

JURISDICTIONAL SYSTEM SECURITY COORDINATOR LOAD SHEDDING PRIORITIES October 2004

1 Introduction

Under Clause 4.3.2 of the *National Electricity Rules*, the *Jurisdictional System Security Co-ordinator* is required to provide to NEMMCO:

- a schedule of **sensitive loads** setting out:
 - i. the priority, in terms of security of *supply*, that each *load* specified in the schedule has over the other *loads* specified in the schedule; and
 - ii. the loads (if any) for which the approval of the *Jurisdictional System Security Co-ordinator* must be obtained by NEMMCO before NEMMCO can interrupt supply to, or prevent reconnection of, that load: and
- a schedule setting out the order in which loads in the participating jurisdiction, other than sensitive loads, may be shed by NEMMCO for the purposes of undertaking any load shedding.

This document contains the above referenced schedule of load shedding priorities.

The load shedding priorities are addressed under two sets of circumstances, namely manually initiated load shedding and automatically initiated under-frequency load shedding.

Priorities for restoration of supply under manually initiated load shedding and other automatically initiated events are also addressed.

2 Guiding Principles

The Jurisdictional requirements as set out in these schedules are based on the following guiding principles.

1. The over-arching objective for load shedding in Tasmania is to facilitate the rapid restoration of normal supply to all electricity users in the State following a disruption. Therefore, preservation of the security and integrity of the Tasmanian and Interconnected NEM Power Systems is the key operational objective.
2. To the greatest extent possible, load shedding will be conducted in accordance with the principle of equitable burden sharing, as given effect in the principles below.
3. Disruption and inconvenience to the community should be minimised to the greatest extent possible.
4. In an area affected by an electricity supply shortfall or disruption, all customers of a particular priority category are to be treated in a similar manner to the maximum extent possible.
5. Priority in maintaining supply is to be given to the protection of public health and safety, and in particular to:
 - (i) hospitals and medical institutions;
 - (ii) educational institutions, major commercial centres, major industrial areas; large sewage plant;
 - (iii) areas where electrical lighting is important to public safety, sewage pumps; communication sites; large buildings; sites with lifts; and

- (iv) community sites relevant to public health and safety, including police and local government facilities;
6. In a short term event (such as an under-frequency load shedding event), priority should be given to disconnecting industrial loads in preference to other loads wherever possible. However, critical industrial loads are to be restored as rapidly as possible and in any event within specified critical times, even if this requires shedding of lower priority loads.
 7. Loads under priority 5(i) above should not be subject to rotational load shedding. Loads categorised as 5(ii) or 5(iii) should only participate in rotational load shedding in extreme situations.
 8. The loads to be shed must be rotated where load shedding is necessary over an extended period. The period of supply interruption for any load should not exceed 2 hours and the total period without supply should not exceed 2 hours in any one day for loads under priorities 5(ii) and 5(iii) and 8 hours in any one day for loads under priority 5(iv) and all other loads.
 9. Rotational load shedding is to be initiated if it is not possible to restore supply to high priority loads without shedding other loads.
 10. To the extent feasible, the period of interruption for each load within a particular priority category subjected to rotational load shedding should be equal.
 11. Contingency events that impact in a particular area are to be treated in a manner that mitigates the impact on that area to the extent technically possible.
 12. The exercise of emergency powers as provided for under Part 6 of the *Electricity Supply Industry Act 1995*, will not necessarily be constrained by the principles and priorities set out in this document.

3 Load Shedding Priorities

3.1 “Major Industrial Loads” categories

Major industrial customers are those with average loads in excess of 50MW. These customers account for a large proportion (about 60%) of the total electrical energy used in Tasmania and hence play a key role in load shedding protocols. Major industrial loads are categorised into four categories. The four categories are described in the following table:

Category	Description
A	Load reduction that will cause significant damage to the customer’s processes that will result in very significant financial loss or even force the closure of the customer’s operations. This may include occupational health and safety concerns, environmental spills or irreversible damage to the customer’s processes.
B	Load reduction that will reduce or stop the customer’s processes and cannot be restarted immediately the power becomes available due to start up time or the need to re-stabilise the processes. This type of interruption would cause financial loss to the customer that would be harsh and should be avoided if possible.
C	Load reduction that will reduce or stop the customer’s process but can be restarted and returned to normal production when the power again becomes available. Thus the inconvenience to the customer is only for the duration of the reduction.
D	Load reduction that can occur without causing a reduction in output from the customer’s overall process. This would typically be a part of a customer process that has some storage capability. Thus interruption to this process would, over a specified period, use up the stored output of that process without interrupting the overall process.

An individual customer’s load may be subdivided and classified under more than one of these categories. The categories have both a size and time dimension; for example a category C load may become a category B load after a certain period of time if a process is idle too long to enable a simple restart when supply is restored.

Rotational load shedding should be carried out on the basis of the size and time limits as agreed with individual customers.

3.2 “Smaller Industrial Load” categories

Smaller industrial customers have average loads between 5 and 50 MW and are connected directly to the transmission network. These may be classified under the same categories as the major industrial loads shown in the above list.

3.3 “Other Load” categories

Load shedding of other smaller loads can only be arranged through the disconnection of distribution feeders. The Distribution Network Service Provider has categorised all distribution feeders into categories A, B, C and D as shown in the table below on the basis of the priority assigned to the connected loads on each feeder as set out in the Guiding Principles. Distribution feeders may be rearranged to change portions of them to different categories. For example some B and C priority loads can be switched from a category A feeder and therefore made available for load shedding.

Distribution Network Service Provider priority categories	Priorities set out in the Guiding Principles	Maximum time off under rotational load shedding
A	(i) Hospitals and medical institutions.	Excluded
B	(ii) Educational institutions, major commercial centres, major industrial areas, large sewage plants. (iii) Areas where electrical lighting is important to public safety, sewage pumps, communication sites, large buildings and sites with lifts.	2 hours/day
C	(iv) Community sites related to public health and safety, including police and local government facilities.	8 hours/day
D	(v) All other areas	8 hours/day

3.4 Manual Load Shedding Priority Schedule

In the event of manual load shedding being necessary, the order in which loads are to be disconnected (as far as is reasonably possible) is as shown in the table below:

Order for disconnection	Load category	Comments
1	Major industrial loads Category D	Time off during rotational load shedding as specified for each load
2	Smaller industrial loads Category D	Time off during rotational load shedding as specified for each load
3	Major industrial loads Category C	Time off during rotational load shedding as specified for each load
4	Smaller industrial loads Category C	Time off during rotational load shedding 8 hours/day max or as specified for each load
5	Other loads Category D	8 hours/day max time off during rotational load shedding
6	Other loads Category C	8 hours/day max time off during rotational load shedding

7	Major industrial loads Category B	Time off during rotational load shedding as specified for each load
8	Smaller industrial loads Category B	Time off during rotational load shedding as specified for each load
9	Other loads Category B	2 hours/day max time off during rotational load shedding

Category A loads will only be manually disconnected as an absolute last resort in a dire emergency situation.

Notwithstanding the order set out in the above schedule, disconnection of loads may be carried out at any time and in any order for operational reasons to ensure:

- safety of people;
- safety of plant; and
- restoration of a secure power system.

3.5 Under-Frequency Load Shedding Priority Schedule

The order in which loads are to be disconnected by under-frequency load shedding relays should be determined in accordance with the following principles:

The loads to be shed and the order in which they are shed should be chosen to:

- ensure that the security and stability of the power system is maintained for;
 - all potential contingency events including major islanding possibilities; and
 - all potential load and generation dispatches;
- the loads should be chosen to ensure to the extent possible that damage to major equipment and cascading failure do not eventuate;
- the prevailing frequency standards should be met; and
- where possible industrial loads should be used in preference to other loads taking into account the impact on industries and the community;

3.6 Restoration of Supply

The maintenance of power system security shall be the principle consideration when determining the order in which disconnected loads are reconnected.

If loads which have specified critical times for restoration of supply are disconnected for reasons including manual or automatic load shedding they must be reconnected within these critical times even if this requires shedding of category D, C or B loads and/or other category A loads.

If the initial management of a contingent event results in the disconnection of higher category loads for reasons including manual or automatic load shedding, they must be reconnected at the earliest possible opportunity and manual load shedding of lower priority loads must be initiated within 1 hour if this is necessary to allow supply to be restored to such loads.

Restoration of supply following automatic under frequency load shedding or manual load shedding will then be in accordance with the provided in the table in section 3.4 above in reverse order.

3.7 Equity considerations

In the event of rotational load shedding, the timing of supply interruptions will also take due account of the:

- particular load shedding circumstances;
- locality of the constraint on supply;
- category of load;
- commercial impact;
- customer(s) involved;
- social impact;
- overall duration of the constraint on supply;
- time of day, day of week and time of year; and
- existence of public events or civil disturbances.

Addendum: Table of “Sensitive Loads” for Tasmania, October 2004

Details of sensitive loads are Commercial-in-Confidence.