
Policy statement

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Introduction

PURPOSE

1. This is the **policy statement** referred to in rules 8 and 10 of section II of part C and sets out the policies and means that are considered appropriate for the **system operator** to observe in complying with the **principal performance obligations (PPOs)** subject always to the obligation of the **system operator** to act as a **reasonable and prudent system operator** and to therefore depart from the **policy statement** if so required.
2. The **policy statement** also:
 - 2.1 Forms a transparent basis from which detailed procedures are developed to support compliance with the policy as well as a mechanism for continually improving existing practices.
 - 2.2 Clarifies the risks being managed by policy and the key assumptions made in managing those risks.

SYSTEM OPERATOR POLICIES TO ACHIEVE THE PPOS AND DISPATCH OBJECTIVE

3. The policies by which the **system operator** will seek to achieve the various **PPOs** (and other deliverables) are set out in the sections of the **policy statement** as follows:

Avoid Cascade Failure

4. The policies to be adopted in respect of the cascade failure **PPO** are set out in:
 - 4.1 The Security Policy that:
 - 4.1.1 Outlines how commonly occurring events are to be managed with the intention to avoid exceeding:
 - Frequency limits.
 - **Asset** capability (including voltage limits), normally without **demand shedding** being required.
 - 4.1.2 Outlines the use of **automatic under-frequency load shedding** to manage **extended contingent events**, where **demand** may otherwise be shed to maintain the security policies and the requirement for emergency management procedures to manage extreme events.
 - 4.2 The Emergency Planning section of the Security Policy that details the emergency arrangements required for extreme events (or where the event cannot be satisfactorily managed through the normal application of the Risk Management policies).

- 4.3 The Dispatch Policy that details how the **system operator** intends to adjust scheduling and **dispatch** to maintain frequency and reserves for use in connection with the Security Policy.

Frequency

5. The policies to be adopted in respect of the frequency related **PPO** are set out in:
 - 5.1 The Security Policy, that:
 - 5.1.1 Sets the overall objective for maintaining frequency reserves for **contingent events** and **extended contingent events**.
 - 5.1.2 Outlines the process for determining the required frequency reserves (as described in the sections on under-frequency and over-frequency management).
 - 5.2 The Dispatch Policy, which describes the arrangements for **dispatching** these reserves.
6. The policies to be adopted for maintenance of the frequency within the **normal band**, and time keeping, are set out in the Dispatch Policy and the **procurement plan**.

Other Standards

7. The policies to be adopted in respect of the other **PPOs** (rule 2.3 of section II of part C) are described in the Security Policy section on Management of Quality.

Restoration

8. The restoration process is described in the Emergency Planning section of the Security Policy.

Dispatch Objective

9. The Dispatch Policy describes the policies that will be adopted in respect of the **dispatch objective**.

INTERPRETATION

10. Any terms used in the **policy statement** which are defined in part A of the **rules** and which are not defined in the Glossary of Terms within the **policy statement**, have the same meaning as given to them in the **rules**. In the event of any inconsistency or conflict between the provisions of this **policy statement** and the rest of the **rules**, the rest of the **rules** shall prevail.

Chapter 1 - Security Policy

POLICY AND SCOPE

General Policy

11. The general policies the **system operator** intends to use to meet the **principal performance obligations** are as follows:
 - 11.1 Adopting processes intended to identify events, assess the risks of occurrence of those events in advance, categorise those event risks, and manage those defined events on the power system in real time in accordance with this **policy statement**.
 - 11.2 Applying **security constraints** on **dispatch**, in accordance with the Security Policy, given the **assets** and **ancillary services** made available to the **system operator**.
 - 11.3 Procuring, scheduling and **dispatching** reserves, where possible, with the **assets** and **ancillary services** made available to the **system operator**, to maintain the required frequency standards and to avoid cascade failure, for defined events.
 - 11.4 Managing voltage and available reactive support during real time, where possible given the **assets** and **ancillary services** made available to the **system operator** in a manner intended to avoid cascade failure for defined events.
 - 11.5 Recommending and facilitating, to the extent considered to be reasonably appropriate and practicable by the **system operator**, coordination of advised planned **asset** outages to minimise the impact on security during **dispatch**.
 - 11.6 Taking action available under the **rules** as reasonably requested by any person to identify the cause of harmonic levels, voltage flicker or, voltage imbalance standards not being met.
 - 11.7 Defining the circumstances under which **formal notices** will be sent in accordance with **technical code** B of schedule C3 of part C and, to the extent possible, determining the situations in advance that will potentially result in the initiation of **demand shedding**.

RISK MANAGEMENT POLICIES

Identification and Application

12. The **system operator** will seek to manage the outcomes of events that may cause cascade failure by:
 - 12.1 Identifying potential credible events (each an 'event') on the power system as a result of **asset** failure that may result in cascade failure. At the date of this **policy statement** the **system operator** has identified the following credible events that may result in cascade failure, due to these events causing quality and/or power flow outcomes exceeding **asset** capability:

12.1.1 The loss of one of the following power system components:

- a **generating unit**; or
- a **transmission circuit**; or
- the **HVDC link** pole (valve group, overhead dc line, or undersea cable); or
- an **interconnecting transformer** (110 kV or 220 kV); or
- a busbar (220 kV, 110 kV or 66kV); or
- large load or load blocks; or
- reactive injections, both when provided as an **ancillary service** or when available from transmission **assets**:

12.1.2 The loss of both transmission circuits of a double circuit line:

12.1.3 The simultaneous loss of two or more of any of the components in 12.1.1:

12.1.4 The close consecutive loss of two or more of any of the components in 12.1.1:

12.1.5 The loss of the **HVDC link** bipole:

12.1.6 Other credible events may be identified during the term of this **policy statement**. This may include events arising in particular temporary circumstances such as, for example, a credible event identified as potentially arising during commissioning:

12.1.7 If, during the term of this **policy statement**, the **system operator** identifies a further or other credible event then, subject to operational requirements and as soon as reasonably practicable, the **system operator** shall:

- **advise** such further credible event to all **participants**;
- invite **participants** to comment on such credible event; and
- consider **participants'** comments prior to it implementing mitigation measures for such credible event.

12.2 Assessing each event, or category of events, to estimate the likely risks based on the potential impact on the power system (including on achievement of the **PPOs**), if the event or category of events occurs. Consequence assessment has taken and will take into consideration mitigating factors such as:

- **AUFLS.**

- The provision of levels of reserves, where justified for mitigation of **other events**.
- The provision of **constraints** on **dispatch**, where justified for mitigation of **other events**.
- The probability of occurrence based on historical frequency of **asset** failure or other credible reliability information, provided that where the **system operator** has limited historical or other information for specific **assets**, it will consider generic information available to it regarding failure of that type of **asset**.
- The estimated costs and benefits of identified risk management.
- The feasibility and availability of other potential mitigation measures.

12.3 Assigning each of the assessed events to one of the following categories:

- **Contingent events:** Events where the impact, probability of occurrence and estimated cost and benefits of mitigation are considered to justify implementing policies that are intended to be incorporated into the scheduling and **dispatch** processes pre-event.
- **Extended contingent events:** Events for which the impact, probability, cost and benefits are not considered to justify the controls required to totally avoid **demand shedding** and maintain the quality limits defined for **contingent events**.
- **Stability events:** Severe power system faults that might lead to a defined **contingent event**, **extended contingent event** or loss of an interconnecting transformer or busbar section. For these faults it is deemed prudent to ensure that the transient and dynamic stability of the power system is maintained.
- **Other events:** Events which are considered to be uncommon and for which the impact, probability of occurrence and estimated cost and benefits do not justify implementing available controls, or for which no feasible controls exist or have been identified, other than unplanned **demand shedding**, **AUFLS** and other emergency procedures or restoration measures.

12.4 Categorising, at the date of this **policy statement** the following credible events:

- **Contingent events:**
 - a) The loss of a **transmission circuit**.
 - b) The loss of an **HVDC link** pole.

- c) The loss of a single **generating unit**.
 - d) The loss of both **transmission circuits** of a double circuit line, where the **system operator** has determined a high level of likelihood of occurrence based on historical information.
 - e) The loss of both **transmission circuits** of a double circuit line, where the **system operator** has been advised of a temporary change to environmental or system conditions that give reason to believe there is a high likelihood of occurrence of the simultaneous loss of both circuits. The **system operator** will display on its website a range of environmental or system conditions that it considers may create a high likelihood of occurrence of simultaneous loss of both circuits (but this list may not be exhaustive and will not limit the definition of the **contingent event**).
 - f) The loss of reactive injections, both when provided as an **ancillary service** or when available from transmission assets.
 - g) The loss of the largest possible load block as a result of paragraphs a) to f) above for each **island**.
- **Extended contingent events:**
 - a) The sudden loss of the **HVDC link** bipole.
 - b) Any of the following as **notified** by the **system operator** in accordance with clause 12.6:
 - The loss of a 220 kV **interconnecting transformer**:
 - The loss of a 220kV or 110kV busbar:
 - The loss of a 66kV busbar directly connected to the **core grid**.
- **Other events:**
 - a) The loss of a 66kV busbar not connected to the **core grid**.
 - b) The loss of a 110kV interconnecting transformer.
 - c) The loss of both **transmission circuits** of a double circuit line.

- d) The simultaneous loss of two or more of any of the components in clause 12.1.1.
- e) The close consecutive loss of two or more of any of the components in clause 12.1.1.

12.5 Applying, where possible, the following principles in implementing controls for each of the following category of risk:

- For **contingent events**, the **system operator** will endeavour to schedule and **dispatch** sufficient reserves to provide **asset** redundancy, maintain the levels of quality defined in the Security Policy, and plan to avoid post-event unplanned **demand shedding**, taking into account any other agreed control measures¹ advised to and agreed by the **system operator**.
- For **extended contingent events**, the **system operator** will plan to maintain the levels of quality defined in the Security Policy through a combination of **AUFLS**, the provision of reserves, **asset** redundancy, planned load management, and acceptance of greater quality disturbances than for **contingent events**, taking into account any other agreed control measures advised to and agreed by the **system operator**.
- For **other events**, no planned controls have been identified, other than **demand shedding**, **AUFLS** and other emergency or restoration procedures.
- If, in the **system operator's** reasonable opinion, a credible event is likely to lead to a **stability event**, the **system operator** may rely on **demand shedding** to maintain the power system within identified transient and/or dynamic stability limits in accordance with clause 74.

12.6 Working with relevant asset owners to assess the requirements to implement the controls required to categorise the following as **extended contingent events** during the term of this **policy statement**:

12.6.1 the loss of an individual 220kV interconnecting transformer;
and

12.6.2 the loss of an individual 220kV or 110kV busbar; and

12.6.3 the loss of an individual 66kV busbar directly connected to the **core grid**.

12.7 Once the **system operator** has assessed the requirements and ensured the necessary controls have been implemented, **notifying participants** of the inclusion of one of the above as an **extended contingent event**.

¹ For example, demand inter-trips, run-back schemes, and Automatic Under Voltage Load Shedding (AUVLS).

13. The **system operator** will:
- 13.1 In addition to the annual review of the **policy statement** in accordance with rules 10 and 11 of section II of part C, review the identification, assessment and assignment of potential credible events in clause 12 not less than once in each period of five years. The most recent review was concluded in 2009.
 - 13.2 **Advise**, prior to the commencement of each review, its intended methodology for identifying and assessing the risks to which the risk management policies are directed.
 - 13.3 Invite comments from **registered participants** as to its process and the content of the review.
 - 13.4 **Publish** an explanation and summary of conclusions for each review completed under clause 13.1.
14. In determining and applying the methodology in clause 13, the **system operator** will, where appropriate, apply risk management principles consistent with the Australia and New Zealand risk management standard AS/NZS 4360 or such recognised standard as is adopted in replacement or modification of AS/NZS 4360.

Quality Limits Associated with Events

15. The **system operator**:
- 15.1 Is entitled to rely on information regarding **asset** performance advised by **asset owners** in **asset capability statements**.
 - 15.2 Will use reasonable endeavours (including planned **demand** interruption or **demand shedding**) to **dispatch assets** in a manner so they remain within their stated **asset** capability.
16. Where the **assets** and **ancillary services** made available to the **system operator** are insufficient to achieve the quality levels set out in clauses 17 and 18, the **system operator** will follow the **demand shedding** policies in clause 74. Where clause 74 provides that the **system operator** will not shed **demand**, the **system operator** may be unable to achieve the quality levels set out in clauses 17 and 18.
17. The quality levels the **system operator** plans to achieve for **contingent events** and **extended contingent events** are set out below. The ability to achieve the quality levels is entirely dependent on sufficient **assets** and **ancillary services** being made available to the **system operator**.
- 17.1 For a **contingent event**, the **system operator** plans to achieve the following quality conditions and limits during and following the occurrence of a **contingent event**:
 - 17.1.1 No **asset** will exceed its stated capability.
 - 17.1.2 Subject to clause 40, **grid** voltage will be within the range set out in rule 3.1.1 of section III of part C.

- 17.1.3 No **demand** is interrupted other than contracted reserves and/or **interruptible load** contracted or pre-arranged to be interrupted.
- 17.1.4 Frequency in either **island** will not drop below 48Hz or rise above 52Hz in the North Island or 55 Hz in the South Island.
- 17.1.5 Frequency in either **island** will be restored to within 50 Hz +/- 0.75 Hz within 1 minute.
- 17.1.6 Frequency reserves will be restored within 30 minutes.
- 17.1.7 Voltage stability of the power system is maintained.
- 17.1.8 Where required by agreements for higher levels of quality, rule 6 of section II of part C or rule 2.1 of section II of part I, the quality targets of such agreements will be met.
- 17.2 For **extended contingent events**, the **system operator** plans to achieve the following quality conditions and limits during and following the occurrence of an **extended contingent event**:
 - 17.2.1 No **asset** will exceed its stated capability
 - 17.2.2 Voltage stability of the power system is maintained.
 - 17.2.3 Subject to clause 40, **grid** voltage will be within the range set out in rule 3.1.1 of section III of part C.
 - 17.2.4 **AUFLS** may be used.
 - 17.2.5 Disconnected **demand** will be restored as soon as practicable.
 - 17.2.6 Frequency in either **island** will be restored to within the **normal band** as soon as practical.
- 18. For **stability events**, the **system operator** plans to ensure that the transient and dynamic stability of the power system is maintained.

SECURITY MANAGEMENT

Security Constraints

- 18A. The **system operator** may **notify** the **Board** of a date (the **changeover date**). The **changeover date** must be no earlier than two weeks from the date of the notification. If the **changeover date** falls within the currency of this **policy statement** then, from the **changeover date**, clauses 19 to 22 (inclusive) cease to apply and clauses 25 to 30 (inclusive) apply. Clauses 25 to 30 (inclusive) do not apply before the **changeover date**.
- 18B. At least two months prior to the **changeover date**, the **system operator** must **advise** an explanation of:
 - 18B.1 the methodology and procedures it will employ in formulating market systems constraints, including the manner in which information (input information) about power system stability limits and transmission

capability limits is used to define the parameters within which market systems constraints are formulated and when such information can be **published**; and

18B.2 any automated processes used in formulating market systems constraints; and

18B.3 the systems used in formulating market systems constraints.

Constraints – before the changeover date

19. When considered appropriate by the **system operator**, the **system operator** will apply **permanent security constraints** to the **Scheduling Pricing and Dispatch (SPD)** software model for what it considers to be an expected normal range of **dispatch** scenarios and for situations with all transmission **assets** available by:

19.1 Identifying the **contingent events** and **stability events** that the **system operator** considers may reasonably result in the need for **security constraints**.

19.2 Analysing a range of transmission, generation, and power flow scenarios.

19.3 Designing and applying **security constraints** to the **SPD** model intended to:

- Maintain post-event operation within stability limits.
- Maintain operation within the stated short term transmission capability (as advised by **grid owners**) after a **contingent event**.
- Allow sufficient time after a **contingent event** to allow for re-dispatch of generation or **demand shedding** to maintain operation within advised transmission capability.

20. In addition to the above, and when considered appropriate by the **system operator**, the **system operator** will apply **temporary security constraints** (including **asset outage constraints**) to the **SPD** model to allow for **contingent events** and **stability events** for what it considers to be an expected range of **dispatch** scenarios when **assets** are temporarily unavailable or **asset** capability is temporarily changed as notified by **asset owners** to the **system operator**. **Temporary security constraints** will be:

20.1 Determined by identifying possible **contingent events** and **stability events** the **system operator** considers may reasonably result in the need for **security constraints** at the following stages:

- During outage co-ordination and commissioning planning.
- During the **schedule period** and in real time.

20.2 Applied, when considered appropriate by the **system operator**, to the **SPD** model to:

- Maintain post-event operation within stability limits.
 - Maintain operation within the stated short term transmission capability (as advised by **grid owners**) after a **contingent event**;
 - Provide sufficient time after a **contingent event** or **stability event** to allow for re-dispatch of generation or **demand shedding** to maintain operation within advised transmission capability.
- 20.3 Applied, when considered appropriate by the **system operator**, to the **SPD** model for a defined period of **asset** unavailability or changed **asset** capability, with the intent of maintaining scheduled and dispatched security.
21. When circumstances require a **constraint** to be applied or modified at short notice the initial **constraint** design will be conservative, to maintain security. This may also apply for the initial application of a **permanent security constraint**. The **system operator** will use reasonable endeavours to refine any **constraint** for accuracy and as operational experience permits.
22. The **system operator** will:
- 22.1 **Advise participants** of new **permanent security constraints** at least two weeks prior to the implementation of a new **permanent security constraint**. The advice given will include a brief summary of the **constraint** design, sufficient for **participants** to assess the effect of the **constraint**. Despite the **system operator** having given notice of a new **permanent security constraint**, within the two week period the **system operator** may need to implement a **temporary security constraint** to achieve the expected outcomes of the **permanent security constraint**. If a **temporary security constraint** is implemented within the two week notice period required for a **permanent security constraint**, the **system operator** will—
 - 22.1.1 give **participants** as much notice of the **temporary security constraint** as is reasonably practicable in the circumstances; and
 - 22.1.2 set out the reasons for requiring a **temporary security constraint** to be implemented within the two week notice period in its notice to **participants**.
 - 22.2 At the time of assessment, **advise** any **asset outage constraints** that will apply for planned outages through the **Planned Outage Co-ordination Process**.
 - 22.3 List all **asset outage constraints** available to the **system operator** on the **system operator's** website. The list will include details of **constraint** design and their effects.
 - 22.4 Once it has completed a **pre-dispatch schedule**, **SDPQ**, security schedule, **week-ahead dispatch schedule** or **dispatch schedule**, notify **participants** of the **temporary security constraints** (except for **frequency keeping constraints**) that have been applied to the **SPD**

model and that reached or exceeded the **constraint percentage threshold**. The **system operator** will use reasonable endeavours to deliver that notification within ten minutes of the relevant schedule's completion. Such notification will be delivered by the **system operator** to the **information system service provider** for **publication** through the **information system** and on a publicly accessible website and will include, in respect of each **temporary security constraint** (other than a **frequency keeping constraint**):

22.4.1 the form of the **constraint**;

22.4.2 the limit of the **constraint**;

22.4.3 the **trading periods** to which the **constraint** applies;

22.4.4 the commencement time of the relevant schedule's preparation;
and

22.4.5 where applicable, the previous limit of the **constraint**.

22.5 Correctly apply all **constraints** described in clauses 19, 20 and 21 to the **SPD** model.

22.6 Provide to the **information system service provider**, for **publication** through the **information system**, information about **grid asset** outages, including start and end times, applied to the **pre-dispatch schedule**, **SDPQ**, and the **week-ahead dispatch schedule**.

23. *[Revoked]*

24. *[Revoked]*

Constraints – after the changeover date

25. The **system operator** will, using the process set out below in clauses 26 to 29, develop market systems constraints for each **trading period** with the intent of assisting the **system operator** to:

25.1 maintain system operation within the stated short term transmission capability (as advised by **grid owners**) after a **contingent event**;

25.2 maintain system operation within stability limits after a **contingent event**; and

25.3 provide sufficient time after a **contingent event** or **stability event** to allow for re-dispatch of generation or **demand shedding** to maintain operation within transmission capability limits.

26. The **system operator** will, from time to time:

26.1 Analyse a range of credible transmission, generation, and power flow scenarios.

26.2 Identify **contingent events** and **stability events** that the **system operator** considers may reasonably impact its ability to meet the **PPOs**.

- 26.3 Identify and input transmission capability limits for **grid assets** in **SPD** to maintain operation within the stated capability (as advised by **grid owners**) after a **contingent event**.
- 26.4 Identify and input power system stability limits in **SPD** to maintain post-event operation within such stability limits.
27. Using the transmission capability limits and the power system stability limits identified in clause 26 the **system operator** will for each **trading period** develop market systems constraints which it will apply during the relevant **trading period**.
28. The market systems constraints which are developed under clause 27 shall be those which arise as a consequence of either or both of the transmission capability limits and the power system stability limits being equal to or greater than the **constraint percentage threshold**.
29. The **system operator** may amend and re-amend the market systems constraints developed under clause 27 during **trading periods** when the **system operator** considers circumstances require a market systems constraint to be modified at short notice.
30. Notwithstanding the provisions of clause 29, the **system operator** will:
- 30.1 Publish to **participants** on the **system operator** website power system stability limits. Such publication will, where practicable, occur two weeks prior to the date on which such limits are intended to be first used. The information published will include a brief summary of the limits, such summary to be reasonably sufficient for **participants** to assess the effect of the limits. The **system operator** will correctly apply power system stability limits.
- 30.2 Notify the **information system service provider** for **publication** through the **information system** when a market systems constraint, other than a **frequency keeping constraint**, has been applied to **SPD** for use in the **pre-dispatch schedule**, the **dispatch schedule**, the security schedule, the **week-ahead dispatch schedule** or the **SDPQ**.
- 30.3 *[Revoked]*
- 30.4 Provide to the **information system service provider** for **publication** through the **information system** in respect of each market systems constraint, other than a **frequency keeping constraint**:
- the form of the market systems constraint;
 - the limit of the market systems constraint;
 - the **trading periods** to which the market systems constraint applies; and
 - where applicable, the previous limit of the market systems constraint.
- 30.5 Provide to the **information system service provider**, for **publication** through the **information system**, information about **grid asset**

outages, including start and end times, applied to the **pre-dispatch schedule, SDPQ**, and the **week-ahead dispatch schedule**.

Under-Frequency Management

31. The **system operator** will aim to schedule sufficient reserves, subject to **asset** and **ancillary service** availability, to meet the specified under-frequency limits and avoid cascade failure for:
 - 31.1 The maximum amount of **MW** injection that could be lost, due to the occurrence of a single **contingent event**; and
 - 31.2 The **extended contingent events**, allowing for **automatic under-frequency load shedding**.
32. In modelling reserve requirements, the **system operator** will:
 - 32.1 Apply the **Reserves Management Tool**
 - 32.2 Use the most recent **asset** capability information provided by **asset owners**, subject to:
 - The requirements of the **RMT** specification (including **asset** performance modelling) from time to time agreed between the **system operator** and the **Board**.
 - Any **asset** assessments the **system operator** needs to carry out.
 - 32.3 Where **asset** capability information has not been provided, the **asset** capability information provided is incomplete, or the **system operator** reasonably considers it can not rely upon the **asset** capability information provided, the **system operator** will:
 - 32.3.1 apply an adjustment factor considered reasonable by the **system operator** based on its current knowledge about the performance of the power system, to account for the fact that the **asset** capability information has not been provided, the **asset** capability information provided is incomplete, or the **asset** capability information provided is reasonably considered unreliable; and
 - 32.3.2 notify the **asset owner** within 3 **business days** following any decision to apply an adjustment factor in clause 32.3.1.
 - 32.4 Include the impact of **dispensations** and **equivalence arrangements**.
33. To maintain a dispatchable **SPD** solution where there is insufficient **offers** and/or **reserve offers** in the current **trading period**, the **system operator**, using the **SPD software**, will—
 - 33.1 for a **contingent event, dispatch** all remaining **offered instantaneous reserve**, and, if the quantity of **instantaneous reserve dispatched**, together with **AUFLS**, is insufficient to meet the under frequency standard in schedule C6 applicable to an **extended contingent event**,

reduce **demand** in accordance with the **demand management** policies; and

- 33.2 for an **extended contingent event** that requires the **dispatch** of **instantaneous reserves** in addition to **automatic under-frequency load shedding**, **dispatch** all remaining **offered instantaneous reserve** and reduce **demand** in accordance with the **demand management** policies.

Time Error Management

34. The **system operator** contracts with an **ancillary service agent** to provide **frequency keeping** and manage **frequency time error** within the limits required in rules 2.2.5 and 2.2.6 of section II of part C. The procurement of this service is described in the **procurement plan**.

Over-Frequency Management

35. For the over-frequency elements of the **PPOs**, the **system operator** procures **over frequency reserves** in accordance with the **procurement plan**.
36. The **system operator** will aim to **dispatch over frequency reserves** when necessary to maintain the frequency within the upper limits of rules 2.2.3 and 3.2.2 of section II of part C (so that the frequency does not exceed 52 Hz in the North Island and 55 Hz in the South Island) for **contingent** and **extended contingent events**. In determining the quantity of **over frequency reserves** to be **dispatched** in the South Island, the **system operator** will take into account the actual amount of South Island **demand**, the **HVDC link** transfer northwards, and the number and capacity of the units able to be **dispatched** for **over frequency reserves** at the time.

Rate of Occurrence of Momentary Fluctuations

37. The **system operator** will monitor the rate of occurrence of **momentary fluctuations** and report this to the **Board**.
38. The **system operator** may recommend changes to the **procurement plan**, **policy statement** or **rules**, or take other action available to it under the **rules**, with the intent to correct a significant negative trend regarding the rate of **momentary fluctuations**.

Purchaser Step Changes

39. In accordance with rule 2.2 of section III of part C the **system operator** will from time to time set a **maximum instantaneous demand change limit** that **purchasers** shall comply with unless otherwise agreed between the **system operator** and a **purchaser**.
- 39.1 As at the date this **policy statement** comes into effect and subject to any alternative agreement between the **system operator** and a **purchaser**, the **maximum instantaneous demand change limit** and net rates of change in **offtake** for **electricity** allowable for each **purchaser** within each **island** is 40 **MW** per minute with no more than a 75 **MW** change in any 5 minute period.

39.2 Clauses 39 and 39.1 do not apply to step changes and rate of change occurring during independent action or restoration in a **grid emergency**.

39.3 The **system operator**:

- May agree to specific instances of **purchaser** step changes exceeding the **maximum instantaneous demand change limit**.
- Will **advise** details of the process for seeking **system operator** agreement to step changes beyond the limits in clause 39.1.
- Will **advise** existing and any new agreements reached for step changes that exceed the **maximum instantaneous demand change limit**. Step change agreements entered into with the **system operator** prior to the commencement date of this **policy statement** continue to be valid.

Voltage Management

40. The **system operator** will plan to manage **grid** voltage as follows

40.1 Following a **contingent event**, voltage shall be maintained within the ranges specified in rule 3.1.1 of section III of part C except where, for a particular **GXP** or region, there is a **wider voltage agreement** in place.

40.2 Where a **wider voltage agreement** applies, the voltage within that **GXP** or region will, following a **contingent event**, be managed so voltage stability is maintained and voltage does not go outside the lesser of the capability of the affected **assets**, as set out in the **asset capability statements** for those **assets**, or the voltage limit agreed in the **wider voltage agreement**.

41. To manage voltage and control voltage excursions within the quality limits set out in clause 17 of this Security Policy the **system operator** will:

41.1 Determine a set of **target grid voltages** at selected key locations (selected by the **system operator**) to be maintained during normal operations.

41.2 Recommend to **asset owners** appropriate tap positions for transformers, which have off load tap changers, given the expected range of **dispatch** scenarios.

42. The **system operator** may vary **target grid voltages** for specific **dispatch** scenarios.

43. The **system operator** will monitor voltage trends in real time at key locations determined by the **system operator** and, subject to **asset** availability and **ancillary services**, it will endeavour to **dispatch** sufficient reactive resources to:

43.1 Achieve **target grid voltages**.

- 43.2 Manage voltage for a **contingent event**.
- 43.3 Maintain post event operation within stability limits.
- 44. The **system operator** will **dispatch generating plant** to:
 - 44.1 Maintain a specific voltage during **dispatch**.
 - 44.2 Provide specific **reactive power** outputs (refer also to the **security constraints** section of this Security Policy).
- 45. The **system operator** will **dispatch** available static reactive devices so that dynamic reactive reserves are available to provide **voltage support** for **contingent events** and **extended contingent events**.
- 46. In **dispatching** static and dynamic reactive resources, the **system operator** will use the following principles:
 - 46.1 The **system operator** will first **dispatch relevant freely available reactive resources**.
 - 46.2 Where insufficient **relevant freely available reactive resources** are available to maintain **target grid voltages**, the **system operator** will **dispatch** additional reactive resources as procured in accordance with the **procurement plan**.
 - 46.3 Where the **system operator** believes the reactive resources **dispatched** under clause 46.1 and clause 46.2 are insufficient to address voltage management requirements the **system operator** will apply a combination of:
 - Procurement and **dispatch** of additional reactive resources as an emergency departure from the **procurement plan** in accordance with rule 8 of section IV of part C.
 - **Security constraints** to provide additional reactive resources through the **dispatch** of generation.
- 47. If the **dispatch** of reactive resources under clause 46 is not sufficient to provide voltage support for managing a **contingent event** or an **extended contingent event** the **system operator** may commence **demand shedding** in accordance with the Emergency Planning section of this Security Policy.

Management of Quality

- 48. Where the **system operator** is made aware of any problem in relation to rule 2.3.1 of section II of part C and where, in the **system operator's** opinion, the problem is not likely to cause cascade failure, the **system operator** will:
 - 48.1 Act on a written request by a **participant** or the **Board** to identify the cause of the problem.
 - 48.2 Investigate the cause of the problem. An investigation may include:
 - Requests for further information from **asset owners**.

- Testing and measurement.
 - Analysis of those measurements, including system modelling.
 - Application of **constraints** on **dispatch** and reconfiguration of **assets** to identify potential resonance and sources.
- 48.3 Where identified, notify the relevant **asset owner** that is causing the problem and invoice any reasonable costs associated with investigating the problem.
- 48.4 Keep account of its costs in relation to the studies and invoice in accordance with the **rules** and the **System Operator Service Provider Agreement**.
- 48.5 If the problem has not been rectified and continues to persist then, in the absence of a requirement in the **rules** for **asset owners** to meet the relevant standards, the **system operator** will:
- Notify the **Board** of the problem.
 - **Advise** the actions that could be taken to rectify the problem.
49. The **system operator** will assess any problem in relation to rule 2.3.1 of section II of part C to ascertain whether that problem may lead to cascade failure. If the problem could lead to cascade failure the **system operator** will seek to identify the cause of the problem and, if any problem remains unaddressed:
- 49.1 Issue a **formal notice** in accordance with rule 4 of **technical code B** of schedule C3 of part C requesting a response of the relevant **participants** to correct the problem.
- 49.2 Rely on the co-operation of the relevant **participants**, or the co-operation of **asset owners** as required by rule 4.7 of section III of part C.

Regional long term contingency planning

50. The **system operator** may from time to time identify, in a region, a material or ongoing power system limitation or power system situation where the **system operator** believes there is a reasonable probability it would have to rely on taking emergency action under the Emergency Planning section of the **policy statement** to plan to comply and comply with the **PPOs**.
51. When the **system operator** identifies a power system limitation or power system situation under clause 50, it may establish and facilitate a forum of relevant **asset owners** and interested **participants** to work jointly with it to assist it plan to comply and to comply with the **PPOs**. The **system operator** will establish a forum when:
- 51.1 It believes there is a reasonable possibility that:
- 51.1.1 without suitable contingency planning and information exchange, regionally material **demand shedding** may be required in order for it to comply with the **PPOs**; or

- 51.1.2 it would have to rely on taking emergency action under the Emergency Planning section of the **policy statement** for credible **dispatch** scenarios over an extended period of time in any region or regions; and
 - 51.2 Co-ordination of multiple **participants** in a region or regions would be required to mitigate the situation identified by it; and
 - 51.3 No single **participant** is able or willing to act unilaterally to resolve the situation identified by it; and
 - 51.4 The **system operator** considers there is sufficient time prior to a situation identified under clause 50 occurring in which to plan to minimise the impact of the situation.
52. In establishing and facilitating such a forum, the **system operator** will:
- 52.1 Invite as contributing parties those **participants** it reasonably believes may be:
 - 52.1.1 affected by the situation; or
 - 52.1.2 able to assist with it planning to comply and to comply with the **PPOs** by reducing the potential need for recourse to the Emergency Planning section of the **policy statement** and **technical code B** (or similar).
 - 52.2 Arrange for **participants** in the forum to undertake such analysis of regional load **demand**, **asset** performance, and such other matters the **system operator** and **participants** in the forum consider relevant, and agree upon the necessary or desirable means to minimise the risk to the **system operator** having to rely on taking emergency actions under the Emergency Planning section of the **policy statement** and **technical code B** of schedule C3 of part C with the **assets** and generation **offers** likely to be available.
 - 52.3 Use a planning horizon, for such forums, of no longer than 3 years.
53. Nothing in clauses 50 to 52 (inclusive) shall be construed to restrict or compromise the ability of the **system operator** to rely, when it believes it appropriate, on the Emergency Planning or any other section of the **policy statement** or the **rules**.

Outage Planning

54. To meet its obligations under **technical code D** of schedule C3 of part C, the **system operator** will:
- 54.1 Carry out the assessment of all **notified planned outages** referred to in clause 3 of **technical code D**.
 - 54.2 **Notify** relevant **asset owners** of **notified planned outages** where it considers such **notified planned outages** may require it to rely on taking emergency action under the Emergency Planning section of the **policy statement** and **technical code B** close to or in real time in order to comply with the **PPOs**. When making such notifications the

system operator may request that relevant **asset owners** notify it of suitable changes to the **notified planned outages**.

- 54.3 Endeavour, where the relevant **asset owners** fail to notify it of suitable changes to the **notified planned outages** in clause 54.2, to facilitate arrangements with the relevant **asset owners** that will result in changes to the **notified planned outages** so that such outages will not result in the **system operator** relying on taking emergency action under the Emergency Planning section of the **policy statement** or **technical code B** to plan to comply, and comply with the **PPOs**.
- 54.4 Re-assess the **notified planned outages** following the notification of any changes by relevant **asset owners** under clause 54.2 or the facilitation of any arrangements in clause 54.3.
- 54.5 **Advise** the relevant **asset owners** whether or not, following the re-assessment, it believes the relevant **notified planned outages** may require it to rely on taking emergency action under the Emergency Planning section of the **policy statement** or **technical code B** to plan to comply, and comply with the **PPOs**.
- 54.6 Re-assess **notified planned outages** following receipt of any material, new information relating to the said **notified planned outages** or the power system which it believes may impact its ability to plan to comply, and comply with the **PPOs**.
55. Where the **system operator** reasonably identifies **notified planned outages** that may require it to rely on taking emergency action under the Emergency Planning section of the **policy statement** or **technical code B** to plan to comply, and comply with the **PPOs** and relevant **asset owners** are unable or unwilling to develop and notify the **system operator** of suitable changes to such outages, it may, where, in its reasonable opinion, there is insufficient time to otherwise plan to avoid **demand shedding** or where the expected period of risk is for a short duration, issue a **formal notice** and rely on emergency action under the Emergency Planning section of the **policy statement** and **technical code B**.
56. Nothing in clauses 54 to 55 (inclusive) shall be construed to restrict or compromise the ability of the **system operator** to rely, when it believes it appropriate, on the Emergency Planning or any other section of the **policy statement** or the **rules**.

EMERGENCY PLANNING

General

57. The following sections set out the general policies for dealing with emergencies relating to security issues. They do not limit the powers of the **system operator** under the **rules** in respect of emergencies, and the **system operator** always retains the right to exercise its rights and powers under the **rules** in relation to emergencies.
58. To manage events greater than those catered for by the Risk Management Policies, or where the event cannot be satisfactorily managed through the normal application of the Risk Management Policies, the **system operator** will rely on:

- 58.1 The load shedding provisions of rules 2.3.4 and 3.3 of section III of part C.
- 58.2 The load shedding systems and independent action defined in **technical code B** of schedule C3 of part C.
- 58.3 **Asset owner** compliance with the provisions of the **rules**.
- 58.4 The use of **standby residual shortfall notices** to advise **participants** when it believes there is or may be a **standby residual shortfall**.
- 58.5 Any other means made available by **asset owners** that are assessed by the **system operator** as being capable of mitigating the need for **demand shedding**.

Standby Residual Shortfall

- 59. In the event the **system operator** identifies a **standby residual shortfall**:
 - 59.1 if the **standby residual shortfall** is greater than the **standby residual shortfall threshold**, it will use reasonable endeavours to send to the **information system service provider**, for **publication**, a **standby residual shortfall notice**; and
 - 59.2 it will, for such time as it believes reasonable and prudent, rely on **participants** making such new **generator offers** and/or **reserve offers** it believes will be sufficient to mean that a **standby residual shortfall** no longer exists.
- 60. If there is a **standby residual shortfall**, and **participants** do not make sufficient new **generator offers** and/or **reserve offers**, the **system operator** may, in accordance with rule 4 of **technical code D**, request an **asset owner** of **assets** which are the subject of an outage or **notified planned outage** to keep those **assets** in service, with the intention of reducing the likelihood of the **system operator** having recourse to the Emergency Planning section of this **policy statement**.

Formal Notices

- 62. The **system operator** will issue a **formal notice** in accordance with rule 4.1.1 of **technical code B** of schedule C3 of part C where a **participant's** response is required to mitigate a risk and where the only other action available to the **system operator** will be to shed **demand**.
 - 62.1 The **system operator** will issue the following types of formal notices:
 - A Warning Notice.
 - A Grid Emergency Notice.
 - 62.2 A Grid Emergency Notice will declare a **grid emergency** in accordance with rule 8 of section III of part G.
- 63. Where the **system operator** has identified a situation requiring the use of the controls in this Emergency Planning section of the Security Policy prior to two

hours before the start of the relevant **trading period**, the **system operator** will issue a Warning Notice.

64. Where the **system operator** has identified a situation requiring the use of the controls under this Emergency Planning section of the Security Policy within two hours prior to the start of the relevant **trading period** or during the relevant **trading period**, the **system operator** will issue a Grid Emergency Notice.
65. A Grid Emergency Notice will be issued whenever, or as soon as practicable after any of the events set out in clause 74 have occurred or the **system operator** determines they will occur and when the **system operator** considers that it will be unable to mitigate the situation without **participant** independent action, **grid** reconfiguration or **demand shedding**.
66. The **system operator** will declare a **grid emergency** and issue a **formal notice** orally or in writing. **Formal notices** will be issued orally in circumstances where either or both of the following situations exist:
 - 66.1 There is, in its view, insufficient time available to the **system operator** before the emergency arises to issue a written **formal notice**.
 - 66.2 One **participant** is, or a restricted number of **participants** are, required to, or able to, take specific action in accordance with **technical code B** of schedule C3 of part C, to alleviate a **grid emergency**.

For the avoidance of doubt an oral declaration of a **grid emergency** is deemed to be the issue of a **formal notice**.

67. **Formal notices** issued in writing will be sent to all **participants** that, in the **system operator's** view, may be able to assist in the mitigation of the **grid emergency** or will have a significant interest in the occurrence and nature of the **grid emergency**. All **formal notices** issued in writing will be shown on the **system operator's** website as soon as reasonably practicable after being first sent to **participants**.
68. In addition to the content of a **formal notice** in rule 4.1 of **technical code B** of schedule C3, the **system operator** will use reasonable endeavours to include in every **formal notice** issued details of **assets**, which are relevant to the cause of the relevant **grid emergency** and the return to service of such **assets**, where such advice would assist it to plan to comply and to comply with the **PPOs**. In providing details of such affected **assets** the **system operator** will rely on the ability and willingness of the owners of affected **assets** to make such details available to other **participants**.
69. The **system operator** will send to **participants** the report it provides to the **Board** under rule 8.6.1 of section III of part G.
70. Security levels will be re-assessed and **participants** advised as soon as reasonably practicable after the **system operator** is aware of any need to change the status of a **formal notice**. Where:
 - 70.1 A situation is alleviated prior to the start of the **trading periods** for which the **formal notice** was issued, the **system operator** will revise the **formal notice**.

70.2 The start or end time period for which a situation exists, or is expected to exist, changes from the **trading periods** set out in the **formal notice**, the **system operator** will revise the **formal notice**.

71. There may be other notices issued by the **system operator** that, by definition, are not **formal notices** issued in accordance with **technical code B** of schedule C3 of part C.

Demand Management

72. The **system operator** has defined circumstances where:

72.1 **Demand shedding** will be initiated.

72.2 **Demand shedding** may be initiated under certain circumstances, subject to availability of **assets** for **dispatch** and/or **dispatch** conditions.

72.3 **Demand shedding** will not be initiated and reliance will instead be placed on planned controls described in the Security Policy.

73. Where the **system operator** considers that the **dispatch** of available **assets** and **ancillary services** (and the application of the policies set out in other sections of this Security Policy) is not or is likely not to be sufficient or sufficiently timely to mitigate a situation, the **system operator** will declare a **grid emergency** and will apply clause 74 in determining whether to initiate **demand shedding**.

74. **Demand Shedding**

Scenario	Event giving rise to a grid emergency situation	Prior to 2 Hours	Within 2 hours	Demand shedding policy
A) Steady State, including steady state after an event has occurred.	Any asset is exceeding or is forecasted to exceed the advised capability limit stated in the asset capability statement .	Issue a Warning Notice.	Declare a grid emergency .	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency .
	Voltage instability is or is about to occur.	Issue a Warning Notice.	Declare a grid emergency .	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency .
	Transient or dynamic instability is or is about to occur.	Issue a Warning Notice.	Declare a grid emergency .	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency .

Scenario	Event giving rise to a grid emergency situation	Prior to 2 Hours	Within 2 hours	Demand shedding policy
	<p>Frequency keeping is unable to be maintained.</p>	Issue a Warning Notice.	Declare a grid emergency .	<p>Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency.</p>
	<p>The grid, or part of the grid, is or is about to be operated outside the ranges specified in rule 3.1 of section III of part C unless a wider voltage agreement applies. Alternatively, a wider voltage agreement applies and that part of the grid affected is or is about to be operated outside of the limits agreed in the wider voltage agreement.</p>	Issue a Warning Notice.	Declare a grid emergency .	<p>Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency (refer to rule 7.2 of technical code B).</p>
	There is a risk of significant asset damage.		Declare a grid emergency .	<p>Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency.</p>
	Public safety is at risk.		Declare a grid emergency .	<p>Demand shedding may occur if the system operator considers it appropriate in the specific circumstances.</p>
	Independent action has been taken in accordance with technical code B to restore the system operator's PPOs .		Declare a grid emergency .	<p>Demand shedding may occur depending on the nature of the grid emergency and whether the system operator considers it appropriate in the specific circumstances.</p>
	<p>Restoration is required after a loss of supply and:</p> <ul style="list-style-type: none"> ▪ grid reconfiguration and/or demand management is required; and ▪ more than one instruction to one or more participants is required to effect restoration. 		Declare a grid emergency .	Refer to restoration policy (as contained in clause 84).

Scenario	Event giving rise to a grid emergency situation	Prior to 2 Hours	Within 2 hours	Demand shedding policy
B) For a defined event.	Any asset will exceed the advised capability limit stated in the asset capability statement .	Issue a Warning Notice.	Declare a grid emergency .	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency .
	A voltage stability limit is being exceeded.	Issue a Warning Notice.	Declare a grid emergency .	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency .
	A transient or dynamic stability limit is being exceeded.	Issue a Warning Notice	Declare a grid emergency .	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency .
	Frequency keeping will not be able to be maintained for a defined event.	Issue a Warning Notice	Declare a grid emergency .	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency .
	The grid , or part of the grid , will operate outside the ranges specified in rule 3.1 of section III of part C for a defined event unless a wider voltage agreement applies. Alternatively, a wider voltage agreement applies and that part of the grid affected is or is about to be operated outside of the limits agreed in the wider voltage agreement .	Issue a Warning Notice.	Declare a grid emergency .	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency (refer to rule 7.2 of technical code B)
	There is a shortage of instantaneous reserve for an extended contingent event .	Issue a Warning Notice.	Declare a grid emergency .	Subject to clause 33.2, demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency .
	There is a shortage of instantaneous reserve for a contingent event .	Issue a Warning Notice.	Declare a grid emergency .	Subject to clause 33.1, rely on the operation of AUFLS where sufficient to ensure compliance with the frequency PPO .

Scenario	Event giving rise to a grid emergency situation	Prior to 2 Hours	Within 2 hours	Demand shedding policy
C) For a second defined event (after an event has occurred ²).	Any asset will exceed the advised capability limit stated in the asset capability statement for a second defined event.		Declare a grid emergency .	Demand shedding will only occur where the system operator reasonably believes a second defined event is likely or asset owners have advised the risks of exceeding capability are unacceptable.
	A voltage stability limit would be exceeded for a second defined event.		Declare a grid emergency .	Demand shedding will only occur where the system operator reasonably believes a second defined event is likely.
	A transient or dynamic stability limit is being exceeded for a second defined event.		Declare a grid emergency .	Demand shedding will only occur where the system operator reasonably believes a second defined event is likely.
	The grid , or part of the grid , will operate outside the ranges specified in rule 3.1 of section III of part C for a second defined event unless a wider voltage agreement applies. Alternatively, a wider voltage agreement applies and that part of the grid affected is or is about to be operated outside of the limits agreed in the wider voltage agreement .		Declare a grid emergency .	Demand shedding will only occur where the system operator reasonably believes a second defined event is likely. (refer to rule 7.2 of technical code B).
	There is a shortage of instantaneous reserve for a binding second contingent event .		Declare a grid emergency .	Demand shedding will only occur where the system operator reasonably believes a second defined event is likely and AUFLS is insufficient to ensure the frequency PPO can be met.

² And where there are insufficient means to operate the power system to the requirements of the security policy following the event.

Scenario	Event giving rise to a grid emergency situation	Prior to 2 Hours	Within 2 hours	Demand shedding policy
	There is a shortage of instantaneous reserve for a binding extended contingent event .		Declare a grid emergency .	Demand shedding will only occur where the system operator reasonably believes a second defined event is likely and AUFLS is insufficient to ensure the frequency PPO can be met.

Allocation of Demand Reduction

75. Where a **formal notice** is issued and the **system operator** wishes to have any **purchaser(s)** and/or **distributor(s)** reduce **demand** (as provided for in rules 5.1.2 and 5.2.3 of **technical code B**) the **system operator** may include the following in the (verbal or written) **formal notice**:
- 75.1 The **offtake** point or points at which a **demand** reduction is required, which will be selected by the **system operator** at its discretion;
- 75.2 The quantity of **demand** reduction required at the relevant **offtake** point(s) (including by reference to the relevant **offtake** point(s) reducing **demand** so as not to exceed a stated maximum **demand**);
- 75.3 The time(s) for which the **demand** reduction is required.
76. *[Revoked]*
77. Without limiting its rights under **technical code B**, where **demand** from any **offtake** point is not reduced in accordance with the demand allocations specified in the **formal notice**, the **system operator** may require a relevant **distributor** to reduce **demand** in accordance with the process or processes agreed under rule 6.9 of **technical code B**.
78. In determining any demand allocations to be specified in the **formal notice**, the **system operator** will use reasonable endeavours to avoid a **demand** reduction of greater than 25% at a single **point of connection**, excepting when the total reduction of **demand** required in the affected region exceeds 25%.
79. After any urgent action to **dispatch** reduced **demand** the **system operator** will assess whether to proceed to restoration action, or to re-allocate reduced **demand** before restoration.
80. When it is judged by the **system operator** to be appropriate to re-allocate reduced **demand** the **system operator** will, in the absence of any agreement pursuant to clause 81, act to the extent practicable in accordance with the following allocation methodology:
- 80.1 To manage a peak capacity constraint each affected **offtake** point will be allocated a pro-rata share of the peak **demand** that can be

dispatched, in the ratio of the annual average peaks of the **offtake** point **demand** and the total **demand** of the affected region. The annual average peak **demands** will be the averages of the five summer or five winter peaks for the previous year, with winter and summer periods defined as for **grid owner** transmission ratings.

80.2 To manage an energy capacity constraint, energy allocated for each affected **offtake** point shall be a pro rata calculation based on a proportion of the energy consumed at the **offtake** point to the total energy consumed in the constrained region. In order to account for seasonal changes and different load characteristics this proportion will vary each month as a weighted average of:

80.2.1 75% of the proportion of energy consumed for the 12 months to the previous 30 June, and

80.2.2 25% of the proportion of energy consumed in the three months of the year up until the previous 30 June, starting one month before and ending one month after the calendar month during which energy allocation is to take place.

81. The **system operator** may use an alternative methodology to that in clause 80, where such alternative methodology has been formally agreed between the **system operator** and directly affected **distributors**.

Restoration

82. The **system operator** will procure black start capability. The procurement details for these facilities are included in the **procurement plan**.

83. The **system operator** will rely on the synchronising facilities defined in **technical code A** of schedule C3 of part C of the **rules** to allow reconnection of sections of the **grid** and to connect generation to the **grid** during restoration.

84. Where restoration is required, the **system operator** will use the following methodology to re-establish normal operation of the power system by:

84.1 Addressing any aspects involving public safety.

84.2 Addressing any aspects involving avoidance of damage to **assets**.

84.3 Stabilising any remaining sections of the **grid** and connected **assets** and the voltage and frequency of the **grid**, through the combination of manual **dispatch instruction** and allowing automatic action of **ancillary services** and governor and voltage regulation operation by **generating plant**, and including any necessary disconnection of **demand**.

84.4 Actioning the steps set out in clauses 84.5, 84.6, 84.7 and 84.8 below in the order or in parallel as is judged by the **system operator**, at the time, as most effectively allowing reconnection of **demand**. The order that **assets** are **dispatched** will be influenced by availability, technical, geographic and other factors influencing rapid restoration of **demand**.

- 84.5 Restoring the transmission, generation, and/or **ancillary service assets** that failed when such restoration assists commencement of steps set out in clauses 84.6 and 84.7, where necessary utilising black start facilities.
- 84.6 Restoring any disconnected **demand** at the rate permitted by the security and capability of the available combined generation and transmission system.
- 84.7 **Dispatching** additional generation and **ancillary services**, where such additional resources are needed to allow **demand** to be reinstated and necessary quality levels to be maintained.
- 84.8 Seeking revised **offers** where insufficient **offers** exist to achieve the restoration objectives.
- 84.9 Restoring normal security and power quality of the **grid** system to the levels set out in the **PPOs** and this Security Policy.
- 84.10 Restoring energy injection levels to the values contained in an updated **dispatch schedule**.

Chapter 2 - Dispatch Policy

DISPATCH POLICY & PROCESS STATEMENT

Software

85. The policies intended to achieve the **system operator's dispatch objective** are as follows:
- 85.1 The **system operator** will use the **software** for scheduling and **dispatch**. The **software** will include **SPD**.

The Scheduling Process

Security Assessment

86. The **system operator** will, in addition to complying with the requirements of schedule G6 of part G, carry out a security assessment for the **schedule period** to:
- 86.1 Take account of the proposed generation and **assets** made available and any potential contingencies for that period and the impact on the achievement of the **PPOs**.
- 86.2 Provide adjustments to the **pre-dispatch schedule** and the **dispatch schedule** that will be required to meet the **dispatch objective** in accordance with schedule G6 of part G.
87. To carry out the security assessment, the **system operator** will:
- 87.1 Produce a security schedule at 12:00 which covers the remaining **trading periods** of that **day** together with each **trading period** of the next **day**.
- 87.2 Perform further security assessments during the **schedule period** if there have been any significant changes to the generation and/or load profiles. The **system operator** will use reasonable endeavours to ensure it commences the preparation of a security schedule no more than two hours after it commenced preparation of the previous schedule. A new security schedule will be produced at least four times per **day**.
- 87.3 Use the inputs described in rule 1.3.2 of schedule G6 of part G. As part of these inputs, the **system operator** will include:
- 87.3.1 **Security constraints** (prior to the **changeover date**) and market systems constraints (on and after the **changeover date**).
- 87.3.2 The reserve requirements in the form of the most recent reserve information, for each **trading period**, calculated up until the time that the security schedule commenced solving.
- 87.4 Update the current security schedule for each **trading period** with any changes received from **participants**, latest reserve requirements, and

any further adjustments to meet the **dispatch objective** for each **trading period**.

- 87.5 Calculate the reserve requirements in the current **trading period** for the following **trading period**. These changes are included as the latest changes in each schedule.
- 87.6 Produce a **demand** profile for the **schedule period** for each **grid exit point** determined by matters including:
 - 87.6.1 Regional weather forecast information.
 - 87.6.2 Non-standard **demand** profiles (from **purchaser bid** information).
 - 87.6.3 Historical **demand** information based on time of the **day**, **day** of the week, and time of the year.
 - 87.6.4 **Fixed load distribution factors** determined by the **system operator** for all **grid exit points** and reviewed weekly. The **fixed load distribution factors** will be applied to each **grid exit point** except where the **system operator** believes the **fixed load distribution factors** for a **grid exit point** may be materially inaccurate in which event the **system operator** may include the demand **bids** for such **grid exit point**.
- 87.7 Assess power flows to identify and assess possible transmission security restrictions, capacity restrictions, or voltage conditions on the **grid**.
- 87.8 Identify stability conditions on the **grid**.
- 87.9 Identify and apply **security constraints** (prior to the **changeover date**) and market systems constraints (on and after the **changeover date**).
- 87.10 Identify where shortfalls in standby reserves exist by:
 - 87.10.1 Checking that there are sufficient uncleared energy and **reserve offers** to provide for a second **contingent event**.
 - 87.10.2 Checking that there are sufficient energy **offers** in each **island** for a frequency keeper to provide the required **frequency keeping** band.

Pre-Dispatch Schedule (PDS)

- 88. Each **pre-dispatch schedule** will, in addition to complying with the requirements of schedule G6 of part G, include or take account of **security constraints** (prior to the **changeover date**) and market systems constraints (on and after the **changeover date**) derived by the **system operator**. The reserve requirements in the form of the most recent reserve information, for each **trading period**, calculated up until the time that the schedule commenced solving.

Dispatch Schedule

89. Pursuant to rule 4.1 of section III of part G, the **system operator** will, in addition to complying with the requirements of schedule G6 of part G, adjust a **dispatch schedule**, where adjustment is required, to include:
- 89.1 **Security constraints** (prior to the **changeover date**) and market systems constraints (on and after the **changeover date**) derived by the **system operator**.
 - 89.2 Any bona fide reductions notified under rules 3.18 or 6.15 of section II of part G.
 - 89.3 Changes notified by **generators, purchasers, and ancillary service agents** during a **trading period**.
 - 89.4 The most recent reserve information received by the **system operator** at the beginning of each **trading period**.
90. To continually meet the **dispatch objective** during a **trading period**, the **system operator** will adjust the current **dispatch schedule** to:
- 90.1 Produce a new **dispatch schedule** during the current **trading period** to incorporate:
 - The **frequency keeping** generation relative to the **frequency keeping** capability.
 - The anticipated **demand** change in the near future.
 - **Dynamic load distribution factors** for all **grid exit points** provided that if the **software** necessary to incorporate **dynamic load distribution factors** into the **dispatch schedule** is unavailable for any reason, the **system operator** may, during the period of unavailability, use the last available **fixed load distribution factor** or factors determined taking into account the matters listed in clause 87.6).
 - Observed variation in **generating plant** ramp from the calculated ramp and expected `make-up` of this in the next **trading period(s)**.
 - **Security constraints** (prior to the **changeover date**) and market systems constraints (on and after the **changeover date**) required to meet the **dispatch objective**.

Schedule of Dispatch Prices and Quantities (SDPQ)

91. The **SDPQ** is an extract from the current **system operator's** security schedule.
92. As part of the inputs specified in the **rules**, each **SDPQ** will, in addition to complying with the requirements of schedule G6 of part G, include:
- 92.1 **Security constraints** (prior to the **changeover date**) and market systems constraints (on and after the **changeover date**).

- 92.2 The reserve requirements in the form of the most recent reserve information, for each **trading period**, calculated up until the time that the schedule commenced solving.

Week-ahead Dispatch Schedule

- 92A Once the **system operator** has completed a **week-ahead dispatch schedule**, the **system operator** will provide to the **information system service provider**, for **publication** through the **information system**, prices for **electricity** determined by the **system operator** from the **week-ahead dispatch schedule** for:

92A.1 each **grid exit point**;

92A.2 each **grid injection point**; and

92A.3 each **reference point**.

Frequency Keeping

93. The **system operator** will:
- 93.1 Procure **frequency keeping ancillary services** as defined in the **procurement plan**.
- 93.2 Use **frequency keeping constraints** to schedule and **dispatch frequency keeping ancillary services** so as to maintain the frequency within the **normal band** for normal operating conditions, excluding events.

Chapter 3 – Compliance Policy

POLICY AND SCOPE

General Policy

94. The **system operator** will have systems in place to ensure it is able to efficiently carry out its functions in accordance with the following specific obligations under the **regulations** and **rules**:
- 94.1 Proactively monitoring and reporting the **system operator's** compliance with its obligations under the **regulations** and **rules**.
- 94.2 Monitoring and reporting **asset owner** compliance with the following obligations under the **rules**:
- The **asset owner performance obligations**.
 - Obligations under the **technical codes**.
 - Obligations under **dispensations**.
 - Obligations under **equivalence arrangements**.
 - Obligations under **alternative ancillary service arrangements**.
- 94.3 Receiving **asset** capability information and carrying out assessments of **asset** capability.
- 94.4 Commissioning **assets**.
- 94.5 Issuing **dispensations** and **equivalence arrangements**.

RULES COMPLIANCE AND PERFORMANCE MONITORING

95. The **system operator** will have processes in place to achieve and maintain compliance with its obligations under the **regulations** and **rules** and will monitor its own performance for the purpose of:
- 95.1 Meeting the **system operator's** review and reporting obligations under the **regulations** and **rules**.
- 95.2 Providing a basis for improvement and increased efficiency in the performance of its services over a period of time.

System Operator Compliance with Obligations under the Rules

96. The **system operator** will:
- 96.1 Identify the obligations with which it must comply under the **regulations** and **rules** and document procedures for compliance with such obligations.

96.2 Whenever the **system operator** identifies a breach or a suspected breach of the **rules** by the **system operator**, investigate the incident to determine:

96.2.1 Any contributory causes including any acts or omissions of other persons and secondary events and incidents.

96.2.2 Any mitigating factors.

96.2.3 Any corrective action necessary by the **system operator**, including any process changes, training issues, or areas where a change to the **rules** may be required.

Asset Owner Compliance and Performance Monitoring

97. In accordance with the **rules**, the **system operator** will proactively monitor and report on **asset owner** compliance with:

97.1 **AOPOs** and the **technical codes**.

97.2 **Dispensations** and **equivalence arrangements**.

97.3 **Alternative ancillary services arrangements**.

Compliance with AOPOs and Technical Codes

98. To monitor **asset owner** compliance with the **AOPOs** and **technical codes**, the **system operator** will:

98.1 Review the content of **asset capability statements** received from **asset owners** under **technical code A** of schedule C3 of part C to assure itself, as far as is reasonably practicable, of an **asset owner's** ability to comply with the **AOPOs** and relevant **technical codes**.

98.2 In accordance with rule 2.5 of **technical code A** of schedule C3 of part C, review the information provided in the **asset capability statements**, to establish or confirm the limitations in the operation of the **asset** in question that the **system operator** needs to know for the safe and efficient operation of the **grid**.

98.3 In accordance with **technical code A** of schedule C3 of part C, rely on the results of any tests carried out under a **test plan** or a commissioning plan, to establish or confirm **asset** capability in accordance with the **AOPOs** and the **technical code** requirements.

98.4 As part of any **test plan** or commissioning plan under **technical code A** of schedule C3 of part C require **asset owners** to provide copies of test results when available.

98.5 In accordance with rule 4 of section II of part C and following the receipt of an **asset capability statement**, and subject to any tests carried out under a **test plan** or commissioning plan, rely on the **assets** and information about such **assets** made available to the **system operator** unless the **system operator** considers, acting reasonably and based on the information received by or otherwise

known to the **system operator**, that it should not rely upon the accuracy of an **asset owner's asset capability statement**.

- 98.6 During **dispatch**, log suspected or actual **asset owner** non-compliance with the **AOPOs** and the **technical codes** based upon information that is available to the **system operator** when fulfilling its **dispatch** obligations under the **rules**.
- 98.7 Where the **system operator** has information that is not information it is required to keep confidential and on which it has relied in determining, under clause 98.5 not to rely on the accuracy of an **asset owner asset capability statement** it will notify such information to the relevant **asset owner** as soon as reasonably practicable.

Compliance with Dispensations and Equivalence Arrangements

99. The **system operator** will monitor **asset owner** compliance with **dispensations** or **equivalence arrangements** using the measures described above in relation to monitoring compliance with **AOPOs** and **technical codes**. In addition, the **system operator** will undertake any specific monitoring required as a condition of a **dispensation** or **equivalence arrangement**.

Compliance with Alternative Ancillary Services Arrangements

100. The **system operator** will monitor **asset owner** compliance with **alternative ancillary services arrangements** in accordance with its obligation under rule 10 of section IV of part C. To meet this obligation the **system operator** will, following consultation with the relevant **asset owner**, specify any requirements to facilitate proactive compliance monitoring of the **alternative ancillary services arrangement** as a condition of the **system operator's** approval of such arrangements under schedule C2 of part C.

Asset Owner Non-Compliance

101. Where the **system operator** suspects that an **asset owner** may have breached or has breached any specific obligation under the **regulations, rules** or conditions of any **equivalence arrangement, dispensation** or **alternative ancillary services arrangement**, the **system operator** will:
- 101.1 Consider the circumstances to see if there are reasonable grounds for believing a breach has occurred.
- 101.2 Seek such further information from a relevant **asset owner** as may be necessary to undertake such consideration.
- 101.3 Determine in accordance with rule 5.2 of section III of part C whether to **dispatch** the **asset** or configuration of **assets** that it does not reasonably believe complies with the **AOPOs, technical code, dispensation** or **equivalence arrangement** in question.
- 101.4 Assess any potential impact of the non-compliance on its ability to continue to comply with the **PPOs** and notify such impact to the **Board**.

101.5 Tell **participants** of its intention to revoke or amend a **dispensation** or **equivalence arrangement** in accordance with rule 8.3 of section III of part C, or its intention to revoke or amend any **alternative ancillary services arrangement** in accordance with rule 9.7 of section IV of part C.

Urgent Change Notice

102. The **system operator** will publish on its website a form of **urgent change notice** which may be used by an **asset owner** to inform the **system operator** of an urgent or temporary change in **asset** capability where rule 2.6.1.3 of **technical code A** does not apply. An urgent or temporary change in **asset** capability is a change where the **asset owner**:

102.1 Unexpectedly becomes aware the capability of an **asset** may differ from the capability described in the most recent **asset capability statement** provided to the **system operator** in respect of such **asset** and there is no practicable opportunity to lodge a new **asset capability statement** in accordance with rule 2.5 of **technical code A**, and

102.2 Needs to perform further investigations to determine or confirm the actual capability of the **asset**.

103. An **urgent change notice** will apply for the period specified in the **urgent change notice** and will be the **asset owner's** best assessment (based on the information it has to hand) as to the actual capability of the relevant **asset**. On receipt of an **urgent change notice** by the **system operator**, the most recent **asset capability statement** in respect of the relevant **asset** will be deemed to be amended to reflect the capability set out in the **urgent change notice**.

104. When the **system operator** receives an **urgent change notice** it will as soon as reasonably possible:

104.1 Assess the impact the urgent or temporary change in **asset** capability will have on the **system operator's** ability to plan to comply or comply with its **PPOs**.

104.2 Endeavour to agree with the **asset owner** any necessary operating conditions or limitations required as a result of the temporary change in **asset** capability.

104.3 Advise the **asset owner** of any conditions or constraints that the **system operator** will apply in respect of the **dispatch** of the **asset** (and it will update the **asset owner** if it changes these constraints or conditions at any time).

ASSET CAPABILITY INFORMATION

General Policy

105. In accordance with rules 2.2 and 2.5 of **technical code A** of schedule C3 of part C the **system operator** will require **asset owners** to provide an **asset capability statement** and any other reasonable information required by the **system operator** to allow the **system operator** to assess compliance of

assets with **AOPOs** and **technical codes**. The **system operator** may also require further information from **asset owners** in accordance with rule 4.4 of section III of part C and rule 3 of **technical code A** of schedule C3 of part C to assist the **system operator** to plan to comply, and comply, with its **principal performance obligations** and the **dispatch objective**.

106. Where **asset** performance can have a significant impact on the **system operator's** ability to comply with the **PPOs**, the **system operator** will seek a detailed **asset capability statement** to enable plant performance to be modelled.

General Information Required from Asset Owners

107. In accordance with rule 2.5 of **technical code A** of schedule C3 of part C the **system operator** will **advise** a standard format **asset capability statement** for the following types of **asset owner**:

107.1 **Generators** for **generating units** connected to the **grid** and to a **local network**.

107.2 **Grid owners**.

107.3 **Distributors**.

ASSET CAPABILITY ASSESSMENTS

General Asset Capability Assessment

108. The **system operator** has identified a number of areas where **asset** performance can have a significant impact on the **system operator's** ability to comply with the **PPOs**. These include:

108.1 **Asset owner** protection systems.

108.2 **Generator asset** capability:

- Voltage.
- Frequency.

108.3 **Grid owner asset** capability:

- Voltage.
- **HVDC link** frequency capability.
- South Island **AUFLS**.

108.4 **Distributor asset** capability:

- North Island **AUFLS**.

Asset Owner Protection Systems

Grid Owners

109. The **system operator** will rely upon **grid owner** compliance with the **technical codes** in the design and configuration of the **grid owner's assets** (including its connections to other persons) and associated protection arrangements, as contained in section III of part C and schedule C3 of part C, unless the **system operator** identifies that such compliance is insufficient to be consistent with maintaining the **system operator's** ability to comply with the **PPOs**. In the event the **system operator** identifies such an insufficiency it will request the **grid owner** to identify and implement the least cost option to change the **grid** configuration and/or associated protection arrangements to be consistent with maintaining the **system operator's** ability to meet the **PPOs**.
110. In accordance with rule 4.5.2 of **technical code A** of schedule C3 of part C the **system operator** and the **grid owner** will agree the locations to check synchronism and **grid owner** confirmation of this synchronism will be requested in the **asset capability statement**.

All Asset Owners

111. To meet its obligations under rule 4.1 of **technical code A** of schedule C3 of part C, the **system operator** will require:
- 111.1 Agreement between **asset owners** on the settings and the protection system that will achieve the outcome required by rule 4.1 of **technical code A**.
- 111.2 Advice to the **system operator** if settings have changed and confirmation that the consultation between **asset owners** has occurred regarding the settings required by rule 4.4.1 of **technical code A**.
- 111.3 **Asset owner's** confirmation in the **asset capability statement** that it has met the requirements of rule 4.1 of **technical code A** for existing **assets**.
- 111.4 Confirmation in any commissioning plan that the **asset owner** has communicated with the **grid owner** on protection settings to meet the requirements of rule 4.1 of **technical code A**.
112. Where, pursuant to rule 6 of **technical code A** of schedule C3 of part C, a **distributor** requests agreement of the **system operator** to connection of **local networks** in parallel with the **grid**, the **system operator** will require the **distributor** to provide the following:
- 112.1 Any information reasonably required by the **system operator** to evaluate the consequences and determine conditions that may apply (and the **system operator** will list on its website the type of information generally required).
- 112.2 Written evidence of the **grid owner's** agreement to the simultaneous connection of those **assets**.

113. For all other requirements in the **rules** in relation to protection systems, the **system operator** will request confirmation of compliance from **asset owners** in the **asset capability statement**.

Generator Asset Capability Assessment

Voltage

114. For the purpose of carrying out assessments under **technical code A** of schedule C3 of part C the **system operator** will assess **generating plant reactive capability** with respect to the **AOPOs** set out in rule 3.2 of section III of part C by;

114.1 Assuming:

- The **generating plant** and the **grid** bus are represented as a two-bus system.
- The **generating plant's** outputs are net **active power** and **reactive power** after accounting for local supply or auxiliary load and are measured at the **generating plant** terminal entering the **generating plant** transformer.
- The **generating plant** has a terminal voltage control range of +/- 5% unless otherwise stated in the relevant **asset capability statement**.

114.2 Verifying compliance with the reactive power requirements of rule 3.2 of section III of part C by assessing:

- The **generating plant** reactive power range when importing and exporting at full load with respect to the standards.
- The ability of **generating plant**, when importing and exporting **reactive power** at full load, to maintain the voltage within the ranges set out in the tables set out in rule 3.2 of section III of part C.
- The ability for **generating plant** to be connected over the operating ranges set out in rule 3.1 of section III of part C considering:
 - **Generating plant** reactive power range.
 - **Generating plant** transformer tap range, including the requirement for on-load tap changers.
 - **Generating plant** terminal voltage range.

Frequency

115. For the purpose of carrying out assessments under **technical code A** of schedule C3 of part C the **system operator** will assess **generating plant frequency capability** with respect to the **AOPOs** set out in rule 2 of section III of part C, by:

- 115.1 Assessing the **generating plant** trip settings.
- 115.2 Modelling **generating plant** and governor performance to analyse frequency performance.
- 115.3 Assessing **generating plant** performance when islanded.
- 115.4 Modelling **generating plant** governor and exciters to:
 - Confirm stability when small voltage perturbations are applied to exciters and load changes for governors.
 - Identify parameters for system dynamic and system security analysis, such analysis to be undertaken in a manner consistent with international practice.

Grid Owner Asset Capability Assessment

Voltage

- 116. To enable the **system operator** to manage the risk of cascade failure, the **system operator** will:
 - 116.1 Request that **grid owners** provide details of the operational voltage range capability of their **assets** in the **asset capability statement**.
 - 116.2 Model the performance of dynamic reactive power devices to establish stability and to obtain parameters for the **system operator** to model the system dynamics for planning and system security analysis.

HVDC Frequency Capability

- 117. For the purpose of carrying out assessments under **technical code A** of schedule C3 of part C the **system operator** will assess **HVDC Owner** frequency capability with respect to the **AOPOs** set out in rule 2 of section III of part C, by:
 - 117.1 Assessing the **HVDC Owner** trip settings.
 - 117.2 Modelling the **HVDC link** performance to analyse its frequency performance.

Distributors Capability Assessment

Automatic Under Frequency Load Shedding (AUFLS)

- 118. To manage its risk of cascade failure, the **system operator** will:
 - 118.1 Request that North Island **distributors** and South Island **grid owners** provide an **AUFLS** load profiling statement on their **asset capability statement** that states the minimum percentage of **AUFLS** load for each block armed to trip.
 - 118.2 Maintain a register of **AUFLS** profiling statements to determine the minimum **AUFLS** percentage available at any time.

- 118.3 Incorporate **AUFLS** relay testing and confirmation of load profiling in the **test plan**.

COMMISSIONING ASSETS

General Policy

119. The **system operator** will carry out the following actions in relation to commissioning:
- 119.1 To ascertain whether the commissioning will affect the **system operator's** ability to plan to comply and comply with the **PPO** objectives, evaluate **asset owner** compliance with the **AOPOs** and the **technical codes**, using the information provided by the **asset owner** in accordance with rules 2 and 3 of **technical code A** of schedule C3 of part C, at the following stages:
- Planning.
 - Building and prior to commissioning.
 - During commissioning.
 - On completion of commissioning.
- 119.2 Display a `Connection and Dispatch Guide` on the **system operator's** website to describe the studies undertaken by the **system operator** at different stages of commissioning and the timeframes for assessment required by the **system operator** at different stages of commissioning. This guide will state the information required from **asset owners** at each of the above stages, including information required by the **asset capability statements** in the form listed on the **system operator's** website for each **asset** that is proposed to be connected, or is connected to, or forms part of the **grid**.
120. The **system operator** will assess **asset capability statements** provided to the **system operator** by **asset owners** for **assets** that are being commissioned or modified at each of the following stages:
- 120.1 Prior to the completion of planning for the construction of an **asset**.
- 120.2 At completion of construction of an **asset**.
- 120.3 At completion of commissioning of an **asset**.
- 120.4 At any time the **asset owner** updates the **asset capability statement** during any stage of commissioning.
121. Upon receipt of an **asset capability statement**, the **system operator** will carry out any assessments necessary, and will notify the **asset owner**:
- 121.1 Whether the **system operator** requires any further information to determine whether the **asset** will, in its reasonable opinion, meet the requirements of the **AOPOs** and the **technical codes**.

- 121.2 Whether, on the basis of the information provided by the **asset owner** and any assumptions made by the **system operator** and notified to the **asset owner**, the **asset** will in the **system operator**'s reasonable opinion meet the requirements of the **AOPOs** and the **technical codes**.
- 121.3 Whether the **system operator**'s decision is based on any specific conditions and / or assumptions.
- 121.4 If the **system operator** is not satisfied the **asset** will in its reasonable opinion meet the requirements of the **AOPOs** and the **technical codes**, any appropriate actions required for the **asset owner** to achieve compliance, including application for a **dispensation** or **equivalence arrangement**.
122. If appropriate, the **system operator** will repeat the process described in clause 121 until the **system operator** is reasonably satisfied the **asset** will meet the requirements of the **AOPOs** and the **technical codes**.

Commissioning Plan

123. When the **asset owner** notifies the **system operator** the **asset** is, or will be, ready for commissioning, the **system operator** will require the **asset owner** to provide a commissioning plan to meet the requirements of rule 2.6 of **technical code A** of schedule C3 of part C. In order to assess the commissioning plan, the **system operator** may require the commissioning plan to address the following matters (in addition to the specific matters set out at rules 2.6.2 and 2.6.3 of **technical code A** of schedule C3 of part C):
- 123.1 Proposed dates and times for commissioning and testing activities.
- 123.2 Preliminary stability check.
- 123.3 Proposed reactive output.
- 123.4 Configuration.
- 123.5 Control system tuning.
- 123.6 Any other matters which the **system operator** reasonably considers relevant to enabling the **system operator** to plan to comply, and to comply, with its **PPOs**.

Dispatch for Commissioning

124. Prior to **dispatch** in accordance with the commissioning plan, the **system operator** will request all information required from the **generator** pursuant to rule 3.2 of section II of part G.
125. The **system operator** will then only **dispatch** those **assets** solely for commissioning purposes.

During Commissioning

126. During commissioning of the **asset**, the **system operator** will review the results of the various tests to:

- 126.1 Confirm the results of any previous assessments of the **asset** carried out prior to commissioning.
- 126.2 Re-assess compliance of the **asset** with the **AOPOs** and the **technical codes**.

Final Assessment

- 127. Upon receipt of a final **asset capability statement** from the **asset owner** after commissioning, the **system operator** will:
 - 127.1 Complete a final assessment of the **asset** for compliance with the **AOPOs** and the **technical codes**.
 - 127.2 Finalise the assessment process of any request for **dispensation** or **equivalence arrangement** in accordance with this Compliance Policy.

Test Plan

- 128. The **system operator** will publish on its website:
 - 128.1 A template for a **system test** that can be used by **asset owners** where the circumstances in rule 2.6.1.3 of **technical code A** apply. If the **system operator** agrees to **dispatch** the **asset** referred to in a **test plan** submitted to it by an **asset owner** using the template, it will thereafter consider any **asset** capability information in the **test plan** that differs from that contained in the most recent **asset capability statement** provided to the **system operator** in respect of such **asset** to replace the relevant **asset** capability information for the duration agreed in the **test plan**.
 - 128.2 An explanatory guide to assist **asset owners** to implement the requirements for **asset** testing in rules 2.6 and 8.2 of **technical code A** of schedule C3 of part C and testing after modification and **commissioning**. Such explanatory guide will:
 - 128.2.1 Be reviewed not less than once in each period of five years. When carrying out each review the **system operator** will invite comments from **registered participants** as to the process and the content of the review.
 - 128.2.2 Outline the information from **asset** testing undertaken by **asset owners** under rule 8.2 of **technical code A** of schedule C3 of part C that will assist the **system operator** understand the nature of the tests carried out and the results thereof.
 - 128.2.3 Describe suggested standards or appropriate methodology for the routine testing of **assets** set out in appendix B of **technical code A** of schedule C3 of part C.
 - 128.2.4 Describe the tests that **asset owners** can undertake after modification and **commissioning** to ensure the provision of appropriate information to the **system operator** in accordance with rule 2.2 and 2.5 of **technical code A** of schedule C3 of part C.

128.2.5 Describe the tests that an **ancillary service agent** may be requested by the **system operator** to undertake to demonstrate an **asset** is capable of meeting the technical requirements and performance standards set out in a relevant **ancillary service** procurement contract.

DISPENSATIONS AND EQUIVALENCE

General Policy

129. To facilitate the operation of the processes under the **rules** for the approval of **equivalence arrangements** and grant of **dispensations**, the **system operator** will provide the following information:

129.1 Contact details for communication with the **system operator** on application, information, and revision of information or cancellation of the application or other matters relating to **equivalence arrangements** and **dispensations**.

129.2 A pro forma application form for **dispensations** or **equivalence arrangements**.

Information Collation and Data Processing

130. The **system operator** will consider any request for a **dispensation** or **equivalence arrangement** by the relevant **asset owner** prior to the **asset** in question being commissioned. The **system operator** may approve such a request subject to conditions including, without limitation, the following:

130.1 Any approval granted by the **system operator** for a **dispensation** or **equivalence arrangement** prior to the **asset** in question being commissioned will terminate after 2 years from the approval date if the **asset** is not commissioned.

130.2 If required, the **asset owner** may apply to the **system operator** to extend the 2 year term. The **system operator** will not unreasonably withhold such consent.

Standard Terms of Dispensations and Equivalence

131. In granting **dispensations** and/or **equivalence arrangements**, the **system operator** will:

131.1 Specify any terms and conditions which apply in relation to that particular **dispensation** or **equivalence arrangement**.

131.2 Apply the following standard terms and conditions:

131.2.1 All **dispensations** and **equivalence arrangements** are subject to review at the time the **system operator** produces the **system security forecast** (and any review thereof) in accordance with rule 15 of section II of part C to ascertain whether there has been any material change in circumstances or in relation to the assumptions on which the **dispensation** was granted or the **equivalence arrangement** approved.

131.2.2 The **system operator** will make its assessment of an application for **dispensation** or **equivalence arrangement** based on the information it has and the circumstances existing at the time. Therefore, all **dispensations** and **equivalence arrangements** will be subject to changes in:

- The content of the **regulations** and **rules**.
- The content of the **policy statement** and **procurement plan**.
- Power system **assets**, availability, and outages.
- Knowledge regarding **asset capability**.
- Any other material factor influencing the **system operator's** decision whether or not to grant a **dispensation** or approve an **equivalence arrangement**.

132. A condition of the grant of a **dispensation** from the **generator** Voltage/Reactive Power requirements of rule 3 of section III of part C, will be that **dispatch** of the non-compliant generation may not occur in the following circumstances:

132.1 In high voltage situations, where **generation plant** is unable to absorb **reactive power**, when **dispatch** may exacerbate a high voltage situation.

132.2 If the **generating plant** is limiting the **system operator's** ability to operate the **grid** over the range of voltages specified in rule 3.1.1 of section III of part C.

Dispensation, Equivalence Arrangement and Alternative Ancillary Service Arrangements Register

133. The following will apply to the **publication** of information on the **dispensation, equivalence arrangements** and Alternative Ancillary Service Register (the Register):

133.1 The Register will contain no information which has been designated as commercially sensitive by the relevant **asset owner**.

133.2 The **system operator** will designate an employee role to be responsible for managing the Register.

133.3 The Register will be displayed on the **system operator's** website and kept up-to-date at all times.

133.4 The **system operator** will only display current **dispensations, equivalence arrangements** and **alternative ancillary service arrangements** on the Register.

Cancellation of Arrangements

134. The **system operator** will consider any request for cancellation of a **dispensation** or **equivalence arrangement** by the relevant **asset owner** provided that the request must:

134.1 Be in writing.

134.2 Be accompanied by a description of how compliance for that **asset**, for which the **dispensation** or **equivalence arrangement** was originally sought, is now achieved.

134.3 Include an updated **asset capability statement**.

134.4 Include any results from **system tests** carried out to confirm compliance with the **AOPOs** and **technical codes**.

Chapter 4 – Conflict Of Interest Policy

General Policy

135. The general policies to be adopted by the **system operator** in respect of any conflict of interest are as follows:
- 135.1 Identification of any conflict of interest between the **system operator** function and the transmission asset owner function, which arise in the performance of the **system operator's** obligations under the **rules**.
 - 135.2 Investigation and assessment of the materiality of each conflict of interest that has been identified.
 - 135.3 Application of a series of management techniques to manage any conflicts of interest that arise in its performance of its obligations under the **rules**.
 - 135.4 Reporting to the **Board** on a regular basis on any new conflicts of interest that arise in the performance of its obligations under the **rules**. That report will:
 - 135.5 State the nature of the conflict, the reason it has arisen and the means by which the conflict will be managed.
 - 135.6 Report any breaches of the Conflict of Interest Policy or any causes for concern that may arise.
136. Specific management techniques have been developed to address certain areas of obvious potential for conflicts of interest. These are set out in clauses 138 to 152.
137. This Policy is not intended to repeat the **system operator** or **grid owner's** obligations under the **rules**, but should be read in conjunction with the provisions of the **rules** and any explanatory documents.

THE MEANS TO MANAGE CONFLICT OF INTEREST

138. The management techniques to be used to address any specific conflict of interest will be as determined by the **system operator** from time to time. On a monthly basis the **system operator** will do the following:

Internal Monthly Review

- 138.1 The **system operator** will, where it considers the materiality of the conflict of interest warrants it, include a review of its performance against this Policy in its monthly report to the **Board** provided under **regulation 45**.

Appointment of an Independent Person

- 138.2 The **system operator** will, where it considers that the materiality of the conflict of interest warrants, appoint an independent person to oversee the management of the conflict of interest processes, so as to ensure objectivity.

Independent Evaluation / Expert

- 138.3 The **system operator** will, when it considers the materiality of the conflict of interest warrants, appoint an independent expert to conduct an evaluation or an investigation into a suspected breach or breach of the **AOPOs**.

Document Control and Information Management

- 138.4 The **system operator** will, when it considers the materiality of the conflict of interest warrants, establish independent document and information management systems to protect confidential and sensitive information.

Communication Management Systems

- 138.5 The **system operator** will, when it considers the materiality of the conflict of interest warrants, establish a communication management system between the **system operator** function and the transmission asset owner function, including but not limited to call logs, document logs, meeting minutes and separate fax numbers.

Division of Staff Functional Roles

- 138.6 The **system operator** will, when it considers the materiality of the conflict of interest warrants, ensure a clear division of management and staff roles to address the issue of sensitivity / confidentiality. This may entail the establishment of a separate project team, physically isolated from others within the organisation for the period of a specific project e.g. the assessment of requests for preliminary determinations. The **system operator** will display on its web page the key contact points for the **system operator**.

Public Notification

- 138.7 The **system operator** will, where appropriate and with the agreement of the **grid owner**, **advise** any relevant non-commercially sensitive information considered material in maintaining a transparent and impartial process that is not already required to be disclosed under the **rules**.

Additional Management Techniques

- 138.8 Where, during the currency of this **policy statement**, the **system operator** identifies a further management technique or techniques to address conflict of interest issues then, as soon as reasonably practicable, the **system operator** shall **advise** such further management technique or techniques to all **participants**.

PROCUREMENT OF ANCILLARY SERVICES

Background

139. The general policies to be adopted by the **system operator** in respect of the purchase of **ancillary services** from the **grid owner** are set out in clauses 142 and 143.
140. The **procurement plan** establishes the principles and processes to be followed by the **system operator** in procuring **ancillary services**.
141. The **grid owner** has in the past actively competed, and is likely in the future to actively compete, with third party service providers in providing some **ancillary services**.
142. In procuring **ancillary services** the **system operator** will adhere to the **procurement plan** and ensure transparency and the integrity of the tender process.

Management Process

143. The **system operator** will, when the **grid owner** competes with another potential service provider for the provision of **ancillary services**, address this conflict of interest through:
 - 143.1 The appointment of an independent chair to a tender administration panel which shall consist, among others, of at least one representative from the **system operator**. This tender administration panel will be responsible for developing and enforcing the protocols described below for the duration of the tender period.
 - 143.2 The appointment of the same independent chair to a tender evaluation panel of **system operator** representatives (refer to clause 138.3).
 - 143.3 The establishment of a document control and information management system (refer to clause 138.4).
 - 143.4 The establishment of a communication management system for the duration of the tender period (refer to clause 138.5).
 - 143.5 The division of staff functional roles for the duration of the tender period (refer to clause 138.6).
 - 143.6 The **publication** of any relevant data to the extent that the **rules** provide for such information to be **published**.

COMPLIANCE ASSESSMENT AND THE ISSUE OF DISPENSATIONS, EQUIVALENCES AND ALTERNATIVE ANCILLARY SERVICE ARRANGEMENTS

Background

144. The **system operator**, under the **rules**, is charged with providing for the receipt, assessment and approval of the **grid owner's** applications for **equivalence arrangements, dispensations and alternative ancillary service arrangements**. This will require the **grid owner** to furnish an **asset**

capability statement, reach agreement on the terms of the application and comply with the conditions and terms of the **dispensations and equivalence arrangements**.

145. In assessing **asset** capability and issuing **dispensations** the **system operator** will adhere to the principles detailed in the Compliance Policy. The **system operator** will:

145.1 Ensure that information provided by the **grid owner** is treated with the same level of confidentiality as any other **asset owner**.

145.2 Ensure that the **grid owner** is required by the **system operator** to follow the same protocols as those required of the other **asset owners**.

Management Process

146. The **system operator** will address this conflict of interest through:

146.1 The establishment of a document control and information management system (refer to clause 138.4).

146.2 The establishment of a communication management system (refer to clause 138.5).

146.3 The division of staff functional roles for the duration of any assessment (refer to clause 138.6).

146.4 The **publication**, with the agreement of the **grid owner**, of relevant, non-commercially sensitive data, in order to demonstrate a consistent approach has been taken between different **asset owners** (refer to clause 138.7).

MONITORING COMPLIANCE OF THE TRANSMISSION ASSET OWNER

Background

147. The **system operator** under the **rules** and **regulations** is charged with the monitoring (to the extent required under rule 5.1 of section III of part C) and reporting on the **grid owner** compliance with the **rules**, any **equivalence arrangement**, **dispensation** or **alternative ancillary service arrangements**.

148. In monitoring **grid owner** compliance the **system operator** will adhere to the principles detailed in the Compliance Policy. The **system operator** will:

148.1 Following a breach by the **grid owner** report that breach, as required by the **regulations**.

148.2 When requested by the **Board** to provide a report on a **grid owner** breach, conduct that investigation as vigorously and with the same impartiality it would in respect of any other **asset owner**.

Management Process

149. The **system operator** will address this conflict of interest through:

- 149.1 The appointment of an independent expert to conduct an investigation / or review any report or investigation of a **grid owner** breach (refer to clause 138.2).
- 149.2 The establishment of a document control system (refer to clause 138.4).
- 149.3 The establishment of a communication management system (refer to clause 138.5).
- 149.4 The **publication**, with the agreement of the **grid owner**, of relevant non-commercially sensitive data (refer to clause 138.7).

OUTAGE CO-ORDINATION

Background

- 150. The **system operator** under the **rules** is required to receive, assess, and provide feedback on outage notifications. Outages can have a significant impact on the ability of the **system operator** to comply with the **PPOs**. The **grid owner** is required under the **rules** to notify the **system operator** of its planned outages up to 12 months in advance, and receive along with other **asset owners**, advice from the **system operator** on timing of outages (typically via short and medium term security forecasts).
- 151. In managing outage co-ordination and regional planning matters, the **system operator** will ensure that it treats the **grid owner** and other **asset owners** on the same basis.

Management Process

- 152. The **system operator** will address this conflict of interest through:
 - 152.1 The facilitation and implementation of the industry-agreed **Planned Outage Co-ordination Process**.
 - 152.2 The establishment of a document control and information management system (refer to clause 138.4).
 - 152.3 The establishment of a communication management system (refer to clause 138.5).
 - 152.4 The **publication** of relevant data.

Chapter 5 – Future Formulation and Implementation Policy

Policy and Scope

153. The **rules** contain provisions that require the **system operator** to be consulted on the impact of proposed **rule** changes. This ensures that where necessary, the impact of **rule** changes can be reflected in the **policy statement** by making timely changes outside the annual review cycle.
154. The **system operator** maintains operational review processes that capture issues for which possible change to the **policy statement** may be desirable. Such matters are logged for consideration during the annual review of the **policy statement**. The matters logged include issues raised with the **system operator** by **participants** and the **Board**.
155. If an issue is identified requiring urgent attention and change to the **policy statement** outside the annual review cycle the **system operator** will bring the matter to the attention of the **Board**. The **system operator** will seek the **Board's** assistance in implementing the required change, such as by **rule** change, change to the **policy statement** or approval of an exemption.

Chapter 6 – Business Performance Policy

156. The **system operator** will maintain and publish on its website a business performance charter that describes in more detail the manner in which the **system operator** intends to deliver the **system operator** services under the **rules**.

The charter will:

- 156.1 Contain a commitment to service that describes its business philosophy.
- 156.2 Describe how **participants** can contact the **system operator** and how contacts and requests made to the **system operator** will be managed.
- 156.3 Contain a commitment to professional standards.
- 156.4 Describe how the **system operator** will maintain regular communications with **participants**.
- 156.5 Contain a protocol for receiving and managing complaints and disputes (other than in respect of matters reserved to the **Board**).
- 156.6 Describe how the **system operator** will undertake industry consultation including how it will invite comments on reviews to be carried out in accordance with the **policy statement**.
- 156.7 Be reviewed at least annually and updated more often as reasonably determined by the **system operator**.
- 156.8 Be displayed on the **system operator's** website.

The charter does not form part of the **policy statement**.

Chapter 7 - Statement of Reasons for Adopting Policies and Means

157. The **system operator** has adopted the policies and means set out in the **policy statement** for the following reasons:

157.1 The **system operator** believes they are the policies and means that will best enable it to comply with the **principal performance obligations**.

157.2 They are policies and means that in large measure have been used successfully for many years.

157.3 To the extent the policies and means represent changes from those adopted previously it is because the **system operator** believes no previous policy or means existed or a previous policy or means did not adequately meet the needs of the **system operator**.

157.4 The **system operator** consulted widely when it developed the policies and means set out in the **policy statement** and took into account the views of **participants**.

This statement is made for the purposes of rule 10.2.4 of section II of part C.

Glossary of Terms

158. **Advise** means the **system operator** placing information or other material required to be provided or made available under the **policy statement** on its website. The **system operator** will use its best endeavours to send an e-mail to **participants** telling them the information or other material has been placed on the **system operator's** website.
159. **Asset outage constraints** are a sub-set of **temporary security constraints**. They are **temporary security constraints** previously developed and used by the **system operator** in response to earlier advised **asset** outages. They are retained by the **system operator** for possible future re-use. They are often applied at short notice.
160. **AUFLS** means **automatic under-frequency load shedding** systems.
161. **Changeover date** means the date notified by the **system operator** to the **Board** under clause 18A.
162. **Constraint percentage threshold** means the percentage **advised** from time to time by the **system operator**, following consultation with **participants**, as being the percentage within which a grid stability limit and/or a transmission stability limit is expected to become binding in its **SPD** model.
163. **Contingent events** are as defined in clause 12.3 and 12.4.
164. **Demand shedding** means an unplanned interruption of **demand** initiated by the **system operator**. **Demand management** also has the same meaning.
165. **Dynamic load distribution factor** means the proportion of a regional load being drawn at a **GXP** within that region. The **dynamic load distribution factors** are derived from actual load on a regularly updated basis in real time.
166. *[Revoked]*
167. **Extended contingent events** are as defined in clause 12.3 and 12.4.
168. **Fixed load distribution factor** means the proportion of the regional load forecast assigned to a **GXP** within that region. The **fixed load distribution factors** are set for a specified **trading period** based on the actual load for the same **trading period** in the previous week or in the previous fortnight.
169. **Frequency keeping constraints** are **temporary security constraints** which are applied by the **system operator** for the purposes of scheduling and **dispatching** the frequency keeper.
170. **Maximum instantaneous demand change limit** is the **MW** amount specified from time to time by the **system operator** under clause 39 for **demand** changes that may be made by any **purchaser** within a 1 minute and a 5 minute period.
171. **Other events** are as defined in clause 12.3.

172. **Permanent security constraints** are **security constraints** which are applied in scheduling and **dispatch** to take into account common **grid** configuration and transmission capability.
173. **Planned Outage Co-ordination Process** means the process by which the **system operator** receives, assesses and provides feedback on outage notifications in accordance with **technical code D** of schedule C3 of part C.
174. **Relevant freely available reactive resources** are reactive resources that exist, the **dispatch** of which will support voltage at the affected location, which are available to the **system operator** at no **procurement plan** cost and without requiring the application of a **security constraint** to provide reactive resources. They include **grid owner assets** capable of providing reactive support and made available, and generation **dispatched**, and required to provide reactive support in accordance with the **voltage support APOs**.
175. **Reserves Management Tool** and **RMT** mean the reserves management **software** used by the **system operator** as agreed with the **Board** pursuant to the **System Operator Service Provider Agreement**.
176. **Scheduling Pricing and Dispatch** and **SPD** mean the scheduling, pricing and dispatch **software** used by the **system operator** as agreed with the **Board** pursuant to the **System Operator Service Provider Agreement**.
177. **SDPQ** means the **schedule of dispatch prices, dispatch quantities, dispatch arc flows, dispatch group constraint arc flows, group constraint formulas and HVDC component flows**.
178. **Security constraints** can be either temporarily or permanently applied by the **system operator** during scheduling and **dispatch** to maintain:
- 178.1 Scheduled and **dispatched** power flows within the capacity of transmission **assets** after the occurrence of a **contingent event**.
- 178.2 Scheduled and **dispatched** power flows within the power system stability limits determined for **stability events**.
- 178.3 Voltage within advised **asset** capability limits and agreements for higher levels of quality.
179. **Stability events** are as defined in clause 12.3.
180. A **standby residual shortfall** is a situation when there are either insufficient **generator offers** and **instantaneous reserve** offers following a **contingent event** to schedule sufficient reserves for a second event and/or there are insufficient **generator offers** to restore **interruptible load** following a **contingent event**.
181. A **standby residual shortfall notice** is a notice issued by the **system operator** to selected **participants** in which it advises that a **standby residual shortfall** has been identified.

- 181A. **Standby residual shortfall threshold** means the threshold above which a **standby residual shortfall notice** will be **published**, such threshold being determined from time to time by the **system operator** and **notified** by the **system operator** to **participants**.
182. **System Operator Service Provider Agreement** means the agreement for the provision of **system operator** services made between the Electricity Commission and Transpower New Zealand Limited dated 12 August 2009.
183. **Target grid voltages** are voltages determined by the **system operator** under clause 41.1 of the Security Policy at selected locations on the **grid** where the voltage is greater than, or equal to 50kV.
184. **Temporary security constraints**, which include **asset outage constraints**, are **security constraints** which are applied in scheduling and **dispatch** to supplement **permanent security constraints** and account for temporary **grid** configuration, transmission capability and system conditions.
185. **Test plan** means:
- 185.1 a routine test plan agreed pursuant to rule 8.2 of **technical code A** of schedule C3 of part C;
 - 185.2 a remedial test plan agreed pursuant to rule 8.3.1 of **technical code A** of schedule C3 of part C; or
 - 185.3 a test plan agreed between the **system operator** and an **asset owner** under rule 2.6.1 of **technical code A** of schedule C3 of part C.
186. **Transmission circuit** means:
- 186.1 any transmission line owned by a **grid owner**.
 - 186.2 any distribution line owned by a **participant** to which not less than a sum of 60 **MW** of **generation** is connected and which distribution line is connected to the **grid** primarily for the purpose of **injection** into the **grid**.
187. **Urgent change notice** is a notice issued to the **system operator** by a **participant** in accordance with clause 102.
188. **Week-ahead dispatch schedule** means a schedule produced by the **system operator** for the 6 **days** beginning at 00.00 hours of the next **day** using:
- 188.1 Generation **offers** or, where no revised **offer** exists, generation **offers** for the previous week.
 - 188.2 Forecast **grid** configuration, including any **notified planned outages**.
 - 188.3 Anticipated **demand** using **fixed load distribution factors**.
189. **Wider voltage agreement** is an arrangement where the **grid owner** has informed the **system operator**, in writing that:

- 189.1 The **grid owner** has agreed with other affected **asset owners** at a **GXP** or in a region that the **system operator** may operate outside the ranges set out in rule 3.1.1 of section III of part C.
- 189.2 Where the **grid owner** has not identified any other affected **asset owners** at a **GXP** or in a region, **the grid owner** agrees with the **system operator** to operate the **grid owner's assets** outside the ranges set out in rule 3.1.1 of section III of part C.