 2 Maps)
MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Corridor Study, September 2004 (Part 1 Report, Part 2 Maps)
MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Route Study, October 2004 (Part 1 Report, Part 2 Maps)
MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Summary Report, October 2004
MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Hunua Options, February 2005
MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Report on Interim Route Decision, May 2005 (Part 1 Report, Part 2 Working Papers Volumes 1 – 3)
MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Final Route Decision Report, July 2005 (Part 1 Report, Part 2 Specialist Reports Volumes 1 to 4)
MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Interim Report on Underground Cable Section, Transition Station and Substations, August 2005 (Volume 1 Report, Volume 2 Maps, Volume 3 Supporting Documents)
MWH NZ Ltd, North Island 400kV Backbone Investigation Project, Final Underground Cable Route, November 2005
MWH NZ Ltd, North Island 400kV Grid Upgrade Project, Review of Route Section 1, Alternatives, December 2005
MWH NZ Ltd and Transpower NZ Ltd, North Island 400kv Backbone Investigation Project, Easement Report, January 2006
MWH NZ Ltd, North Island Grid Upgrade Project Amended Proposal, Interim Report on Northern End Modifications, October 2006
MWH NZ Ltd, North Island Grid Upgrade Project, Amended Proposal, Final Report on Northern End Modifications, February 2007
MWH NZ Ltd, North Island Grid Upgrade Project Amended Proposal, Brownhill Substation, Dodd Property Option, July 2007
Truescape Visual Simulations and Video, Lake Karapiro Crossing – Monopoles,7 August 2007

TAB 1

GLOSSARY OF TERMS

A glossary of terms will be provided for the assistance of the Board. This glossary will summarise all definitions contained in Transpower evidence, and will be compiled once rebuttal evidence has been lodged.

TAB 2

Introduction

These Electricity Governance Rules provide for the operation of the New Zealand Electricity Industry in relation to the following areas:

a) Part A provides for defined terms and principles of interpretation for the Rules;

b) Part B is reserved for future use;

c) Part C provides for the maintenance of system quality, including:
   - the principal performance obligations of the system operator;
   - the performance obligations of asset owners;
   - arrangements concerning ancillary services; and
   - technical codes and standards.

d) Part D provides for standards and requirements for metering installations;

e) Part E provides for the management of registry information and a process for switching customers between retailers;

f) Part F provides for the maintenance and upgrade of the transmission system, including:
   - contracts for transmission;
   - grid upgrades and investments;
   - transmission pricing methodology; and
   - financial transmission rights.

g) Part G provides for the trading of wholesale electricity, including:
   - the scheduling of generation and load;
   - the dispatch of generation and load;
   - the publication of prices;
   - must run dispatch generation; and
   - the reconciliation of metering information.

h) Part H provides for the clearing and settlement of wholesale electricity volumes, including:
   - provision of prudential security;
   - processes for the settlement of wholesale electricity volumes; and
   - payments between the clearing manager and other participants.

i) Part I provides for transitional arrangements, including:
   - interim dispensations;
   - existing common quality agreements;
   - existing and transitional ancillary service arrangements;
   - transition from MARIA; and
   - transition from NZEM.

These Rules are made by the Minister of Energy in accordance with sections 172H, 172I and 172E(2) of the Electricity Act 1992.

These Electricity Governance Rules are regulations within the meaning of the Regulations (Disallowance) Act 1989, but are not regulations for the purposes of the Acts and Regulations Publication Act 1989.

Part A Interpretation

1. Defined terms

In these **rules**, unless the context otherwise requires:

"**Act**" means the Electricity Act 1992;

"**active energy**" means the integration over time of the product of voltage, current and the cosine of the phase angle between them, and which is normally measured in kilowatt hours (kWh);

"**active power**" means the product of voltage, current and the cosine of the phase angle between them, and which is normally measured in kilowatts (kW);

"**active meter**" means a **meter** used for the measurement of **active energy**;

"**adjustment**" means an operation or process intended to reduce the differences between the values indicated by an instrument and the values realised by a **reference standard** or **working standard** to within a predetermined tolerance, and "**adjust**" and "**adjusted**" have corresponding meanings;

"**administrative cost**" means, in relation to any **ancillary service**, those significant costs that are incurred by the **system operator** in relation to the development of **ancillary service** provision and that are specifically attributable to an **ancillary service** and that have been agreed to by the **Board** and the **system operator**;

"**allocable cost**" has the meaning set out in rule 11 of section IV of part C;

"**alternative ancillary service arrangement**" means an arrangement between a **participant** and another **participant** or other person, or an arrangement involving only a **participant**, which is authorised by the **system operator** in accordance with rule 9 of section IV of part C;

"**ancillary service**" means **black start**, **over frequency reserve**, **frequency keeping**, **instantaneous reserve** or **voltage support**;

"**ancillary service agent**" means a person who provides any **ancillary service**;

"**ancillary service arrangement**" means a contract entered into between the **system operator** and an **ancillary service agent** for the procurement of **ancillary services** in accordance with rule 6 of section IV of part C;

"**annual audit**" means a complete review of all processes, procedures, facilities and other relevant items to confirm compliance with the **rules**;

"**annual consumption list**" means the list published by the **market administrator** in accordance with rule 3.32 of section V of part G;

"**approved calibration laboratory**" means the Measurement Standards Laboratory of New Zealand, or a calibration laboratory that has been accredited under the Testing Laboratory Registration Act 1972 to ISO 17025, or an international laboratory that has been recognised by the Chief Metrologist for the specific **calibration** required;

"**approved test house**" means a meter testing and calibration facility that has been approved by the **market administrator** in accordance with the procedures in a **code of practice** D2 of schedule D1 of part D;

"**approved test laboratory**" means a test laboratory that has been accredited under the Testing Laboratory Registration Act 1972 to ISO 17025 for the specific test required;

"**asset**" means equipment or plant which is connected to, or forms part of the **grid** and, in the case of part C, includes equipment or plant which is intended to become connected to the **grid** and equipment or plant of **embedded generators**;

"**asset capability statement**" means a statement of capability and operational limitations that applies to specific **assets** during the normal and abnormal conditions which may arise on the **grid**, provided to the **system operator** in accordance with **technical code** A of schedule C3 of part C;

"**asset owner**" means a **participant** who owns **assets** used for the generation or conveyance of **electricity** and persons who operate such **assets** and, in the case of part C, includes **consumers** with a **point of connection** to the **grid**;

"**asset owner performance obligations**" and "**AOPO**" means a performance obligation specified in section III of part C, with which **asset owners** must comply for the **system operator** to plan to comply and comply with its **principal performance obligations**;

"**associated person**" means a person that has **control** of a **participant**. A **participant** is deemed to be associated with another person who is:

(a) an officer or employee of the **participant**; or

(b) an entity controlled by an officer or employee of the **participant**; or

(c) an entity controlled by a person covered in (a) or (b); or

(d) an entity controlled by any person with whom the **participant** is deemed to be related by virtue of rule 3.

"**assumed co-efficient of variation**" means the value of **co-efficient of variation** which is set by the **market administrator** for the purpose of calculating the **preliminary sample size**;

"**at risk HVDC transfer**" means the quantity of **MWh** for each **trading period** calculated in accordance with tables 1 and 2 below:

HVDC configuration		the operating configuration of the **HVDC link** at the beginning of **trading period** t;
$INJ_{HVDCH\ Ayt}$	=	the **electricity** injected from the **HVDC link** into the North Island grid assets at the North Island **HVDC injection point** in **trading period** t; and
$INK_{HVDCBENt}$	=	the **electricity** injected from the **HVDC link** into the South Island grid assets at the South Island **HVDC injection point** in **trading period** t.

Table 1: HVDC northward transfer – if **electricity** is injected at the North Island **HVDC injection point** in the relevant **trading period**

HVDC Configuration	**Electricity injected in trading period t**	**At risk HVDC transfer**
Both Poles	> 299	$INJ_{HVDCHAYt}$ – 269
Both Poles	≤ 299	0
Pole 2 and 1 Halfpole	> 196	$INJ_{HVDCHAYt}$ - 166
Pole 2 and 1 Halfpole	≤ 196	0
Pole 2 only	> 30	$INJ_{HVDCHAYt}$
Pole 2 only	≤ 30	0
Two Halfpoles	> 172	$INJ_{HVDCHAYt}$ – 142
Two Halfpoles	≤ 172	0
One Halfpole only	> 30	$INJ_{HVDCHAYt}$
One Halfpole only	≤ 30	0

Table 2: HVDC southward transfer – if **electricity** is injected at the South Island **HVDC injection point** in the relevant **trading period**.

HVDC Configuration	**Electricity injected in trading period t**	**At risk HVDC transfer**
Both Poles	> 223	$INJ_{HVDCBENt}$ - 193
Both Poles	≤ 223	0
Pole 2 and 1 Halfpole	> 131	$INJ_{HVDCBENt}$ - 101
Pole 2 and 1 Halfpole	≤ 131	0
Pole 2 only	> 30	$INJ_{HVDCBENt}$
Pole 2 only	≤ 30	0
Two Halfpoles	> 131	$INJ_{HVDCBENt}$ - 101
Two Halfpoles	≤ 131	0
One Halfpole only	> 30	$INJ_{HVDCBENt}$
One Halfpole only	≤ 30	0

"**auction**" means a must-run dispatch auction conducted by the **clearing manager** under section IV of part G;

"**auction bid**" means a bid made for the **auction** under rule 3 of section IV of part G;

"**auction revenue**" means, for a **generator**, the amount payable in accordance with rule 2.7 of section IV of part G and, for a **purchaser**, the amount receivable in accordance with rule 2.5 of section IV of part G;

"**auction right**" means the right (but not the obligation) to offer for sale a specified quantity of **electricity** to the **clearing manager** at zero price in accordance with rule 2.13 of section IV of part G;

"**audit**" means a process of inspection of procedures, facilities and other relevant items to confirm compliance with the **rules** and "**audited**" has a corresponding meaning;

"**auditor**" means a person selected to carry out an **audit**;

"**automatic control plant**" means any hydro generating plant that has a pre-programmed generation profile and an automatic override should uncontrollable water inflows change;

"**automatic under-frequency load shedding**" means automatic shedding of electrical load when frequency falls below preset frequency as specified in rule 6.3of **technical code** B of schedule C3 of part C;

"**availability cost**" means the costs incurred by the **system operator** in purchasing **instantaneous reserve** and providing that **instantaneous reserve** for a **trading period**, including:

(a) payments made by the **system operator** for that **trading period** pursuant to contracts which secure the availability of **instantaneous reserves**; and

(b) the annual and variable costs (including any constrained-on costs) incurred by the **system operator** under any other contracts allocated by the **system operator** to that **trading period**:

less

(c) costs of **instantaneous reserves** procured as a direct result of a **generator** having been granted a **dispensation** under rule 7.3 of section III of part C.

but excludes any **administrative cost**;

"**back-up metering information**" means **half-hour metering information** from any alternative **metering installation** which measures the same flow of **electricity** at the relevant **grid exit points** and **grid injection points** as would have been given pursuant to rule 3.26.2 of section V of part G,;

back up protection system means a protection system:

(a) which disconnects faulted **assets** from the **grid** because either a **main protection system** or a **circuit breaker** has failed to disconnect a faulted **asset** from the **grid** in the allocated time; and

(b) that may disconnect non-faulted **assets** as well as a faulted **asset**

"**bank**" means an incorporated person which carries on the business of banking;

"**bank bill bid rate**" means the rate per annum (rounded upwards to two decimal places) displayed at or about 10.45am on the Reuters Screen on page BKBM (or its successor or equivalent page) on the relevant date as the bank bill "settlement" bid rate for bank bills having a tenor of one month provided that if such a rate is not available then the "**bank bill bid rate**" will be the rate determined by the **clearing manager** to be the nearest practicable equivalent;

"**benchmark agreement**" means an agreement for the connection to and/or use of the **grid** under rule 4 of section II of part F as amended from time to time as a result of a review under rule 7 of section II of part F (including, where relevant, investment);

"**benefit to the public**" means public benefit net of any costs and detriments, including those detriments associated with a lessening of competition as those concepts are applied under the Commerce Act 1986;

"**bid**" means the information submitted to the **system operator** by a **purchaser** in accordance with rule 3.10 of section II of part G and includes any bid revised in accordance with rule 3.14 or 3.17 of section II of part Gbut excludes any **bid** cancelled in accordance with rule 3.14 of section II of part G;

"**binding constraint**" means a **constraint** which is likely to cause a significant difference in a price at one **node** in comparison to the price at another **node**;

"**billing period**" means a period of one calendar month;

"**black start**" means an **ancillary service** required to enable a **generating unit** isolated from a **grid** to be livened and connected to the **grid**;

"**block dispatch group**" means a group of **generating stations** on one continuous water course, which is the subject of an agreement between the **system operator** and a **generator** pursuant to rule 3.6 of section III of part G;

"**block security constraint**" means any one of the following:

(a) a constraint applied by the **system operator** to any **generating unit** or **generating station** to provide **voltage support** or **frequency keeping** as determined in accordance with part C; or

(b) a limitation in the offered capacity of a **grid owner's network** to convey **electricity** between **generating stations** constituting a **block dispatch group**; or

(c) a limitation in the offered capacity of a **grid owner's network** to convey **electricity** between **generating stations** constituting a **block dispatch group** and a **grid owner's network**,

in both (b) and (c) above, such a limitation in the offered capacity being either the offered capacity of a **grid owner's network** or a **grid system security constraint** as determined by the **system operator** in accordance with part C;

"**Board**" means the Electricity Commission continued under subpart 1 of part 15 of the Act;

"**bona fide physical reason**" includes:

(a) in relation to any **generator** or **purchaser** or any **asset owner**, a situation where personnel or plant safety is at risk;

(b) in relation to a **generator**:

(i) a reasonably unforeseeable change in generating capability from an item of **generating plant** which is the subject of an existing **offer** by that **generator**; or

(ii) a reasonably unforeseeable change in the level of expected uncontrollable water inflows into the head pond of a hydro station which is the subject of an existing **offer** by that **generator**; or

(iii) a reasonably unforeseeable change in circumstances such that the **generator** will breach any consent held by it under the Resource Management Act 1991; or

(iv) a reasonably unforeseeable physical infeasibility which arises from a **pre-dispatch schedule** or **dispatch schedule**;

(c) in relation to a **purchaser**:

(i) a reasonably unforeseeable full or partial loss of demand at a **grid exit point** which is the subject of an existing **bid** by that **purchaser**; or

(ii) a reasonably unforeseeable change in circumstances such that the **purchaser** will breach any consent held by it under the Resource Management Act 1991; or

(iii) a reasonably unforeseeable full or partial loss of generating capability from an item of **generating plant** owned by, or the subject of a supply contract with, that **purchaser** during the relevant **trading periods**;

(d) in relation to a **grid owner,** a reasonably unforeseeable loss of full or partial capacity on transmission plant forming part of the **grid**.

bound, in relation to a **transmission security constraint**, means that the flow of **electricity** through one or more transmission lines or transformers is equal to or greater than the **transmission security constraint** applied to those transmission lines or transformers, and **bind** has a corresponding meaning

"**branch**" means an electrical link between:

(a) two or more **nodes**; or

(b) a **node** and a **point of connection** to the **grid**;

"**business**" means the business carried out as a **participant**;

"**business day**" means any day of the week except Saturdays, Sundays, **national holidays** and any other day from time to time declared by the **market administrator** not to be a **business day** by notice to each **registered participant** in the manner set out in the **rules**;

"**calibration**" means the set of operations that establishes, under specified conditions, the relationship between the values indicated by the measuring system and the corresponding values of a quantity realised by a **reference standard** or **working standard**, and "**calibrate**" and "**calibrated**" have corresponding meanings;

"**calibration report**" means a report which contains the results of all **calibration** tests carried out on a **metering installation** or a component of a **metering installation** or a **working standard** by an **approved test house** as part of the **certification** process;

"**call**" has the meaning given to it in rule 3.1.3 of part H;

"**capacity reserve**" means:

(a) demand that can be decreased for the purpose of adjusting a **constraint**; or

(b) generation that can be increased or decreased for the purpose of adjusting a **constraint**.

"**cash deposit**" means the cash deposited in **cleared funds** by a **payer** in accordance with rule 2.4 of part H and includes any interest under rule 2.6.6 of part H, which has not been paid out;

"**cash deposit accounts**" means the trust accounts established by the **clearing manager** in accordance with rule 2.6.1 of part H;

"**cash interest rate**" means the interest rate calculated by taking a weighted average of interest rates applying to each **purchaser's cash deposit**;

"**causer**" means the person whose **asset** caused an **under-frequency event**;

"**centralised data set**" means information kept by the **Board** relating to transmission and **transmission alternatives** under section III of part F;

"**certification**" means:

(a) when applied to a **metering installation**, confirmation that the whole metering system is installed and functioning correctly and the **metering installation** meets the requirements of the **rules**; and

(b) when applied to an individual component of a **metering installation**, confirmation that that component meets the requirements of the **rules**;

"**certification report**" means a report which contains the **calibration report** and all other information relevant to the **certification** of a **metering installation** or a component of a **metering installation**;

"**certification sticker**" means a sticker which is valid for a specific period and which is attached to a **metering installation** or a component of a **metering installation** confirming that the **metering installation** or component has been **certified** by an **approved test house** in accordance with rule 5.2 of **code of practice D**3 of schedule D1 of part D;

"**certified**" means having achieved **certification**;

"**certify**" means to carry out a **certification**;

"**chargeable capacity**" means the capacity that the **distributor** may charge for, but which might not be the actual installed capacity at the relevant **ICP**;

"**check metering information**" means **half-hour metering information** from a **meter**, and located at the **grid exit point** or **grid injection point**, giving equivalent information, but not necessarily of the same accuracy, as the relevant **grid exit point** or **grid injection point** meter;

"**circuit branch**" means a **branch** that is not a **transformer branch** or the **HVDC link**;

circuit breaker means a switching device capable of making, carrying and breaking currents under normal circuit conditions and also making, carrying for a specified time and breaking currents under specified abnormal conditions (such as a short circuit)

circuit breaker failure protection system means a protection system which:

(a) operates because a **circuit breaker** has failed to disconnect a faulted **asset** from the **grid** in the allocated time; and

(b) may disconnect non-faulted **assets** from the **grid** as well as a faulted **asset**

"**class A approved test house**" means an **approved test house** which has been approved in accordance with rule 7 of **code of practice** D2 of schedule D1 of part D;

"**class B approved test house**" means an **approved test house** which has been approved in accordance with rule 7 of **code of practice** D2 of schedule D1 of part D;

"**cleared funds**" means on any **business day**, funds which are immediately available for disbursement on that day;

"**clearing auction price**" means the lowest successful price bid at an **auction** in dollars per **MW** per **half hour**;

"**clearing manager**" means the **service provider** for the time being who is appointed as clearing manager pursuant to the **regulations**;

"**code of practice**" means a code of practice issued pursuant to the **rules**, and includes the **codes of practice** in schedule D1 of part D and schedule G8 of part G;

"**co-efficient of variation**" means the ratio of the standard deviation to the mean of the distribution for the random variable under consideration;

co-generator means the owner of an **industrial co-generating station**. For the avoidance of doubt, rules specifying **co-generators** only apply to the **industrial co-generating stations** owned by the **co-generator**

"**Comalco agreement**" has the same meaning as in regulation 198;

"**commissioning**" means to verify the correct operation of metering equipment installed in a **metering installation**;

"**commissioning report**" means a report which contains the results of all **commissioning** tests carried out on a **metering installation** by an **approved test house** as part of the **certification** process;

"**common quality**" means those elements of quality of **electricity** conveyed across the **grid** that cannot be technically or commercially isolated to an identifiable person or group of persons;

"**configuration**", in relation to the **HVDC link**, means the following modes of operation of the **HVDC link**:

(a) Bipole;

(b) Pole Two and One half Pole;

(c) Pole Two only;

(d) Pole One only, both half poles;

(e) Pole One only, one half pole;

"**connection asset**", for the purposes of sections II, VI and VII of part F, has the meaning set out in the **transmission pricing methodology**;

"**Connection Code**" means the Connection Code developed in accordance with rule 3.3 of section II of part F;

connection location means a substation or other location at which the lines, equipment and plant owned or managed by a **designated transmission customer** that are directly related to a **point of connection**, and that are used for the consumption, conveyance, or generation of **electricity**, are directly connected to the **grid**

"**connection type**" means a connection that identifies whether the connected person is a **generator**, **distributor** or **direct consumer** and whether the connection is to the **grid**, a **local network** or an **embedded network**;

"**constrained off amounts**" means the amounts calculated by the **clearing manager** pursuant to rule 4.3 of section V of part G;

"**constrained off situation**" means a situation as defined in rule 4.1 of section V of part G;

"**constrained on amounts**" means the amounts calculated by the **clearing manager** pursuant to rules 5.3 and 5.4 of section V of part G;

"**constrained on compensation**" means the amounts payable to any **generator** and the amounts payable by the **system operator** or any **purchaser** in accordance with rule 5 of section V of part G;

"**constrained on situation**" means a situation as defined in rule 5.1 of section V of part G;

"**constraint**" means a limitation in the capacity of the **grid** to convey electricity caused by limitations in capability of available **assets** forming the **grid**; or limitations in the performance of the integrated power system;

constraint price, in relation to a **transmission security constraint**, means the amount in dollars and cents per **MW** by which the objective function described in rule 2 of schedule G6 of part G is decreased by relaxing the **transmission security constraint** by a very small amount

"**consumer**" means any person who is supplied **electricity** for consumption and includes a **distributor**, **retailer** or **generator** where the **distributor**, **retailer** or **generator** is supplied with **electricity** for its own consumption;

"**consumption information**" means the quantity of **electricity** conveyed during the period for which the information is required, which may be directly measured or calculated from information obtained from a **metering installation** or calculated in accordance with the **rules**;

"**consumption pattern**" means the result of the allotment of total consumption over some time period to each **half hour** interval within that time period;

"**contract specifications**" means specifications prescribing the specific terms of, and terms of trading in, each class of contract which may from time to time be traded on a market under these **rules**;

"**controller**" means:

(a) in relation to a company:

(i) any person in accordance with whose directions and instructions the persons occupying the position of directors of the company are accustomed to act (but disregarding advice given in a professional capacity); or

(ii) any person who is entitled to exercise, or control the exercise of, 50% or more of the voting power at any general meeting of the company or of another company of which the company is a subsidiary;

(b) in relation to an unincorporated body of persons:

(i) any person in accordance with whose directions and instructions the officers of the body are accustomed to act (but disregarding advice given in a professional capacity); or

(ii) any person who is entitled to exercise, or control the exercise of, 50% or more of the voting power on any resolution of the body;

(c) in relation to any person, any person who has the power to appoint or remove a majority of the participants of the governing body of that person or otherwise controls or has the power to control the affairs or policies of that person; and "control" and "controlled" have corresponding meanings;

"**control room**" means the location at which **asset owners** have facilities to receive operational instructions from the **system operator** and to act on those instructions;

"**control system**" means equipment which adjusts the output voltage, frequency, **MW** or **reactive power** (as the case may be) of an **asset** in response to certain aspects of **common quality** such as voltage, frequency, **MW** or **reactive power**, including speed governers and exciters;

"core grid" means the **assets** that form part of the **core grid** as specified in the **core grid determination**;

"core grid determination" means the determination specifying the **assets** forming part of the **core grid**, developed in accordance with rules 5A and 5B under section III of part F, including variations;

"**customer**" means a person who has agreed to purchase **electricity** from a **retailer** at a specific **ICP**;

"**data administrator**" means the person responsible for gathering, validating, processing and storing **metering information** on behalf of **retailers** as approved in accordance with **code of practice** G1 of schedule G8 of part G;

"**data collector**" means a person responsible for collecting metering data for non **half-hour metering**;

"**data logger**" means a device that complies with **code of practice** D4 of schedule D1 of part D, whether or not the **data logger** is integral with the **meter**;

"**day**" has the meaning set out in the Time Act 1974;

"**declaration date**" means the date, nominated by the **profile applicant**, on which the **market administrator** must, for a particular **profile**, notify every **registered participant** of the information set out in rule 6 of **code of practice** G2 of schedule G8 of part G for that **profile**;

"**de-energisation**" means the movement of any isolator, breaker or switch or the removal of any fuse or link so that no **electricity** can flow to or from a **network** or any part thereof, and "**de-energise**" has a corresponding meaning;

"**default interest rate**" means the **bank bill bid rate** plus 5 percent per annum;

"**demand**" means the rate of consumption of electrical energy;

"**designated transmission customers**" means **participants** required to enter into **transmission agreements** with **Transpower** under section II of part F;

"**direct consumer**" means a **consumer** that purchases **electricity** from the **clearing manager** for its own consumption at a **point of connection** to a **local network** or the **grid** and, in the case of part C, means a **consumer** with a **point of connection** to the **grid**;

"**disconnected price situation**" means a situation where:

(a) the **software** used to determine **final prices** and **final reserve prices** substitutes a model variable for a nodal price equivalent to a model variable for deficit bus generation or surplus bus generation; and

(b) there is no load or generation at the relevant **grid injection point** or **grid exit point** at the relevant **trading period** in the model; and

(c) the relevant **grid injection point** or **grid exit point** is not connected to the **network** for the duration of the relevant **trading period** in the model;

"**dispatch**" means the process of:

(a) pre-dispatch scheduling to match expected **supply** with expected **demand**, and to allocate **ancillary service offers** and transmission **offers** to match expected **grid** conditions; and

(b) rescheduling to meet forecast **demand**; and

(c) issuing instructions based on the **pre-dispatch schedule** and the real-time conditions to manage resources to meet the actual **demand**,

and "**dispatching**" has a corresponding meaning;

"**dispatch arc flows**" means, for a transmission line or a transformer, the quantity of energy flow on that transmission line or transformer, as calculated by the **system operator** in accordance with rule 5 of section III of part G, that is equal to or greater than 95% of the maximum flow limit (in **MW**) of that transmission line or transformer as set by the **system operator** in accordance with schedule G6 of part G;

"**dispatch group constraint arc flows**" means the quantity of energy flows on a group of transmission lines and/or transformers calculated according to the relevant **group constraint formula**, as calculated by the **system operator** in accordance with rule 5 of section III of part G, and where the calculated energy flow is equal to or above 95% of the maximum flow limit (in **MW**) for that group of transmission lines and /or transformers as set by the **system operator** in accordance with schedule G6 of part G;

"**dispatch instruction**" means any instruction formulated and issued by the **system operator** in accordance with rule 4.5 of section III of part G;