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**NRS 047-1:2005**

Edition 3

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# **ELECTRICITY SUPPLY — QUALITY OF SERVICE**

## **Part 1: Minimum standards**



## NRS 047-1:2005

This rationalized user specification is issued by  
the Technology Standardization Department (TSD), Eskom,  
on behalf of the  
User Group given in the foreword  
and is not a standard as contemplated in the Standards Act, 1993 (Act No. 29 of 1993).

### Table of changes

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## Foreword

This part of NRS 047 was prepared for the National Energy Regulator of South Africa (NERSA) by a working group appointed by the Electricity Suppliers Liaison Committee (ESLC) and an interest group of stakeholders recommended by NERSA.

The working group, at the time of publication, comprised the following members:

|                                 |   |
|---------------------------------|---|
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At the time when the ESLC accepted this edition of NRS 047-1, the ESLC comprised the following members:

|                      |  |
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A reference is made in **3.1** (in the definition of “prescription”) and in **4.1.1(h)** to “legislation”. In South Africa this means the Electricity Act, 1987 (Act No. 41 of 1987) (as amended from time to time).

This part of NRS 047 cancels and replaces edition 2.3 (NRS 047-1:2002).

NRS 047 consists of the following parts, under the general title *Electricity supply – Quality of service*:

*Part 1: Minimum standards.*

*Part 2: Reporting guidelines.*

Annexes A and B are for information only.

## **NRS 047-1:2005**

### **Introduction**

The preparation of this part of NRS 047 on quality of service in the Electricity Supply Industry (ESI) has been driven by the National Energy Regulator of South Africa (NERSA) to facilitate liaison between customers and the licensed suppliers of electricity (licensees).

In order to assess the quality of the service provided, NERSA will require licensees to provide as much information as is practical. However, this will incur costs, which will ultimately be passed on to the customer. In terms of the needs and principles of economical and affordable electricity supply in South Africa, it is essential that a balance be maintained between these costs and the service activities measured.

This specification consists of two parts. This part of NRS 047 is restricted to the measuring of those service activities and standards that have been agreed upon and defined by the ESI, various customer organizations and NERSA. This part of NRS 047 also tabulates the various quality-of-service activities that licensees will report to NERSA. Should reporting show that certain targets are unrealistic, these targets can be changed in revisions of this part of NRS 047.

Although this part of NRS 047 deals with the manner in which planned interruptions are managed, and with restoration times for unplanned interruptions, more technical performance information can be found in NRS 048-2 which deals with quality of supply.

It is recognized that not all aspects are addressed in detail and it is noted that aspects that still need to be addressed will be included in future revisions of this part of NRS 047.

This part of NRS 047 provides minimum standards. Licensees who render higher standards should maintain or improve on these minimum standards.

This part of NRS 047 does not address issues of negligence.

### **Keywords**

electricity supply, quality of service, minimum standards.

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## ELECTRICITY SUPPLY — QUALITY OF SERVICE

### Part 1: Minimum standards

#### 1 Scope

This part of NRS 047 outlines various service activities and the minimum standards for measuring the quality of service provided to customers by electricity utilities in South Africa. It also introduces various quality-of-service activities that the utilities would report to the National Electricity Regulator of South Africa (NERSA). It is intended that this reporting will give NERSA a common basis for evaluating quality of service and enable NERSA to

- a) grant distribution licences ;
- b) monitor the performance of licensees on an ongoing basis, and
- c) deal with customer complaints.

#### 2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of NRS 047. All documents are subject to revision and, since any reference to a document is deemed to be a reference to the latest edition of that document, parties to agreements based on this specification are encouraged to ensure the use of the most recent editions of the documents listed below. Information on currently valid national and international standards can be obtained from Standards South Africa.

National Energy Regulator of South Africa (NERSA). *Power quality directive*. November 2003.

NRS 047-2, *Electricity supply – Quality of service – Part 2: Reporting guidelines*.

NRS 048-2, *Electricity supply – Quality of supply – Part 2: Voltage characteristics, compatibility levels, limits and assessment methods*.

SANS 9004, *Quality management systems – Guidelines for performance improvements*.

#### 3 Terms, definitions and abbreviations

For the purposes of this part of NRS 047, the following terms, definitions and abbreviations apply.

##### 3.1 Terms and definitions

###### **complaint resolution**

identification of the cause of the problem and of the measures (if any) that can be taken to correct the problem, and the completed implementation of a plan to resolve the problem where it is appropriate

**customer**

person or legal entity who either has entered into an electricity supply agreement with a licensee, or legally consumes electricity supplied by that licensee

NOTE In 4.2, a potential customer (i.e. a person or legal entity who applies for or requests an electrical supply) is referred to as a "customer".

**dwelling**

place or structure of residence

**high voltage**

**HV**

voltage of 36 kV and above

**large customer**

**LC**

person or legal entity who applies for, or requests, an electrical supply of 1 MVA and higher

NOTE Large customers include industrial, commercial and agricultural customers but exclude grouped domestic supplies (for example blocks of flats).

**lost call**

telephone call that gets through to the licensee but that is not answered

**low voltage**

**LV**

nominal voltage of 1 000 V and below

**medium voltage**

**MV**

voltage exceeding 1 000 V but less than 36 kV

**planned interruption**

interruption that occurs when a component is deliberately taken out of service (by the utility or its agent) at a selected time, usually for the purpose of construction, preventative maintenance, or repair

**prescription**

limitation of the time within which a claim can be made, as laid down in legislation (see foreword)

**rural network**

**rural system**

network or system that serves clustered or scattered structures, usually of low density, not served by well-established infrastructure (roads, telecommunication, etc.)

NOTE The power network is usually supplied radially by overhead lines emanating from one distribution station.

**temporary supply**

electricity supply that is temporarily provided to a customer in the event of unusual circumstances

NOTE Such a supply might not conform to the service levels normally provided by agreement between the customer and the licensee.



**unplanned interruption**

interruption that

- a) occurs when service is interrupted because a component is taken out of service immediately, either automatically or as soon as switching operations can be performed, as a direct result of emergency conditions, or
- b) is caused by human error or by the improper operation of equipment

**urban**

descriptive of areas characterized by formally or informally built structures, usually of high density distribution, served by well-established infrastructure (roads, telecommunication, etc.)

NOTE The power network is usually supplied by more than one distribution station.

**3.2 Abbreviations**

|        |   |
|--------|---|
| CS:    | customer service                          |
| d:     | day(s)                                    |
| EPL:   | emergency priority list                   |
| ESI:   | Electricity Supply Industry               |
| h:     | hour(s)                                   |
| HV:    | high voltage                              |
| LC:    | large customers                           |
| LV:    | low voltage                               |
| MV:    | medium voltage                            |
| NERSA: | National Energy Regulator of South Africa |

**4 Requirements****4.1 General****4.1.1 Principles that govern the application of this part of NRS 047**

The following principles apply.

- a) In the granting or retention of licences, NERSA will assess compliance or non-compliance with acceptable quality-of-service standards. NERSA will not require licensees to demonstrate compliance for each customer. NERSA will prescribe statistical sampling to verify continued compliance.
- b) It is the responsibility of licensees to manage the quality of service provided to their customers. A supply agreement that makes customers aware of their rights and obligations can form part of the management system.
- c) The decision by a licensee to provide different levels of service will be a mutually agreed business decision between the licensee and the customer. A licensee may contract specific customers, or groups of customers, to provide different levels of service under agreed terms.
- d) It is not intended that NERSA will receive all individual complaints directly. Licensees and their customers are expected to resolve their problems between themselves in the first instance. Only if a problem cannot be resolved, should NERSA become involved to achieve a solution to the problem.

- e) If a complaint is received by NERSA, a licensee will be given a reasonable period to demonstrate that the service complies with the requirements specified for it. This period will be determined by NERSA in conjunction with the complainant and the licensee.
- f) The service standards specified do not apply in cases where licensees experience unavoidable circumstances such as
  - 1) in places where there is war damage, uprising, sabotage, attack and malicious damage, and areas identified by the South African Police Service as being of high risk to personnel,
  - 2) places where damage was caused by accidental and unavoidable occurrences attributable to third parties,
  - 3) places where direct material damage was caused primarily by the unusual intensity of a natural event, where the usual precautions against such damage could not be taken nor could the damage be prevented,
  - 4) in cases of atmospheric phenomena that are extreme and unusual in terms of annual events, and that could not be prevented because of their cause or their extent, and to which electrical networks, especially overhead networks, are particularly vulnerable. Normal lightning activity is excluded because licensees are expected to design and install appropriate lightning protection on the electrical network.
  - 5) in cases of industrial action that prevent normal operation of the network,
  - 6) in cases of motor vehicle accidents that are not reasonably avoidable, and
  - 7) in situations where the licensee provides a temporary supply to keep customers supplied during maintenance and construction work, or to minimize the extent and duration of a total loss of supply. The licensee should state the negotiated duration of the temporary supply, which should be by mutual agreement between the customer and the licensee. The normal supply should be reinstated as soon as possible.

The circumstances listed above do not automatically absolve the licensee from any action that is deemed negligent.
- g) A customer who requires an investigation into the level of service provided might be required to pay a cost-related fee in advance to cover the cost of the investigation. Such a fee will be refunded should the complaint be justified; and
- h) Matters that are dealt with in legislation (see foreword) are not covered by this specification (for example, the proving of negligence and the use of official languages in communicating with customers).

#### **4.1.2 Reporting procedures, information systems and management systems**

NERSA recognizes the fact that licensees will need time to put the necessary reporting procedures and information systems in place to comply with the requirements of this specification.

Initially, licensees will only be required to report to NERSA on those service activities where data are already available.

Where practicable, licensees should revise their existing reporting procedures and information systems to be able to report in the format specified in NRS 047-2.

Where new information systems are installed, they should be configured to provide the information as required by NRS 047-2.

In the future, the need for a particular licensee to report on additional service activities will be determined by NERSA in agreement with the licensee.

While some key parameters of quality of service are measurable, overall quality of service includes many aspects that cannot readily be measured. Overall quality of service is dependent upon appropriate quality management systems.

The guidelines given in SANS 9004 shall be used by licensees in the management of the services that they provide to their customers.

## 4.2 Processing of requests for supply

### 4.2.1 Service activities for the processing of requests for supply

**4.2.1.1** The management of the following activities for the processing of requests for supply will influence the quality of service:

- a) applications;
- b) feasibility studies;
- c) quotations and estimates;
- d) acceptance of quotation and payment;
- e) design;
- f) construction (including the certificate of compliance);
- g) commissioning and decommissioning;
- h) the supply contract between the licensee and the customer; and
- i) meeting of agreed deadlines.

NOTE 1 An element of "segmentation" might be required with regard to applications; for example, the processing required for applications submitted by township developers will differ from that required for applications submitted by individual customers.

NOTE 2 The provisions in 4.2.2 and 4.2.3 apply to both the upgrading of existing supplies as well as to new supplies.

NOTE 3 Where a licensee has a standard approved tariff for providing a supply, the tariff is regarded as a quotation. For these customers the reporting for providing a quotation (see 4.2.1 of NRS 047-2) is not required.

**4.2.1.2** The service activities for measuring and reporting on the provision of a supply are given in table 1.

**Table 1 — Service activities for measuring and reporting on the provision of a supply**

| 1                       | 2  | 3                | 4                      |
|-------------------------|--|------------------|------------------------|
| Service activity        | Measure of service standard  | Minimum standard | Reporting format       |
| Quotations to customers | Time taken to provide the customer with a quotation for the cost of providing a supply | See 4.2.2        | See 4.2.1 of NRS 047-2 |
| Provision of a supply   | Time taken to make a supply available (once all customer obligations have been met)    | See 4.2.3        | See 4.2.2 of NRS 047-2 |

**4.2.1.3** The service standards that are stipulated in 4.2.2 and 4.2.3 should be regarded as minimum standards. Should a customer require a supply sooner than the standard dictates, the licensee should negotiate the time frame and any additional costs to meet the shorter deadline with the customer. The cost should be justified.

#### **4.2.2 Quotations to customers**

If a customer has made a written request for supply and has provided all the necessary documentation, the following time frames for quotation shall apply:

- a) within 10 working days where existing infrastructure can be used;
- b) within one month where network extensions are required; and
- c) if new networks have to be installed or if supply is required for industrial and commercial customers, the period for providing a quotation shall be negotiated between the customer and the licensee.

The target percentage success is at least 95 %.

#### **4.2.3 Providing a supply**

If a customer has paid all the money he owes and met all other obligations stipulated by the licensee and if, where applicable, all subsidies have been received, the following time frames shall apply for the provision of supply:

- a) within 30 working days where existing infrastructure can be used;
- b) within two months where LV network extensions are required and within three months where MV network extensions are required; and

NOTE It might be necessary to negotiate an extended period of time to accommodate delivery of equipment from manufacturers.

- c) if new networks have to be installed, if HV extensions are required or if supply is required for industrial and commercial customers, the period for providing the supply shall be negotiated between the customer and the licensee.

The target percentage success is at least 95 %.

### **4.3 Credit metering**

#### **4.3.1 Service activities for credit metering**

**4.3.1.1** The management of the following activities and factors influences the quality of service in dealing with credit meter customers:

- a) meter reading (frequency);
- b) billing (format, information provided and methods);
- c) account queries;
- d) payment method;
- e) payment venues (queuing times, operating hours);
- f) special meter readings;

- g) check-meter readings;
- h) disconnections;
- i) reconnections;
- j) penalties for non-payment and theft;
- k) meter auditing for accuracy; and
- l) calibration.

**4.3.1.2** The service activities for measuring of and reporting on credit metering are given in table 2.

**Table 2 — Service activities for credit metering**

| 1                             | 2   | 3                | 4                      |
|-------------------------------|---|------------------|------------------------|
| Service activity              | Measure of service standard                                 | Minimum standard | Reporting format       |
| Meter reading                 | Frequency of meter readings for various customers           | See 4.3.3        | See 4.3.1 of NRS 047-2 |
| Penalties for non-payment     | Periods and time frame for disconnections and reconnections | See 4.3.7        | See 4.3.2 of NRS 047-2 |
| Account queries               | Time to respond to account queries                          | See 4.3.8        | See 4.3.3 of NRS 047-2 |
| Credit meter accuracy queries | Response time to check meter accuracy                       | See 4.3.10       | See 4.3.4 of NRS 047-2 |

#### **4.3.2 Information to be provided to credit meter customers**

The following information shall be provided to credit meter customers:

- a) the scheduled frequency of meter readings;
- b) the method used to estimate electricity consumption during periods when no meter readings are taken;
- c) the format of the electricity account;
- d) the methods of payment of the account and the period allowed for payment before penalties are applied;
- e) the location of payment venues and the hours of business;
- f) the penalties for late payment, for non-payment and for the disconnection/reconnection process;
- g) how a customer should initiate an account query;
- h) the process that the licensee will follow when it is impossible to gain access to a customer's premises;
- i) the process for dealing with special meter readings and check-meter readings;
- j) the process for dealing with meter accuracy queries and the fees charged for accuracy audits;

- k) the penalties applied in the case of tampering, by-passing of meters, or any other method used to procure electrical energy illegally;
- l) where applicable, the process for recovering any energy account arrears; and
- m) where applicable, the voltage transformer/current transformer factors should be available or calculable.

### **4.3.3 Frequency of meter reading**

The meters of customers with a supply of less than 50 kVA should be read at least once in every three months. If this is not possible, the meters should be read at least once in a twelve-month period. Where the use of the 50 kVA limit is not feasible, the kVA limit shall be agreed upon with NERSA.

The meters of other customers should be read once a month.

The target average percentage success is at least 95 %.

NOTE Additional readings should be taken when premises are vacated and new customers are registered.

### **4.3.4 Estimated energy consumption**

In cases where it is necessary to estimate electricity consumption for a particular period, the method of estimation shall be based on historical data or, in the absence of such data, on a method agreed upon between the customer and the licensee.

### **4.3.5 Format of the account**

#### **4.3.5.1 Essential information**

The following information shall be clearly presented on the account:

- a) the date of the previous meter reading (or estimate) and the corresponding meter reading (or estimate);
- b) the date of the current meter reading (or estimate) and the corresponding meter reading (or estimate);
- c) the applicable tariff;
- d) the number of units consumed (or estimated) during the period covered by the account;
- e) the cost of the electricity consumed during the period covered by the account and the number of days covering that period that will allow a consumer to determine daily consumption or cost per day for the defined account period;
- f) the date and the amount of the previous payment;
- g) the outstanding balance, if applicable;
- h) any other amounts charged and a description of what the charges are for;
- i) the total amount payable;
- j) the latest date by which the account is to be paid in order to avoid penalties;
- k) acceptable methods of payment; and

- l) any arrears, together with a written warning that disconnection will follow unless paid within 14 d.

#### **4.3.5.2 Optional information**

The following agreed upon information, and any additional and agreed upon information, should ideally also be presented on the account:

- a) the payment venues, hours of business, and telephone and telefax numbers;
- b) the voltage transformer or current transformer and load factors (where applicable) should be available or calculable;
- c) the account query procedure, including the applicable telephone numbers; and
- d) the consequences and procedures in the case of locked premises (see 4.3.9).

#### **4.3.6 Payment venues**

The licensee shall ensure that, wherever practical, facilities are provided within or close to urban residential, commercial or industrial areas to afford customers a reasonable opportunity to pay their accounts and to resolve account queries.

#### **4.3.7 Penalties for non-payment**

The following conditions shall be met unless different conditions have been contractually agreed upon:

- a) no disconnections shall be effected until at least 14 d after the due date for payment stipulated on the account;
- b) commercial and industrial customers shall be given at least 24 h notice of an impending disconnection;
- c) disconnections shall only be carried out if payment points and a reconnection service are available at some stage during the next 24 h;
- d) disconnections shall not be carried out over weekends, public holidays or Fridays (unless normal payment and reconnection facilities are available on Saturday mornings), or on the day before a public holiday; and
- e) reconnections shall be effected as promptly as possible and not later than the first working day after the account has been settled satisfactorily and the reconnection fee has been paid.

The target average percentage success is at least 95 %.

#### **4.3.8 Account queries and disputes**

##### **4.3.8.1 General account queries**

In the case of account queries that cannot be resolved on first contact, at least 95 % of these account queries should be responded to within five working days.

Account queries should normally be resolved within three weeks. The target average percentage success is at least 95 %.

#### **4.3.8.2 Account disputes that have resulted in, or would result in, disconnection**

In the event of a customer who had been disconnected due to non-payment and a subsequent agreement that there was an error in the metering or billing data such that disconnection should not have taken place, the customer shall be reconnected without delay.

In the event of a customer who is due to be disconnected due to non-payment, but it has been agreed that there was an error in the metering or billing data such that disconnection would not be valid, the disconnection shall be put on hold while the error is being investigated. The distributor should make available all related information pertaining to the query to the customer.

The investigation into the meter or billing data error shall be concluded and the customer reconnected and refunded, if necessary, without delay.

#### **4.3.9 Locked premises**

In cases where the licensee is unable to gain access to a customer's premises for the purposes of reading the meter, a meter reading card or a notification (or both) shall be left for the customer's attention.

If the card, with an acceptable reading, has not been returned before the next billing, or if the customer has not contacted the licensee within this interim period, the licensee shall make every effort to make telephonic contact or personal contact with the customer.

If, after a predetermined period, it is impossible to gain access to the meter, the supply to the customer shall be disconnected after the customer has been informed in writing.

#### **4.3.10 Credit meter accuracy queries**

The licensee shall, on request, provide meter accuracy checking as a service to customers. Information on how to obtain the service and any associated costs shall be readily available to the customers.

Where applicable, any fee charged for checking the accuracy of a meter shall be refunded if the meter accuracy should prove to be outside the declared limits specified in the supply agreement.

Meter accuracy checks shall be performed within 15 working days of the receipt of the prescribed fee.

The target average percentage success is at least 95 %.

There shall be monetary adjustments either way (within the period of prescription).

NOTE See 3.1 for the definition of prescription.

Check-metering shall be used where applicable.

### **4.4 Prepayment metering**

#### **4.4.1 Service activities for prepayment metering**

The management of the following service activities influences the quality of service to prepayment meter customers:

- a) information to be provided to customers;
- b) vending stations (location and business hours);



- c) meter accuracy audits;
- d) frequency of meter inspections; and
- e) disconnections and reconnections.

The service activities for measuring and reporting on prepayment metering are given in table 3.

**Table 3 — Service activities for prepayment metering**

| 1                                  | 2   | 3                | 4                      |
|------------------------------------|---|------------------|------------------------|
| Service activity                   | Measure of service standard                                       | Minimum standard | Reporting format       |
| Provision of vending stations      | Acceptable levels of service to customers                         | See 4.4.3        | See 4.4.1 of NRS 047-2 |
| Business hours of vending stations | List of vending stations and the actual hours of business of each | See 4.4.4        | See 4.4.2 of NRS 047-2 |
| Prepayment meter accuracy queries  | Response time to check meter accuracy                             | See 4.4.5        | See 4.4.3 of NRS 047-2 |
| Reconnection of prepayment meters  | Time taken to reconnect prepayment meters                         | See 4.4.7        | See 4.4.4 of NRS 047-2 |

#### **4.4.2 Information to be provided to prepayment meter customers**

The licensee shall provide every prepayment meter customer with the following information by means of a brochure issued at the time of installation of the service connection and periodically thereafter:

- a) the type of electricity token to be used and how to purchase and use the token;
- b) the applicable tariff (which shall also be displayed at the vending stations);
- c) the location of points of sale of tokens and the hours of business;
- d) the contact telephone numbers and addresses of the licensee's service centres, where service queries and queries concerning the meter can be handled;
- e) the process for dealing with meter accuracy queries and the fees charged for accuracy audits;
- f) the process that the licensee will follow when it is impossible to gain access to a customer's premises, and therefore to the meter;
- g) the process that will be followed when penalties are applied for tampering with, or bypassing, a pre-payment meter;
- h) the process for disconnecting the service;
- i) where applicable, the process for the recovery of any electricity account arrears; and
- j) where a customer is on conventional metering and owes the utility, but is unable to pay the outstanding amounts immediately, and converts to prepayment metering, an arrangement shall be made to recover the outstanding debt;

Changes in the approved tariff shall be announced in an appropriate way as and when required.

#### **4.4.3 Provision of vending stations**

Where practical, vending stations should be accessible to customers through their normal course of business activities or areas frequented by the customer, i.e. at the local grocery outlet, taxi rank etc. with acceptable service levels similar to those of other service providers in similar environments.

NOTE Where several vending stations at one location can be justified, these could be manned according to customers' purchasing patterns, with the maximum number manned at times of peak demand, hence the need to determine the number of transactions per vending station per year.

#### **4.4.4 Hours of business of vending stations**

Vending stations should sell tokens during normal shopping hours on weekdays, and from 08:00 to 12:00 on weekends and public holidays.

Certain vending stations may close on weekends and public holidays, and during normal office hours, provided that there are vending stations in operation nearby.

#### **4.4.5 Prepayment meter accuracy queries**

The same meter accuracy checking service that is provided for credit meter customers shall be available to pre-payment meter customers (see 4.3.10).

The licensee shall provide the means to read, to transfer or refund, as appropriate, the amount of unexpended credit due to a customer when a prepayment meter is replaced or removed as a result of faulty meters.

#### **4.4.6 Frequency of prepayment meter inspection**

The licensee shall have the right to inspect a prepayment meter at the customer's premises.

Meters may be inspected if tampering or theft is detected or suspected. The latter can be ascertained by studying the purchase patterns of consumers.

Where reasonable but unsuccessful attempts have been made to gain access to the prepayment meter, the licensee may disconnect the supply after having delivered a written warning to the customer.

#### **4.4.7 Reconnection of prepayment meters**

Prepayment meters should be reconnected within 48 working hours of receiving a request and the payment of the reconnection fee (except in the case of hard disconnections or service removals after tampering has taken place).

NOTE Normally a disconnection of the prepayment meter will be done by either opening the circuit-breaker or removing the fuse. However, in the case of a hard disconnection, a section of the service conductor is also removed.

The target average percentage success is at least 95 %.

### **4.5 Planned and unplanned network interruptions**

#### **4.5.1 Service activities for network interruptions**

The management of the following service activities influences the quality of service in dealing with network interruptions:

- a) availability and location of fault-reporting centres;

- b) hours during which interruptions may be reported;
- c) fault-reporting procedures;
- d) telephone answering response time;
- e) response times to queries;
- f) time to restore supply;
- g) number and duration of interruptions; and
- h) notification of planned interruptions.

The service activities for measuring and reporting on network interruptions are given in table 4.

**Table 4 — Service activities for network interruptions**

| 1                               | 2  | 3                | 4                      |
|---------------------------------|--|------------------|------------------------|
| Service activity                | Measure of service standard  | Minimum standard | Reporting format       |
| Fault-reporting centres         | Location and hours of business of fault-reporting centres  | —                | See 4.5.1 of NRS 047-2 |
| Fault-reporting process         | Prescribed procedures to be followed and appropriate information to be requested from the customer | See 4.5.2        | See 4.5.2 of NRS 047-2 |
| Unplanned interruptions         | Time to restore the supply after an unplanned interruption   | See 4.5.3        | See 4.5.3 of NRS 047-2 |
| Planned interruptions           | Number and duration of planned interruptions   | See 4.5.4        | See 4.5.4 of NRS 047-2 |
| Notice of planned interruptions | Notice of planned interruptions to be given to the affected customer at least 48 h in advance      | See 4.5.5        | See 4.5.5 of NRS 047-2 |

#### 4.5.2 Fault-reporting process

The licensee shall provide a 24 h telephone service to receive reports of interruptions from customers (see 4.7.2).

The licensee shall provide a facility for customers to report interruptions during normal office hours.

There might be a need to address customer interruptions from a different location after normal office hours, however, the telephone number to report interruptions telephonically shall remain the same. Hence the licensee shall have the facility to redirect telephone calls to the different locations after hours.

The licensee shall supply the customer with the telephone number of the fault-reporting centre to which interruptions should be reported. The following information should be requested from a customer reporting a fault: the customer's name, telephone number (if any), physical address, and the nature of the fault. Pole number and site identity should also be reported where the physical address is not formal.

The licensee shall give the reporting customer a fault reference number.

### 4.5.3 Restoration of supply after unplanned interruptions

There is a need to classify each interruption or customer in an emergency priority list (EPL) which dictates the order in which supply after each unplanned interruption is restored. An example of an EPL is illustrated in annex A. This priority list should be updated as required by the licensee.

After unplanned interruptions, the supply should be restored as follows:

- a) 30 % within 1,5 h;
- b) 60 % within 3,5 h;
- c) 90 % within 7,5 h;
- d) 98 % within 24 h; and
- e) 100 % within a week.

The above represents the worst case scenario and should be improved upon whenever circumstances permit.

NOTE The frequency and duration of unplanned interruptions for various networks are considered in NRS 048-2.

Customers who require improved continuity of supply (for example large customers) could negotiate additional feeders. This would be the subject of a separate agreement.

### 4.5.4 Number and duration of planned interruptions

The licensee shall endeavour to keep supply interruptions to an absolute minimum and, in the case of planned interruptions, shall, except under exceptional circumstances, ensure that customers are given adequate notice.

Where a customer or a group of customers has suffered a series of interruptions within a short period, the licensee shall endeavour to prevent coincident planned interruptions from affecting the same customer(s) for at least two months, with the understanding that urgent remedial work might require a planned interruption to rectify the cause of such a series of interruptions.

### 4.5.5 Notice of planned interruptions

Where possible, at least 48 h advance notification should be given of any planned interruption. Details of such notification are given in 4.5.6.

The licensee may choose to give certain customers on the EPL more than 48 h notification and may even decide to notify these customers personally.

In the case of large customers, wherever possible, the licensee and customers should mutually agree on planned interruptions.

The target average percentage success is at least 95 %.

NOTE Measuring of planned time vs actual interruption times is recommended (early restoration of supply can also be inconvenient to customers).

### 4.5.6 Press or media releases

The licensee should make use of the appropriate media to inform its customers of future major interruptions. The following information should be supplied:

- a) the time that the interruption(s) will occur or is/are planned to occur;
- b) the area(s) that will be affected;
- c) the reason for the planned interruption;
- d) the time at which it is anticipated that the supply will be restored; and
- e) notification that customers are to treat the supply as live at all times.

The licensee may also choose to make use of the appropriate media to inform its customers of the reason for any previous unplanned interruptions.

## 4.6 Customer complaints, enquiries and requests

### 4.6.1 Service activities for customer complaints, enquiries and requests

The management of the following service activities influences the quality of service in dealing with customer complaints, enquiries and requests:

- a) availability and location of service centres;
- b) telephone services;
- c) response times; and
- d) time taken to resolve problems.

The service activities for measuring and reporting on customer complaints, enquiries and requests are given in table 5.

**Table 5 — Service activities for customer complaints, enquiries and requests**

| 1                   | 2                           | 3                | 4                      |
|---------------------|-----------------------------|------------------|------------------------|
| Service activity    | Measure of service standard | Minimum standard | Reporting format       |
| Customer complaints | Time to respond and resolve | See 4.6.2        | See 4.6.1 of NRS 047-2 |
| Customer enquiries  | Time to respond and resolve | See 4.6.3        | See 4.6.2 of NRS 047-2 |
| Customer requests   | Time to respond and resolve | See 4.6.4        | See 4.6.3 of NRS 047-2 |

### 4.6.2 Customer complaints

Seventy-five percent of general complaints received should be resolved on first contact (immediate resolution).

Ninety-five percent of general complaints received should be resolved on one contact (only requiring one inbound contact from the customer).

Written customer complaints should be acknowledged in writing within three working days if the matter cannot be resolved on first contact.

Complaints should normally be resolved within two weeks. The target percentage success is at least 95 %.

For complaints related to the quality of supply, 4.8 applies.

### **4.6.3 Customer enquiries**

Seventy-five percent of enquiries for information and advice received should be resolved on first contact (immediate resolution).

Ninety-five percent of general enquiries received should be resolved on one contact (only requiring one inbound contact from the customer).

Where the matter cannot be resolved on first contact, at least 95 % of enquiries received for information and advice should be responded to within three working days.

Queries should normally be resolved within two weeks. The target percentage success is at least 95 %.

Meter queries are covered in 4.3.10 and 4.4.5.

Account queries are covered in 4.3.8.

### **4.6.4 Customer requests**

All general customer requests (for example moving of meters, moving of street lighting, changing of meters and changing of tariffs) should be replied to in writing by the licensee within two weeks of receipt of a written request. The reply should include information on the cost to the customer, the customer's obligations and the time frame for the carrying out of the request.

The target percentage success is at least 95 %.

For network alterations, 4.2.2(b) and 4.2.3(b) apply.

Provision of supply is covered in 4.2.3.

## **4.7 Telephone services**

### **4.7.1 Service activities for telephone services**

The management of the following service activities influences the quality of service in dealing with telephone services:

- a) provision of telephone services;
- b) business hours;
- c) telephone answering response times;
- d) duration of calls; and
- e) management of telephone answering centres.

The service activities for measuring and reporting on telephone services are given in table 6.

**Table 6 — Service activities for measuring and reporting on telephone services**

| 1                            | 2  | 3                | 4                      |
|------------------------------|--|------------------|------------------------|
| Service activity             | Measure of service standard                              | Minimum standard | Reporting format       |
| Essential telephone services | Provision of essential telephone services                | See 4.7.2        | See 4.7.1 of NRS 047-2 |
| Specific telephone services  | Provision and performance of specific telephone services | See 4.7.3        | See 4.7.2 of NRS 047-2 |
| Call handling                | Response and talk times                                  | See 4.7.4        | See 4.7.3 of NRS 047-2 |

The equipment for measuring the service activities in 4.7.3 and 4.7.4 might not be generally available; therefore utilities should regard these standards as goals to be achieved in the future.

Guidelines are included in annex B to help licensees manage telephone centres.

#### 4.7.2 Provision of essential telephone services

A 24 h telephone service shall be provided for the reporting of interruptions and emergencies.

The licensee shall provide a telephone service for complaints, requests and queries. This service shall be available during normal office hours.

#### 4.7.3 Provision and performance of specific telephone services

The licensee should ideally provide the telephone services and the performance standards stipulated in table 7.

**Table 7 — Performance standards for specific telephone services**

| 1                        | 2   |
|--------------------------|---|
| Service                  | Performance standard  |
| Information requests     | At least 75 % of queries resolved on first contact  |
| Payments                 | 90 % of payments processed on first contact   |
| Reports of interruptions | 100 % of fault reports not resolved on first contact are referred to the dispatcher as part of the customer contact |
| Claims                   | 100 % of all claims referred to responsible person as part of the customer contact                                  |
| General complaints       | 75 % of general complaints resolved on first contact  |
| Meter readings           | 100 % of all meter readings recorded accurately and allocated to correct point of delivery                          |
| Emergency reports        | 100 % of all emergency reports acted on immediately   |

**4.7.4 Call handling**

The recommended performance standards for call handling are

- a) 80 % of incoming calls should be responded to within 30 s,
- b) the lost call rate should be less than 5 %,
- c) 90 % of all incoming calls should be dealt with within 5 min, and
- d) the availability of the fault and emergency services should be better than 1 h downtime per year.

**4.8 Service activities related to individual customer quality-of-supply levels**

**4.8.1 Management of service activities**

The management of the following service activities influences the quality of service in dealing with NRS 048-2 power quality parameters:

- a) time to respond to a complaint received from a customer;
- b) negotiation of a time span to resolve the problem; and
- c) adherence to the time span in resolving the problem.

**4.8.2 Compliance with minimum power quality standards**

Minimum levels of quality have been specified for specific power quality parameters. These apply to any individual customer supply point, and are specified as compatibility levels in NRS 048-2.

The measurement and reporting of service activities related to NRS 048-2 minimum quality-of-supply parameters are given in table 8.

**Table 8 — Service activities for compliance with NRS 048-2**

| 1                                    | 2  | 3                | 4                    |
|--------------------------------------|--|------------------|----------------------|
| Service activity                     | Measure of service standard  | Minimum standard | Reporting format     |
| Resolution of NRS 048-2 compliance   | Time to resolve the problem in relation to time communicated with the customer             | See 4.8          | See 4.8 of NRS 047-2 |
| Non-compliance complaints management | Number of non-compliance complaints per annum that have escalated, are submitted to NERSA. | –                | See 4.8 of NRS 047-2 |

The licensee shall correct any violations of the power quality compatibility levels defined in NRS 048-2 in as short a period as is practically possible without compromising the supply to other customers. This time span shall be communicated with the customer.

NOTE 1 The licensee should consider the nature of the complaint in negotiating the time span with the customer.

NOTE 2 Should a complaint not have been appropriately addressed, or not have been resolved as agreed upon, a customer is entitled to submit the complaint to NERSA in accordance with the NERSA *Power quality directive*.



NOTE 3 In the event that the quality-of-supply complaint cannot be resolved by the licensee and the customer and NERSA becomes involved, guidelines on resolving the issue are given in NRS 048-4.

### 4.8.3 Interruptions and voltage dips

No customer-specific levels of minimum quality are specified for the frequency and duration of interruptions and voltage dips over a given period, although annual characteristic levels are defined for specific networks in NRS 048-2.

Service activities for individual customer interruptions and voltage dip performance are given in table 9.

**Table 9 — Service activities for individual customer interruption and voltage dip performance**

| 1                                    | 2   | 3                | 4                    |
|--------------------------------------|---|------------------|----------------------|
| Service activity                     | Measure of service standard   | Minimum standard | Reporting format     |
| Resolution of complaints             | Time to resolve the problem in relation to time agreed upon with the customer | See 4.8          | See 4.8 of NRS 047-2 |
| Non-compliance complaints management | Number of non-compliance complaints per annum that are submitted to NERSA.    | —                | See 4.8 of NRS 047-2 |

In terms of the NERSA *Power quality directive*, licensees are required to address individual customer complaints related to interruptions and voltage dips.

NOTE 1 In some cases it is possible that higher levels of interruption or dip performance can only be achieved with significant cost. In such instances, a licensee is required to provide the customer with sufficient information explaining why this is the case.

NOTE 2 Should a complaint not have been appropriately addressed, or not have been resolved as agreed upon, a customer is entitled to submit the complaint to NERSA in accordance with the NERSA *Power quality directive*.

NOTE 3 In the event that the complaint cannot be resolved by the licensee and the customer and NERSA becomes involved, guidelines on resolving the issue are given in NRS 048-4.

## 4.9 Customer education and customer forums

### 4.9.1 General customer education

General customer education is encouraged. A utility shall demonstrate that it has used whatever means deemed necessary or appropriate (or both) for the specific target audience to effectively communicate the mandatory information contained in NRS 047-1 and NRS 047-2.

### 4.9.2 Components of a customer education programme

#### 4.9.2.1 National level (collaborative)

##### 4.9.2.1.1 Safety issues

The following safety issues shall be addressed:

- a) the safe use of electricity;
- b) the dangers of illegal connections and tampering;

- c) the dangers of incompetent or unqualified persons who conduct illegal and unsafe connections;
- d) reconnections, modifications, repairs, etc.;
- e) the use of unauthorized and unsafe devices;
- f) protection against overvoltages;
- g) dangers associated with lifting irrigation piping by farm labourers; and
- h) dangers associated with driving earth-moving vehicles into power lines.

#### **4.9.2.1.2 The reasons for, and the culture of, paying for electricity**

The following topics shall be addressed:

- a) a customer who is legally connected shall not redistribute electricity without complying with the bylaws or contractual constraints and the legal implications thereof;
- b) the issue of cross-subsidization of non-payers by paying customers;
- c) owners of rented properties shall ensure that all outstanding amounts are recovered from tenants; and
- d) the efficient use of energy.

#### **4.9.2.1.3 Quality of supply (protection against overvoltages)**

Customers' equipment will have a range of sensitivity to overvoltages. It is usually not practicable for the utility to provide surge protection at all points of supply which will adequately protect all customers' equipment satisfactorily.

NOTE 1 The customer needs to ensure that there is adequate earthing and the appropriate earthing arrangement.

NOTE 2 National standards (SANS standards) to guide customers on this and other quality of supply issues are under consideration.

#### **4.9.2.2 Local level (utility-specific)**

Education on the following topics shall be conducted at local and regional levels:

- a) tariffs;
- b) utility processes such as
  - 1) the management of disconnections,
  - 2) reporting of all defaulters – a process should be developed to facilitate this notwithstanding the need for confidentiality, and
  - 3) reporting of illegal connections;
- c) processes of interacting with the respective utilities on services (this includes account enquiries, new service applications, etc.);
- d) bill content and queries pertaining to a bill; and
- e) utilities should ensure that the customers' rights are inherently protected by explaining and clarifying local bylaws, where necessary.

### 4.9.3 Customer forums

Utilities shall demonstrate that they have channels to address customer feedback.

In areas where an integrated development plan or any other equivalent communication structures exist, these shall be deemed as customer communication forums. Where such structures are not in place, the relevant utility shall facilitate the establishment thereof.

### 4.10 Special services (optional)

**4.10.1** The management of the following factors influences the quality of service in dealing with special services:

- a) the types of special service provided; and
- b) response times in providing such special services.

**4.10.2** Apart from the key customer questionnaire (see 4.10 of NRS 047-2:2001), the licensee is not expected to measure or report on special services.

**4.10.3** Special services could include

- a) the delivery, checking and determination of electricity consumption of domestic appliances,
- b) secure supply to community service centres,
- c) special arrangements to restore power after an interruption to customers who have life-support equipment such as kidney-dialysis machines,
- d) the provision of standby plants, and
- e) the classification of certain customers as key customers.

**4.10.4** Where required, standards for the quality of special services should be specified by the licensee in an agreement with the customer.

**4.10.5** A licensee could classify certain maximum demand customers as key customers. In this case, the licensee shall supply each key customer with details of a contact person (persons) or organization where the following quality-of-service activities could be addressed:

- a) interruptions;
- b) equipment;
- c) maintenance;
- d) account queries;
- e) technical assistance; and
- f) tariff negotiations.

The licensee should ensure that at least 10 % of its key customers are requested to fill in the customer satisfaction questionnaire given in 4.10 of NRS 047-2:2001. The customer satisfaction questionnaires that are completed and returned to the licensee should be included in the annual quality-of-service report to NERSA.

### 4.11 Management of disconnections

Disconnections are part of a utility’s normal ongoing business. The flow chart in figure 1 gives guidance on this issue.

NOTE A favourable “Response to notice” in figure 1 could include the payment or signing of an acknowledgement of debt by the customer.

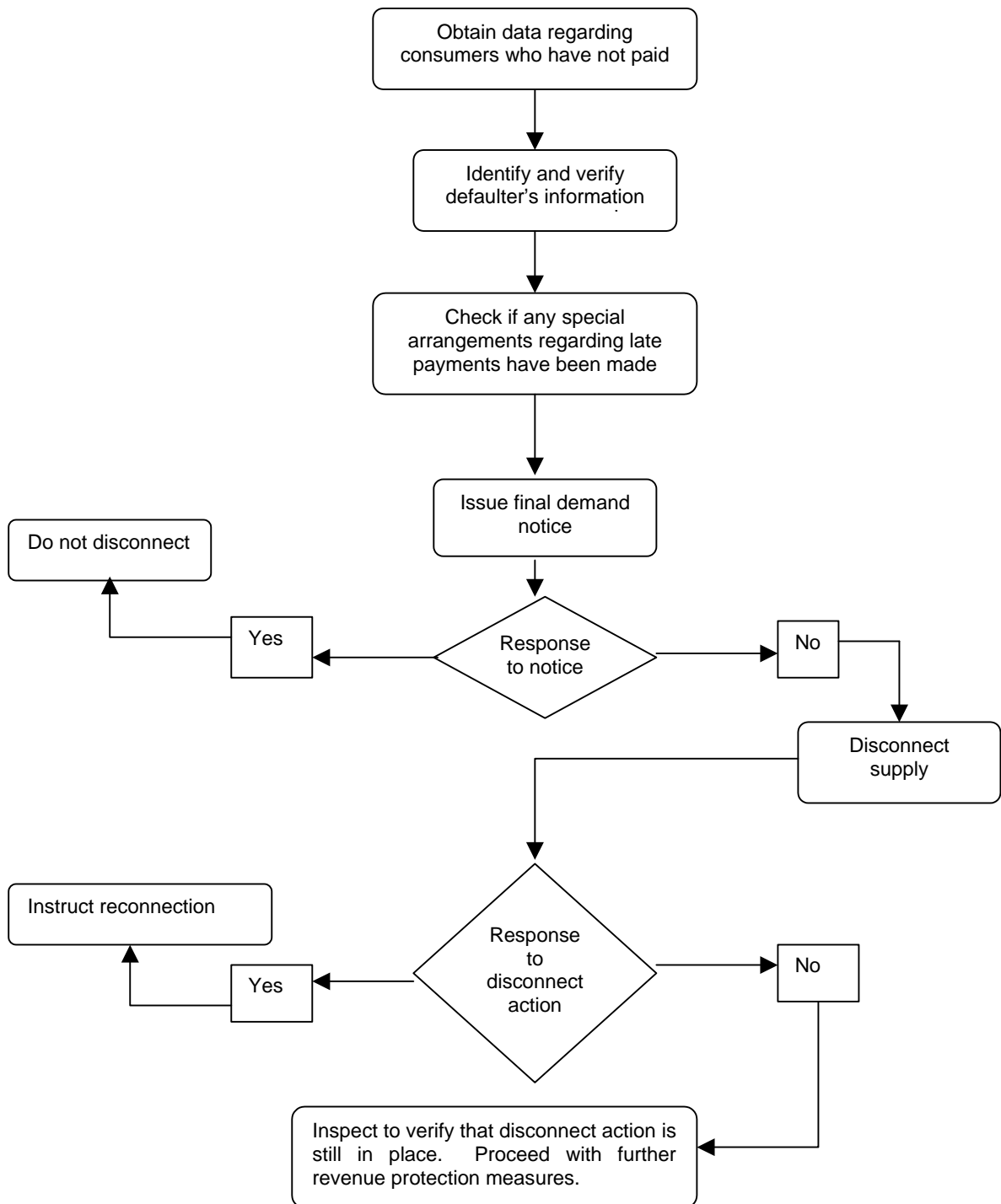


Figure 1 — Flow chart for the management of disconnections

## **Annex A** (informative)

### **An example of an emergency priority list (EPL)**

An EPL could prioritize interruptions as follows:

- a) **priority 1:** Interruptions at hospitals, clinics and emergency operating rooms, and interruptions at dwellings where life-support machines are used;
- b) **priority 2:** Area interruptions (i.e. more than one customer affected) where most of the customers are industrial customers;
- c) **priority 3:** Interruptions that affect large industrial customers (where there are consumptions that exceed 10 MVA);
- d) **priority 4:** Area interruptions where most of the customers are residential customers;
- e) **priority 5:** Interruptions that affect individual industrial customers; and
- f) **priority 6:** Interruptions that affect rural customers.

## **Annex B** (informative)

### **Guidelines on managing telephone centres**

#### **B.1 Operating principles**

The following operating principles apply:

- a) employees should receive comprehensive training before going live;
- b) continuous, ongoing employee training should be provided;
- c) most employees are generalists and handle all types of calls;
- d) the generalist employees are backed up by one or more specialists;
- e) one national telephone number (preferably toll free) should be available for customer service contact;
- f) disaster recovery plans to cover all eventualities should be in place to limit potential downtime to an absolute minimum;
- g) the use of sophisticated forward planning techniques to determine optimum staffing levels that will cater for forecasted business cycles;
- h) minimal paperwork;
- i) information is available and communicated to other areas electronically;
- j) the use of technology such as automated call distribution, computer and telephone integration and interactive voice response to enhance customer responsiveness and telephone centre efficiency;

- k) telephone centres should have very strong information and communication links with the dispatching function;
- l) customer contact interaction details should be available on the telephone centre's database to customer service managers and to service interface people on a log-in basis;
- m) some service people (for example service representatives) could use the telephone centre as a back-up resource (helpline);
- n) standard greetings and scripting will provide consistency of standards and image; and
- o) the on-site information technology and human resource support and operations managers of the local telephone centre are represented on the divisional management team.

## B.2 Policies

Telephone centre employees are

- a) authorized according to their competencies to provide specific categories of service to customers,
- b) authorized to negotiate and extend credit to customers within specified limits,
- c) authorized to accept credit card payments and arrange automatic clearing bureau facilities on customer request,
- d) required to adhere to generally accepted accounting practice and audit/segregation-of-duties requirements in respect of the payment receiving portion of their role,
- e) authorized to accept telephonic meter readings from customers,
- f) authorized to add, change and delete customer personal details within defined parameters,
- g) authorized to add, change and delete customer interaction history within defined parameters,
- h) authorized to add, change and delete customer agreement details within defined parameters,
- i) authorized to commit licensees to perform within defined performance standards, and
- j) to ensure that all customer interaction details will be fully updated on the system before closing or suspending the contact.

NOTE Changing of customer details should only be done with the customer's approval.

## Bibliography

NRS 048-4, *Electricity supply – Quality of supply – Part 4: Application guidelines for utilities.*