

CITY OF CAPE TOWN		ENERGY DIRECTORATE	
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LOAD-SHEDDING CURTAILMENT PROGRAMME

1 OBJECTIVE

This guideline document is intended to assist all Load-shedding Curtailment Programme (LCP) participants and applicants in understanding this programme and this document also formalizes this programme via reference in the customer's electricity supply contract, if applicable.

2 REFERENCE / RELATED DOCUMENTS

Identifier	Title
NRS048-9	National code of practice for load-shedding

3 DEFINITIONS, ABBREVIATIONS AND TERMS

CCT : City of Cape Town
LCP : Load-shedding Curtailment Programme
NMD : Notified Maximum Demand
QOS : Quality of Supply
SDR : Eskom's Scheduled Demand Response Programme

4 BACKGROUND

Customers could be excluded from load-shedding in exchange for a predefined load curtailment, in accordance with the national code of practice for load-shedding (NRS048-9: 2019 section 4.5.3).

The City of Cape Town performs load-shedding by switching feeders at main substations, as this can be done remotely. The curtailment programme can therefore be implemented for very large customers that are supplied directly at main substation level.

Most City customers, even if they are large power users, are embedded in the network and cannot be excluded from load-shedding without also excluding less essential customers, such as residential customers that should remain on the load-shedding schedule.

However, if large customers in an industrial or commercial area can collaborate with each other and, as a group, achieve the required load curtailment at the main substation, then an application to take part in this programme can also succeed for these embedded customers. In order to participate successfully in this programme it is advised that an operator / aggregator be appointed for the area to perform the co-ordination effort.

5 TECHNICAL DETAIL

5.1 Requirements for participation in the programme

The requirements for notified load curtailment under Eskom declared load-shedding stages 1, 2, 3 and 4 are as follows:

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- 5.1.1 The customer must be capable of the required percentage curtailment for an extended period, either singularly or collaboratively at the main substation supplying the customer or the group of customers;
- 5.1.2 The customer or participating customers of the main substation area must respond to the load-shedding communication received via various media platforms, and reduce load by the required amounts. The required load reduction amount depends on the Eskom declared load-shedding.
- 5.1.3 Load curtailment starts and ends at the load-shedding start and end times declared by Eskom. (Note, this is not just for the 2.5 hours that the area would have been shed, but for the full duration of the emergency, which can last for the entire day.)
- 5.1.4 Protection of the customer or participating group of customers from load-shedding shall not result in the need to exclude significant other non-essential load from load-shedding; (This will be determined by summing the participating companies' NMD and comparing this figure to the total NMD of the area. The minimum requirement for an area to be considered for the curtailment programme will be 80% participation. Note however that the individual companies need to compensate for the non-participating customers of the area. If the area has 80% participation, then the minimum required percentage curtailment for the individual companies increases by 25%.)
- 5.1.5 Failure to meet the minimum curtailment requirements will result in cancellation of the exclusion in which case normal load-shedding will resume for the large customer or the curtailment area. (The minimum curtailment requirements are more specifically described in the notes below)
- 5.1.6 Cancellation of the exclusion can also occur for network operational reasons such as a failure on the remote switching facilities.
- 5.1.7 Being on the curtailment programme does not guarantee exclusion from load-shedding.
- 5.1.8 The curtailment, measured at the supplying main substation or the feeder(s) supplying the large customer, shall be:
 - 5.1.8.1 10% of normal load (of a curtailment base load day), during Eskom announced load-shedding stages 1 and 2. This is not required from companies that participate in the Eskom Scheduled Demand Response Programme. (Eskom SDR requires reduction in a stage before load-shedding starts.)
 - 5.1.8.2 15% of normal load, during Eskom announced stage 3. This is also required from Eskom SDR participants.
 - 5.1.8.3 20% or normal load, during Eskom announced stage 4. This is also required from Eskom SDR participants.
- 5.1.9 The emergency can last throughout the day from 06:00 to 22:00 and repeat daily. Night-time curtailment, when load-shedding is in the period from 22:00 to 06:00, is excluded for now and reduction compliance during this period will not be expected or assessed.
- 5.1.10 The curtailment will be assessed per load-shedding day by comparing the load-shedding day's load to a calculated curtailment base load day. Details of the curtailment base load day calculation are in Annexure A below. The method used by the LCP participant

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to find an appropriate similar day, preferably done automatically, should be aligned with the CCT curtailment base load day calculation. Companies are expected to perform self-assessments daily of their previous day's metered loads and make the necessary corrections to their curtailment. A competent service provider should perform this function unless this expertise and capacity exists within the company.

- 5.1.11 The minimum curtailment requirement is 80% of the target reduction. This is to allow for inaccuracies of the assessments, e.g. the weather, choice of sample days and metering. Note that the target reduction shall be increased if the participation is less than 100%. This will normally be the case due to the mix of industrial, commercial and domestic customers of a main substation or the feeder group area of supply.

- 5.1.12 A maximum of 3 violations out of ten daily assessed curtailment event days will be allowed before the area or the individual company is removed from the curtailment programme. A new application will need to be made describing the corrective actions that have been implemented to prevent future violations.

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5.2 Applications where no network rearrangement is required

- 5.2.1 Participation in the load curtailment programme can be considered only
 - 5.2.1.1 for customers supplied direct from a main substation; or
 - 5.2.1.2 where at least 80% or more (in terms of load) of the customers on a complete feeder group are willing and capable to take part in the load curtailment programme.
- 5.2.2 Applications will be considered by Network Control.
- 5.2.3 Network Control will not consider applications requiring network rearrangements other than minor operational changes.

5.3 Applications where network rearrangement is required

- 5.3.1 Customers who would like to modify their supply so that they are fed direct from a main substation with the aim to participate in the load curtailment programme can apply for a network rearrangement to achieve that.
- 5.3.2 It must be technically feasible to connect the customer at the proposed point. The City shall have the sole discretion in determining whether it is technically feasible to connect at the point of connection, and will advise the applicant accordingly.
- 5.3.3 The required network rearrangement will be quoted on the following basis:
 - 5.3.3.1 Network Control must first confirm if it is possible to accept the curtailment at the point of the proposed main substation connection. If not, the application will be rejected.
 - 5.3.3.2 The customer will be responsible for all cost incurred.
 - 5.3.3.3 Besides normal items like the Medium Voltage (MV) panel(s) in the main substation and the MV supply cable(s), the quote will also include the replacement value of a slice of the main substation switchroom building as wide as the number of panels required.
 - 5.3.3.4 The MV supply has to terminate in a building substation supplied by the customer. An outdoor substation will not be accepted.
 - 5.3.3.5 Applications for network rearrangements must be initiated by submitting a completed application form to the Service Connection Planning branch. This will be handled like any other service connection modification application.
 - 5.3.3.6 Acceptance and payment of the quote will not constitute automatic inclusion in the load curtailment programme. All applications to take part in the load curtailment programme must be submitted to Network Control for approval.
 - 5.3.3.7 Conditions set by Network Control for participation in the load curtailment programme – which include payment by the applicant of the quoted network rearrangement cost – must be met.

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6 RESPONSIBILITIES

6.1 Notifications to Customers

For the communication of stage number as well as start and end times, it must be noted that this programme is aligned with National Load-shedding, the communication of which is done widely via various media platforms. Any other type of communication relating to the curtailment programme will be done by the Network Control QOS section assisted by Business Retention, Enterprise and Investment.

6.2 Investigation of an application

Network Control QOS section will investigate viability of an application.

6.3 Assessments

Assessments of the load reduction required and achieved are done for each load-shedding day by the customers or the aggregators. Network Control QOS section will also do assessments and communicate the results to customers.

6.4 Reporting

Reporting of curtailment performance to Eskom and CCT management is done by Network Control QOS section.

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7 Annexure A - Curtailment base load day calculation:

The curtailment base load day is determined from 6 selected sample days. The 6 sample days are selected as described below. Load-shedding and public holidays are excluded from the selection.

- 1st sample day: One week back from assessment day
- 2nd sample day: One week back from 1st sample day
- 3rd sample day: One week back from 2nd sample day
- 4th sample day: One year (364 days)back from assessment day
- 5th sample day: One week back from 4th sample day
- 6th sample day: One week forward from 4th sample day

After the 6 sample days have been selected the base load day is calculated by taking the median for each half-hour as shown below.

Time	1st sample	2nd sample	3rd sample	4th sample	5th sample	6th sample	Base load day
00:30	kW or A values	kW or A values	kW or A values	kW or A values	kW or A values	kW or A values	=Median of 6 samples

Note: If the sample day is a load-shedding or public holiday the sample day is moved by 1 week until a non-load-shedding day is found.

Calculating the median: The median is the value in the middle of a sorted set of values. The set is sorted from the highest to lowest value. If there is an even number of values in the set, then the median is calculated by taking the average of the two values in the middle.