
Policy statement

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Introduction

PURPOSE

- ~~1. This is the **policy statement** referred to in clauses 8.8 and 8.9 of the Code 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.~~
1. This is the **policy statement** referred to in part 8 of the Code.
- 1A. This **policy statement** takes effect from ~~24 June 2016.~~ [10 November 2017.](#)
- 1B. References to the **system operator's** website in this policy statement refer to the system operator page on the **Transpower** website.

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** must 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~~avoiding 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:
 - (a) Frequency limits.
 - (b) **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 maintaining](#) 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** ~~(clause 7.2(1)(c) of the Code)~~ 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 must be adopted in respect of the **dispatch objective**.

INTERPRETATION

10. Any terms used in the **policy statement** which are defined in Part 1 of the Code and which are not defined in the Glossary of Terms within the **policy statement**, have the same meaning as given to them in the Code. In the event of any inconsistency or conflict between the provisions of this **policy statement** and the rest of the Code, the rest of the Code 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**, co-ordination of advised planned **asset** outages to minimise the impact on security during **dispatch**.
- 11.6 ~~Taking action available under the Code as if~~ reasonably requested by ~~any person a~~ **participant**, ~~investigating, identifying and, to identify the~~ **extent reasonably practicable, resolving** the cause of ~~a non-compliance with~~ harmonic levels, voltage flicker or, voltage imbalance standards ~~not being met, (sections 4.7, 4.8 and 4.9 of the~~ **Connection Code)**.
- 11.7 Defining the circumstances under which **formal notices** must be sent in accordance with **Technical Code B** of Schedule 8.3 of the Code 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** must 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
 - an **HVDC link pole**; or

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- 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~~must:

- **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 must 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 must 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** must [displaymake available](#) 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) The loss of a 220 kV **interconnecting transformer** except during a planned maintenance outage or forced outage of an asset (including but not limited to lines, interconnecting banks and substation equipment) that could affect the system performance of that 220kV interconnecting transformer.
- ~~c) The loss of a 220kV or 110kV busbar except during a planned maintenance outage or forced outage of an asset (including but not limited to lines, interconnecting banks and substation equipment) that could affect the system performance of that 220kV or 110kV busbar.~~
- ~~d) The loss of a 66kV busbar directly connected to the **core grid** except during a planned maintenance outage or forced outage of an asset (including but not limited to lines, interconnecting banks and substation equipment) that could affect the system performance of that 66kV busbar.~~

- **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.

12.4.1 Categorising the loss of a 220kV, 110kV or 66kV busbar connected to the **core grid** as either a **contingent event**, **extended contingent event** or **other event** according to a methodology made available on its website, and making the

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[results of such categorisation available on its website:](#)

[12.4.2 Inviting industry to comment on any proposed changes to the methodology referred to in clause 12.4.1 before those changes come into effect.](#)

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** must 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** must 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.

13. The **system operator** must:

- 13.1 In addition to ~~the annual review~~ [reviews](#) of the **policy statement** in accordance with ~~clauses 8.11 and 8.12 of~~ the Code, 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~~[2014](#).
- 13.2 ~~Advise~~[Make available on its website](#), prior to the commencement of each review [of credible events](#), 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~~[Make available on its website](#) an explanation and summary of conclusions for each review [of credible events](#) completed under clause 13.1.

14. In determining and applying the methodology in clause 13, the **system operator** must, 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~~[ISO 31000](#).

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

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 Must 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** must follow the **demand shedding** policies in clause 74. Where clause 74 provides that **demand shedding** will not occur, 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** and the accuracy of the stated capabilities of those **assets** and **ancillary services**.

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 clause 8.22(1) of the Code.
- 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 **Instantaneous 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, clause 8.6 or clause 17.29 of the Code, 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

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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 clause 8.22(1) of the Code.

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 *[Revoked]*

18B *[Revoked]*

19. *[Revoked]*

20. *[Revoked]*

21. *[Revoked]*

22. *[Revoked]*

23. *[Revoked]*

24. *[Revoked]*

25. The **system operator** must, using the process set out below in clauses 26 to 29, develop **security 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** or stability 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; and

25.4 maintain voltages within the range set out in clause 8.22 of the Code following a contingent event.

26. The **system operator** must, 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** must for each **trading period** develop **security constraints** which it will apply during the relevant **trading period**.
- 27A The **system operator** may use either automated or non-automated processes to develop the **security constraints** under clause 27. ~~Circumstances under which non~~ Non-automated processes will be used include (but are not limited to) circumstances in situations where the automated system cannot accurately model a protection scheme or where multiple branches are required to be modelled in the constraint processes do not generate appropriate **security constraints**.
28. The **security constraints** which are developed using automated processes under clause 27 ~~shall be~~ are those which arise as a consequence of either or both the transmission capability limits and the power system stability limits being equal to or greater than the applicable **constraint percentage threshold**. Security constraints developed using non-automated processes apply regardless of constraint percentage threshold.
29. The **system operator** may amend, re-amend, add, remove or exclude the **security constraints** developed under clause 27 before and during **trading periods** when the **system operator** reasonably considers this is required to meet its obligations under the Code.
30. Notwithstanding the provisions of clause 29, the **system operator** must:
- 30.1 ~~Publish to participants~~ Make available on the ~~system operator's~~ operator's website:
- ~~power system stability limits and~~ **security constraints** developed using non-automated processes under clause ~~27A~~ and security constraints developed using non-automated processes, 27A excluding **discretionary security constraints** and **frequency keeping constraints**.
- ~~30.1AA~~ Such The information ~~publication provided under this clause 30.1~~ must:
- Where practicable, occur four weeks prior to the date on which ~~such limits or the~~ **security constraints** are intended to be first used, where the **system operator** identifies an outage or **security constraint** that could be of significant interest to participants.
 - Otherwise where practicable, occur two weeks prior to the date on which ~~such limits or the~~ **security constraints** are intended to be first used.

- Include a brief summary of the ~~limits or~~ **security constraint** design, such summary to be reasonably sufficient for **participants** to assess the effect of the limits or **security constraint**.

30.1A If ~~the system operator makes~~ a change to a ~~power system stability limit or~~ **security constraint** of one of the types described in clause 30.1 is made within two weeks before it is intended to be first used,

30.1A.1 if practicable, ~~publish~~make available details of the change on the ~~system operator's~~website in advance; but
~~website in advance; but~~

30.1A.2 if it is not ~~published~~made available in advance, ~~publish~~make available details of the change as soon as practicable.

30.1B Correctly apply ~~power system stability limits and~~ **security constraints** regardless of whether or not the ~~published~~ information on the ~~system operator's~~Transpower website about the power system stability limits or **security constraints** is complete or up to date.

30.2 Notify the ~~information system service provider for publication through the information system~~WITS manager when a **security constraint** other than a **frequency keeping constraint** ~~or general market-node constraint~~ has been applied to **SPD** for use in—

- (a) the **price-responsive** ~~schedules~~schedules;
- (b) the **non-response** ~~schedules~~schedules;
- (c) the **dispatch schedule**;
- (d) the **week-ahead dispatch schedule**; and

where the ~~right hand side~~calculated value of the constraint exceeds the **constraint publication threshold**.

30.3 *[Revoked]*

30.4 Provide to the ~~information system service provider for publication through the information system~~WITS manager, for making available on WITS, in respect of each **security constraint** notified pursuant to clause 30.2:

- the form of the **security constraint**;
- the limit of the **security constraint**;
- the **trading periods** to which the **security constraint** has been applied to **SPD**; and
- where applicable, the previous limit of the **security constraint**.

~~30.4A For the purposes of clauses 30.2 and 30.4, a constraint is only required to be notified and published if its calculated flow is equal to or greater than the applicable constraint publication threshold.~~

30.4A [Revoked].

30.5 Provide to the ~~information system service provider~~**WITS manager**, for ~~publication through the information system~~making available on WITS, information about **grid asset** outages, including start and end times, applied to—

- (a) the **price-responsive schedule**; and
- (b) the **non-response schedule**; and
- (c) the **week-ahead dispatch schedule**.

30B The **system operator** must ~~advise~~make available on its website a set of generation scenarios that it will use to develop indicative **security constraints** under clause 30C, and may amend the generation scenarios from time to time. The **system operator** will place any amendments on its website and at the same time notify **participants** of these amendments.

30C Subject to clause 30F, the **system operator** must develop indicative **security constraints** for a **notified planned outage** if it is requested to do so by a **participant** in relation to a specific outage where:

- (a) the **system operator** considers it likely that the outage will have a widespread impact on competition or efficiency, taking into account the information provided by the requesting **participant**; and
- (b) the request is made more than two weeks prior to the notified start date of the outage.

30D The intent of the indicative **security constraints** developed under clause 30C is to provide an indication of the market system constraints that may be developed for the **notified planned outage** under clause 27.

30E The **system operator** must ~~publish~~make available information detailing indicative **security constraints** developed under clause 30C to **participants** on the **Planned Outage Co-ordination Process** website. The information ~~published~~made available must include a summary of the limits or **security constraint** design, such summary to be reasonably sufficient for **participants** to assess the effect of the **security constraint**.

30F The **system operator** may decline to develop indicative **security constraints** under clause 30C if the **system operator** reasonably believes that sufficient relevant historical **security constraint** information has already been made available to **participants** after the **changeover date**. If the **system operator** declines a request pursuant to this clause, it must advise the requesting **participant** where the relevant historical **security constraint** information can be located.

30G The **system operator** must ~~publish~~make available on ~~its~~the Transpower website a description of the process it will use to develop indicative **security constraints** under clause 30C, The **system operator** may amend the process from time to time.

30H Where the **system operator** declines a request to develop indicative **security constraints** on the grounds that the criteria in clause 30C do not apply, the **participant** may request the **system operator** to agree to develop the indicative **security constraints**. Such agreement may not be unreasonably withheld but may, in the **system operator's** discretion, include the requirement for the requesting **participant** to pay the reasonable costs of

the **system operator** in developing the indicative **security constraints**.

Under-Frequency Management

31. The **system operator** must aim to schedule sufficient reserves, subject to **asset** and **ancillary service** availability and clause 33A, 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** must:

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 **Authority**;
- any **asset** assessments the **system operator** needs to carry out; and
- a reasonable time delay allowing for the system operator to modify the **RMT** to include the latest **asset** capability information.

~~32.3~~

32.3 Include the impact of **dispensations** and **equivalence arrangements**.

32A Where **asset capability information** has not been provided, the **asset** capability information provided is incomplete, or the **system operator** reasonably considers it cannot rely upon the **asset** capability information provided, the **system operator**:

~~32.3~~32A.1 may 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~~32A.2 must 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 are insufficient **offers** and/or **reserve offers** in the current **trading period**, the **system operator**, using the **SPD software**, must—

- 33.1 for a pre-event shortage relating to 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 8.4 of the Code applicable to an **extended contingent event**, reduce **demand** in accordance with the **demand management** policies; and
- 33.2 for a pre-event shortage relating to 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.

33A Following the occurrence of an **under frequency event** in which **interruptible load** has been triggered, the **system operator** may temporarily set the reserve requirements to zero. The **system operator** must then restore the reserve requirements in accordance with the methodology set out in clause 84.

33B For the purposes of the **event charge** calculation pursuant to clause 8.64 of the Code, the **system operator** will use the methodology ~~published through the system operator~~ it makes available on its website.

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 ~~clauses~~ clause 7.2(1)(b)(v) and (vi) 2C of the Code. 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** must aim to **dispatch over frequency reserves** when necessary to maintain the frequency ~~within the upper limits of clauses 7.2(1)(b)(iii) and 7.2(2) of the Code (so that the frequency does not exceed below~~ 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** ~~must take into account the actual amount of demand, the HVDC link transfer, and the number and capacity of the units able to be dispatched for over frequency reserves at the time.~~ ~~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.~~

Comment [CM1]: space

Rate of Occurrence of ~~Momentary~~ Frequency Fluctuations

~~37. The system operator must monitor the rate of occurrence of momentary fluctuations and report this to the Authority.~~

~~37. [Revoked]~~

38. The **system operator** may recommend changes to the **procurement plan**, **policy statement** or Code, or take other action available to it under the Code, with the intent to correct a significant negative trend regarding the rate of

Purchaser Step Changes

39. ~~In accordance with clause [Revoked]~~

39A Clause 8.18 of the Code ~~the system operator~~ may from time to time set a ~~maximum instantaneous demand change limit~~ provides that ~~purchasers shall comply with unless otherwise agreed between them~~ must limit the magnitude of any instantaneous change in the ~~offtake of electricity and net rates of change in offtake~~ to the levels the system operator requires.
~~system operator and a purchaser.~~

39.1

39B 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.

~~39.239C~~ The **system operator** may specify a **maximum instantaneous demand change limit** and rate of change in **offtake** in relation to a particular **purchaser** that is different from the limit and the rate specified in clause 39B.

39D Clauses ~~3939A~~ and ~~39.139B~~ do not apply to step changes and ~~rates~~ rates 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.~~
- ~~• Must advise details of the process for seeking system operator agreement to step changes beyond the limits in clause 39.1.~~
- ~~• Must 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** must plan to manage **grid** voltage as follows:

- 40.1 Following a **contingent event**, voltage will be maintained within the ranges specified in clause 8.22(1) of the Code 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** must:
 - 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** must monitor voltage trends in real time at key locations determined by the **system operator** and, subject to **asset** availability and **ancillary services**, it must 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** must **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** must **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** must 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 clause 8.47 of the Code.

- **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~~If the **system operator** ~~is made aware~~receives a request to investigate and resolve a security of any supply or reliability problem in relation to clause 7.2(4)(c)2D of the Code and ~~where~~, in the **system operator's** opinion, the problem is not likely to cause cascade failure, the **system operator** must:
- 48.1 Act on a written request by a **participant** or the **Authority** 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 Code 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 Code for **asset owners** to meet the relevant standards, the **system operator** must:
- Notify the **Authority** of the problem.
 - **Advise** the actions that could be taken to rectify the problem.
49. The **system operator** must assess any problem in relation to clause 7.2(4)(e)2D of the Code to ascertain whether that problem may lead to cascade failure. If the problem could lead to cascade failure the **system operator** must seek to identify the cause of the problem and, if any problem remains unaddressed:
- 49.1 Issue a **formal notice** in accordance with clause 5 of **Technical Code B** of Schedule 8.3 of the Code 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 clause 8.26 of the Code.

Regional long term contingency planning

50. The **system operator** may from time to time identify, in a region, a material or on-going 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** must 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 [described under clause 51](#), the **system operator** must:
- 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** of Schedule 8.3 of the Code (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 8.3 of the Code 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 Code.

Outage Planning

54. To meet its obligations under **Technical Code D** of Schedule 8.3 of the Code, the **system operator** must:
- 54.1 Carry out the assessment of all **notified planned outages** referred to in clause 3 of **Technical Code D** of Schedule 8.3 of the Code.
 - 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** of Schedule 8.3 of the Code 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** of Schedule 8.3 of the Code 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** of Schedule 8.3 of the Code 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** of Schedule 8.3 of the Code 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** of Schedule 8.3 of the Code.
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 Code.

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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 Code in respect of emergencies, and the **system operator** always retains the right to exercise its rights and powers under the Code 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** may rely on:
- 58.1 The load shedding provisions of clauses 8.19(5) and 8.24 of the Code.

- 58.2 The load shedding systems and independent action defined in **Technical Code B** of Schedule 8.3 of the Code.
- 58.3 **Asset owner** compliance with the provisions of the Code.
- 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 must use reasonable endeavours to send to the ~~information system service provider, for publication~~ **WITS manager, for making available on WITS**, a **standby residual shortfall notice**; and
 - 59.2 it may, 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 clause 4 of **Technical Code D** of Schedule 8.3 of the Code, 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**.

61. *[Revoked]*

Formal Notices

- 62. The **system operator** must issue a **formal notice** in accordance with clause 5 of **Technical Code B** of Schedule 8.3 of the Code 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**.
- 62A The **system operator** may issue the following types of formal notices:
 - A Warning Notice.
 - A Grid Emergency Notice.
 - An Island Shortage Situation Notice.
- 62A.1 A Grid Emergency Notice declares a **grid emergency** in accordance with clause 13.97 of the Code.
- 62A.2 An Island Shortage Situation Notice provides notification in accordance with clause 5(1A) of Technical Code B of Schedule 8.3 of

the Code that an **island** wide instruction to disconnect **demand** has been issued, amended, or revoked.

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-~~[one hour](#) before the start of the relevant **trading period**, the **system operator** must 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-hour~~[one hour](#) prior to the start of the relevant **trading period** or during the relevant **trading period**, the **system operator** must issue a Grid Emergency Notice.
 65. A Grid Emergency Notice must 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. If the **system operator** decides to declare a **grid emergency**, it must make the declaration by issuing a **formal notice** orally or in writing. **Formal notices** may 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 8.3 of the Code, 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 must 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 must be shown on the ~~system operator's~~[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 clause 5 of **Technical Code B** of Schedule 8.3 of the Code, the **system operator** must 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**. The ability of the **system operator** to include details of such affected **assets** is subject to the ability and willingness of the owners of affected **assets** to make such details available to other **participants**.
 69. The **system operator** must send to **participants** the report it provides to the **Authority** under clause 13.101(1)(a) of the Code.

70. Security levels must 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**. The **system operator** must revise the **formal notice** if:
- 70.1 A situation is alleviated prior to the start of the **trading periods** for which the **formal notice** was issued.
 - 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**.
 - 70.3 The electrical or geographical region affected changes from that set out in 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 8.3 of the Code.

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** must declare a **grid emergency** and apply clause 74 in determining whether to initiate **demand shedding**.

74. Demand Shedding

Scenario	Event giving rise to a grid emergency situation	Prior to 21 <u>2</u> hours	Within 2 <u>1</u> hour	Demand shedding policy
A) Steady State, including steady state after an event	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 .

Scenario	Event giving rise to a grid emergency situation	Prior to 21 ² Hoursh	Within hours ¹ hour	Demand shedding policy
has occurred.	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 .

Scenario	Event giving rise to a grid emergency situation	Prior to 2 Hours	Within 2 hours	Demand shedding policy
	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.
	Frequency keeping is unable to be maintained.	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, is or is about to be operated outside the ranges specified in clause 8.22(1) of the Code 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 clause 8(2) of Technical Code B of Schedule 8.3 of the Code).
	There is a risk of significant asset damage.		Declare a grid emergency.	Demand shedding will occur if participant responses to the GEN do not mitigate the grid emergency.
	Public safety is at risk.		Declare a grid emergency.	Demand shedding may occur if the system operator considers it appropriate in the specific circumstances.
	Independent action has been taken in accordance with Technical Code B of Schedule 8.3 of the Code to restore the system operator's PPOs.		Declare a grid emergency.	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><u>Restoration is required after a loss of supply and:</u></p> <ul style="list-style-type: none"> ▪ <u>grid reconfiguration and/or demand management is required; and</u> ▪ <u>more than one instruction to one or more participants is required to effect restoration.</u> 		<p><u>Declare a grid emergency.</u></p>	<p><u>Refer to restoration policy (as contained in clause 84).</u></p>
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Scenario	Event giving rise to a grid emergency situation	Prior to 2 Hours	Within 2 hours	Demand shedding policy
	Restoration is required after a loss of supply and: <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).
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 clause 8.22(1) of the Code 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 clause 8(2) of Technical Code B of Schedule 8.3 of the Code).
	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 .

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 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 .
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 may occur where the system operator reasonably believes there is a significantly elevated risk of a second defined event 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 may occur where the system operator reasonably believes there is a significantly elevated risk of a second defined event.
	A transient or dynamic stability limit is being exceeded for a second defined event.		Declare a grid emergency .	Demand shedding may occur where the system operator reasonably believes there is a significantly elevated risk of a second defined event.-
	The grid , or part of the grid , will operate outside the ranges specified in clause 8.22(1) of the Code 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 may occur where the system operator reasonably believes there is a significantly elevated risk of a second defined event. (refer to clause 8(2) of Technical Code B of Schedule 8.3 of the Code).
	There is a shortage of instantaneous reserve for a binding second contingent event .		Declare a grid emergency .	Demand shedding may occur where the system operator reasonably believes there is a significantly elevated risk of a second defined event and AUFLS is insufficient to ensure the frequency PPO can be met.

² And

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 may occur where the system operator reasonably believes there is a significantly elevated risk of a second defined event 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 clauses 6(1)(b) and 6(2)(c) of **Technical Code B** of Schedule 8.3 of the Code) 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 may 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** of Schedule 8.3 of the Code, 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 clause 7(19) of **Technical Code B** of Schedule 8.3 of the Code.
78. In determining any demand allocations to be specified in the **formal notice**, the **system operator** must 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 require **demand** reduction under **Technical Code B** of Schedule 8.3 of the Code the **system operator** must 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** must, 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** capacity, 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** must procure black start capability. The procurement details for these facilities are included in the **procurement plan**.
- 83. The **system operator** may rely on the synchronising facilities defined in **Technical Code A** of Schedule 8.3 of the Code 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** must 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** (which includes any triggered **interruptible load**) 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. If the reserve requirements have been set to zero under clause 33A, the actions taken under this clause must include restoring the reserve requirements to the levels set out in the Under-Frequency Management Policy.
- 84.10 Restoring energy injection levels to the values contained in an updated **dispatch schedule**.

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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** must use the **software** for scheduling and **dispatch**. The **software** will include **SPD**.

The Scheduling Process

Security Assessment

86. The **system operator** must, in addition to complying with the scheduling requirements of Schedule 13.3 of the Code, carry out a security assessment for the **schedule period** to:

- 86.1 Take account of the proposed generation, dispatchable **demand** and **assets** made available and any potential contingencies for that period and the impact on the achievement of the **PPOs**.
- 86.2 Provide changes required to the **non-response schedule** or the **dispatch schedule** (as the case may be) to meet the **dispatch objective**.

- 86A. The **system operator** must carry out a security assessment—

- 86A.1 At least 4 times a day, with one of those times being 14:00; and

- 86A.2 If there is significant change to—

- (a) generation; or
- (b) load profiles.

87. To carry out the security assessment, the **system operator** must:

- 87.1 Use the latest **non-response schedule** for the **schedule length period** for which the **system operator** is carrying out the security assessment.

- 87.2 *[Revoked]*

- 87.3 *[Revoked]*

- 87.4 Update the latest **non-response 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 *[Revoked]*

- 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.
- 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.

Price-responsive schedule and non-response schedule

- 88. Each **price-responsive schedule** and **non-response schedule** must, in addition to complying with the requirements of [clause 13.58A and](#) Schedule 13.3 of the Code, include:
 - 88.1 **Security constraints** derived by the **system operator**.
 - 88.2 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.
- 88A. The **system operator** must run the automated process that the **system operator** uses to develop **security constraints** under clause 27 independently for each **price-responsive schedule** and **non-response schedule**, and accordingly the automated **security constraints** for a **non-response schedule** and the concurrent **price-responsive schedule** may be different.
- 88B. If the **system operator** amends, re-amends, adds, removes or excludes an automated **security constraint**, under clause 29, in a **non-response schedule**, the **system operator** is not required to do the same for the **price-responsive schedule** which is prepared for the same **schedule length period** as the **non-response schedule**.
- 88C. To meet the requirements of clauses 13.72(1)(b) and 13.72(2) of the Code, the **system operator**:
 - 88C.1 Must issue each **dispatch instruction** required under clause 13.72(1)(b) before the start of the relevant **trading period** using scheduled **nominated dispatch bid** quantities.
 - 88C.2 Must not revise a **dispatch instruction** to a **dispatchable load purchaser** within the **trading period** for which the **dispatch instruction** was issued.

Dispatch Schedule

- 89. The **system operator** must adjust a **dispatch schedule** when required under clause 13 of Schedule 13.3 of the Code to include:

- 89.1 **Security constraints.**
 - 89.2 Bona fide changes to generation **offers, nominated bids** and **reserve offers** notified under clause 13.20 or 13.48 of the Code.
 - 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** must adjust the current **dispatch schedule** to:
- 90.1 Produce a new **dispatch schedule** during the current **trading period** to incorporate:
 - (a) The **frequency keeping** generation relative to the **frequency keeping** capability.
 - (b) Any anticipated **demand** change in the near future, except for a **reduction line change operation**.
 - (c) **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 matters including the following:
 - (i) regional weather forecast information; and
 - (ii) historical **demand** information based on the time of **day**, the **day** of the week, and the time of the year.
 - (d) Observed variation in **generating plant** ramp from the calculated ramp and expected `make-up` of this in the next **trading period(s)**.
 - (e) **Security constraints** required to meet the **dispatch objective**.

91. *[Revoked]*

92. *[Revoked]*

Week-ahead Dispatch Schedule

- 92A. Once the **system operator** has completed a **week-ahead dispatch schedule**, the **system operator** must provide to the **information system service provider** **WITS manager**, for **publication through the information system making available on WITS**, 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** must:

- 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.

Use of discretion to constrain generation or reserve

93A. The **system operator** must notify the ~~information system service provider~~WITS manager, for ~~publication through the information system~~making available on WITS, when it has applied a discretionary constraint to the **dispatch schedule** to directly constrain generation or **instantaneous reserve** ~~(excluding frequency keeping constraints)~~. The notification must include:

- (a) the limit of the constraint; and
- (b) the node at which the generation or **instantaneous reserve** has been constrained.

Adjustment of demand profile

93B. In addition to complying with the requirements of Schedule 13.3, the **system operator** may include in a **non-response schedule** or **dispatch schedule** any adjustment factors considered reasonable by the **system operator** based on its current knowledge about the quantity of **demand** at each **GXP** to account for the fact that the **system operator** reasonably considers the quantity of **electricity** provided in a **nominated bid** for one or more of those **GXPs** is unreliable.

93C. Despite clause 93B, the **system operator** must not include in a **non-response schedule** an adjustment factor of the type described in clause 93B in relation to a **nominated dispatch bid**.

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Chapter 3 – Compliance Policy

POLICY AND SCOPE

General Policy

94. The **system operator** must 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 Code:
- 94.1 Proactively monitoring and reporting the **system operator's** compliance with its obligations under the **regulations** and Code.
- 94.2 Monitoring and reporting **asset owner** compliance with the following obligations under the Code:
- 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**.

COMPLIANCE AND PERFORMANCE MONITORING

95. The **system operator** must have processes in place to achieve and maintain compliance with its obligations under the **regulations** and Code and must monitor its own performance for the purpose of:
- 95.1 Meeting the **system operator's** review and reporting obligations under the **regulations** and Code.
- 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 Regulations and Code

96. The **system operator** must:
- 96.1 Identify the obligations with which it must comply under the **regulations** and Code and document procedures for compliance with such obligations.
- 96.2 Whenever the **system operator** identifies ~~a breach or a suspected breach of that it may have breached~~ the Code ~~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 Code may be required.

Asset Owner Compliance and Performance Monitoring

- 97. In accordance with the Code, the **system operator** must 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** must:
 - 98.1 Review the content of **asset capability statements** received from **asset owners** under **Technical Code A** of Schedule 8.3 of the Code 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 clause 2(5) of **Technical Code A** of Schedule 8.3 of the Code, 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 8.3 of the Code, 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 [Revoked]
 - 98.5 In accordance with clause 8.4 of the Code 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 Code.

- 98.7 Where the **system operator** has ~~information that is not information it is required to keep non-confidential and information~~ 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 must notify such information to the relevant **asset owner** as soon as reasonably practicable.

Compliance with Dispensations and Equivalence Arrangements

99. The **system operator** must 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** must undertake any specific monitoring required as a condition of a **dispensation** or **equivalence arrangement**.

Compliance with Alternative Ancillary Services Arrangements

100. The **system operator** must monitor **asset owner** compliance with **alternative ancillary services arrangements** in accordance with its obligation under clause 8.54 of the Code. To meet this obligation the **system operator** must, 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 8.2 of the Code.

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**, Code or conditions of any **equivalence arrangement**, **dispensation** or **alternative ancillary services arrangement**, the **system operator** must:
- 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 clause 8.27(2) of the Code 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 **Authority**.
 - 101.5 Tell **participants** of its intention to revoke or amend a **dispensation** or **equivalence arrangement** in accordance with clause 8.35 of the Code, or its intention to revoke or amend any **alternative ancillary services arrangement** in accordance with clause 8.52 of the Code.

Urgent Change Notice

102. The **system operator** must ~~publish~~[make available](#) 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 clause 2(6)(b) of **Technical Code A** of Schedule 8.3 of the Code 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 clause 2(5) of **Technical Code A** of Schedule 8.3 of the Code, 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 must 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 must update the **asset owner** if it changes these constraints or conditions at any time).

ASSET CAPABILITY INFORMATION

General Policy

105. In assessing the performance of an asset to assist the **system operator** to plan to comply and comply with the **principal performance obligations** and the **dispatch objective**, the **system operator** will only use information supplied by the **asset owner** through an **asset capability statement**.
106. *[Revoked]*

General Information Required from Asset Owners

107. In accordance with clause 2(5) of **Technical Code A** of Schedule 8.3 of the

Code the **system operator** must **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.
- [Fault ride-through capability.](#)

108.3 **Grid owner asset** capability:

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

108.4 **Distributor asset** capability:

- North Island **AUFLS**.
- [Frequency response capability of unoffered generation on the distributor's network](#)
- [Fault ride-through capability of generating units on the distributor's network.](#)

Asset Owner Protection Systems

Grid Owners

109. The **system operator** may 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 Subpart 2 of Part 8 of the Code and Schedule 8.3 of the Code.

110. In accordance with clause 4(5)(b) of **Technical Code A** of Schedule 8.3 of the Code the **system operator** and the **grid owner** must agree the locations to

check synchronism and **grid owner** confirmation of this synchronism must be requested in the **asset capability statement**.

111. [Revoked]

111.1 [Revoked]

111.2 [Revoked]

111.3 [Revoked]

111.4 [Revoked]

112. [Revoked]

112.1 [Revoked]

112.2 [Revoked]

113. [Revoked]

Generator Asset Capability Assessment

Voltage

114. For the purpose of carrying out assessments under **Technical Code A** of Schedule 8.3 of the Code the **system operator** must assess **generating plant reactive capability** with respect to the **AOPs** set out in clause 8.23 of the Code 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 clause 8.23 of the Code 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 clause 8.23 of the Code.
- The ability for **generating plant** to be connected over the operating ranges set out in clause 8.22 of the Code considering:
 - **Generating plant** reactive power range.

- **Generating plant** transformer tap range, including the requirement for on-load tap changers.
- **Generating plant** terminal voltage range.

Voltage Fault Ride Through

114A For the purpose of carrying out an assessment of fault ride through compliance under clause 8.25A of the Code, the **system operator** must make available on its website a summary of the assumptions used in the assessment.

Frequency

115. For the purpose of carrying out assessments under **Technical Code A** of Schedule 8.3 of the Code the **system operator** must assess **generating plant** frequency capability with respect to the **AOPOs** set out in clauses 8.17 to 8.21 of the Code, 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** must:
- 116.1 Assess the information **grid owners** provide regarding the details of the operational voltage range capability of their **assets** described in their **asset capability statements**.
 - 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 8.3 of the Code the **system operator** must assess **HVDC Owner** frequency capability with respect to the **AOPOs** set out in clauses 8.17 to 8.21 of the Code, by:
- 117.1 Assessing the **HVDC Owner** trip settings.

- 117.2 Modelling the **HVDC link** performance to analyse its frequency performance.

Distributors Automatic Under Frequency Load Shedding (AUFLS)

117A. To manage its risk of cascade failure, the **system operator** must:

- 117A.1 Request that the South Island **grid owner** 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.
- 117A.2 Maintain a register of **AUFLS** profiling statements to determine the minimum **AUFLS** percentage available at any time.
- 117A.3 Incorporate **AUFLS** relay testing and confirmation of load profiling in the **test plan**.

Distributor Asset Capability Assessment

Automatic Under Frequency Load Shedding (AUFLS)

118. To manage its risk of cascade failure, the **system operator** must:

- 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** must 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 clauses 2 and 3 of **Technical Code A** of Schedule 8.3 of the Code, at the following stages:
- Planning.
 - Building and prior to commissioning.
 - During commissioning.
 - On completion of commissioning.

- 119.2 ~~Display~~ Make available on its website a `Connection and Dispatch Guide` ~~on the system operator's website to describe~~ that describes 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 must 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~~ 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** must 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** must carry out any assessments necessary and 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** may 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** must require the **asset owner** to provide a commissioning plan to meet the requirements of clause 2(6) of **Technical Code A** of Schedule 8.3 of the Code. 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 clauses 2(7) and 2(8) of **Technical Code A** of Schedule 8.3 of the

Code):

- 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. [Revoked]

- 125. The **system operator** will only **dispatch** ~~commissioning~~**commissioning assets** solely for commissioning purposes.

During Commissioning

- 126. During commissioning of the **asset**, the **system operator** must 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** must:
 - 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** must ~~publish~~**make available** on ~~its~~**the Transpower** website:
 - 128.1 A template for a **system test** that can be used by **asset owners** where the circumstances in clause 2(6)(c) of **Technical Code A** of Schedule 8.3 of the Code 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 must 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~~**The Companion Guide for Asset**
[Policy statement](#)

[Testing, which assists asset owners](#) to implement the requirements for **asset** testing in clauses 2(6) to (8) and 8(2) of **Technical Code A** of Schedule 8.3 of the Code and testing after modification and **commissioning**. ~~Such explanatory guide~~[The Companion Guide for Asset Testing](#) must:

- 128.2.1 Be reviewed not less than once in each period of five years. When carrying out each review the **system operator** must 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 clause 8(2) of **Technical Code A** of Schedule 8.3 of the Code 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 8.3 of the Code.
- 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 clauses 2(2) and 2(5) of **Technical Code A** of Schedule 8.3 of the Code.
- 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 ARRANGEMENTS

General Policy

- 129. To facilitate the operation of the processes under the Code for the approval of **equivalence arrangements** and grant of **dispensations**, the **system operator** must 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**.
- 129A. The **system operator** must make its assessment of an application for a **dispensation** or an **equivalence arrangement** based on the information it has and the circumstances existing at the time. Information relevant to the **system operator's** assessment includes:
 - (a) The content of the regulations and Code.
 - (b) The content of the **policy statement** and **procurement** plan.
 - (c) Power system **assets**, availability, and outages.

- (d) Knowledge regarding **asset** capability.

129B. The **system operator** must consider any request for a **dispensation** or **equivalence arrangement** by the relevant **asset owner** prior to the **asset** in question being commissioned.

Terms and Conditions of Dispensations and Equivalence Arrangements

130. The **system operator** may approve such a request subject to reasonable 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** may not unreasonably withhold such consent.

131. *[Revoked]*

131A. **Dispensations** and **equivalence arrangements** are subject to review at the time the **system operator** produces or reviews the **system security forecast** in accordance with clause 8.15 of the Code. The purpose of the review is to ascertain whether there has been any material change in circumstances or to the assumptions on which the **dispensation** was granted or the **equivalence arrangement** approved.

131B. Under Part 8 of the Code the **system operator** may revoke or vary a **dispensation**, or revoke an **equivalence arrangement**, in certain circumstances.

132. *[Revoked]*

Dispensation, Equivalence Arrangement and Alternative Ancillary Service Arrangements Register

133. The following must apply to the **publication** of information on the **system operator register**:

133.1 The **system operator register** must contain no information which has been designated a commercially sensitive by the relevant **asset owner**.

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

133.3 The **system operator** must maintain an up to date copy of the **system operator register** and make it available to **registered participants** at no cost on the **system operator's** website at all reasonable times.

133A. The **system operator** must make available on its website a list of current **dispensations, equivalence arrangements and alternative ancillary services arrangements**.

Cancellation of Arrangements

134. The **system operator** must 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

134A This Conflict of Interest Policy sets out the methods the **system operator** must use to manage conflicts of interest that arise within Transpower New Zealand Limited between its **system operator** functions and any of its other **participant** functions, including the **grid owner** function. A conflict of interest is any situation where one of the following persons has a material interest in the outcome of a **system operator** function:

- Transpower New Zealand Limited, other than in its capacity as the system operator.
- A Transpower New Zealand Limited employee, contractor or director involved in carrying out the function.

134B Some **system operator** functions where conflicts of interest may arise are:

- Procurement of **ancillary services**.
- **Causar** determinations.
- **Dispensation** and **equivalence arrangement** decisions.
- **Outage** co-ordination.
- Code compliance monitoring and reporting.

GENERAL APPROACH

135. The **system operator** must:

135.1 Identify potential conflicts of interest that arise in the performance of the **system operator's** functions, including by providing easily accessible means by which Transpower New Zealand Limited personnel and persons external to Transpower New Zealand Limited can (anonymously if they wish) notify the **system operator** of potential conflicts of interest.

135.2 Investigate and assess the materiality of each conflict of interest that has been identified.

135.3 Apply methods to manage each conflict of interest that are appropriate for the materiality of the conflict of interest.

135.4 Report to the **Authority** in the **system operator's** monthly report under clause 3.14 of the Code, and on the **Authority's** request, on:

135.4.1 Any new conflict of interest that has arisen since the last report, including the nature of the conflict of interest, the reason it has arisen and the methods by which it was or will be managed.

135.4.2 Any breaches of this Conflict of Interest Policy.

135.5 Treat all **participants** in an even-handed way, including by applying

the same processes and standards to its dealings with all **participants**.

135.6 [Revoked]

136. [Revoked]

137. [Revoked]

THE MEANS TO MANAGE CONFLICT OF INTEREST

138. The **system operator** must employ some or all of the following methods to manage conflicts of interest. The **system operator** must select the method or methods it considers most appropriate taking into account the circumstances and materiality of the conflict of interest.

138.1A Appoint an independent person to oversee the management of the conflict of interest.

138.2A Appoint an independent expert to conduct an evaluation or investigation on behalf of, or to advise, the system operator.

138.3A Establish independent document and information management systems.

138.4A Establish a communication management system between the relevant parts of Transpower New Zealand Limited, which may include call logs, document logs, meeting minutes and specified points of contact.

138.5A Establish a clear division of management and staff roles. This may include the establishment of separate teams that are physically isolated from each other.

138.6A Advise any relevant non-confidential information considered material in maintaining a transparent and impartial process.

138.7A Any other method the system operator identifies and considers appropriate to manage the conflict of interest, which the system **operator** must **advise** as soon as reasonably practicable.

138.1 [Revoked]

138.2 [Revoked]

138.3 [Revoked]

138.4 [Revoked]

138.5 [Revoked]

138.6 [Revoked]

138.7 [Revoked]

138.8 [Revoked]

139. [Revoked]

140. [Revoked]

141. [Revoked]

142. [Revoked]

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143. [Revoked]

143.1 [Revoked]

143.2 [Revoked]

143.3 [Revoked]

143.4 [Revoked]

143.5 [Revoked]

143.6 [Revoked]

144. [Revoked]

145. [Revoked]

145.1 [Revoked]

145.2 [Revoked]

146. [Revoked]

146.1 [Revoked]

146.2 [Revoked]

146.3 [Revoked]

146.4 [Revoked]

147. [Revoked]

148. [Revoked]

148.1 [Revoked]

148.2 [Revoked]

149. [Revoked]

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149.1 [Revoked]

149.2 [Revoked]

149.3 [Revoked]

149.4 [Revoked]

150. [Revoked]

151. [Revoked]

152. [Revoked]

152.1 [Revoked]

152.2 [Revoked]

152.3 [Revoked]

152.4 [Revoked]

Chapter 5 – Future Formulation and Implementation Policy

Policy and Scope

153. The Code contains provisions that require the **system operator** to be consulted on the impact of proposed Code changes. This ensures that where necessary, the impact of Code 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 [annualnext](#) review of the **policy statement**. The matters logged include issues raised with the **system operator** by **participants** and the **Authority**.
155. If an issue is identified requiring urgent attention and change to the **policy statement** outside the annual review cycle the **system operator** must bring the matter to the attention of the **Authority**. The **system operator** must seek the **Authority's** assistance in implementing the required change, such as by Code change, change to the **policy statement** or approval of an exemption.
156. [Revoked]
 - 156.1 [Revoked]
 - 156.2 [Revoked]
 - 156.3 [Revoked]
 - 156.4 [Revoked]
 - 156.5 [Revoked]
 - 156.6 [Revoked]
 - 156.7 [Revoked]
 - 156.8 [Revoked]

Chapter 6 - 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 clause 8.11(3)(d) of the Code.

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** must 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 **security constraints**. They are **security constraints** previously developed and used by the **system operator** temporarily 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 28 March 2011.
- ~~162. **Constraint percentage** means a percentage within which a transmission capability limit and/or power system stability limit is expected to become binding in its **SPD** model.~~
- ~~162. *[Revoked]*~~
- 162A **Constraint percentage threshold** means ~~percentages~~the threshold at which constraints developed by automatic processes are applied to schedules in the market system, expressed as a percentage of the limit of the constraint. This threshold is **advised** from time to time by the **system operator**, following consultation with **participants**. Separate constraint percentage thresholds may be **advised** for constraints developed under automated and non-automated processes.
- 162B **Constraint publication threshold** means the threshold at which constraints are published on **WITS**, expressed as a percentage of a constraint limit ~~as~~. This threshold is **advised** from time to time by the **system operator**, following consultation with **participants**.
163. **Contingent events** are as defined in ~~clause~~clauses 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.
- 164A. **Discretionary security constraint** means a **security** constraint applied to **SPD** by the **system operator** that represents a departure from the **dispatch schedule** pursuant to clause 13.70 of the Code.
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~~clauses 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**

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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** means **security constraints** applied by the **system operator** in scheduling and **dispatch** for the purposes of maintaining a frequency keeper within its offered **asset** capability limits.
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.
- 170A [Revoked]
171. **Other events** are as defined in clause 12.3.
172. [Revoked]
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 8.3 of the Code.
- 173AA **Reduction line change operation** means the planned or unplanned NZAS reduction line removal and restoration process at Tiwai Aluminum smelter.
- 173A. **Regulations** means the regulations made pursuant to subpart 1 of Part 5 of the **Act** as may be amended from time to time.
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 AOPs**.
175. **Reserves Management Tool** and **RMT** mean the reserves management **software** used by the **system operator** as agreed with the **Authority** 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 **Authority** pursuant to the **System Operator Service Provider Agreement**.
177. [Revoked]
178. ~~**Security constraints** can be either temporarily or permanently applied by the **constraint** is a constraint that is used for a purpose described in clause 25. **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.~~

~~The various types of security constraint are described with examples and published through the system operator website.~~

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** must be ~~published~~^{issued}, 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 clause 8(2) of **Technical Code A** of Schedule 8.3 of the Code;
- 185.2 a remedial test plan agreed pursuant to clause 8(3)(a) of **Technical Code A** of Schedule 8.3 of the Code; or
- 185.3 a test plan agreed between the **system operator** and an **asset owner** under clause 2(6) of **Technical Code A** of Schedule 8.3 of the Code.
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 260 **trading periods** beginning at 14.00 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**.
 - 188.4 **Nominated bids** or, where no revised **nominated bid** exists, **nominated bids** for the previous week.
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 clause 8.22(1) of the Code.
 - 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 clause 8.22(1) of the Code.

190. **WITS** means the wholesale information and trading system.

191. **WITS manager** means the market operation service provider who provides **WITS**.