

System Operator Rolling Outage Plan

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1. Introduction

Purpose

- 1.1 This document meets the system operator's obligation in clause 9.2 of the Electricity Industry Participation Code (Code) to prepare and publish a system operator rolling outage plan (SOROP).
- 1.2 The Code specifies (clause 9.4) that the SOROP must:
- describe events that the system operator predicts will be likely to give rise to the need to make a supply shortage declaration;
 - set out thresholds that the system operator will apply in deciding whether to make a supply shortage declaration;
 - specify how the system operator intends to determine what directions to give to address the shortage of electricity supply or transmission capacity that gives rise to the declaration;
 - identify specified participants, or a class or classes of specified participants, who are required to develop participant rolling outage plans under subpart 1 of Part 9 of the Code;
 - specify criteria, methodologies, and principles to be applied in implementing outages, or taking any other actions, to be provided for in participant rolling outage plans; and
 - specify criteria, methodologies, and principles to be applied by any specified participant who does not have an approved participant rolling outage plan in implementing outages, or taking any other action, in accordance with directions given by the system operator under clause 9.15 of the Code.

Objective

- 1.3 The objective of this SOROP is to comply with clause 9.4 of the Code and thereby establish a framework for:
- specified participants to plan how to implement rolling outages; and
 - the system operator to set savings targets for the specified participants to achieve when a supply shortage declaration is in force.

Background

- 1.4 The Electricity Industry Act 2010 requires the system operator to manage supply emergencies. Specific functions of the system operator in relation to security of supply are set out in Parts 7 and 9 of the Code, including associated policies.
- 1.5 Implementing rolling outages is an extreme measure that has the potential to impact on public health and safety, and cause material damage to the economy. Rolling outages are therefore regarded as being a last resort in an attempt to balance supply and demand. Other emergency provisions such as the use of an electricity conservation campaign are expected to be used, wherever possible, well in advance of rolling outages.

Note on terminology

- 1.6 The term 'rolling outages' is commonly used in the industry because it is expected that distributors would achieve savings targets by rolling outages across different parts of their network over time. However, the Code applies not only to distributors, but also to electricity users connected directly to the transmission network who may achieve savings targets by turning off or reducing the use of specific equipment.
- 1.7 In this SOROP, the term 'rolling outages' is used as a convenient way of referring to outages under the Code, even though it is acknowledged some of those outages may not be 'rolling' in nature.

2. System Operator's Response to Security of Supply Emergencies

Overview

- 2.1 The SOROP outlines how the system operator intends to implement rolling outages as a last resort emergency measure. The system operator is responsible for making a supply shortage declaration and for directing specified participants to implement rolling outages. In both cases, the system operator must first consult the Authority (clauses 9.14(1) and 9.15(2)(b) of the Code).
- 2.2 The system operator's emergency management policy (EMP) prepared and published under Part 7 of the Code specifies the actions the system operator would take in a shortage situation (such as commencing a national electricity conservation campaign or implementing rolling outages).
- 2.3 The EMP sets out that rolling outages should be triggered if:
- hydro storage falls to or below a level at which, in the system operator's view, it is more likely than not that shortages (i.e. a sustained period of forced outages under grid emergency provisions) will occur; or
 - an "immediate event" has occurred which, in the system operator's view, creates a situation such that it is more likely than not that shortages will occur.
- 2.4 Rolling outages would be implemented only after the system operator has assessed that it is more likely than not that a sustained period of forced outages under grid emergency provisions would otherwise be required.
- 2.5 The system operator is also responsible for operating the electricity system on a day-to-day basis, in accordance with the Electricity Industry Act and the Code. The system operator will continue to carry out its role (the 'day-to-day role') while a supply shortage declaration is in force.
- 2.6 While a supply shortage declaration is in force, it is possible that a grid emergency¹ impacting on the area subject to rolling outage directions could occur. Part 8 of this SOROP addresses issues arising from the concurrent incidence of a grid emergency and rolling outages, including the system operator's role, when possible, of advising revised automatic under-frequency load shedding (AUFLS) requirements.

Staged approach

- 2.7 The EMP outlines four phases of response during a security of supply situation:
- **a Security Normal Phase:** Modelled risk of energy shortage is less than 1%. The system operator monitors and publishes assessments of security of supply risk.

¹ Under Technical Code B of Schedule 8.3 of the Code.

- **a Security Watch Phase:** Modelled risk of energy shortage reaches 1%. The system operator increases the frequency of monitoring and publishes assessments of security of supply risk more frequently.
- **a Security Alert Phase:** Modelled risk of energy shortage reaches 4%. The system operator communicates with stakeholders, intensifies monitoring activity, and activates an emergency response structure.
- **a Security Emergency Phase:** Modelled risk of energy shortage reaches 10%, or asset outages create a similar risk of shortage. An emergency situation is declared. The system operator communicates with stakeholders and oversees the implementation of emergency measures.

2.8 The rolling outages process outlined in the SOROP would be a 'last resort' emergency measure during the Security Emergency Phase.

Rolling outages as a last resort

2.9 Clause 9.14 of the Code states that the system operator may make a supply shortage declaration only if there is a shortage of electricity supply or transmission capacity such that:

- the system operator considers that the normal operation of the wholesale market is, or will soon be, unlikely to facilitate the adjustment of supply and demand necessary to ensure that supply matches demand; and
- if planned outages are not implemented, unplanned outages are likely.

2.10 Part 9 of the Code empowers the system operator to make a supply shortage declaration as a last resort, to avoid or delay the need for the disconnection of demand under grid emergency provisions.²

2.11 The disconnection of demand under grid emergency provisions would necessarily be based on limited information and would focus on achieving a supply-demand balance in the short term. Rolling outages under Part 9 of the Code should facilitate demand reductions on a more informed basis and could be implemented in a more managed way.

Range of events

2.12 There is a range of events that could lead the system operator to make a supply shortage declaration, from those that foreshadow the need for rolling outages (e.g. a prolonged period of unseasonably low inflows) to those that arise from an unexpected contingency. The system operator and specified participants need to plan for the full spectrum of events that could lead to a supply shortage declaration.

2.13 Two categories of events that typify the ends of the spectrum are:

- **a Developing Event:** an event that evolves over time, for example, a period of unseasonably low inflows to hydro catchments; and

² Under Technical Code B of Schedule 8.3 of the Code.

- **an Immediate Event:** an event that occurs with little or no warning, usually as a result of a transmission or major power station failure.
- 2.14 Plans to implement rolling outages must provide for both categories, including providing for a situation which has elements of both events at the same time.

Communications

- 2.15 The system operator will provide communications required under the SOROP using the contact details provided by participants under clause 9.18 of the Code. The system operator may also provide communications required under the SOROP:
- using the same, or similar, communications system as that used by the system operator to issue formal notices; and
 - to the relevant asset owner points of contact, and to persons who receive instructions and formal notices as set out in Technical Code B of Schedule 8.3 of the Code.
- 2.16 Communications with the system operator may include the following:
- Any declaration of a supply shortage by the system operator;
 - Any revocation of a supply shortage declaration by the system operator;
 - Providing a participant rolling outage plan to the system operator;
 - Any notice to approve or to decline to approve a participant rolling outage plan;
 - Any advance notice of a possible declaration of a supply shortage or revocation of a supply shortage declaration;
 - Reporting by participants on compliance with the Code and any directions received under the Code;
 - Any direction to implement rolling outages, including savings targets;
 - Any advance notice of savings targets;
 - Any information provided by participants on demand forecasts, the nature and extent of outages, and the level of electricity savings being experienced;
 - Any process to restore load following rolling outages; and
 - Any information about the possible overlap between grid emergencies, AUFLS and the implementation of rolling outages.
- 2.17 Under clause 9.18(5) of the Code, the system operator requires the following persons to provide their contact details:
- every distributor (as defined in section 5 of the Electricity Industry Act 2010) that takes electricity directly from the grid (this does not include Transpower and embedded networks); and
 - every person who uses electricity that is conveyed to that person directly from the grid, provided that person uses more than 80 GWh per annum according to the system operator's calculations.

3. Supply shortage declarations

Definition of a supply shortage

- 3.1 Clause 9.14 of the Code provides that the system operator may make a supply shortage declaration only if there is a shortage of electricity supply or transmission capacity such that the system operator considers that:
- the normal operation of the wholesale market is, or will soon be, unlikely to facilitate the adjustment of supply and demand necessary to ensure that supply matches demand; and
 - if planned outages are not implemented, unplanned outages are likely.
- 3.2 The Code empowers the system operator to make a supply shortage declaration as a last resort to avoid or delay the need for the disconnection of demand under grid emergency provisions.³
- 3.3 Clause 9.14 of the Code is an empowering provision and does not oblige the system operator to make a supply shortage declaration if the test in clause 9.14(2) is met. The system operator's policy is to make a supply shortage declaration when the threshold described in paragraph 3.6 below is met.

Examples of events

- 3.4 Developing Events and Immediate Events, as described in paragraph 2.13 above, or some combination of both, could lead to a supply shortage declaration.
- 3.5 Examples of events that could contribute to the need for a declaration are an extended period of low hydro inflows, a prolonged failure of a major transmission line, and an extended outage of a generating plant.

Threshold for declaration

- 3.6 The system operator will make a supply shortage declaration, after assessment and consultation with the Authority, if it considers that it is **more likely than not** that a sustained period of forced outages under grid emergency provisions would be required in the absence of rolling outages.
- 3.7 In other words, the system operator will make a supply shortage declaration if the probability that forced outages will be required exceeds 50%. This is a much higher level of risk than, for example, the risk if hydro storage fell to the Emergency Storage Guideline (10% risk of shortage).

³ Under Technical Code B of Schedule 8.3 of the Code.

4. Participant rolling outage plans

- 4.1 The following persons must prepare participant rolling outage plans under subpart 1 of Part 9 of the Code:
- every distributor (as defined in section 5 of the Electricity Industry Act) that takes electricity directly from the grid (note, this does not include Transpower or embedded networks); and
 - every person who uses electricity that is conveyed to the person directly from the grid, provided that person uses more than 80 GWh per annum according to the system operator's calculations.
- 4.2 The system operator will maintain on its website a list of participants who are required to develop participant rolling outage plans, and will send a notice to those participants advising them of the requirements (clause 9.6 of the Code).
- 4.3 Under clause 9.8(1)(c) of the Code, participant rolling outage plans are required to specify how the specified participant would reduce consumption to comply with a direction given by the system operator under clause 9.15 of the Code. For example, a distributor would be required to specify the actions it would take to shed load on its network, and a direct-connect industrial electricity user would specify actions it would take to shed load at its sites.
- 4.4 Subpart 1 of Part 9 of the Code sets out the process that the system operator must follow to approve or decline participant rolling outage plans. Clause 9.9 of the Code indicates that the system operator may decline to approve a participant rolling outage plan only if the system operator is not satisfied that the plan complies with clause 9.8 of the Code. This includes the system operator not being satisfied that the plan is consistent with this SOROP.
- 4.5 The transitional provisions in Part 17 of the Code provide that a participant outage plan published under the Electricity Governance (Security of Supply) Regulations 2008 and in effect at the close of 30 September 2010 is deemed to be a participant rolling outage plan published under clause 9.12 of the Code. Under the Code, the system operator has taken over responsibility for approving participant rolling outage plans from the former Electricity Commission, which means that the system operator will be involved in the review and resubmission of plans under clause 9.13 of the Code.
- 4.6 The system operator has prepared guidelines for distributors to use when they are preparing participant rolling outage plans (Guidelines). The Guidelines are attached as Appendix A to this SOROP.

5. Approach to rolling outages by electricity distributors

Criteria to be applied by electricity distributors

- 5.1 When an electricity distributor is preparing its participant rolling outage plan or implementing rolling outages, the system operator expects the distributor to ensure that public health and safety is preserved and that costs to the economy are minimised. Accordingly, the system operator has developed a set of criteria to be taken into account by distributors when they are preparing their plans.

Priority	Priority Concern	Maintain Supply to:
1	Public health and safety	Major hospitals, air traffic control centres, and emergency operation centres.
2	Important public services	Energy control centres, communication networks, water and sewage pumping, fuel delivery systems, major ports, public passenger transport and major supermarkets.
3	Public health and safety	Minor hospitals, medical centres, schools, and street lighting.
4	Animal health and food production/storage	Dairy farms, milk production facilities, chicken sheds and cool stores.
5	Domestic production	Commercial and industrial premises.
6	Disruption to consumers	Residential premises.

- 5.2 These priorities are intended as a guide, and are not intended to prevent distributors making sensible, pragmatic decisions, having regard to the Guidelines, and based on particular circumstances and knowledge of local communities.
- 5.3 Rolling outages are generally implemented on a feeder by feeder basis. It is usually not feasible to discriminate between individual consumers when implementing rolling outages because there will typically be a mix of consumers supplied by any one feeder. However, when implementing rolling outages, distributors should generally adopt an approach which leads to fewer and shorter outages for high priority consumers. Time of day for the outage should also be taken into consideration.

Identifying health and safety issues

- 5.4 It is the responsibility of distributors and retailers to agree how to communicate with consumers who may be subject to rolling outages, including those identified as having health and safety issues to be managed.
- 5.5 Distributors' participant rolling outage plans must set out appropriate arrangements for identifying and managing health and safety issues, including interfacing with retailers.

Achieving savings targets

- 5.6 Participant rolling outage plans should allow for different forms of savings targets, as discussed in paragraphs 7.14 to 7.18 of this SOROP. A savings target may be expressed in various ways depending on the timeframe in which savings are required (for instance, at peak times or anytime).
- 5.7 The participant rolling outage plan of a specified participant must set out how the implementation of outages will achieve savings over different timeframes. At one end of the spectrum the plan needs to be capable of meeting weekly savings targets consistent with Developing Events. At the other end of the spectrum, the plan must set out how savings would be achieved during short-term periods consistent with Immediate Events.
- 5.8 Participant rolling outage plans must be capable of achieving a level of energy savings of up to 25% relative to the same period in the previous year. The target savings specified by the system operator will allow for any savings that may already be occurring as a result of other measures, including a national conservation campaign.
- 5.9 It is possible that lower target levels of savings (say less than 5%) could be achieved by cutting supply to areas with predominantly lower priority customers. For higher target levels of savings (say greater than 10%) it would be likely that higher priority customers would be affected.
- 5.10 For higher target levels of savings it is likely that commercial and industrial premises, schools, and street lighting will be affected, and the duration of outages will need to be extended over a much longer period. Rolling outages are more likely to be spread into the business day and into the evening.

System operation

- 5.11 During a supply shortage declaration the system operator will communicate directions to distributors.
- 5.12 Distributors are to coordinate the implementation of rolling outages with the system operator, in order to ensure that the schedule of rolling outages across the country does not yield unexpected power system outcomes.
- 5.13 Arrangements for disconnecting and reconnecting load are to be closely coordinated with the system operator. In particular, during the period in which the system operator has directed rolling outages, a distributor to which a direction applies should not increase or decrease the total demand across all its grid exit points by more than 25 MW in any five minute interval without prior approval from the system operator.
- 5.14 Individual participant rolling outage plans must be consistent with the Code, and allow participants who have Code obligations to continue to meet those obligations.

Guideline for distributors' participant rolling outage plans

- 5.15 Appendix A to this SOROP includes the Guidelines to the preparation of a distributor's participant rolling outage plan. The Guidelines indicate the content that the system operator expects to be included in each distributor's plan. If distributors

follow the Guidelines, then their plan is more likely to be approved by the system operator.

- 5.16 The Code does not contain any provision requiring distributors to consult on their participant rolling outage plans. However, the system operator recommends that distributors consider consultation with stakeholders to facilitate the preparation of a robust plan.

6. Approach to be applied by direct-connect users

6.1 Direct-connect electricity users (i.e. users physically connected to the grid, excluding distributors and generators) will have varying flexibility and capability to implement on-site electricity savings. The system operator will work closely with specified direct-connect users to identify savings targets for them to apply while a supply shortage declaration is in force. The goal will be to minimise the overall impact on the economy.

6.2 Specified direct-connect users are required to prepare and maintain a participant rolling outage plan. The plan must specify how the direct-connect user will achieve savings in the event of a supply shortage declaration.

6.3 Specified direct-connect users must choose which of two types of participant rolling outage plans to prepare. The choice may influence the way in which the system operator determines the savings target for that direct-connect user. The two types of plans are:

- **Full information plans:** These plans must contain sufficient information for the system operator to make a decision on the most appropriate savings target for the direct-connect user.

A direct-connect user's full information plan must inform the system operator about:

- the nature of the load on site;
- whether any load is used to provide other services to the electricity sector such as interruptible load;
- the extent to which different levels of savings can be achieved;
- the nature of the measures that could be implemented; and
- the cost associated with different levels of savings.

Where the system operator seeks to achieve a relatively low savings target for a region (e.g. 5%), it is possible that this could be achieved by cutting supply to lower priority customers within distribution networks. This could mean that direct-connect users would not be required to save electricity. However, where higher levels of savings are required, it is likely that direct-connect users will also be affected.

- **Partial information plans:** These plans may contain some of the information required for full information plans. If the system operator sets a savings target for a region where there is a direct-connect user with a partial information plan, their savings target will likely be set to achieve the same percentage saving as distribution companies in that region.

System operation

6.4 During a supply shortage declaration the system operator will communicate a direction to direct-connect users via the system operator's information system.

6.5 Direct-connect users must keep the system operator informed of their specific plans to meet their target level of savings, to ensure that the schedule of rolling outages across the country does not yield unexpected outcomes. Arrangements for

disconnecting and reconnecting load will need to be closely coordinated with the system operator.

- 6.6 Individual participant rolling outage plans must be consistent with the Code, and allow participants who have Code obligations to continue to meet those obligations.

7. Issuing directions and allocating savings targets

Responsibility

- 7.1 The system operator is responsible for making a supply shortage declaration and giving directions to specified participants (clauses 9.14(1) and 9.15(2)(b) of the Code).
- 7.2 The system operator will determine what directions to give in accordance with paragraphs 7.14 to 7.18 of this SOROP.

Communications

- 7.3 The system operator will communicate a declaration to all specified participants through the point of contact that has been provided in accordance with clause 9.18(5) of the Code.
- 7.4 As soon as possible after making a declaration, the system operator will publish the declaration by making it available on its website and by notifying it in the *Gazette*.

Notice

- 7.5 The system operator may only make a supply shortage declaration if clause 9.14(2) of the Code is satisfied. Within this constraint, the system operator recognises that the earlier it can make such a declaration, the sooner participants will be able to activate their participant rolling outage plans. Similarly, the earlier the system operator is able to specify savings targets, the earlier participants will be able to notify parties who will be affected by the rolling outages.
- 7.6 During a Developing Event, the system operator will endeavour to provide 14 days' advance notice of a supply shortage declaration, including the time and date that the notice is likely to take effect. If it is not possible to provide 14 days' notice, the system operator will provide as much notice as possible, consistent with meeting its obligations to manage supply emergencies.
- 7.7 During a Developing Event, the system operator will endeavour to provide nine days' advance notice of a direction containing a savings target, including the time and date when the savings target is to take effect. If it is not possible to provide nine days' notice the system operator will provide as much notice as possible, consistent with meeting its obligations to manage supply emergencies.
- 7.8 During an Immediate Event, the system operator will endeavour to provide as much advance notice as possible of a supply shortage declaration. However, it is likely that a declaration may have to take effect immediately.
- 7.9 During an Immediate Event, the system operator will endeavour to provide as much advance notice as possible of a direction containing a savings target. However, it is likely that in such case it may have to take effect immediately.

Direction to implement rolling outages

- 7.10 During a period in which a supply shortage declaration is in force, the system operator may direct specified participants to implement outages. Any direction will be in accordance with the procedures outlined in this SOROP and must specify savings targets for each specified participant.
- 7.11 Any direction to implement rolling outages will be communicated through the system operator's information system to the point of contact provided in accordance with clause 9.18(5) of the Code.
- 7.12 The system operator will also publish the direction on its website as soon as practicable after it is given, and publish notice of it in the *Gazette*, in accordance with clause 9.15(4) of the Code.
- 7.13 Each specified participant is required to take action to comply with the direction, in a manner consistent with its approved participant rolling outage plan. If the specified participant does not yet have an approved plan, they must apply the criteria, principles and methodologies that participants need to follow when preparing plans, as set out in Parts 5 and 6 of this SOROP.

Allocating savings targets

- 7.14 The system operator, after consulting with the Authority, will allocate savings targets based on regions that recognise the nature of the security of supply emergency and the likely benefit of savings in different areas. The following steps will be taken when setting savings targets:
- (a) the system operator will determine an overall amount of savings required;
 - (b) the system operator will determine a target level of savings for each distributor and direct-connect consumer within the affected region, as a percentage of the previous year consumption for the equivalent period;
 - (c) these savings targets will be expressed as maximum MWh demand for a particular period or periods, for each distributor and direct-connect consumer within the affected region; and
 - (d) in the event of a capacity constraint, maximum MW may also be specified.
- 7.15 The system operator will generally set the same level of percentage savings for all distributors in the region to which the supply shortage declaration applies. This target will then be expressed as a maximum MWh target for each distributor in each period. For direct-connect electricity users, the system operator will follow the approach set out in Part 6 of this SOROP.
- 7.16 Typically the target will be expressed in terms of a maximum MWh demand in each week. In some cases – e.g. an Immediate Event limited to a particular area – the target could instead be expressed as a maximum MWh or MW demand during particular peak periods.
- 7.17 The system operator may use its discretion to alter particular targets for particular distributors and direct-connect consumers within the affected region, if it considers there are exceptional circumstances that should be taken into account.

- 7.18 The system operator may amend the savings targets specified in a direction at any time including within a target savings period (clause 9.15(5) of the Code).

8. Overlap with grid emergencies

Responsibility

- 8.1 Circumstances which could cause the system operator to make a supply shortage declaration may evolve in several different ways, as set out in Part 2 of this SOROP.
- 8.2 It is possible that a grid emergency⁴ could also occur within a region for which the system operator has declared a supply shortage. This raises the prospect that both the system operator could simultaneously require emergency actions to be taken by distributors and direct-connect users, and that there could be scope for confusion about which action should prevail.

Developing Event (e.g. sustained low inflow scenario)

- 8.3 If the system operator has made a supply shortage declaration in response to a Developing Event and directs rolling outages, then specified participants will be implementing rolling outages in order to meet savings targets. If a grid emergency is declared somewhere in the system, during the time the supply shortage declaration is in force, distributors and direct-connect users are to give priority to actions required to avert the grid emergency. The requirements to meet the grid emergency are likely to be more severe and more immediate than the requirements to meet cumulative savings targets with rolling outages.
- 8.4 The system operator expects participants to respond to grid emergencies during a supply shortage declaration as they would in any other situation. However, participants will still have an obligation to meet savings targets under any direction to implement rolling outages. It should be possible for participants to meet both obligations.

Immediate Event (e.g. major transmission failure)

- 8.5 Should an Immediate Event occur, it is likely that the system operator will activate the grid emergency provisions⁵ and require action from generators, distributors and direct-connect users in the affected areas. Accordingly, it is likely that distributors will be acting under a Grid Emergency Notice (GEN) and responding to requests from the system operator. The GEN will persist for the period specified by the system operator.
- 8.6 If a grid emergency is likely to persist for a sustained period, the system operator after consultation with the Authority, may make a supply shortage declaration. The system operator will take this action if it considers that there is a high probability that the incidence of a grid emergency for a sustained period would be more appropriately managed by rolling outages.
- 8.7 Once the supply shortage declaration is made, the need for the grid emergency should cease, and specified participants would be expected to implement rolling outages in order to meet savings targets specified by the system operator.

⁴ Under Technical Code B of Schedule 8.3 of the Code.

⁵ Under Technical Code B of Schedule 8.3 of the Code.

- 8.8 Should rolling outages not be sufficient, the system operator may need to declare a grid emergency again. Distributors and direct-connect users should then give priority to actions required to manage the grid emergency. As with Developing Events, the system operator expects participants to respond to grid emergencies as they would in any other situation. However, participants will also have an obligation to meet savings targets under a direction to implement rolling outages.

Overlap with AUFLS

- 8.9 As part of the grid emergency arrangements, all North Island distributors and direct-connect users, and the grid owner in the South Island, are required to provide AUFLS.⁶ The AUFLS obligation is for two 16% blocks of demand to be available at all times at each grid exit point to cover for system events that are larger than those events covered by the purchase of instantaneous reserves.
- 8.10 The AUFLS tripping relays are generally established on feeders associated with residential load. Those feeders that would probably best meet the criteria for distributors (as set out in Part 5 of this SOROP) for being scheduled for disconnection first in the event of rolling outages, are also likely to be those tagged as AUFLS blocks. In order to simultaneously meet the existing AUFLS obligations and the requirements of this SOROP, distributors may need to apply rolling outages to non-AUFLS feeders, thereby interrupting higher priority load.
- 8.11 The system operator may identify scenarios where an AUFLS block may not be needed in some regions during a supply shortage declaration, while still allowing the system operator to meet its obligations under Parts 7 and 8 of the Code. Clause 7 of Technical Code B of Schedule 8.3 of the Code allows for the system operator to give notice to one or more participants modifying the extent to, and the periods during, which they are required to comply with the AUFLS requirements.
- 8.12 The system operator will only be able to identify such scenarios when generation and transmission offers are firm. The Code requires generators and grid owners to make final offers two hours prior to a given half hour (the relevant trading period). It is therefore unlikely that the system operator will be able to give more than two hours notice under clause 7 of Technical Code B of Schedule 8.3 of the Code.

⁶ Refer to Technical Code B of Schedule 8.3 of the Code.

9. Civil Defence emergencies

- 9.1 It is possible that a natural disaster could cause a major transmission or generation outage and could also lead to the declaration of a state of national emergency or local emergency under the Civil Defence Emergency Management Act 2002 (CDEM Act).
- 9.2 In these circumstances there may also be a substantial reduction in demand in some locations due to the natural disaster. It is possible that a grid emergency will also be in place.
- 9.3 Section 60 of the CDEM Act provides that it is a duty of lifeline utilities (including generators and lines businesses) to ensure they are able to function to the fullest extent possible, during and after an emergency. It is envisaged that generators and lines businesses will have plans in place to work with groups established under the CDEM Act to recover from any natural disaster that affects their ability to provide services.
- 9.4 In addition to the provisions within the Code to coordinate supply and demand, the EMP, this SOROP and participant rolling outage plans could provide a useful framework for coordinating reductions in electricity demand during a civil defence emergency.

10. Monitoring during a supply shortage situation

Persons to supply information

- 10.1 Part 9 of the Code provides that the system operator may require a person to supply information to the system operator in order to enable the system operator to manage a security of supply situation (clause 9.18 of the Code).
- 10.2 Each specified participant who is the subject of a direction to implement rolling outages will be required to regularly provide information on the level of electricity demand and savings relative to targets. This does not exclude the possibility of the system operator requiring other information to be provided after a direction has been made or in other circumstances (for example, where the information is relevant to the need for a direction).

Distributor information

- 10.3 During the period in which the system operator has directed rolling outages, distributors to which a direction applies will be required to supply the following information to the system operator:
- a rolling week-ahead load forecast (beginning at a time specified by the system operator) that forecasts the distributor's reasonable expectation of the half-hourly load at each grid exit point. This forecast should take into account the impact of any rolling outages;
 - any expected change to the forecast for a grid exit point of more than 20% for any trading period, as soon as reasonably practicable following the distributor becoming aware of the expected change;
 - the level of consumption relative to the target levels; and
 - the nature and extent of rolling outages.
- 10.4 Distributors must attempt to provide accurate forecasts (though it is understood that the forecasting process is difficult and the accuracy of results cannot be guaranteed).
- 10.5 Distributors to whom a direction applies will be required to supply an assessment of compliance with their participant rolling outage plan and with directions given by the system operator. The system operator will notify, as part of any direction, the frequency of compliance reporting required.

Direct-connect electricity users

- 10.6 During the period in which the system operator has directed rolling outages, direct-connect electricity users to whom a direction applies will be required to provide the following information:
- the level of consumption relative to the target levels; and
 - the nature and extent of outages in place at the site.

The information should be provided at least weekly or more frequently if required by the system operator.

- 10.7 Direct-connect electricity users need not provide load forecasts during rolling outages.⁷
- 10.8 Direct-connect electricity users to whom a direction applies will be required to supply an assessment of compliance with their participant rolling outage plan and with directions given by the system operator. The system operator will notify, as part of any direction, the frequency of compliance reporting required.

Approach to monitoring

- 10.9 The system operator will monitor the level of demand and the level of savings relative to targets, for the region to which the supply shortage declaration applies.
- 10.10 The system operator will provide distributors to whom a direction applies with 'actual load data' on a daily basis. The actual load data will be energy consumed (MWh) in the previous day (24 hour period beginning midnight) for each grid exit point in the distributor's network. The actual load data is to be communicated to the point of contact set out in the distributor or direct-connect electricity user's participant outage plan.
- 10.11 The system operator need not provide distributors and direct-connect users with commentary on the actual load data. The responsibility for monitoring savings and achieving savings targets remains with the distributor.

⁷ This is because they already provide information on their load through the bidding process. If at any point the requirement on direct-connect users to bid was removed, the system operator would consider revising this SOROP to create a requirement for them to provide load forecasts during rolling outages.

11. Revoking a supply shortage declaration

- 11.1 The system operator must revoke a supply shortage declaration when it is satisfied that the circumstances that gave rise to it no longer apply (clause 9.17 of the Code). This will occur when the system operator assesses that there is less than a 50% probability that a sustained period of forced outages under grid emergency provisions would be required in the absence of rolling outages.
- 11.2 The system operator will communicate any revocation of a supply shortage declaration to specified participants through the point of contact provided in accordance with clause 9.18(5) of the Code.
- 11.3 As soon as possible after revoking a declaration, the system operator will publish the revocation on its website and give notice of it in the *Gazette* (clause 9.17(2) of the Code).

12. Compliance

- 12.1 Under the Electricity Industry Act, the Authority may investigate, and take enforcement action in respect of, breaches and possible breaches of the Code by industry participants.
- 12.2 The system operator will work constructively with specified participants and assist them to prepare participant rolling outage plans that comply with the Code.

Appendix A

Guidelines for distributors' participant rolling outage plans

A.1 The following headings show sections that are expected to be included within a distributor's participant rolling outage plan. The content under the headings is designed to guide development of the plans and to facilitate approval by the system operator.

Authorisation to receive direction and activate

A.2 The participant rolling outage plan should specify who is authorised to implement the plan and what circumstances need to exist for the plan to be implemented. It should also detail all personnel who will be involved in executing the plan and specify their respective roles as follows:

- the person who is intended to receive communications from the system operator about a supply shortage declaration;
- the means by which those communications and directions are intended to be received by the person including the means by which written communications should be received;
- key personnel who will be expected to implement the direction, and their respective roles;
- the person who is responsible for reporting to the system operator on performance against savings targets;
- the person who is responsible for communicating with public agencies (e.g. police, civil defence, and local authorities); and
- the person who is responsible for communicating with the media (if required).

Implementing rolling outages

A.3 This part of the participant rolling outage plan should specify the process for establishing how particular target levels of savings would be achieved for different types of events. This should include how 5%, 10%, 15%, 20%, or 25% savings targets might be achieved.

A.4 It should also set out:

- how the plan meets the criteria set out in Part 5 of the SOROP;
- the process for translating the savings targets into an operational plan designed to achieve the targets;
- the process for disconnecting load in a controlled manner and how load reductions are to be coordinated with the system operator in real time (including meeting any reasonable requirements of the system operator to limit the rate of disconnection);
- the grid exit points at which the distributor plans to implement rolling outages;
- how any AUFLS requirements will continue to be met when rolling outages are being implemented;

- the form that the operational plan will take (for example a half-hourly profile to achieve a weekly energy target);
- the expected timeframes to respond to a direction under a Developing Event and an Immediate Event (paragraph 2.13 of the SOROP);
- the process for restoring load in a controlled manner and how load restoration will be coordinated with the system operator in real time (including meeting any reasonable requirements of the system operator to limit the rate of restoration);
- how the operational plan is to be communicated with the system operator;
- arrangements for identifying and managing particular health and safety issues that may affect consumers, including interfacing with retailers as required; and
- any backup arrangements to cover unexpected contingencies.

A.5 For the avoidance of doubt, it is not required that distributors include a list of all feeders, and the sequence of outages to be applied to those feeders, in their participant rolling outage plan. However, the methodology for implementing rolling outages to achieve the various levels of savings targets needs to be clearly set out.

Coordination with grid emergencies

A.6 Arrangements to manage grid emergencies (as defined in Part 1 of the Code) will take immediate priority over the implementation of rolling outages. This part of the participant rolling outage plan should set out the process for managing a grid emergency during a period in which an instruction to implement rolling outages is in place.

A.7 It should also set out the process for reverting to the participant rolling outage plan following the end of a grid emergency.

Maintaining performance over time

A.8 This part of the participant rolling outage plan should set out:

- the systems for tracking how long individual loads have been disconnected;
- the process of restoring load and disconnecting other loads while maintaining targets and meeting the criteria for load shedding; and
- the process to modify the operational plan to ensure that targets are met as actual load varies from the operational plan.

Monitoring and reporting performance against targets

A.9 This part of the participant rolling outage plan should set out:

- the systems to be used for monitoring savings performance against targets;
- how the nature and extent of rolling outages is to be monitored;
- arrangements to assess compliance with the plan; and
- how performance will be reported to the system operator.

Load restoration

A.10 This part of the participant rolling outage plan should set out:

- how load restoration is to be coordinated with the system operator;
- who the person intended to receive the direction from the system operator to revoke the supply shortage declaration is; and
- the process for restoring load in a controlled manner.

Communication strategy

A.11 This part of the participant rolling outage plan should outline the strategy for communicating with:

- affected consumers, both generally, and those with particular health and safety needs;
- retailers;
- the media;
- emergency services;
- local authorities; and
- civil defence.

A.12 The strategy should also set out how public messages will be coordinated with the system operator.