March 2005

Quality of Service Regulatory Instructions and Guidance version 5

Executive Summary

This document is version 5 of the Quality of Service Regulatory Instructions and Guidance (rigs). It supersedes all earlier drafts of the rigs that have been issued. Version 5 of the rigs will take effect on and from 1 April 2005. In drawing up this version of the revised rigs, Ofgem has considered responses to the earlier draft versions.

Ofgem is proposing to make a number of changes to the rigs to:

- improve their style and presentation;
- provide further guidance in a number of areas where the distribution businesses are seeking further clarification;
- introduce additional disaggregated reporting for the number and duration of interruptions;
- simplify the reporting requirements for the speed of telephone response;
- introduce 2 new connections outputs to replace the existing overall standards of performance requirements; and
- introduce environmental reporting and refine the approach to medium-term performance reporting

Copies of this document are available on Ofgem's website (www.ofgem.gov.uk)

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1. Introduction

1.1 Version 5 of the Quality of Service Regulatory Instructions and Guidance (rigs) has been produced in accordance with standard condition 49 of the distribution licence (SLC 49). The purpose of the rigs is to provide a framework for the collection and provision of accurate and consistent information from the electricity distribution network operators (DNOs). This is important as it reduces the level of regulatory uncertainty that may otherwise exist. The benefits of improvements in the quality of information should be realised by all those with an interest in the regulation of DNOs, including customers and their representatives, Ofgem and the DNOs themselves.

1.2 The rigs include definitions and related instructions and guidance for collating "specified information" as defined in SLC 49. For the avoidance of doubt this rigs document is subordinate to the licence conditions. Consequently, the rigs will not change any definitions or obligations contained within the distribution licence and in the event of any dispute the licence conditions will always take precedence.

1.3 Any future changes to the rigs will comply with the change process set out in paragraphs 10 to 14 of the revised version of SLC 49 which, subject to consultation, will be implemented on 1 April 2005. Ofgem recognises that any significant changes to the scope or form of the information that it requests from the DNOs could not only increase the regulatory burden but also the perception of regulatory risk. It is Ofgem's intention to change the scope and form of the information it requests as infrequently as possible, consistent with Ofgem's carrying out of its duties under the Electricity Act 1989 and the Utilities Act 2000.

Structure of this document

1.4 The rigs cover eight main areas:

- definitions, instructions and guidance for collating information on:

- the number of customers interrupted, the duration of interruptions to supply and the number of customers interrupted by short interruptions – (Section 2);
- assessing the speed and quality of telephone response – (Section 3);
- monitoring connections performance - (section 4);
- monitoring medium-term performance – (Section 5);and
- environmental reporting – (Section 6);

- specification of the required levels of accuracy for reporting – Ofgem has specified minimum levels of accuracy that must be achieved for the reporting of the number of customers interrupted and the duration of interruptions to supply (Section 7);
- reporting arrangements – an outline of the reporting arrangements under SLC 49 (Section 8);
- an outline of the purpose for which specified information will be used – Appendix 1;
- formulae for the purposes of reporting – Appendix 2;
- other formulae – Appendix 3;
- definition of voltage boundaries – Appendix 4; and
- auditing and estimating interruption reporting accuracy – Appendix 5.

2. Definitions, instructions and guidance for reporting the number and duration of interruptions to supply

Introduction

2.1 This section sets out definitions and related instructions and guidance for the reporting of:

- the number of customers interrupted (CIs);
- the duration of interruptions to supply (CMLs);
- the number of customers interrupted by short interruptions (SIs); and
- the number of customers re-interrupted (RIs).

Information sources

2.2 Most DNOs use the National Fault and Interruption Reporting Scheme (NaFIRS) which is administered by the Energy Networks Association (ENA) - or an equivalent system - to collect information on the number of customers interrupted and duration of interruptions to supply. For the purpose of reporting under SLC 49, DNOs are instructed to use the definitions contained in this guidance.

Definitions of output measures

2.3 Definitions to be applied for reporting on the number of customers interrupted and duration of interruptions to supply, the number of customers interrupted by short interruptions and the number of customers re-interrupted are shown below. Further definitions, instructions and guidance and output reporting requirements are set out in paragraphs 2.4 to 2. 86.

- **the number of customers interrupted per year (CI)** – the number of customers whose supplies have been interrupted per 100 customers per year over all incidents, where an interruption of supply lasts for three minutes or longer, excluding re-interruptions to the supply of customers

previously interrupted during the same incident (see below for further details). It is calculated as:

$$\frac{\text{The sum of the number of customers interrupted for all incidents} * 100}{\text{The total number of customers}}$$

- **the duration of interruptions to supply per year (CML)** - average customer minutes lost per customer per year, where an interruption of supply to customer(s) lasts for three minutes or longer, calculated as:

$$\frac{\text{The sum of the customer minutes lost for all restoration stages for all incidents}}{\text{The total number of customers}}$$

- **the number of customers interrupted by short interruptions per year (SI)** –the number of customers whose supplies have been interrupted by a short interruption per 100 customers per year over all short interruptions, where the initial interruption to supply is restored in less than three minutes, calculated as:

$$\frac{\text{The sum of the number of customers interrupted by short interruptions} * 100}{\text{The total number of customers}}$$

- **the number of customers re-interrupted per year (RI)** – the number of customers whose supplies have been re-interrupted per 100 customers per year, calculated as:

$$\frac{\text{The sum of the number of customers re - interrupted} * 100}{\text{The total number of customers}}$$

Further definitions

Distribution system

2.4 "Distribution system" is defined in standard condition 1 of the distribution licence. Transmission activities in Scotland encompass 132 kV electric lines and

plant; therefore references to reporting on 132 kV in the rigs are not applicable to the two Scottish DNOs[1].

SLC 49 voltages/systems

2.5 Incidents at the following voltage levels should be included in reporting under SLC 49 following these instructions and guidance:

- 132 kV systems;
- extra high voltage systems (i.e. all voltages above 20kV up to but excluding 132 kV);
- HV systems (i.e. all voltages of 1kV and above up to and including 20kV);
- LV systems (i.e. voltages below 1 kV); and
- LV services.

2.6 The upper and lower boundaries associated with these voltages are defined in Appendix 4.

2.7 It should be noted that incidents on meters, time-switches and cut-outs, including cut-out fuse operations, are excluded from reporting under SLC 49 even where such incidents have resulted in the operation of a fuse at the DNO's substation, and the definition of LV services therefore excludes this equipment.

Higher voltages

2.8 For the purposes of reporting under SLC 49, higher voltages include HV, EHV and 132 kV networks[2].

Customer

2.9 For the purposes of SLC 49, special condition C2 and the Quality of Service rigs only, customer means in relation to any energised or de-energised entry or exit point to the DNO's distribution system, where metering equipment is used for

[1] SP Distribution Limited, Scottish Hydro-Electric Power Distribution Limited
[2] See Appendix 4 – SLC 49 Voltage boundaries

the purpose of calculating charges for electricity consumption, the person who is providing or is deemed to be providing a supply of electricity through that entry point, or the person who is taking or is deemed to be taking a supply of electricity through that exit point.

2.10 Customers should be identified from Metering Point Administration Numbers (MPANs)[3], such that an individual customer is identified at each connection point.

Total number of customers

2.11 The total number of customers is defined as the total number of customers whose supplies are connected to the DNO's distribution network as at 30 September in the relevant reporting year. Guidance on counting customers is set out in paragraphs 2.28 to 2.30.

Total number of new customers

2.12 New customers – Total number of new customers whose supplies have been connected between 1 October in the previous year and 30 September in the relevant year.

Total number of disconnected customers

2.13 Disconnected customers – Total number of customers whose supplies have been disconnected between 1 October in the previous year and 30 September in the relevant year.

2.14 New and disconnected customers should be identified from MPANs such that the number of new and disconnected customers corresponds with the number of new and disconnected connection points on the distribution system.

[3] The Master Registration Agreement (MRA) is an agreement that sets out, amongst other things, the terms for metering point administration services and the requirements for the change of supplier process. Schedule 5 of the MRA sets out the form in which a supplier is obliged to print the supply number (attributed to a metering point) on a customer's bill. Within the industry the supply number is known as the metering point administration number (MPAN).

Incident

2.15 Any occurrence on the DNO's distribution system or other connected distributed generation, transmission or distribution system, which:

- results in an interruption of supply to customer(s) for three minutes or longer; or
- prevents a circuit or item of equipment from carrying normal load current or being able to withstand "through fault current" for three minutes or longer.

Unplanned incident on the distribution system

2.16 Any incident arising on the licensee's distribution system, where statutory notification[4] has not been given to all customers affected at least 48 hours before the commencement of the earliest interruption (or such notice period of less than 48 hours where this has been agreed with the customer(s) involved).

Pre-arranged incident

2.17 Any incident arising from the pre-arranged isolation of any circuit or item of equipment energised at power system voltage that results in loss of supply and where statutory notification has been given to all customers affected at least 48 hours before the commencement of the earliest interruption (or such notice period of less than 48 hours where this has been agreed with the customer(s) involved).

Incident on other systems

2.18 Any incident arising on other connected electricity systems which leads to the interruption of supply to the customers of the licensee, including:

- National Grid Company (NGC) or transmission companies (in Scotland);
- distributed generators; and
- any other connected systems – which should be identified.

[4] Regulation 12 of the Electricity (Standards of Performance) Regulations 2005

Non-damage incident

2.19 A non-damage incident is defined as any unplanned incident where supply can be restored from the original source by network switching and without the need for the repair of equipment. For example:

- the remote or manual operation of a pole mounted auto recloser that had previously completed its duty cycle and locked out, to restore supplies, is regarded as network switching;
- the changing of a blown LV fuse in an LV feeder pillar is regarded as network switching and is therefore not considered to be a repair of equipment; and
- the removal of trees from an otherwise healthy overhead line is not considered to be the repair of equipment.

Damage incident

2.20 A damage incident is defined as any unplanned incident where it is necessary to affect the repair of equipment. For example, the changing of a damaged insulator is considered to be a repair.

Interruption

2.21 An interruption is defined as the loss of supply of electricity to one or more customers due to an incident but excluding voltage quality and frequency abnormalities, such as dips, spikes or harmonics.

Short interruption

2.22 Short interruptions are defined as the loss of supply of electricity to one or more customers due to automatic, manual or remote control operation of switchgear or fusegear on the distribution system or other systems, upstream of the customers interrupted, where supply is restored in less than three minutes. (Note an initial loss of supply of electricity for less than 3 minutes should be treated as a short interruption rather than an interruption.)

Re-interruption

2.23 A re-interruption is defined as the loss of supply of electricity to one or more customers, for a period of 3 minutes or longer, where those same customers have experienced an interruption during previous restoration stages of the same incident.

Restoration stage

2.24 A restoration stage is defined as a stage of an incident, at the end of which supply to some or all customer(s) is restored and/or a circuit or part of a circuit is re-energised, excluding any restoration/re-energisation which is immediately followed by a circuit trip.

Temporary supply arrangement

2.25 A temporary supply arrangement is the use of temporary connections, temporary disconnections or mobile generation in order to provide temporary restoration of supplies during an incident.

Temporary connection

2.26 A temporary connection is a connection (made without using normal switching devices) which is not to become a permanent feature of the distribution system, but which is used solely to provide a temporary restoration of supplies during an incident.

Temporary disconnection

2.27 A temporary disconnection is a deliberate break in the continuity of a circuit, which is not to become a permanent feature of the distribution system, but is used solely to facilitate the temporary restoration of supplies during an incident.

Instructions and guidance

Customers

2.28 Only one customer should be identified at each connection point. This means that multiple (or secondary) MPANs which arise due to the type of "tariff" (or

equivalent) and/or metering arrangements, but are associated with a single connection point, should not be counted.

2.29 In some cases (e.g. flats), the connection point may be from the distribution system to wiring owned by a landlord or a facilities manager. In such cases, individual customers supplied by such wiring are classed as customers of the distribution system where they are identifiable from MPANs.

2.30 Any changes to the method used by DNOs to identify customers from MPANs shall be agreed in advance with Ofgem. Ofgem will want to ensure that, as far as possible, DNOs use a consistent method for identifying customers.

Incidents

2.31 Occurrences classed as an incident lasting three minutes or longer include:

- any physical break in the circuit upstream of the customers interrupted (or circuit affected), due to automatic or manual operation of switchgear or fusegear, or due to any other open circuit condition;
- the unprogrammed isolation of any circuit or item of equipment, energised at power system voltage, which has not been classified as a pre-arranged incident;
- failures of non-system equipment (e.g. pilot cables, oil and gas alarms, voltage control equipment etc) which result in the disconnection of equipment energised at power system voltage;
- incorrect operations of protection equipment which result in the disconnection of a circuit energised at power system voltage;
- failure of protection equipment to operate. This includes incidents where the main protection fails to operate and a fault clearance is initiated by back-up protection or protection at another point on the network;
- the loss of infeed from other connected systems, including those owned by NGC/transmission companies (in Scotland), other distribution companies and distributed generators; and

- the pre-arranged isolation of any circuit or item of equipment energised at power system voltage that results in loss of supply.

2.32 Occurrences that would not lead to an incident are as follows:

- maintenance outages and malfunctions of non-system equipment (e.g. pilot cables, etc) which do not result in the disconnection of a circuit or item of equipment energised at power system voltage;

- failures and overloads on customers' equipment or another connected system, which are cleared by the correct operation of the DNO's protection and which do not interrupt the supply to other customers of the DNO; and

- pre-arranged works affecting customers for the purposes of meter changes, voltage standardisation and work on service cables and distributors' fuses.

2.33 Any additional incidents which affect part of the network and/or customers already affected by an incident must also be reported as additional incidents. Two or more incidents may then be active concurrently and the number and duration of interruptions and the number of re-interruptions should be calculated accordingly.

Pre-arranged incidents

2.34 A pre-arranged incident which requires a number of switching operations involving an interruption to supply to customers should be treated as a single incident, provided that the outage start time is within the period stated on the notification provided to the customer(s). Whether or not the outage restoration time is outside the period stated on the notification provided to the customer(s), the full length of the outage should be recorded as part of the planned incident. A record should also be kept of the times notified to the customer(s) and the actual interruption times. Where the outage start time is outside the period stated on the notification provided to the customer(s), the interruption of supply to the customer(s) should be recorded as an unplanned incident.

Short interruptions

2.35 In the case of multi-shot reclosing schemes, only one short interruption is to be counted where the successful restoration is achieved by a sequence of multiple operations in less than three minutes, where these are identifiable. Where the sequence of operations is not identifiable, a simple count of all operations of automatic reclosing devices could be used, excluding those operations recorded elsewhere, e.g. those associated with other incidents or routine switching.

2.36 The number of customers interrupted should be identified in the same way as for incidents (i.e. those situations where customers are off supply for three minutes or longer). If a DNO uses periodic counts of recloser operations to calculate the number of short interruptions, the number of customers interrupted will be based on an estimate of those customers who would have been interrupted. The DNO should base this estimate on the assumption that the circuit affected was configured normally, unless the DNO has robust information that there were abnormal feeding arrangements in place at the time.

2.37 The dates and times of short interruptions are not required. Where short interruptions are identified from a periodic count of circuit breaker operations, the counters should be read annually between 1 January and 31 March to ensure a reasonable approximation to a 12-month total.

Interruption sequences

2.38 An incident may include both a loss of supply of less than 3 minutes' duration and a loss of supply of 3 minutes or longer. Under such circumstances, where the loss of supply of less than 3 minutes' duration occurs first, it should be reported as a short interruption. Where an interruption lasts for 3 minutes or longer, further losses of supply of less than 3 minutes' duration during the course of the same incident should not be recorded either as part of the incident or as a short interruption.

2.39 In determining interruption sequences above, restorations of less than 3 minutes should be ignored, i.e. the interruption sequence would be determined as if there had been no such restoration. For example, where a customer is interrupted for 2 minutes, restored for 2 minutes, then interrupted for 30 minutes

and subsequently restored for 3 minutes or more, the duration of the interruption would be 34 minutes.

Restoration stages

2.40 Where a customer's supply is restored for a period of less than three minutes, the calculation of the duration of interruptions to supply should ignore the time for which customers' supplies were restored, i.e. the minutes for which the customers are restored will be included in the count of minutes lost as if there were no restoration.

2.41 There should be no limit to the number of restoration stages for an incident.

Incident start

2.42 The incident start time is the earlier of the date and time at which:

- the first report is received of a loss of supply or other abnormality which prevents a circuit or other item of equipment from carrying normal load current or being able to withstand "through fault current" for three minutes or longer; or
- the relevant circuit is automatically, deliberately or otherwise disconnected.

Report received time

2.43 The report received time is the earliest time that a DNO became aware of a loss of supply, an abnormality or a suspected abnormality. It shall be the earliest of the date and time at which:

- a customer (or other person) first contacted the DNO to advise of no-supply, an abnormality or suspected abnormality;
- an alarm was received by the DNO indicating a loss of supply, abnormality or suspected abnormality; or
- a DNO employee or agent identified the existence of a loss of supply, abnormality or suspected abnormality.

2.44 For reports that are associated with a loss of supply or other abnormality which prevents a circuit or other item of equipment from carrying normal load current or being able to withstand "through fault current" for three minutes or longer, the report received time will coincide with the incident start time. For other reports the report received time may precede the incident start time, for example:

- when deliberate disconnection is undertaken some time after the report is received; or
- when some faults are held by arc suppression.

2.45 In respect of loss of supply, some DNOs wait for a second report before initiating action. However, for the purposes of reporting under SLC 49 the incident start time must be based on the time of the first report received. The date and time of an incident is the time at which the DNO first becomes aware of the incident by any means.

Incident completion

2.46 The determination of when an incident is considered complete is dependent on whether or not a temporary supply arrangement[5] has been used to restore supplies.

2.47 Where a temporary supply arrangement has not been used to restore supplies, an incident is considered complete when supplies have been restored to all customers involved in the incident for a period of at least 3 hours. This does not require the restoration of the normal network configuration and open points.

2.48 Where a temporary supply arrangement has been used to restore supplies, an incident is considered complete when supplies have been restored to all customers involved in the incident for a period of at least 18 hours.

2.49 In both of the above cases, if there is a further loss of supply due to a related occurrence, e.g. the repetition of the original occurrence or the failure of the temporary supply arrangement, to some or all of the same customers before incident completion, these should be counted as re-interruptions.

[5] Defined in paragraph 2.25

2.50 In both of the above cases, if there is a further loss of supply due to an unrelated occurrence, e.g. an incident on an adjacent circuit, to some or all of the same customers before incident completion, then this should be treated as a separate incident and the losses of supply should be counted as interruptions.

2.51 In both of the above cases and for any reason, if there is a further loss of supply to some or all of the same customers after incident completion, this should be treated as a separate incident and the losses of supply should be treated as interruptions.

2.52 Where an incident start time and completion time/date span two reporting years, the incident should be allocated to the year in which it started.

Start of a restoration stage

2.53 The start of a restoration stage is the date and time at which supply to customer(s) is interrupted and/or a circuit or part of a circuit is de-energised.

End of a restoration stage

2.54 The end of a restoration stage is the date and time at which customer(s) have their supply restored and/or a circuit or part of a circuit is re-energised.

Customers involved in a restoration stage

2.55 The customers involved in a restoration stage are defined as the customers connected to that part of the DNO's distribution network restored in the restoration stage, including restorations from mobile generators and temporary connections.

2.56 The number of customers interrupted for single-phase and two-phase LV incidents may be calculated on a pro rata basis, i.e. 1/3 or 2/3 of the total number of customers connected to the LV circuit, or part of circuit, affected. Customers with a three-phase LV supply (where these can be identified) are considered to be interrupted when supply is interrupted to one or more of the three phases. Individual customer phase connections do not need to be identified for the purpose of reporting under SLC 49. It might be helpful, in

terms of the audit process, if DNOs recorded the number and phases of fuses that have operated in the event of an incident on the LV system.

2.57 For HV incidents, in the interest of simplicity and consistent reporting, if one phase of a three-phase circuit is disconnected it should be considered that two-thirds of customers connected downstream of the point of disconnection had their supplies interrupted.

2.58 Where a connectivity model is in place it should be used consistently to derive the number of customers interrupted on a particular element (e.g. LV feeder) of the network modelled. Where the section of network involved is a subset of a modelled network element (e.g. LV service), the number of customers interrupted may be derived from records or from information available on site.

2.59 Customers involved for HV, EHV and 132 kV should take account of the real-time changes to 132 kV/EHV/HV network configuration during restoration, which may be identified from a connectivity model.

2.60 Customers involved in each restoration stage may be identified from a connectivity model in which customer information is individually linked with the appropriate section of network to which they are connected.

2.61 The date and time of interruption and the date and time of restoration must be recorded for each restoration stage. The numbers of customers involved and the elapsed time in each restoration stage will be used to calculate the number of customers interrupted and duration of interruptions to supply.

Clock stopping

2.62 Where access to customers' premises necessary to restore supplies is not available, the DNO should stop the clock for the period where access is not available. The clock should be restarted as soon as access is available. The DNO should keep appropriate audit records of the inability to gain access and the associated delay.

2.63 Where a customer requests that restoration be delayed, the DNO should stop the clock for the period requested by the customer. The clock should be restarted at the time agreed with the customer that the delay in restoration would

end. The DNO should keep appropriate audit records of the customer request and agreed delay.

2.64 Where access necessary to restore supplies is explicitly prevented by the emergency services, government authorities or other utilities (e.g. gas and water) (and supplies cannot be restored through other means such as remote switching or network reconfiguration and the use of temporary generation is not economic), the DNO should stop the clock for the period where access is denied. The DNO must keep auditable records detailing orders given by the emergency services or government authorities and the times of the orders. The clock must be restarted as soon as access is available.

Updating the connectivity model

2.65 It is important that the connectivity model is kept up to date. The accuracy with which the number and duration of interruptions to supply are reported is, in part, determined by the frequency with which the connectivity model is updated. A reasonable timeframe for updating the connectivity model is likely to be within 14 days of the DNO being formally notified of any permanent changes to the network or customer connections. (For example, a change expected to be in place for at least 28 consecutive days may be regarded as a permanent change). In addition, the numbers of customers in the model could be reconciled with the total number of connected customers on a monthly basis.

Output reporting requirements

Customers

2.66 DNOs are required to report information on the number of customers according to the following categories:

- total number of customers;
- total number of new customers; and
- total number of disconnected customers.

Disaggregation of incidents

2.67 It is necessary to collect information on the number of customers interrupted and duration of interruptions to supply at a disaggregated level. This will help in comparing performance across DNOs, setting performance targets and determining appropriate audit samples, and could be used for making adjustments within the incentive scheme. There are five types of mutually exclusive disaggregation required. These are:

- by incident and restoration stage;
- by source, voltage level and main equipment involved (MEI);
- by duration band (both pre-arranged and unplanned CI)
- by frequency band (higher voltage unplanned CI only); and
- by HV circuit.

Disaggregation by both incident and restoration stage

2.68 In addition to reporting on the effect on customers of all incidents arising on the distribution system, the number of customers interrupted and duration of interruptions to supply should be reported separately by incident and restoration stage.

Disaggregation by "source", voltage level and main equipment involved (MEI)

2.69 In addition to the above the number of customers interrupted and duration of interruptions to supply arising from the following categories should be separately identified:

- **unplanned incidents on the distribution system** in total and by the following classifications:
  - 132 kV;
  - 66 kV (EHV);
  - 33 kV (EHV);

- 22kV (EHV);
- 20 kV (HV);
- 11 kV (HV);
- 1kV to 6.6 kV (HV);
- LV overhead mains;
- LV underground mains;
- LV switchgear & fusegear;
- LV services (excluding incidents on cut-outs and cut-out fuses); and
- LV other.

Incidents at other HV voltages should be allocated to the nearest HV voltage classification listed above.

- **pre–arranged incidents on the distribution system** in total by the following classifications:
  - EHV;
  - HV pole-mounted or overhead;
  - HV ground-mounted or underground;
  - LV pole-mounted or overhead; and
  - LV ground-mounted or underground.
- incidents on the systems of NGC or the transmission companies (in Scotland);
- incidents on the systems of distributed generators; and
- incidents on any other connected systems – which should be identified.

Disaggregation by duration band (pre-arranged and unplanned CI only)

2.70 DNOs are required to separately disaggregate both the pre-arranged and unplanned number of customers interrupted (including all voltage levels) by duration band in order to provide a better understanding of how customer minutes lost are made up and of DNOs' effectiveness in restoring customers' supplies following an interruption.

2.71 DNOs should report separately both the pre-arranged and unplanned number of customers interrupted (excluding re-interruptions and re-interruptions only) by the following duration bands:

- 3 minutes up to but excluding 1 hour;
- 1 hour up to but excluding 2 hours;
- 2 hours up to but excluding 3 hours;
- 3 hours up to but excluding 6 hours;
- 6 hours up to but excluding 12 hours etc;

in 6-hour bands up to and including the longest time any customers have been recorded as being off supply. Time bands with no customers interrupted should be reported with a zero count.

Disaggregation by frequency band (higher voltage unplanned CI only)

2.72 DNOs should report the unplanned number of customers interrupted (excluding re-interruptions) by frequency band starting with customers experiencing zero higher voltage interruptions and rising in single increments up to customers experiencing 10 higher voltage interruptions. The DNO should also identify the total number of customers experiencing more than 10 higher voltage interruptions and the largest number of higher voltage interruptions experienced by any customer. (Higher voltage interruptions include HV, EHV and 132 kV interruptions.)

Disaggregation by HV circuit

2.73 The number of unplanned incidents, customers interrupted and duration of interruptions to supply arising on HV systems need to be reported by HV circuit to support work on comparing quality of supply performance.

2.74 For each HV circuit DNOs should report the following circuit characteristics and performance information:

- the unique circuit identifier (where possible this should be the same as for previous years so that comparisons can be made over time);
- the voltage level (e.g. 6.6 kV, 11 kV, 20 kV);
- the number of connected customers (on 31 March);
- the length of overhead line in kilometres (on 31 March);
- the length of underground cable in kilometres (on 31 March);
- the number of incidents affecting the circuit;
- the total number of customer minutes lost; and
- the total number of customers interrupted (excluding re-interruptions).

2.75 Two versions of the HV circuit information should be provided:

a. containing all HV incidents and associated customers interrupted and customer minutes lost;

b. excluding HV incidents, customers interrupted and customer minutes lost for the duration of events for which exemptions have been requested and which meet the criteria set out in special condition C2 of the distribution licence. The approach to treating such events must be agreed with Ofgem in advance of the data being provided. DNOs should provide summary data for the events which have been excluded including: the number of days'

performance which has been removed, the number of incidents, customers interrupted and customer minutes lost. [6]

2.76 DNOs should also provide total number of incidents, total number of customers interrupted and total number of customer minutes lost for any incidents that are not attributable to specific circuits. These should be grouped into one of the two following categories (see reporting template for more detail):

- changes to HV topology or misallocation (e.g. circuit removed during the reporting period); and
- loss of HV circuit infeed (e.g. a fault on an 11 kV bus-bar).

2.77 In addition to the above, for each loss of HV circuit infeed, the number of customers interrupted and number of customer minutes lost for each incident should be provided.

2.78 The incidents, total number of customers interrupted and total number of customer minutes lost for the disaggregated reporting for HV circuits plus unattributable HV performance should reconcile with the total HV performance.

Definition of a HV circuit

2.79 The DNOs have submitted their existing mix of circuit types to Ofgem. Any change in the definition of "HV circuits" to be used when reporting performance on a disaggregated circuit-by-circuit basis should be agreed with Ofgem in advance of the data being provided.

Circuits with non-zero length and non-zero connected customers

2.80 These are valid circuits and should be included in the HV circuit dataset submitted by DNOs.

Circuits with non-zero length and zero connected customers

2.81 These are valid circuits that would normally be used to provide alternative supplies to one or more customers. These circuits should be included in the HV

[6] The performance figures excluding exceptional events plus the summary data for those events should reconcile with the information containing all incidents requested in paragraph 2.75a.

dataset submitted by DNOs. However, customers interrupted and customer minutes lost per customer would be inconsistent with zero connected customers. Therefore it will be necessary for DNOs to re-attribute any incidents, customers interrupted and customer minutes lost as if the network were normally configured.

Circuits with zero length and non-zero connected customers

2.82 This classification of circuits is present for two reasons;

- a circuit exists but there is actually no circuit length, e.g. the exit point of a customer's connection is the circuit breaker; or
- a circuit exists and there is actual circuit length that is not being reported by the functionality of the mapping system or GIS.

2.83 In both cases, these are valid circuits that should be included in the HV circuit dataset submitted by DNOs. However, in order to include such circuits in the dataset, a nominal circuit length of 100 metres should be attributed to each of these circuits.

Circuits with zero length and zero connected customers

2.84 These HV circuits are not valid and should not be included in the HV circuit dataset submitted by DNOs. Where appropriate any incidents, customers interrupted and customer minutes lost should be re-attributed as if the network were normally configured.

Short interruptions

2.85 For the purpose of reporting under SLC 49, DNOs are required to report the total number of short interruptions and disaggregated number of short interruptions by the following four causes:

- due to the automatic operation of distribution network switchgear where the supplies of some or all of the customers involved are successfully restored by automatic switching within less than three minutes of the first interruption;

- due to the automatic operation of distribution network switchgear where the supplies of some or all of the customers involved are successfully restored by manual or remote control switching within less than three minutes of the first interruption. This definition includes only the initial restoration. Further short interruptions during subsequent stages of fault sectionalising are not to be reported;

- due to the manual or remote operation of distribution network switchgear for reasons such as deliberate disconnection for operational or emergency reasons; and

- due to the operation of switchgear on the networks of NGC/transmission companies (in Scotland) or other connected systems and distributed generators.

2.86 Short interruptions do not need to be disaggregated by voltage or by HV circuit. Where DNOs make significant use of automatic reclosing devices and automatic switching at the LV level, the number of short interruptions at this voltage level should be included in the appropriate short interruption categories identified above.

3. Definitions, instructions and guidance for reporting on speed and quality of telephone response

Introduction

3.1 This section sets out definitions and related instructions and guidance to be used for the reporting of:

- the speed of telephone response and other related information; and
- the information which Ofgem, and its appointed consultants, require for undertaking a survey of customers' views of the response that they receive when they contact the DNO by telephone.

Speed of telephone response

Definition of the specified contact lines

3.2 It is necessary to specify which telephone calls are relevant for measuring the speed of telephone response. All telephone calls received to the following lines should be included:

- to the "freephone power outage telephone number" (and its equivalents) operated by the DNO or by its appointed agents (or contractors);
- to the security and safety enquiry service telephone number (if different from the above) operated by the DNO or by its appointed agents (or contractors); and
- to contractors and/or agents of the DNO who act as an overflow or crisis management facility during peak periods.

3.3 To the extent that DNOs provide a different emergency telephone number as required by the Electricity Safety, Quality and Continuity Regulations (ESQCR)[7], this is not included in the definition of specified contact lines.

[7] The Electricity Safety, Quality and Continuity Regulations 2002, No 2665

Definitions of the required information

3.4 DNOs are asked to report performance on the speed of telephone response by an agent once a customer has decided to speak to an agent. They are also required to report performance under a number of supporting key measures. These are set out in table A1.1 below.

Table A1.1 Explanation of key measures for the reporting template

Key Measure	Definition
KM1	Total calls on the specified lines
KM2	Total calls answered by an automated message providing fault details (excluding an IVR/group announcement providing details of alternative contact telephone numbers if the call is not a powerloss call)
KM3	Total calls answered by an agent
KM4	Mean time taken for response by an agent
KM5	Total number of unsuccessful calls, comprising: (a) Total calls not reaching the specified lines (b) Total calls terminated by the DNO during the IVR/group announcement (c) Total calls not allowed into the queue or flushed from the queue (d) Total calls abandoned by the customer in the queue

- **Key Measure 1 – total calls on the specified lines.** Defined as the total number of incoming calls received on the specified lines. This includes those calls to the specified contact lines which do not enter those lines (for example calls receiving an engaged tone).

  Some or all of the specified contact lines may be operated by the DNOs' appointed agents or contractors. DNOs should obtain the necessary information from their agents or contractors on the total calls received on the specified lines. DNOs should also obtain the number of calls that are lost prior to entering the specified contact lines. This information is important to demonstrate the total number of customer calls on the specified lines.

- **Key Measure 2 – total calls answered by an automated message.** Defined as all calls routed to and answered by an automated fault message (excluding

an IVR/group announcement providing details of alternative contact telephone numbers if the call is not a powerloss call).

- **Key Measure 3 – total calls answered by an agent.** Defined as all calls that reach and are answered by an agent. This will include those customers that speak to an agent either by holding for an agent or by re-dialling on an alternative number.

- **Key Measure 4 – mean time taken for response by an agent.** Defined as the total time of all calls received to agents from when the customer hears a ringing tone to when the call is first answered by an agent, divided by the total number of calls answered by an agent.

  For those DNOs' telephony systems that require customers to wait for an agent following an automated message, the time taken is the time from when the customer enters the queue to speak to an agent after the message has finished to when the call is first answered by an agent.

  For those DNOs' telephony systems where customers are required to dial an alternative number to speak to an agent, the time taken is from when the customer hears the ringing tone of this line to when the call is first answered by an agent, irrespective of whether the DNO has an additional IVR or group announcement on the alternative number.

  Where the DNO has an additional IVR/group announcement on the alternative number, the length of this message and its content should be reported as part of the additional narrative accompanying the reported statistics.

- **Key Measure 5 – total number of unsuccessful calls.** Defined as the total number of calls that are terminated by the DNO (either by call flushing or call blocking or other similar method) once the customer has called the specified line. This includes calls that are terminated by the DNO in the IVR/group announcement. It also includes the total number of calls abandoned by customers in the queue.

Format of report

3.5 DNOs should report the required information within the relevant timescales in the following format:

Table A1.2 Reporting template

Key Measure	Definition	Total
KM1	Total calls on the specified lines	
KM2	Total calls answered by an automated message	
KM3	Total calls answered by an agent	
KM4	Mean time taken for response by an agent (seconds)	
KM5	Total number of unsuccessful calls, comprising: (a) Total calls not reaching the specified lines (b) Total calls terminated by the DNO during the IVR/group announcement (c) Total calls not allowed into the queue or flushed from the queue (d) Total calls abandoned by the customer in the queue	

3.6 DNOs are required to report the information to Ofgem on a monthly basis, fourteen days after the end of each calendar month.

3.7 In addition DNOs should also report on the configuration of their telephony systems annually at the end of each reporting year. DNOs should describe the number and configuration of incoming lines in the narrative and include a schematic diagram to explain how the telephony system is set up. DNOs should indicate on this diagram where each of the Key Measures is generated.

3.8 Where DNOs are unable to provide information on the Key Measures identified above, they should use the accompanying narrative to explain why this is the case and when they will be able to provide the relevant information.

Quality of telephone response

3.9 Ofgem intends to undertake a survey of the views of customers on the telephone response that they receive when they contact the DNO about powerloss or an emergency. To undertake this survey, Ofgem (and/or its appointed consultants)

will require information on the customers that have contacted the DNOs by telephone.

3.10 In order for Ofgem to undertake the survey, DNOs are required to provide the following information:

- the telephone number of each person (or customer contact) telephoning either of the following enquiry services/contact lines whose call is answered by a telephone operator (i.e. excluding automated responses) and whose call is about power loss or an emergency:
  - to the freephone power outage telephone number (and its equivalents) operated by the DNO or by its appointed agents (or contractors);
  - to the security and safety enquiry service telephone number (if different from the above) operated by the DNO or by its appointed agents (or contractors);
- together with, if known, the name of that person, whether that person is a domestic or non-domestic customer and when they telephoned the DNO.

Scope of customer survey

3.11 Ofgem is aware that some customer calls received on the specified lines are not in relation to power loss or an emergency (for example calls relating to supplier hub activities or other erroneous calls such as wrong numbers). These "out of scope" calls should not form part of the survey.

3.12 Where DNOs pre-filter the data sent to Ofgem (and/or its appointed agents), it is important that there is a robust and consistent system in place that extracts "out of scope" calls from the sample. DNOs must agree this process in writing with Ofgem by 1 April each year for the forthcoming year.

Customer contact

3.13 In some instances customer information may not be available to the DNO, including where:

- customers choose to withhold their telephone number, either verbally or by using a call line identification blocking service (i.e. by pressing 141 before contacting the DNO);
- customers refuse to partake in a survey; and
- where, in consultation with the Information Commissioner and DNOs, Ofgem considers that the provision of information would be a breach of the Data Protection Act.

3.14 In such circumstances the DNO is not required to submit the customer information outlined above.

4. Definitions, instructions and guidance for monitoring connections performance

Introduction

4.1 This section sets out definitions and related instructions and guidance for the reporting of:

- the percentage of domestic connections provided within 30 working days; and
- the percentage of non-domestic connections provided within 40 working days.

This reporting requirement is being introduced as the overall standards of performance for DNOs will cease to apply on 1 April 2005.

Information sources

4.2 DNOs should use the systems which have been developed for the overall standards of performance to report the connections output measures. For the purpose of reporting under SLC 49, DNOs must use the definitions contained in this document.

Definitions of output measures

4.3 Definitions to be applied for reporting on the percentage of domestic and business premises connected within 30 and 40 working days are set out below. Further definitions, instructions and guidance are provided in paragraphs 4.4 to 4.8.

- **the percentage of domestic connections provided within 30 working days per year –** the percentage of domestic connections provided within 30 working days of the "commencement date" per year. It covers connection requests where the supply only requires the installation of a service line. It is calculated as:

$$\frac{\text{The sum of the domestic connections provided within 30 working days} * 100}{\text{The sum of domestic connections provided}}$$

- **the percentage of non-domestic connections provided within 40 working days per year –** the percentage of non-domestic connections provided within 40 working days of the "commencement date" per year. It covers low voltage connection requests where the supply only requires the installation of a service line. It is calculated as:

$$\frac{\text{The sum of the non - domestic connections provided within 40 days} * 100}{\text{The sum of non - domestic connections provided}}$$

4.4 These measures should be reported on a quarterly basis as well as annually.

Further definitions and guidance

4.5 The "commencement date" is defined as the date on which all of the following conditions are first satisfied:

- the DNO has received a notice under section 16A(1) of the Act, or is otherwise notified of circumstances which will require the provision by the DNO of an electric line or electrical plant to make a connection;
- the person requiring the connection has made such payments as have been requested by the DNO or determined as payable by the Authority;
- the person requiring the connection has accepted the terms for the provision of an electric line or electrical plant proposed by the DNO or (if appropriate) determined by the Authority or is deemed to have accepted the terms by requesting the DNO in writing to proceed with the necessary works to provide the connection; and
- the consent of any third party to the installation of any necessary electric line or electrical plant has been obtained.

4.6 For the purposes of reporting the connections outputs in this section, "service line" means any low voltage electric line or electrical plant which enables electricity to be conveyed to or from single metered premises.

4.7 If a DNO splits the work to provide a connection into more than one job, the relevant date is when the complete service is operational.

4.8 The DNO will be not be deemed to have provided the connection outside the specified time (30 working days for domestic premises and 40 working days for non-domestic premises)[8] where the following circumstances apply:

- the person requiring the connection fails, having regard to any timetable proposed by the DNO, either to complete any works which he had agreed or is deemed to have agreed to carry out;
- the person requiring the connection fails to allow any access to his premises necessary to carry out the works; or
- the DNO reasonably believes that the maximum period for which the connection is required to be provided to the premises does not exceed three months; or
- the connection has been provided later at the express request of the customer.

[8] i.e. The DNOs should include these connections within the output measures defined in 4.3 as having been provided within the specified time.

5. Definitions, instructions and guidance for monitoring medium-term performance

Introduction

5.1 This section sets out definitions and related instructions and guidance for the reporting of information that Ofgem requires for monitoring the medium-term performance of distribution networks. Ofgem intends to collect information in three main areas, namely:

- an analysis of incidents and causes on electric lines and electrical plant and equipment;
- a supporting narrative provided by the DNOs; and
- activity-based information on the number of "units" replaced of an asset that has been identified as poorly performing and that is the subject of a replacement programme.

5.2 It is not Ofgem's intention to constrain DNOs' monitoring and reporting of medium-term performance (MTP). The framework for monitoring MTP will develop over time and, as such, DNOs could report at a more disaggregated level, and are encouraged to report additional indicators and/or narrative that they consider relevant.

5.3 At future price control reviews Ofgem will want to understand the impact of future expenditure (both capital and operating) on MTP.

5.4 The requirements for reporting on MTP are outlined below.

5.5 Three versions of the MTP information should be provided:

a. containing all incidents;

b. containing only those incidents which are attributable to one-off exceptional events for which exemptions have been requested and which meet the criteria set out in Annex C of special condition C2 of the distribution licence; and

c. containing only those incidents which are attributable to severe weather exceptional events for which exemptions have been requested and which meet the criteria set out in Annex B of special condition C2 of the distribution licence.

5.6 For the first year of reporting under rigs version 5 (2005/06), DNOs are required to provide historical information according to the classifications outlined below[9]. This should be provided for the years 2001/02, 2002/03, 2003/04 and 2004/05 as well as for the reporting year 2005/06 by 31 May 2006. This will ensure that there is a track record of information going forward for assessing reliability.

Definitions

Reliability

5.7 Reliability is defined as the number of reportable unplanned incidents affecting circuits and electrical plant expressed as the:

- number of incidents per unit length of circuit asset category (per 100 km);
- number of incidents per unit of electrical plant asset category (per 1000 units); and
- number of service incidents per 1000 customers connected at low voltage.

The reporting of asset quantities and number of unplanned incidents on those assets should be disaggregated in a consistent manner to allow the calculation of reliability rates.

Reporting requirements for 132 kV, 66 kV, 33 kV and 22 kV networks

Reporting of asset quantities

5.8 DNOs are required to report circuit length (in km) in commission for each of the 132 kV, 66 kV, 33 kV and 22 kV networks as shown below:

[9] For the years 2001/02, 2002/03, 2003/04 and 2004/05 data on the quantities of electrical plant in commission do not need to be supplied.

- total length of overhead lines;
- total length of underground cables (i.e. all power cables except submarine); and
- total length of submarine cables.

5.9 For each voltage level, the sum of the three asset categories above should equal the total network length at each voltage level.

5.10 DNOs are required to report the quantity of electrical plant in commission for each of the 132 kV, 66 kV, 33 kV and 22 kV networks, as shown below:

- circuit breakers (not an integral part of a ring main unit);
- all other switchgear;
- ground-mounted power transformers, reactors and regulators;
- ground-mounted earthing transformers, auxiliary transformers, earthing resistors, earthing reactors and arc suppression coils; and
- pole-mounted power transformers, reactors and regulators.

5.11 For each of the five asset categories, one total quantity should be reported.

Reporting the number of unplanned incidents

5.12 DNOs are required to report the number of damage, non-damage and total number of unplanned incidents that have occurred on each of the 132 kV, 66 kV, 33 kV and 22 kV networks. For each voltage level the number of damage, non-damage and total number of unplanned incidents should be disaggregated into the number of unplanned incidents occurring on:

- overhead lines;
- underground cables (all power cables except submarine);
- submarine cables;
- circuit breakers (not an integral part of a ring main unit);

- all other switchgear;
- ground-mounted power transformers, reactors and regulators;
- ground-mounted earthing transformers, auxiliary transformers, earthing resistors, earthing reactors and arc suppression coils;
- pole-mounted power transformers, reactors and regulators; and
- any other, unknown or unidentified asset categories.

5.13 It should be noted that at each voltage level, the number of damage, non-damage and total number of unplanned incidents should be the sum of the damage, non-damage and total unplanned incidents on the 9 asset categories above.

5.14 DNOs are also required to disaggregate and report, for each voltage level, the number of damage, non-damage and total number of unplanned incidents that occurred on overhead lines, underground cables and submarine cables, attributable to the following causes:

- lightning;
- rain, snow, sleet, blizzard, freezing fog, frost and ice;
- wind, gale, growing trees, falling trees and wind-borne materials;
- all others due to weather and environmental causes plus birds, animals and insects;
- company and manufacturer causes;
- third party; and
- any other causes (including unknown and unclassified).

5.15 At each voltage level the number of damage, non-damage and total number of unplanned incidents on overhead lines, underground cables and submarine cables should be the sum of the damage, non-damage and total unplanned incidents of the 7 causes above.

Reporting requirements for the high voltage network

5.16 For the purposes of medium-term reporting, there should be one voltage classification for high voltage, i.e. more than 1 kV up to and including 20 kV.

Reporting of asset quantities

5.17 DNOs are required to report circuit length (in km) in commission for the high voltage network as shown below:

- total length of overhead lines;
- total length of underground cables (i.e. all power cables except submarine); and
- total length of submarine cables.

5.18 The sum of the three asset categories above should equal the total high voltage network length.

5.19 DNOs are required to report the quantity of high voltage electrical plant in commission as shown below:

- ground-mounted circuit breakers (not forming an integral part of a ring main unit);
- all other ground-mounted switchgear;
- pole- or structure-mounted circuit breakers;
- all other pole- or structure-mounted switchgear;
- ground-mounted power transformers, reactors and regulators; and
- pole-mounted power transformers, reactors and regulators.

5.20 For each of the six asset categories, one total quantity should be reported.

Reporting the number of unplanned incidents

5.21 DNOs are required to report the number of damage, non-damage and total number of unplanned incidents that have occurred on the HV network. The number of damage, non-damage and total number of unplanned incidents should be disaggregated into the number of unplanned incidents occurring on:

- overhead lines;
- underground cables (all power cables except submarine);
- submarine cables;
- ground-mounted circuit breakers (not forming an integral part of a ring main unit);
- all other ground-mounted switchgear;
- pole- or structure-mounted circuit breakers;
- all other pole- or structure-mounted switchgear;
- ground-mounted power transformers, reactors and regulators;
- pole-mounted power transformers, reactors and regulators; and
- any other, unknown or unidentified asset categories.

5.22 The number of damage, non-damage and total number of unplanned incidents on the HV network should be the sum of the damage, non-damage and total unplanned incidents on the 10 asset categories above.

5.23 DNOs are also required to disaggregate and report the number of damage, non-damage and total number of unplanned HV network incidents that occurred on overhead lines, underground cables and submarine cables, attributable to the following causes:

- lightning;
- rain, snow, sleet, blizzard, freezing fog, frost and ice;

- wind, gale, growing trees, falling trees and wind-borne materials;
- all others due to weather and environmental causes plus birds, animals and insects;
- company and manufacturer causes;
- third party; and
- any other causes (including unknown and unclassified).

5.24 The number of damage, non-damage and total number of unplanned HV network incidents on overhead lines, underground cables and submarine cables should be the sum of the number of damage, non-damage and total unplanned incidents of the 7 causes above.

Reporting requirements for the low voltage network

5.25 DNOs are required to report circuit length (in km) in commission (excluding services) for the low voltage network as show below:

- total length of overhead lines (including surface wiring);
- total length of CONSAC underground cables; and
- total length of all other underground cables.

5.26 The sum of the three asset categories above should equal the total low voltage network length.

5.27 DNOs are also required to report the quantity of low voltage switchgear/fusegear in commission.

Reporting the number of unplanned incidents

5.28 DNOs are required to report the number of damage, non-damage and total number of unplanned incidents that have occurred on the LV network. The number of damage, non-damage and total number of unplanned incidents should be disaggregated into the number of unplanned incidents occurring on:

- overhead lines;
- CONSAC underground cables;
- all other underground cables;
- switchgear/fusegear; and
- any other, unknown or unidentified asset categories.

5.29 The number of damage, non-damage and total number of unplanned incidents on the LV network should be the sum of the number of damage, non-damage and total unplanned incidents on the 5 asset categories above.

5.30 DNOs are also required to disaggregate and report the number of damage, non-damage and total number of unplanned LV network incidents that occurred on overhead lines, CONSAC underground cables and all other underground cables, attributable to the following causes:

- lightning;
- rain, snow, sleet, blizzard, freezing fog, frost and ice;
- wind, gale, growing trees, falling trees and wind-borne materials;
- all others due to weather and environmental causes plus birds, animals and insects;
- company and manufacturer causes;
- third party; and
- any other causes (including unknown and unclassified).

5.31 The number of damage, non-damage and total number of unplanned incidents on overhead lines, CONSAC underground cables and all other underground cables should be the sum of the number of damage, non-damage and total unplanned incidents of the 7 causes above.

Reporting requirements for overhead and underground services

5.32 DNOs are required to report the total number of LV connected customers.

Reporting of asset quantities

5.33 DNOs are required to take all appropriate steps within their power to report the total number of low voltage services in commission (as identified through a count of LV MPANs). This will be used to provide a composite measure of faults per 1000 services.

5.34 In order to support disaggregation, DNOs are required to report the number of services in commission for the low voltage service network and an estimate of the split between overhead and underground services as shown below:

- total number of overhead services; and
- total number of underground services.

DNOs should state the basis of their estimate of the split in the MTP supporting narrative.

5.35 The sum of the two asset categories above should equal the total number of low voltage services.

Reporting the number of unplanned incidents

5.36 DNOs are required to report the total number of incidents on all service equipment associated with metered services but specifically to exclude incidents associated with meters, timeswitches and cut-outs. The total number of unplanned incidents should be disaggregated into the number of unplanned incidents occurring on:

- overhead lines; and
- all underground cables.

There is no requirement to differentiate between damage and non-damage incidents.

5.37 The total number of unplanned incidents on the LV services network should be the sum of the unplanned incidents on the two asset categories above.

Instructions and guidance

5.38 Only initial unplanned incidents on the DNO's own network are to be included in the medium-term performance report. Pre-arranged incidents and incidents on other connected systems are to be excluded. Incidents which are raised simply to record supply interruptions which occur as a result of manual switching more than 3/18[10] hours after all customers' supplies are restored are also to be excluded.

Circuit lengths

5.39 All network lengths should be reported as circuit length (in km) rather than route lengths. For example the reported length of:

- a double-circuit 132 kV overhead line of 50 km route length should be 100 km; and
- a single-circuit 132 kV underground circuit, comprising three single-core cables (one per phase) with a route length of 10 km, should be 10 km.

Counting the quantities of transformers and switchgear

5.40 The basic principle for counting items of switchgear for medium-term performance reporting is to count an item as a single unit if it is individually purchased and specified. For example:

- an outdoor circuit breaker with two independent isolators would count as three units;
- an indoor circuit breaker with integral earthing and isolating facilities would count as one unit;

[10] See paragraphs 2.47 and 2.48 on incident completion

a HV ring main unit comprising two ring switches and a tee-off circuit breaker would count as one unit, irrespective of whether the tee-off was a switch, a fused switch or a circuit breaker;

- for power transformers the voltage refers to the higher voltage side; and
- for earthing transformers, auxiliary transformers, earthing resistors, earthing reactors and arc suppression coils, the voltage refers to the higher voltage of the associated power transformer.

Counting 132 kV, 66 kV, 33 kV and 22 kV switchgear

5.41 The total quantity of circuit breakers (which are not an integral part of a ring main unit) should be determined by counting each of the following as one item:

- outdoor ground-type circuit breakers (excluding GIS);
- outdoor pole-type circuit breakers (excluding GIS);
- indoor circuit breakers (excluding GIS); and
- GIS circuit breakers.

5.42 The total quantity of all other switchgear units should be determined by counting each of the following as one item:

- ring main units;
- pole- or structure-mounted isolators (ABSDs);
- pole- or structure-mounted earth switches;
- pole- or structure-mounted fault throwers;
- pole-mounted sets of fuses; and
- ground-mounted switches.

Any isolator and earth switches that are integral to a circuit breaker should not be counted.

Counting HV switchgear

5.43 The total quantity of ground-mounted circuit breakers (not forming an integral part of a ring main unit) should be determined by counting each of the following as one item:

- indoor ground-mounted circuit breakers (not forming an integral part of a ring main unit);
- outdoor ground-mounted circuit breakers (not forming an integral part of a ring main unit).

5.44 The total quantity of all other ground-mounted switchgear/fusegear should be determined by counting each of the following as one item:

- ring main units;
- switches;
- fuse switches; and
- fuse cable boxes.

5.45 Any isolators and earth switches that are integral to a circuit breaker should not be counted as separate items of switchgear. Any circuit breakers or fuse switches that are integral to a ring main unit should not be counted as separate items of switchgear.

5.46 The total quantity of pole- or structure-mounted circuit breakers should be determined by counting each of the following as one item:

- auto-reclosers (e.g. Reyrolle OYT and GVR).

5.47 Switchgear that automatically sectionalises the HV network whilst circuits are de-energised should not be counted as circuit breakers.

5.48 The total quantity of all other pole- or structure-mounted switchgear should be determined by counting each of the following as one item:

- isolators (ABSDs);

- switches;
- sets of fuses;
- sets of links;
- automatic sectionalising links (ASL) (also referred to as intelligent fuses); and
- auto-sectionalisers (e.g. Reyrolle OYS).

Counting LV switchgear/fusegear

5.49 The total quantity of LV switchgear/fusegear should be determined by counting each of the following as one item:

- free-standing LV pillars in substations;
- free-standing LV pillars remote from substations;
- transformer-mounted LV pillars;
- indoor LV boards;
- fused cable boxes;
- sets of pole-mounted fuses (assume one set per pole-mounted transformer); and
- LV link boxes.

General

5.50 DNOs should explain any changes that have been made to the definitions or measurement over the period that have led to a change in the reported figures.

5.51 In addition the following points need to be considered:

- the incident cause classifications outlined above are based on those used in NaFIRS. Where a DNO does not used NaFIRS, equivalent classifications will need to be agreed with Ofgem; and

- quantities of equipment, circuit length (in km) should be based on a count at 30 September in the relevant reporting year.

Narrative

5.52 In addition to the reporting of the number of unplanned incidents, asset quantities and reliability, DNOs are also required to provide a supporting narrative. Ofgem would like to publish the narrative in some form. This may help spread best practice through the industry. If DNOs feel that any section of the narrative should remain confidential it should be clearly marked and an explanation provided as to why this is the case. Particular issues that the narrative should cover include:

- an explanation of the trends observable from the reliability information – to include actions taken to improve reliability or identify and replace/improve deteriorating assets, together with a prediction of future performance; and

- an explanation of any adverse trends in the reliability of sub-asset groups not covered by the rigs but collected by the DNO as part of its asset management strategy.

Activity-based information

5.53 DNOs are required to provide some activity-based information such as the number of different assets types replaced, repaired, refurbished or maintained during the year. This should focus on assets which a DNO has identified as a poorly-performing asset type and where it has put in place a replacement or refurbishment programme. The DNO should provide the number and proportion of the poorly-performing assets replaced, repaired, refurbished or maintained each year and how this compares with the envisaged programme. Any differences from the envisaged programme should be explained.

5.54 As explained above, Ofgem will want to understand the impact of future expenditure (both capital and operating) on medium-term performance, including on replacement or refurbishment programmes across a range of assets, and not solely those that are performing poorly.

6. Environmental reporting

Introduction

6.1 This section sets out guidance for the reporting of environmental performance information to Ofgem.

6.2 It is not intended that these requirements should be any more onerous than would be required by current reporting or management practices. It is therefore expected that DNOs will use existing information systems to report these measures.

Performance measures

6.3 The table below sets out the environmental performance measures for the distribution networks.

Performance indicator	**Reportable measures**
Loss of SF_6	Weight of SF_6 in service (kg) Weight of SF_6 lost (i.e. top-ups used) (kg)
Loss of insulating fluid	Volume of fluid used to top-up cables (l) Total length of fluid-filled cable (km) Number of reportable incidents Number of prosecutions
General Environmental Management	% of activities covered by a certified Environmental Management System (EMS) scheme[11]

6.4 To support the reporting of these indicators, DNOs should also provide a supporting narrative which should include:

- for 2006/07 onwards, discussion of any emerging trends in the environmental data and areas of trade-off in performance;
- further details of any reportable incidents or prosecutions; and
- details of any EMS accredited under ISO or other recognised accreditation scheme.

[11] It is not a mandatory requirement for DNOs to have a certified or accredited EMS.

6.5 Ofgem continues to take an interest in Schedule 9 matters and DNOs are also encouraged to send Ofgem copies of their Schedule 9 statements, for instance, after a review or update.

6.6 Further development of the definitions of the reporting requirements will be necessary over time. This will take into account guidance from the Government, the Environment Agency and other relevant bodies.

Publication

6.7 It is intended that the information provided will be published and performance across DNOs compared. This report may also include other information collected under the price control requirements, such as level of losses and capacity of distributed generation connected.

7. Required level of accuracy for reporting

Introduction

7.1 Ofgem considers that it is important that information used to implement the incentive scheme is sufficiently accurate to enable comparisons to be made over time and if appropriate between DNOs. Ofgem has specified minimum levels of accuracy for the reporting of:

- the number of customers interrupted – at both the LV level and the overall level; and
- the duration of interruptions to supply – at both the LV level and the overall level.

7.2 In addition DNOs are also required to estimate the accuracy with which they report short interruptions to supply.

Required levels of accuracy – number of customers interrupted and duration of interruptions to supply

7.3 The table below specifies the minimum levels of accuracy required for the reporting of the number of customers interrupted and duration of interruptions to supply. DNOs are required to meet both the overall and the LV minimum levels of accuracy. Meeting one of the required levels of accuracy is not sufficient to satisfy the requirements set out in SLC 49.

	Minimum overall level of accuracy (%)	Minimum level of accuracy for LV system interruptions(%)
Number of customers interrupted	95	90
Duration of interruptions to supply	95	90

Estimating reporting accuracy

7.4 Appendix 5 sets out the methodology for auditing and estimating the accuracy of interruption reporting to determine whether the minimum levels of accuracy have been met.

Reporting of accuracy levels for customers interrupted by short interruptions

7.5 DNOs are required to indicate the estimated accuracy of the reporting of the number of customers interrupted by short interruptions. This should include a statement on the method used to measure short interruptions and how the estimated level of accuracy has been assessed. Ofgem's appointed auditors will provide an assessment of the reasonableness of the estimate and will state whether in their view it has been achieved.

8. Reporting arrangements

Introduction

8.1 It is important that robust arrangements are put in place for the reporting of information required under SLC 49. This section sets out the reporting arrangements that Ofgem expects to apply in each reporting year. Different arrangements apply for the provision of customer details for the purpose of Ofgem's undertaking a survey of customers' views of the telephone response they receive when they contact the DNO.

Ofgem's role in reporting and the requirements on DNOs

8.2 The normal reporting year for the provision of information required under SLC 49 will be from 1 April to 31 March of the relevant year. Ofgem expects to publish the rigs at least one month in advance of the relevant reporting year, normally in February. At the same time Ofgem will also provide the DNOs with standard templates that should be used for the reporting of SLC 49 information in advance of the relevant year. Any changes to the rigs will have been consulted on for a period of time in accordance with SLC 49. Where these changes do not relate to information included in the incentive scheme or the required level of accuracy, the consultation period will not be less than 28 days.

8.3 DNOs will normally be required to provide the information required under SLC 49 at the end of the reporting year and by no later than the dates set out in the table below. This is the earliest that information can be requested for submission. Ofgem may specify a later date if it considers that it is appropriate. Once the DNOs have submitted the information to Ofgem, it would expect its appointed auditors to undertake an audit of the information over the course of the summer of the relevant year.

Timetable for reporting

Information	Deadline for reporting
Total number of customers, total number of new customers and total number of disconnected customers	By 30 April each year
Number of customers interrupted for 3 minutes or more	
Duration of interruptions to supply of 3 minutes or more	
Number of customers interrupted and duration of interruptions to supply of 3 minutes or more disaggregated by source, voltage level and MEI.	
Number of customers interrupted and duration of interruptions to supply of 3 minutes or more disaggregated by incident and restoration stage The number of customers re-interrupted	
All other interruption information including: ♦ the number of customers interrupted by short interruptions; ♦ the number of customers interrupted and duration of interruptions of 3 minutes or more disaggregated by - HV circuit; - frequency band; and - duration band.	By 31 May each year.
Speed of telephone response information	On a monthly basis
Quality of telephone response customer information	On a weekly basis (see below)
Connections reporting	Quarterly (one month in arrears) Annual data by 31 May
Medium-Term Performance reporting	By 31 May
Environmental reporting	By 31 May

Arrangements for the provision of customer information

8.4 In order for Ofgem's appointed agents to undertake a survey of customers' views on the telephone response that they receive when they contact a DNO, it is necessary for the DNOs to provide Ofgem (or its appointed agents) with customer information on a regular basis. The information that must be provided is outlined in Section 3 and should be submitted within 4 normal working days of the end of the week in which the customer contacted the specified contact lines. For these purposes the end of the week is defined as the Friday in the week in which the customer contacted the DNO and normal working days exclude Saturdays and Sundays.

8.5 This information should be submitted to Ofgem in electronic form.

Appendix 1 Purpose of SLC 49 information

1.1 The table below sets out the purpose for which the specified information as set out in SLC 49, and described in detail in this document, will be used. It does not specify how this information will be used in the incentive scheme.

Information	**Purpose**	
	Incentive scheme	**Other**
a) Number of customers interrupted and duration of interruptions		
Number of customers interrupted by short interruptions of less than three minutes, including disaggregated by "cause"		Yes
Number of customers interrupted for three minutes or more	Yes	
Duration of interruptions to supply of three minutes or more	Yes	
Number of customers interrupted and duration of interuptions to supply of three minutes or more disaggregated by: ♦ incident and restoration stage; ♦ source, voltage level and MEI; ♦ duration band; ♦ frequency of interruption; and ♦ HV circuit.	 Yes Yes	 Yes Yes Yes
Aggregate number of customers re-interrupted		Yes
b) Speed and quality of telephone response		
Customer information, including the telephone number of the caller; the name of the caller and whether the caller is a domestic or a non-domestic customer	Yes	
c) Connections		
Percentage of domestic connections provided within 30 working days		Yes
Percentage of non-domestic connections provided within 40 working days		Yes
d) Medium-Term Performance Aggregate number and cause of incidents on specified classes/types of electrical plant/line		Yes
Statement on the asset management strategy of the licensee		Yes
Statement of the reasons for any increase/decrease in the number of incidents		Yes
e) Environmental reporting		Yes

Appendix 2 Formulae for the purposes of reporting

This annex sets out formulaic expressions for:

- the number of customers interrupted in the relevant year t (excluding re-interruptions); and
- the duration of interruptions to supply in the relevant year t.

Definitions

CI_t = the number of customers interrupted in the relevant year t, **excluding re-interruptions.**

CML_t = the duration of interruptions to supply in the relevant year t, **including re-interruptions.**

i = an unplanned incident on the distribution system.

j = a pre-arranged incident on the distribution system.

k = an incident on a transmission system such as the systems of NGC or transmission companies in Scotland.

l = an incident on a distributed generator's system.

m = an incident on any other connected system.

r = a restoration stage in any incident i,j,k,l,m.

t = relevant year (that financial year for the purposes of which any calculation falls to be made).

TC_t = total connected customers in the relevant year t.

TR_{rit} = the restoration time of restoration stage r of an unplanned incident i in the relevant year t.

TR_{rjt} = the restoration time of restoration stage r of a pre-arranged incident j in the relevant year t.

TR_{rkt} = the restoration time of restoration stage r of an incident k on NGC's system or a transmission company's system in Scotland in the relevant year t.

TR_{rlt} = the restoration time of restoration stage r of an incident l on a distributed generator's system in the relevant year t.

TR_{rmt} = the restoration time of restoration stage r of an incident m on any other connected system in the relevant year t.

TI_{rit} = the interruption time prior to the restoration time of restoration stage r of an unplanned incident i in the relevant year t .

TI_{rjt} = the interruption time prior to the restoration time of restoration stage r of a pre-arranged incident j in the relevant year t.

TI_{rkt} = the interruption time prior to the restoration time of restoration stage r of an incident k on NGC's system or a transmission company's system in Scotland in the relevant year t.

TI_{rlt} = the interruption time prior to the restoration time of restoration stage r of an incident l on a distributed generator's system in the relevant year t.

TI_{rmt} = the interruption time prior to the restoration time of restoration stage r of an incident m on any other connected system in the relevant year t.

and:

ND_{rit} = Number of customers interrupted in restoration stage r of an unplanned incident i in the relevant year t, ***excluding*** re-interruptions to supply.

ND_{rjt} = Number of customers interrupted in restoration stage r of a pre-arranged incident j in the relevant year t, ***excluding*** re-interruptions to supply.

ND_{rkt} = Number of customers interrupted in restoration stage r of an incident k on NGC's system or a transmission company's system in Scotland in the relevant year t, ***excluding*** re-interruptions to supply.

ND_{rlt} = Number of customers interrupted in restoration stage r of an incident l on a distributed generator's system in the relevant year t, ***excluding*** re-interruptions to supply.

ND_{rmt} = Number of customers interrupted in restoration stage r of an incident m on any other connected system in the relevant year t, ***excluding*** re-interruptions to supply.

NN_{rit} = Number of customers interrupted in each restoration stage r of an unplanned incident i in the relevant year t, ***including*** re-interruptions to supply.

NN_{rjt} = Number of customers interrupted in restoration stage r of a pre-arranged incident j in the relevant year t, ***including*** re-interruptions to supply.

NN_{rkt} = Number of customers interrupted in restoration stage r of an incident k on NGT's system or a transmission company's system in Scotland in the relevant year t, ***including*** re-interruptions to supply.

NN_{rlt} = Number of customers interrupted in each restoration stage r of an incident l on a distributed generator's system in the relevant year t, ***including*** re-interruptions to supply.

NN_{rmt} = Number of customers interrupted in restoration stage r of an incident m on any other connected system in the relevant year t, ***including*** re-interruptions to supply.

Formulae

CI_t is the number of customers interrupted per year in the relevant year t and is derived from the following formula: $CI_t = CIA_t + CIB_t + CIC_t + CID_t + CIE_t$

where

CIA_t is the number of customers interrupted per year arising from unplanned incidents on the distribution system in the relevant year t and is derived from the following formula:

$$CIA_t = \frac{\left(\sum_i \sum_r ND_{rit}\right) * 100}{TC_t}$$

CIB_t is the number of customers interrupted per year arising from pre-arranged incidents on the distribution system in the relevant year t and is derived from the following formula:

$$CIB_t = \frac{\left(\sum_j \sum_r ND_{rjt}\right) * 100}{TC_t}$$

CIC_t is the number of customers interrupted per year arising from incidents on the systems of NGC or transmission companies in Scotland in the relevant year t and is derived from the following formula:

$$CIC_t = \frac{\left(\sum_k \sum_r ND_{rkt}\right) * 100}{TC_t}$$

CID_t is the number of customers interrupted per year arising from incidents on the systems of distributed generators in the relevant year t and is derived from the following formula:

$$CID_t = \frac{\left(\sum_l \sum_r ND_{rlt}\right) * 100}{TC_t}$$

CIE_t is the number of customers interrupted per year arising from incidents on any other connected systems in the relevant year t and is derived from the following formula:

$$CIE_t = \frac{\left(\sum_m \sum_r ND_{rmt}\right) * 100}{TC_t}$$

Each of the terms CIA_t, CIB_t, CIC_t, CID_t and CIE_t should be separately identified.

CML_t is the duration of interruptions to supply in the relevant year t and is derived from the following formula:

$$CML_t = CMLA_t + CMLB_t + CMLC_t + CMLD_t + CMLE_t$$

$CMLA_t$ is the duration of interruptions from unplanned incidents on the distribution system in the relevant year t and is derived from the following formula:

$$CMLA_t = \frac{\sum_i \sum_r (NN_{rit} * (TR_{rit} - TI_{rit}))}{TC_t}$$

$CMLB_t$ is the duration of interruptions from pre-arranged incidents on the distribution system in the relevant year t and is derived from the following formula:

$$CMLB_t = \frac{\sum_j \sum_r (NN_{rjt} * (TR_{rjt} - TI_{rjt}))}{TC_t}$$

$CMLC_t$ is the duration of interruptions arising from incidents on the systems of NGC or transmission companies in Scotland in the relevant year t and is derived from the following formula:

$$CMLC_t = \frac{\sum_k \sum_r (NN_{rkt} * (TR_{rkt} - TI_{rkt}))}{TC_t}$$

$CMLD_t$ is the duration of interruptions arising from incidents on the systems of distributed generators in the relevant year t and is derived from the following formula:

$$CMLD_t = \frac{\sum_l \sum_r (NN_{rlt} * (TR_{rlt} - TI_{rlt}))}{TC_t}$$

$CMLE_t$ is the duration of interruptions arising from incidents on any other connected systems in the relevant year t and is derived from the following formula:

$$CMLE_t = \frac{\sum_m \sum_r (NN_{rmt} * (TR_{rmt} - TI_{rmt}))}{TC_t}$$

Each of the terms $CMLA_t$, $CMLB_t$, $CMLC_t$, $CMLD_t$ and $CMLE_t$ should be separately identified.

Appendix 3 Other formulae

This appendix sets out formulaic expressions for:

- the number of customers interrupted by short interruptions in the relevant year t (excluding re-interruptions); and
- the number of customers re-interrupted in the relevant year t.

Definitions

RI_t = the number of customers re-interrupted in the relevant year t.

n = a short interruption due to the automatic operation of distribution network switchgear where the supplies of some or all of the customers involved are successfully restored by automatic switching within less than three minutes of the first interruption.

o = a short interruption due to the automatic operation of distribution network switchgear where the supplies of some or all of the customers involved are successfully restored by manual or remote control switching within less than three minutes of the first interruption.

p = a short interruption due to the manual or remote operation of distribution network switchgear for reasons such as deliberate disconnection for operational or emergency reasons.

q = a short interruption due to the operation of switchgear on the networks of NGC/transmission companies (in Scotland) or other connected systems and distributed generators.

SI_t = the number of short interruptions to supply in the relevant year t.

NS_{nt} = the number of customers interrupted by a short interruption in category n in the relevant year t.

NS_{ot} = the number of customers interrupted by a short interruption in category o in the relevant year t.

NS_{pt} = the number of customers interrupted by a short interruption in category p in the relevant year t.

NS_{qt} = the number of customers interrupted by a short interruption in category q in the relevant year t.

Formulae

SI_t is the number of customers interrupted by short interruptions in the relevant year t and is derived from the following formula:

$$SI_t = SIA_t + SIB_t + SIC_t + SID_t$$

where:

SIA_t is the number of customers interrupted by short interruptions in the relevant year t due to the automatic operation of distribution network switchgear where the supplies of some or all of the customers involved are successfully restored by automatic switching within less than three minutes of the first interruption and is derived from the following formula:

$$SIA_t = \frac{\left(\sum_n NS_{nt}\right) * 100}{TC_t}$$

SIB_t is the number of customers interrupted by short interruptions in the relevant year t due to the automatic operation of distribution network switchgear where the supplies of some or all of the customers involved are successfully restored by manual or remote control switching within less than three minutes of the first interruption and is derived from the following formula:

$$SIB_t = \frac{\left(\sum_o NS_{ot}\right) * 100}{TC_t}$$

SIC_t is the number of customers interrupted by short interruptions in the relevant year t due to the manual or remote operation of distribution network switchgear

for reasons such as deliberate disconnection for operational or emergency reasons and is derived from the following formula:

$$SIC_t = \frac{\left(\sum_p NS_{pt}\right) * 100}{TC_t}$$

SID_t is the number of customers interrupted by short interruptions in the relevant year t due to the operation of switchgear on the networks of NGC/transmission companies (in Scotland) or other connected systems and distributed generators and is derived from the following formula:

$$SID_t = \frac{\left(\sum_q NS_{qt}\right) * 100}{TC_t}$$

Each of the terms SIA_t, SIB_t, SIC_t and SID_t should be separately identified.

RI_t is the number of customers re-interrupted in the relevant year t and is derived from the following formula:

$$RI_t = RIA_t + RIB_t + RIC_t + RID_t + RIE_t$$

where:

RIA_t is the number of customers re-interrupted in the relevant year t arising from unplanned incidents on the distribution system and is derived from the following formula:

$$RIA_t = \frac{\left(\sum_i \sum_r (NN_{rit} - ND_{rit})\right) * 100}{TC_t}$$

RIB_t is the number of customers re-interrupted in the relevant year t arising from pre-arranged incidents on the distribution system and is derived from the following formula:

$$RIB_t = \frac{\left(\sum_j \sum_r (NN_{rjt} - ND_{rjt})\right) * 100}{TC_t}$$

RIC_t is the number of customers re-interrupted in the relevant year t arising from incidents on the systems of NGC or transmission companies in Scotland and is derived from the following formula:

$$RIC_t = \frac{\left(\sum_k \sum_r (NN_{rkt} - ND_{rkt})\right) * 100}{TC_t}$$

RID_t is the number of customers re-interrupted in the relevant year t arising from incidents on the systems of distributed generators and is derived from the following formula:

$$RID_t = \frac{\left(\sum_l \sum_r (NN_{rlt} - ND_{rlt})\right) * 100}{TC_t}$$

RIE_t is the number of customers re-interrupted in the relevant year t arising from incidents on any other connected systems and is derived from the following formula:

$$RIE_t = \frac{\left(\sum_m \sum_r (NN_{rmt} - ND_{rmt})\right) * 100}{TC_t}$$

Appendix 4 SLC 49 Voltage boundaries

This appendix sets out the definition of voltage boundaries.

132 kV systems

The "lower boundary" of the 132 kV system should be taken as the supply terminals of the DNO's customers supplied at 132 kV or the load-side terminals of switchgear controlling the secondary (lower voltage) side of 132 kV transformers. If no switchgear exists between the secondary side of the 132 kV transformer and the primary side of an EHV or HV system transformer, the "lower boundary" should be taken as the secondary-side terminals of the 132 kV transformer. The lower voltage busbars and their protection equipment at 132 kV/lower voltage substations are not included.

The "upper boundary" of the 132 kV system should be taken as the point at which ownership of the 132 kV circuit or plant becomes the responsibility of the DNO.

EHV systems

For the purposes of reporting under SLC 49, extra high voltage (EHV) includes all voltage levels above 20kV up to but excluding 132kV[12]. The "lower boundary" of EHV systems should be taken as the supply terminals of customers supplied at EHV, and in other situations as the load-side terminals of protection equipment connected to the secondary side (lower voltage) of EHV transformers. The "upper boundary" should in general be taken as the busbar side of lower voltage switchgear of transformers whose primary voltage is 132kV or above and whose secondary voltage is EHV. If no secondary switchgear exists, the "upper boundary" should be taken as the secondary-side terminals of the 132 kV or above transformer: incidents on the system connected to the secondary voltage terminals of the transformer should be reported as EHV incidents and not as 132kV incidents.

[12] See paragraph 2.4 in relation to the reporting of incidents in Scotland

HV systems

For the purposes of reporting under SLC 49, high voltage (HV) includes all voltage levels above 1,000 volts up to and including 20kV. The "lower boundary" of HV systems should be taken as the supply terminals of customers supplied at HV, and in other situations as the load-side terminals of the protection equipment connected to the secondary side (lower voltage) of distribution transformers respectively. Where the transformer does not have any secondary-side protection equipment, the boundary shall be the bolted connection between the transformer tail and the lower voltage busbar. The "upper boundary" should in general be taken as the busbar side of lower voltage switchgear of transformers whose primary voltage is EHV or above and whose secondary voltage is HV. If no secondary switchgear exists, the "upper boundary" should be taken as the secondary-side terminals of the EHV or above transformer: incidents on the system connected to the secondary voltage terminals of the transformer should be reported as HV incidents and not as EHV or 132 kV incidents.

LV systems

For the purposes of reporting under SLC 49, a low voltage (LV) system is one that operates at a nominal voltage of 1000 V or less.

The upper boundary should be taken as the load-side terminals of the protection equipment connected to the secondary side (low voltage) of distribution transformers. Where the transformer does not have any secondary-side protection equipment, the boundary shall be the bolted connection between the transformer tail and the LV busbar. The lower boundary should be taken as the points of connection associated with LV services.

LV services

For the purpose of reporting under SLC 49, LV services are defined as the service line from the LV distributing main to the DNO's protection device situated upon the customer's premises, including the joint and associated components connecting the service line to the distributing main. It should be noted that incidents on meters and time-switches and cut-outs, including cut-out fuse

operations, are excluded from reporting under the Quality of Service Incentive Scheme (even where this results in the operation of a fuse at the DNO's substation) and the definition of LV services therefore excludes this equipment.

Appendix 5 Auditing and estimating the accuracy of interruptions reporting

Audit preparation

At the end of the reporting year each DNO shall submit information on CI and CML at each voltage by incident and restoration stage.

Ofgem will then select a sample of 150 incidents, split between HV and above and LV according to the respective contribution to CI and CML (with a minimum of 50 LV incidents). Generally the entire sample will be supplied to DNOs in advance: however, Ofgem may elect to hold back a proportion of the sample until the time of the audit.

Audits

The audits of interruption reporting accuracy for the purposes of the scheme will then involve the following steps:

Stage 1 – Calculation of MPAN accuracy[13]

The HV and above MPAN accuracy will be calculated using the following formula:

$$\left(\frac{\text{Total number of primary traded MPANs assigned to true feeders at HV and above}}{\text{Total number of primary traded MPANs}}\right)\times 100$$

The LV MPAN accuracy will be calculated using the following formula:

$$\left(\frac{\text{Total number of primary traded MPANs assigned to true feeders at LV}}{\text{Total number of primary traded MPANs}}\right)\times 100$$

The overall MPAN accuracy will be calculated using the following formula:

$$\left(\begin{array}{c}\text{LV MPAN accuracy * average percentage LV contribution (including services) to CI}\\ +\\ \text{HV and above MPAN accuracy * average percentage higher voltage contribution to CI}\end{array}\right)\times 100$$

Stage 2

Ofgem's auditors will audit 50 HV and above incidents and 30 LV incidents[14]. All of these incidents will make up the Stage 2 overall sample.

[13] "True feeders" are feeders which can generate CI and CML.
[14] Where incidents that are "too difficult" to audit are substituted by a relevant spare incident.

The auditors will then calculate the mean, standard deviation and mean plus/minus 4 standard deviations of the errors in the reported restoration stage figures.

The auditors will exclude any incidents containing outlier restoration stages (i.e. where the errors of any stage are outside the mean plus/minus 4 standard deviations).

The auditors will then calculate the accuracy of incident reporting for CI and CML for both the overall and LV data sets using the following formula:

$$\frac{\text{Sum of reported CI/CML for remaining restoration stages}}{\text{Sum of audited CI/CML for remaining restoration stages}}$$

The auditors will calculate the combined MPAN and incident reporting accuracies using the following formula:

[MPAN accuracy * accuracy of incident reporting] * 100

This is expressed as a percentage less than 100 using the following formula:

100 - modulus [100 - combined accuracy]

If the overall accuracy results are greater than or equal to 97 per cent, the DNO will be deemed to have met the accuracy levels set out in the rigs. If not, the remaining overall sample will be audited at Stage 3.

If the LV accuracy results are greater than or equal to 92 per cent, then the DNO will be deemed to have met the accuracy levels set out in the rigs. If not, the remaining LV sample will be audited at Stage 3.

Stage 3

If appropriate, the auditors will audit the remaining incidents in the overall/LV samples and recalculate the incident reporting accuracies and combined accuracies using the same method as set out in Stage 2.

If the DNO fails to meet the 95 per cent minimum overall level of accuracy required for the reporting of the number of customers interrupted and duration of interruptions set out in paragraph 7.3, Ofgem will make the appropriate adjustments[15] to performance.

If the DNO fails to meet the 90 per cent minimum level of accuracy required for the reporting of LV interruptions, Ofgem will make the appropriate adjustments[16] to performance.

[15] Where data is found to fail the 95 per cent mimimum overall level of accuracy, the data will be made 100 per cent accurate.
[16] Where data is found to fail the 90 per cent minimum LV level of accuracy, the data will be made 100 per cent accurate.