

December 2001

Information and Incentives Project

**Draft revised Regulatory
Instructions and Guidance**

Executive Summary

This document is a draft version of the revised Regulatory Instructions and Guidance (RIGs) for the reporting year commencing 1 April 2002. In drawing up this draft version of the revised RIGs, Ofgem has considered responses to a letter sent to the distribution companies on the 8 October 2001, which asked for views on how the RIGs might be improved and comments on draft formulae for calculating the interruption measures. Ofgem has also addressed a number of areas of ambiguity which were highlighted as part of the IIP interim review carried out by Mott MacDonald and British Power International.

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;
- ◆ remove inconsistencies; and
- ◆ introduce formulae for calculating the number and duration of interruptions to supply per year, the number of re-interruptions and the number of short-interruptions.

This constitutes formal notice, in accordance with paragraph 9 of Standard Licence Condition 49 of the distribution licence of changes to the RIGs. We would welcome comments on the draft version of the revised RIGs. Ofgem will then publish the final version of the revised RIGs in February 2002 in the light of these comments. Ofgem proposes that new version of the RIGs should take effect from April 2002. This process is consistent with the licence condition and the proposed changes.

A copy of this document is available on Ofgem's website (www.ofgem.gov.uk).

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1. Introduction

- 1.1 This draft version of revised Regulatory Instructions and Guidance (RIGs) has been produced in accordance with standard condition 49 of the electricity distribution licence (the IIP information licence condition). The purpose of the RIGs is to provide a framework for the collection and provision of accurate and consistent information from the electricity distribution companies. 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 distribution companies, including customers and their representatives, the regulator and the companies themselves.
- 1.2 The RIGs include definitions and related instructions and guidance for collating “Specified Information” as defined in the IIP information licence condition. Where possible Ofgem has specified consistent definitions to apply to all distribution companies. Ofgem is also putting in place an audit framework that will assess whether the information that is collected meets the required levels of accuracy and is consistent with the definitions contained in the RIGs.
- 1.3 Any changes to the RIGs will comply with the change process set out in paragraphs 9 to 11 of the IIP information licence condition. Ofgem recognises that any significant changes to the scope or form of the information that it requests from the distribution businesses 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 carrying out its duties under the Electricity Act 1989 and the Utilities Act 2000.
- 1.4 Distribution businesses will be expected to have the necessary measurement systems in place by April 2002 for delivering the required levels of accuracy of reporting.

Structure of this document

1.5 The RIGs covers six main areas:

- ◆ definitions, instructions and guidance for collating information on:
 - the number and duration of interruptions to supply and short interruptions to supply – (Section 2);
 - assessing the speed and quality of telephone response – (Section 3); and
 - monitoring medium term performance – (Section 4);
- ◆ 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 and duration of interruptions to supply (Section 5);
- ◆ reporting arrangements – an outline of the reporting arrangements for IIP; (Section 6); and
- ◆ an outline of the purpose for which Specified Information will be used – Appendix 1;
- ◆ formulae for the purposes of the incentive scheme – Appendix 2; and
- ◆ other formulae – Appendix 3.

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 interruptions to supply;
- ◆ the duration of interruptions to supply;
- ◆ short interruptions to supply; and
- ◆ the number of re-interruptions to supply.

Information sources

2.2 Most distribution companies use the National Fault and Interruption Reporting Scheme (NaFIRS) which is administered by the Electricity Association (EA) - or an equivalent system - to collect information on the number and duration of interruptions to supply. For the purpose of reporting under the IIP, companies must use the definitions contained in this document.

Key definitions

2.3 Set out below are key definitions to be applied for reporting on the number and duration of interruptions to supply, the number of short interruptions to supply and the number of re-interruptions to supply. Further definitions, instructions and guidance are provided in paragraphs 2.4 to 2.62.

- ◆ **the number of interruptions to supply per year** – the number of customers interrupted per 100 customers per year, where an interruption of supply to customer(s) 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** - 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 short interruptions to supply per year** – the number of customers interrupted by a short interruption per 100 customers per year, where the initial interruption to supply is restored within a period of 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 re-interruptions to supply per year** – the number of customers 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, instructions and guidance

Customer

- 2.4 Any energised or de-energised entry or exit point to the distribution system, where metering equipment is used for the purpose of calculating charges for electricity consumption. Customers should be identified from Metering Point

Administration Numbers (MPANs), such that individual customers are identified at each connection point.

- 2.5 Only one (individual) 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 be discounted.
- 2.6 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.
- 2.7 The method adopted by companies to identify customers from MPANs shall be agreed in advance with Ofgem. Ofgem will want to ensure that, as far as possible, distribution companies use a consistent method for identifying customers.

Total number of customers

- 2.8 The total number of customers is defined as the total number of customers connected to the company’s distribution network as at 30 September in the relevant reporting year.

Incident

- 2.9 Any occurrence on the distribution system or other connected electricity supply system, which involves a physical break in the circuit upstream of the customers interrupted (or circuit affected), for three minutes or longer, due to automatic or manual operation of switchgear or fusegear, or due to any other open circuit condition, 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.

2.10 In addition to failures of power equipment, other occurrences classed as an incident include:

- ◆ 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 interruption of a circuit energised at power system voltage;
- ◆ failures 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;
- ◆ any incidents on other connected systems owned by the National Grid Company/Transmission Companies (in Scotland), other distribution companies, embedded generators, that arises from loss of supply to these systems; and
- ◆ the pre-arranged isolation of any circuit or item of equipment energised at power system voltage that results in loss of supply.

2.11 A further incident must be reported if another incident occurs which affects part of the network and/or customers already affected by an incident. 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.

2.12 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 equipment energised at power system voltage;

- ◆ failures and overloads on customers' equipment or another authorised electricity operator's system, which are cleared by the correct operation of the distribution company's protection and which does not interrupt the supply to other customer(s) of the distribution company; and
- ◆ pre-arranged works affecting single customers for the purposes of meter changes, voltage standardisation, and work on service cables and suppliers' fuses.

Unplanned incident on the distribution system

- 2.13 Any incident arising on the licensee's distribution system, where statutory notification 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).
companies

Pre-arranged incident

- 2.14 Any incident 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).
- 2.15 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 times are within the period stated on the notification provided to the customer.

Incident on other systems

- 2.16 Any incident arising on other connected electricity supply systems which leads to the interruption of supply to the customers of the licensee, including:
- ◆ National Grid Company or Transmission Companies (in Scotland);
 - ◆ distributed generators; and
 - ◆ any other connected systems – which should be identified.

Non-damage incident

- 2.17 A non-damage incident is defined as an incident where supply can be restored from the same source without the need for the repair of equipment or other intervention and where the cause of the fault and the equipment involved has not been positively identified.

Incident start

- 2.18 The date and time of the incident is the earlier of the date and time at which:
- ◆ the first report of the incident is received; or
 - ◆ the relevant circuit is automatically, deliberately or otherwise disconnected.
- 2.19 The date and time at which the first report of the incident is received (the 'report received time') shall be the earlier of the date and time at which:
- ◆ a customer (or other person) first contacted the distribution company to advise of no-supply or of some suspected abnormality;
 - ◆ an alarm was received by the distribution company indicating an abnormality; or
 - ◆ a distribution company employee or agent identified the existence of an abnormality.
- 2.20 Some companies wait for a second report before initiating action but for the purposes of reporting under the IIP the date and time of the incident shall be based on the time of the first report received. This will normally equal or follow the date and time of the first interruption (e.g. when an alarm is received from supervisory equipment or where no-supply calls from customers are the first indication received of an abnormality). The report received time may precede the time of the first interruption only when deliberate disconnection is later carried out by the distribution company or in the case of some arc suppression coil held faults.

- 2.21 The date and time of an incident is the time at which the company first becomes aware of the incident by any means.

Incident completion

- 2.22 An incident is considered complete when supplies have been restored from the network to all customers involved in the incident for three hours.
- 2.23 Any re-interruption to supply from the network more than 3 hours after all customers are restored from the network should be treated as a new incident. However, re-interruptions to supply caused by the connection and disconnection of mobile generation or temporary connections should not be treated as a new incident, unless the re-interruption takes place after a period of restoration of supply by mobile generation or temporary connection of more than 18 hours.
- 2.24 Where an incident start and completion time/date spans two reporting years, it should be allocated to the year in which the incident started.
- 2.25 In the case of “non-damage” incidents, where the network is restored successfully without the need for repair of equipment or other intervention, any re-interruption within a period of three hours of the initial interruption will be treated as part of the first incident, i.e. it will not be treated as a new incident. Any subsequent re-interruption after a period of more than three hours after the initial interruption will be treated as a new incident.

Interruption

- 2.26 An interruption is defined as the loss of supply of electricity to one or more customers due to an incident (defined above) but excluding voltage quality abnormalities, such as dips, spikes or harmonics.

Short interruption

- 2.27 A short interruptions is defined as the loss of supply of electricity to one or more customers for a period of less than three minutes, due to automatic, manual or remote control operation of switchgear or fusegear on the distribution system or other systems, upstream of the customers interrupted.

- 2.28 For the purpose of reporting under the IIP, companies are required to report all short interruptions and in addition to separately identify, measure and report short interruptions due to the following four causes:
- ◆ short interruptions due to the automatic operation of distribution network switchgear where some or all the customers involved are successfully restored by automatic switching within three minutes of the first interruption;
 - ◆ short interruptions due to the automatic operation of distribution network switchgear where some or all the customers involved are successfully restored by manual or remote control switching within three minutes of the first interruption. This definition includes only the initial restoration. Further short interruptions during subsequent stages of fault sectionalising are not included;
 - ◆ short interruptions due to the manual or remote operation of distribution network switchgear for reasons such as deliberate disconnection for operational or emergency reasons; and
 - ◆ short interruptions due to the operation of switchgear on the networks of NGC/Transmission Companies (in Scotland) or other connected systems and distributed generators.
- 2.29 Short interruptions do not need to be disaggregated by voltage or by HV circuit. Where companies 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.
- 2.30 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 within a period of three minutes, where these are identifiable. Where the sequence of operations is not identifiable, then a simple count of all operations of automatic reclosing device(s) could be used, excluding those operations recorded elsewhere, e.g. those associated with other incidents or routine switching.

- 2.31 Customers interrupted should be identified in the same way as for incidents (i.e. those in excess of 3 minutes duration). If a company uses periodic counts of recloser operations to calculate the number of short interruptions then the number of customers interrupted will be based on an estimate of those customers who would have been interrupted, assuming the circuit affected was configured normally, i.e there was no abnormal feeding arrangements.
- 2.32 The date and time of short interruptions is 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.

Re-interruption

- 2.33 A re-interruption is defined as the loss of supply of electricity to one or more customers during the course of an incident where those same customers have experienced an interruption during previous restoration stages of the same incident.

Temporary connection

- 2.34 A temporary connection is an electrical line, which is not to become a permanent feature of the distribution system, but which is used solely to provide a temporary restoration of supply to customers during an incident.

Restoration stage

- 2.35 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.
- 2.36 Where a customer(s) is temporarily restored for a period of less than three minutes, then the customer minutes supplied during this period should not be taken into account in calculating the duration of interruptions to supply.
- 2.37 There should be no limit to the number of restoration stages for an incident.

Start of a restoration stage

- 2.38 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

- 2.39 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

- 2.40 The customers involved in a restoration stage are defined as the customers connected to that part of the distribution network restored in the restoration stage, including restorations from mobile generators and temporary connections.
- 2.41 The number of customers interrupted for single phase and two phase LV faults 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 the IIP. It may be helpful, in terms of the audit process, if companies recorded whether fuses have operated in the event of an incident on the LV system.
- 2.42 For HV faults, in the interest of simplicity and consistent reporting, if one phase is disconnected it should be considered that the whole circuit is disconnected.
- 2.43 Where a connectivity model is in place it should be used consistently to derive the number of customers interrupted on a particular element of the network modelled. Where the section of network involved is a subset of a modelled network element, then the number of customers interrupted may be derived from records or from information available on site.
- 2.44 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.

- 2.45 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.
- 2.46 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 and duration of interruptions to supply.

Distribution system

- 2.47 The distribution system is defined as in the standard distribution licence. Transmission activities in Scotland encompass 132 kV electrical line and plant. References to reporting on 132 kV in the RIGs are not applicable to the two Scottish ex-PES distribution companies.

Interruption sequences

- 2.48 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 the loss of supply of less than 3 minutes duration should be reported as a short interruption rather than a re-interruption and therefore not included in the calculation of the number and duration of interruptions to supply per year.

Updating the connectivity model

- 2.49 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 distribution company being formally notified of any permanent changes to the network or customer connections. (For example, a change expected in place for at least 28 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.

Disaggregation of incidents

2.50 It is necessary to collect information on the number and duration of interruptions to supply at a disaggregated level. This will help in comparing performance across distribution companies and could be used for making adjustments within the incentive scheme. There are three types of disaggregation required, namely:

- ◆ by source;
- ◆ by voltage level; and
- ◆ by HV circuit.

Disaggregation by “source”

2.51 In addition to reporting on the effect on customers of all incidents arising on the distribution system, the number and duration of interruptions to supply arising from the following 5 categories should be separately identified:

- ◆ unplanned incidents on the distribution system, i.e. all incidents *excluding* pre-arranged incidents;
- ◆ pre-arranged incidents on the distribution system;
- ◆ incidents on other connected systems which cause interruptions to the supply of customers connected to the distribution system, including incidents on the systems of:
 - National Grid Company or Transmission Companies (in Scotland);
 - distributed generators; and
 - any other connected systems – which should be identified.

Disaggregation by voltage levels

2.52 All incidents arising on the distribution system should be disaggregated in the following classifications, which are defined in more detail below:

- ◆ 132 kV;
- ◆ Extra High Voltage (EHV) excluding voltages up to 22 kV;
- ◆ High Voltage (HV) and voltages up to 22 kV;
- ◆ Low Voltage (LV); and
- ◆ LV Services.

2.53 For the purpose of reporting under the IIP voltage/system boundaries are defined as follows:

132 kV

2.54 The "lower boundary" of the 132 kV system should be taken as the supply terminals of the distribution company'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 then 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.

2.55 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 distribution company.

EHV and HV

2.56 For the purposes of reporting under the IIP:

- ◆ High Voltage (HV) includes all voltage levels above 1,000 volts up to and including 22 kV; and

- ◆ Extra High Voltage (EHV) includes all voltage levels above 22 kV up to but excluding 132 kV.
- 2.57 The "lower boundary" of HV and EHV systems should be taken as the supply terminals of customers supplied at HV or EHV, and in other situations as the load side terminals of the protection equipment connected to the secondary side (lower voltage) of distribution transformers respectively. The "upper boundary" should in general be taken as the busbar side of lower voltage switchgear of transformers whose primary voltage is 132 kV or above and whose secondary voltage is EHV or HV. If no secondary switchgear exists, the "upper boundary" should be taken as the secondary side terminals of the transformer; faults on the system connected to the secondary voltage terminals of the transformer should be reported as EHV/HV faults and not as 132 kV faults.
- 2.58 In practice companies will normally report and disaggregate by each discrete voltage level in order to report to the above classifications.

LV

- 2.59 For the purposes of reporting under the IIP, a Low Voltage (LV) system is one that operates at a nominal voltage of 1000 V or less.
- 2.60 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. The lower boundary should be taken as the points of connection associated with LV services.

LV Services

- 2.61 For the purpose of IIP reporting LV Services are defined as the service line from the LV distributing main to the distribution company'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 out fuse operations are excluded from reporting under the IIP (even where this results in the operation of a fuse at the distribution company's substation) and the definition of LV Services therefore excludes this equipment.

Disaggregation by HV circuit

- 2.62 The number and duration of interruptions to supply arising on HV systems need to be reported by HV circuit.

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 on:

- ◆ the speed of telephone response and other related information; and
- ◆ the information which Ofgem, and its appointed agents, require for undertaking a survey of customers' views of the response that they receive when they contact the distribution company 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 distribution company or by its appointed agents (or contractors);
- ◆ to the security and safety enquiry service telephone number (if different from the above) operated by the distribution company or by its appointed agents (or contractors); and
- ◆ to contractors and/or agents of the distribution company who act as an overflow or crisis management facility during peak periods.

3.3 To the extent that companies provide a different emergency telephone number as required by the Electricity Supply Regulation (ESRs), this is not included in the definition of specified contact lines.

Definitions of required information

3.4 Companies are asked to provide the following information.

Average speed of response

3.5 Average speed of response can be measured by:

- ◆ **direct measurement** - companies using direct measurement to calculate the average response time should use the formula below for calculating the average speed of response, i.e. the summation of wait times for all calls divided by the total number of calls answered:

$$\frac{\text{Total response times for all relevant telephone calls each year}}{\text{Total number of telephone calls answered each year}}$$

In addition companies are required to provide an analysis of the average speed of response on a monthly basis, where each element (total wait times and total number of calls answered) are identified separately.

Companies should submit the monthly figures at the end of the reporting year with other IIP information.

3.6 Where direct measurement is not possible, the average speed of response can be measured by sampling or interpolation. While companies are allowed to use sampling and interpolation, the approach must be agreed in advance with Ofgem. It is also expected that companies will move towards using direct measurement as soon as practicable to ensure that there is greater consistency in measurement. In the accompanying narrative companies are required to outline their plans and timetable for introducing direct measurement.

3.7 Companies also need to measure and provide the following information:

- ◆ **total calls on the specified contact lines** - this is defined as the total number of incoming telephone calls to the lines specified above, including, where appropriate, calls which receive an engaged tone;
- ◆ **total calls received** - this is defined as the total number of calls which enter the company's telephony system on the specified contact lines and receive a ringing tone. Calls which receive an engaged tone are not to

be counted as calls received. These calls will be accounted for within the “all lines busy” indicator which is defined below;

- ◆ **total calls answered** – this is defined as the total number of calls received on the specified contact lines that are answered by either an automated messaging system or a telephone operator;
- ◆ **response times** – this is defined as the amount of time that a customer has to wait before receiving a response once their call has entered the company’s telephony system. The distribution company’s telephony system includes systems operated by a service provider on behalf of the company. For example, an automatic messaging system on a BT platform. The response times should be calculated for each relevant telephone call according to the guidance provided below;
- ◆ **total response times** – this is defined as the sum of all response times for each relevant telephone call in the reporting year; and
- ◆ **relevant phone calls** – this is defined as all calls answered on the specified contact lines.

Other required information

All lines busy

- 3.8 The “all lines busy” indicator measures the degree of difficulty customers experience in getting through to the customer contact number/enquiry service. Companies are required to report the number of calls to the distribution company on the specified contact lines, which receive a busy tone (or equivalent). Ofgem will specify the average time that a customer listens to a busy tone in order to estimate the total time that customers experience busy lines. Where companies are unable to provide this information they should report the total time the customer contact number/enquiry service is physically unable to take additional calls.

Calls abandoned

3.9 Companies using recorded messages, or answering machines, or facilities for touch-tone telephones should take particular care when reporting against this indicator. All calls abandoned, including those abandoned within ten seconds (which should be separately identified if applicable), are to be reported. Calls should be reported as "calls abandoned" whenever the following circumstances apply:

- ◆ **recorded messages (queuing)** - where callers hang up during or after hearing the recorded message advising them that they are in a queue, and before the company answers the call; or
- ◆ **touch-tone telephone facilities** - where callers hang up during or after hearing the message but before pressing the appropriate buttons.

Instructions and guidance

3.10 In collating the required information the following guidance should be applied.

Recorded messages

- ◆ **queuing (or equivalent)** - some distribution companies employ recorded messages in their telephony systems advising customers that they are in a queue and that there are no operators available to answer their calls. Some recorded messages trip-in within a few seconds of the ringing tone being heard by the customer while others are activated later. Under such situations the response time should be measured as the time that the customer first hears the ringing tone to the time that the company agent answers the call or that an automated fault message (or equivalent) is provided, **not** from or to the time that the customer hears the recorded queuing message informing them that they are in a queue. If customers hang up during or after hearing the recorded message advising them that they are in a queue, but before the company agent answers the call, then such calls are to be reported as abandoned;
- ◆ **"group announcements" (or equivalent)** – some companies also operate a recorded message informing customers of the purpose of the telephone

number that they have rung and to provide a Data Protection Notice. This is used to filter out calls that have been made to the company by mistake and to inform customers that they may be asked to take part in a customer survey. The response time should be taken from the time that the customer first hears the ringing tone to the time that the company agent answers the call or that an automated fault message (or equivalent) is provided, excluding the length of time that the group announcement lasts. In the accompanying narrative companies should provide details on:

- the length of the group announcement message (including the length of the Data Protection Notice); and
- its content (including the content of the Data Protection Notice).

If customers hang up during or after hearing the group announcement message then such calls do not need to be reported as abandoned.

- ◆ **automated fault messages** – some distribution companies use a recorded message (e.g. via a 'message manager' or equivalent system) to relay information to customers on incidents, i.e. automated fault messaging. Where customers hang up during or at the end of an automated fault message their call should be treated as a call answered as they have received the information they require. However, if customers choose to hold for an agent then the call should only be treated as answered when the agent answers the call. i.e. the additional length of time taken until the agent answers the call should be counted as part of the response time;
- ◆ **calls disconnected** – companies should report the number of calls where customers choose to hold for an agent following an automated fault message but are disconnected before the agent answers the call;
- ◆ **answering machines** – where companies use answering machines they should use the accompanying narrative to provide details on:
 - the number of days during the reporting year where answering machines were in operation;

- their function and the company's policy for responding to customer messages; and
 - the total number of calls received that were handled by an answering machine.
- ◆ **touch-tone telephone facilities** - some companies employ a system that asks customers with touch-tone telephones to press specified buttons to access specific company information. It is recognised that customers will need to listen to the message before they can respond but it is important that messages are clear and concise. The response time is taken from the time that the customer **either** hears the first ringing tone, **or** (where there is no ringing tone) from the commencement of the interactive voice response message to the time that the company agent answers the call or an automated fault message trips in. In measuring this period of time a company is allowed a 15 second grace period.

Additional narrative

- 3.11 In addition to the information specified above for inclusion in the accompanying narrative companies are also required to identify, on an annual basis:
- ◆ the number of temporary customer telephone contact points that are put in place and the reason for their introduction;
 - ◆ the length of time each of the contact points was in place; and
 - ◆ the number of calls received to each contact point.
- 3.12 In addition companies should also report on the configuration of their telephony systems. Companies are asked to describe the number and configuration of incoming lines linked to lines identified under the categories outlined above - a schematic diagram should be included to explain how the telephony system is set up.
- 3.13 Where companies are unable to provide information on the indicators for all lines busy and calls abandoned, 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

- 3.14 Ofgem intends to undertake a survey of the views of customers of the telephone response that they receive when they contact the distribution company. To undertake this survey, Ofgem (and/or its appointed agents) will require information on the customers that have contacted the distribution companies by telephone.
- 3.15 In order for Ofgem to undertake the survey, distribution companies 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):
 - to the freephone power outage telephone number (and its equivalents) operated by the distribution company or by its appointed agents (or contractors);
 - to the security and safety enquiry service telephone number (if different from the above) operated by the distribution company 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 distribution company.

Customer contact

- 3.16 In some instances customer information may not be available to the distribution company, 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 distribution company);

- ◆ customers refuse to partake in a survey; and
- ◆ where, in consultation with the Data Protection Registrar and distribution companies, Ofgem considers that the provision of information would be a breach of the Data Protection Act.

3.17 In such circumstances the distribution company is not required to submit the customer information outlined above.

4. Definitions, instructions and guidance for monitoring medium term performance

Introduction

- 4.1 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 fault rates and causes on electrical line and plant and equipment;
 - ◆ a supporting narrative provided by the distribution companies; 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.
- 4.2 It is not Ofgem’s intention to constrain companies’ monitoring and reporting of medium term performance (MTP). The framework for monitoring MTP will develop over time and as such companies could report at a more disaggregated level, and are encouraged to report additional indicators and/or narrative that they consider relevant.
- 4.3 At future price control reviews Ofgem will want to understand the impact of future expenditure (both capital and operating) on MTP.
- 4.4 The requirements for reporting on MTP are outlined below. PB Power (Ofgem’s technical advisors on the initial phase of the IIP) produced a report on monitoring MTP. This is available on Ofgem’s website (www.ofgem.gov.uk). This is for information purposes only and companies are not required to report on the basis of the PB Power document.

Definitions

Reliability

- 4.5 Ofgem intends to monitor the reliability (fault rates) of electrical line and plant and equipment, together with the fault causes. For the purposes of this document reliability is defined as the number of reportable incidents affecting line, plant and equipment expressed as the:
- ◆ number of faults per unit length of circuit classification (per 100 km); and
 - ◆ number of faults per unit of equipment classification (per 1000 units); and
 - ◆ number of service faults per 1000 customers connected at low voltage.
- 4.6 Faults are defined as unplanned incidents on the distribution system at the relevant voltage(s), i.e. excluding pre-arranged incidents and incidents on other connected systems.

Required information

- 4.7 For the first year of reporting under the IIP (2001/2), distribution companies are required to provide an historical analysis of reliability and fault causes according to the classifications outlined below. This should be provided for the last five years including for the reporting year 2001/02 (i.e. reports should be submitted in 2002). This will ensure that there is a track record of information going forward for assessing reliability. Distribution companies must also explain any changes that have been made to definitions or measurement over this period that have led to a change in the reported figures.

132 kV, 66 kV and 33 kV circuits and equipment

- 4.8 Fault rates need to be provided according to the following breakdown, i.e. 3 trend lines per voltage level. Total fault rates include all incidents on the distribution system at these voltages. It should be noted that the total fault rate may exceed the sum of the fault rates for overhead lines and underground cables.

132 kV	66 kV	33 kV
Total (all faults)	Total (all faults)	Total (all faults)
Overhead lines	Overhead lines	Overhead lines
Underground cables	Underground cables	Underground cables

High voltage

Overhead lines and underground cable

- 4.9 All high voltage levels should be aggregated from more than 1 kV up to 22 kV, i.e. there should be a single classification for HV. This should be disaggregated by overhead line and underground cable. The fault rates on each should be reported according to the following classification, i.e. 5 trend lines for each.

Overhead line plus pole mounted/structure mounted fusegear, isolators and switch disconnectors	Underground cable (i.e. power cables)
Total (all causes)	Total (all causes)
Weather and environment	Weather and environment
Company causes and faulty manufactures	Company causes and faulty manufactures
Unknown or unclassified causes	Unknown or unclassified causes
Third party	Third party

- 4.10 Total fault rates (all causes) in the table above include all fault rates attributed to the relevant class of equipment and will be equal to the sum of the fault rates for the disaggregated causes.¹

Switchgear and protection systems

- 4.11 Distribution companies should include NaFIRS defined (or equivalent) pole-mounted automatic circuit breakers and automatic sectionalisers and all (automatic or non-automatic) ground-mounted switchgear and protection and control equipment classifications. Distribution companies should report all faults for this aggregated category, i.e. 1 trend line. For the purposes of

¹ If companies provide information at a more disaggregated level it must reconcile with the classifications in the table.

calculating the fault rate for switchgear and protection systems, the number of protection units should be excluded from the denominator.

Transformers and reactors

- 4.12 Distribution companies should report all faults for both transformers and reactors, disaggregated by ground- and pole-mounted equipment, i.e. 2 trend lines.

Low Voltage

- 4.13 For LV overhead mains reporting, overhead mains surface wiring mains and switchgear/fusegear should be aggregated. For LV underground mains, also include switchgear/fusegear. Fault rates should be reported by cause as follows, i.e. 5 trend lines for each. The denominator should exclude the length of service cables.

LV Overhead line	LV Underground main
Total (all causes)	Total (all causes)
Weather and environment	Weather and environment
Company causes and faulty manufactures	Company causes and faulty manufactures
Unknown or unclassified causes	Unknown or unclassified causes
Third party	Third party

- 4.14 Total fault rates (all causes) in the table above should sum to all fault rates attributed to the relevant class of equipment and will be equal to the sum of the fault rates for the disaggregated causes.

Services – overhead and underground

- 4.15 All service equipment should be aggregated, and should include:

- ◆ overhead service line and equipment;
- ◆ surface wiring service;
- ◆ underground service cable and equipment; and
- ◆ any other service line, cable and equipment (excluding unmetered services).

- 4.16 Companies are required to report the total number of faults on all service equipment, where this does not need to be disaggregated by cause, i.e. there will be 1 trend line for service faults.

Instructions and guidance

- 4.17 In addition the following points need to be considered:
- ◆ the fault cause classifications outlined above are those used in NaFIRS. Where distribution companies do not report to NaFIRS, equivalent classifications will need to be agreed with Ofgem;
 - ◆ no distinction is made between damage and non-damage faults although companies are free to report separately on damage and non-damage faults; and
 - ◆ volumes of equipment, length of circuits (excluding services) should be based on a count at 30 September in the relevant reporting year.

Narrative

- 4.18 In addition to the reporting of reliability, distribution companies 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 distribution companies 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:
- ◆ a statement detailing the asset management strategy of the distribution company in respect of distribution assets – to include a commentary on the broad philosophy and overall approach that is adopted with respect to asset management. This should include a statement on the methodology for monitoring condition and performance of assets and for predicting future condition and performance of assets and therefore replacement and improvement programmes;
 - ◆ 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;

- ◆ any additional condition monitoring and post fault investigation carried out by the distribution company to identify the condition of assets, and the prognosis for future condition and performance. This should include any indicators that have been developed for predicting future performance of assets;
- ◆ for 132 kV and EHV assets a supporting narrative which explains the asset management approach for these assets, together with details of condition monitoring methodologies and a more detailed report on problem assets or groups of assets; and
- ◆ an explanation of any adverse trends in the reliability of sub-asset groups not covered by the RIGs but collected by the distribution company as part of its asset management strategy.

Activity based information

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

5. Required level of accuracy for reporting

Introduction

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

- ◆ the number of interruptions to supply – at both the Low Voltage (LV) level and the overall level; and
- ◆ the duration of interruptions to supply – at both the Low Voltage (LV) level and the company level.

5.2 In addition distribution companies are also required to estimate the accuracy with which they report short interruptions to supply.

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

5.3 The table below specifies the minimum levels of accuracy required for the reporting of the number and duration of interruptions to supply. Distribution companies 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 the IIP licence condition.

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

Reporting of accuracy levels for short interruptions to supply

5.4 Distribution companies are required to indicate the estimated accuracy of the reporting of short interruptions to supply. 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 on the reasonableness of the estimate and whether in their view it has been achieved.

6. Reporting arrangements

Introduction

- 6.1 It is important that robust arrangements are put in place for the reporting of information required under the IIP. 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 undertaking a survey of customers' views of the telephone response they receive when they contact the distribution company.

Ofgem's role in reporting and the requirements on distribution companies

- 6.2 The normal reporting year for the provision of information required under the IIP 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 distribution companies with standard templates that should be used for the reporting of IIP information. Any changes to the RIGs will have been consulted on for a period of time in accordance with the IIP licence condition. 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.
- 6.3 Distribution companies will normally be required to provide the information required under the IIP at the end of the reporting year and by no later than 30 April. This is the earliest that information can be requested for submission. A later date could be specified by Ofgem if it considers that it is appropriate. Ofgem recognises that companies will be making changes to measurement systems over the course of the reporting year 2001/02 and as such has decided that the information for this reporting year should be submitted by 31 May 2002. Once the distribution companies 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.

6.4 The table below sets out the key dates for a normal IIP reporting year.

Date	Output
November	Ofgem publishes draft version of RIGs for consultation.
February	Ofgem publishes final version of RIGs and templates to apply for the next reporting year.
1 April	Reporting year begins.
31 March	Reporting year ends.
30 April	Distribution companies submit IIP information to Ofgem.
Summer	Ofgem undertakes audit of IIP information.

Arrangements for the provision of customer information

- 6.5 In order for Ofgem's appointed agents to undertake a survey of customers' views on the telephone response that they receive when they contact the distribution company, it is necessary for the companies 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 either of the specified enquiry services. For these purposes the end of the week is defined as the Friday in the week in which the customer contacted the distribution company and normal working days exclude Saturday and Sunday.
- 6.6 The most appropriate arrangements for submitting this information needs to be agreed with the distribution companies, although Ofgem's preference is for this to be done in electronic form.

Appendix 1 Purpose of IIP information

1.1 The table below sets out the purpose for which the specified information in the IIP information licence condition will be used and which is described in detail in this document. It does not specify how this information will be used in the incentive scheme. This will form the basis of the work that Ofgem intends to carry out in the period up to April 2002.

Information	Purpose	
	Incentive scheme	Other
a) Number of interruptions to supply of less than three minutes (short interruptions), included disaggregated by "cause"		Yes
Number of interruptions to supply of more than three minutes	Yes	
Duration of interruptions to supply of more than three minutes	Yes	
Number and duration of interruptions to supply of more than three minutes disaggregated by:		
◆ source;	Yes	Yes
◆ voltage level; and	Yes	Yes
◆ HV circuit.	Yes	Yes
Aggregate number of re-interruptions to supply		Yes
b) Speed of response	Yes	
Customer information, including the telephone number of the caller; the time of the call; the name of the caller and whether they are a domestic/non-domestic customer	Yes	
c) Aggregate number and cause of faults 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 faults		Yes

Appendix 2 Formulae for the purposes of the scheme

This annex sets out formulaic expressions for:

- ◆ the number of interruptions to supply per year (excluding re-interruptions); and
- ◆ the duration of interruptions to supply per year.

Definitions

CI = the number of interruptions to supply per year, **excluding re-interruptions**

CML = the duration of interruptions to supply per year, **including re-interruptions**

CIR = the number of interruptions to supply per year, **including re-interruptions**

SI = the number of short interruptions to supply per year.

d = categories of unplanned incidents on the distribution system by voltage classification – 132 kV (excluding 132 kV in Scotland), EHV (excluding 22 V), HV (including 22 V), LV, and LV services

i = an incident in category d

j = a pre-arranged incident

k = an incident on a transmission system such as NGC's system or a 132 kV system in Scotland

l = an incident on an distributed generator's system

m = an incident on any other connected system

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

o = a short interruption due to the automatic operation of distribution network switchgear where some or all of the customers involved are successfully restored

by manual or remote control switching within 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 embedded generators

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

TC = total connected customers

TR = is the restoration time of restoration stage r, in any incident i,j,k,l,m

TI = is the interruption time prior to the restoration time in restoration stage r, in any incident i,j,k,l,m

and:

ND_{rid} = Number of customers interrupted in restoration stage r of an incident i in category d, **excluding** re-interruptions to supply

ND_{rj} = Number of customers interrupted in restoration stage r of a pre-arranged incident j, **excluding** re-interruptions to supply

ND_{rk} = Number of customers interrupted in restoration stage r of an incident k on NGC's system or a 132 kV system in Scotland, **excluding** re-interruptions to supply

ND_{rl} = Number of customers interrupted in restoration stage r of an incident l on an embedded generator's system, **excluding** re-interruptions to supply

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

NN_{rid} = Number of customers interrupted in each restoration stage r of an incident i in category d, **including** re-interruptions to supply

NN_{rj} = Number of customers interrupted in restoration stage r of a pre-arranged incident j, **including** re-interruptions to supply

NN_{rk} = Number of customers interrupted in restoration stage r of an incident k on NGC's system or a 132 kV system in Scotland, **including** re-interruptions to supply

NN_{rl} = Number of customers interrupted in each restoration stage r of an incident l on an embedded generator's system, **including** re-interruptions to supply

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

NS = Number of customers interrupted by a short interruption in category n,o,p

Formulae

The number of interruptions to supply per year shall be calculated as follows:

$$CI = \sum_1^5 CI_x$$

where

$$CI_1 = \frac{\left(\sum_d \sum_i \sum_r ND_{rid} \right) * 100}{TC}$$

$$CI_2 = \frac{\left(\sum_j \sum_r ND_{rj} \right) * 100}{TC}$$

$$CI_3 = \frac{\left(\sum_k \sum_r ND_{rk} \right) * 100}{TC}$$

$$CI_4 = \frac{\left(\sum_l \sum_r ND_{rl} \right) * 100}{TC}$$

$$CI_5 = \frac{\left(\sum_m \sum_r ND_{rm} \right) * 100}{TC}$$

Each of the CI_x terms should be separately identified.

The duration of interruptions to supply per year shall be calculated as follows:

$$CML = \sum_1^5 CML_y$$

$$CML_1 = \frac{\sum_d \sum_i \sum_r (NN_{rid} * (TR_{rid} - TI_{rid}))}{TC}$$

$$CML_2 = \frac{\sum_j \sum_r (NN_{rj} * (TR_{rj} - TI_{rj}))}{TC}$$

$$CML_3 = \frac{\sum_k \sum_r (NN_{rk} * (TR_{rk} - TI_{rk}))}{TC}$$

$$CML_4 = \frac{\sum_l \sum_r (NN_{rl} * (TR_{rl} - TI_{rl}))}{TC}$$

$$CML_5 = \frac{\sum_m \sum_r (NN_{rm} * (TR_{rm} - TI_{rm}))}{TC}$$

Each of the CML_y terms should be separately identified.

Appendix 3 Other formulae

This annex sets out formulaic expressions for:

- ◆ the number of short interruptions to supply per year (excluding re-interruptions); and
- ◆ the number of re-interruptions to supply per year.

The number of short interruptions to supply per year (SI) shall be calculated as follows:

$$SI = \frac{\left(\sum_n NS_n + \sum_o NS_o + \sum_p NS_p + \sum_q NS_q \right) * 100}{TC}$$

where each NS term should be separately identified.

The number of re-interruptions to supply per year is calculated as follows:

$$RI = \sum_1^5 RI_x$$

where

$$RI_1 = \frac{\left(\sum_d \sum_i \sum_r (NN_{rid} - ND_{rid}) \right) * 100}{TC}$$

$$RI_2 = \frac{\left(\sum_j \sum_r (NN_{rj} - ND_{rj}) \right) * 100}{TC}$$

$$RI_3 = \frac{\left(\sum_k \sum_r (NN_{rk} - ND_{rk}) \right) * 100}{TC}$$

$$RI_4 = \frac{\left(\sum_l \sum_r (NN_{rl} - ND_{rl}) \right) * 100}{TC}$$

$$RI_5 = \frac{\left(\sum_m \sum_r (NN_{rm} - ND_{rm}) \right) * 100}{TC}$$