
Reporting guidance – Supply interruptions¹

Objective

The purpose of this document is to derive a metric for supply interruptions that consistently calculates the performance of water companies in terms of the average number of minutes lost per customer for the whole customer base for interruptions that lasted 3 hours or more.

This guidance seeks to enable companies to monitor and compare consistently derived and common performance measures for Supply Interruptions.

Key Principles

There are several key assumptions made in the compilation of the guidance:

- Reporting of supply interruptions shall be subject to each company's assurance process which is applied to all measures reported annually.
- Companies have a methodology or procedure in place for reporting on supply interruptions. This procedure is reviewed as part of their assurance process.
- There is an assumption that there will be continued improvement by all companies in the short and medium term through innovation, new technology, data quality improvements and staff training:
- The measure assumes a clear and simple approach that can be understood by customers and regulators.
- The essential reporting requirements for reporting on supply interruptions are set out.
- The focus of the guidance is on annual reporting of supply interruptions. It is not intended as a definitive guide to managing the risk of supply interruption.
- The company shall apply the precautionary principle, using the start and finish times and the properties affected that will give the highest supply interruption value in the event of uncorroborated or conflicting data.

Applying this guidance is likely to mean that comparisons of historical performance between companies, and of individual company's previous performance, may not necessarily be valid.

¹ This is the same guidance as included in the March 2018 report for Ofwat and Water UK: "Targeted review of common performance commitments".

However, it is anticipated that future individual company year on year trends in performance will be possible.

The adoption of this metric across the industry does not preclude any company electing to have other supply interruption Performance Commitments with company specific definitions or continued reporting against the previously reported DG3 or KPI Dashboard (post 2011) metrics.

Exclusions

The default position is that the water company manages the risk of supply interruptions and there are no exclusions. This measure covers planned and unplanned interruptions. The cause of the interruption is not relevant to the calculation of the reported figure. That is, asset failure caused by third parties would be treated the same as the failure of the company's assets and planned or unplanned interruptions are the same.

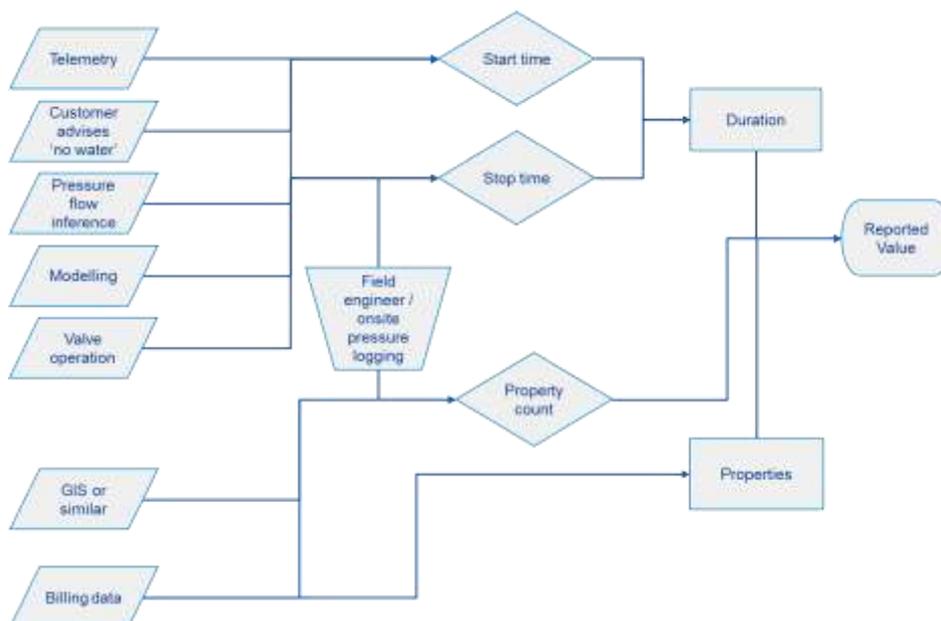
Companies may make a representation to Ofwat for an exception to be granted on the basis of a civil emergency under the Civil Contingencies Act 2004, where the supply interruption is not the cause of the emergency.

Measure Definition

Calculation of the Performance

$$\sum \frac{(\text{Properties with interrupted supply} \geq 180 \text{ mins}) \times \text{Full duration of interruption}}{\text{Total number of properties supplied (year end)}}$$

Process diagram



Component Definitions

To ensure consistency of reporting, the following regularly used terms are defined below:

Properties shall include billed mains pressure fed household and non-household properties connected to the distribution system. This includes properties that are connected, but not billed (for example temporarily unoccupied), but should exclude properties which have been permanently disconnected. A group of properties supplied by a single connection shall be considered as several properties. They should only be considered as a single property if a single bill covers the whole property. The total connected properties figure shall be those connected at the end of the report year. Cattle troughs shall not be included.

Supply interruptions are defined as when properties are without a continuous supply of water. The property shall be considered as without a supply when water is lost from the first cold water tap – taken as being operationally equivalent to $\leq 3\text{m}$ pressure at the main (adjusted for any difference in ground or property level). This can be inferred from local logging, network modelling or a customer contact indicating a loss of supply which was caused by the company operation and has not been demonstrably restored. Multiple-storey buildings shall be considered on a case-by-case and floor by floor basis, with properties on a particular floor being considered as receiving the same pressure.

Duration is defined as the length of time for which properties are without a continuous supply of water. The duration shall only be considered in the calculation of the metric where the duration is 3 hours or greater.

Start time is when water is lost from the first cold water tap at a property – taken as being operationally equivalent to $\leq 3\text{m}$ pressure at the main (adjusted for any difference in ground or property level). In the event of applicable telemetry data or logging being unavailable, the time should be determined from the earliest of:

- As advised by “no water” contact from customer (where not due to a customer side issue);
- Indications from flow or pressure monitoring to infer a change in supply; or
- Verified modelled data (calibrated, maintained, reflective of the network at the time of the incident and validated with contemporaneous flow and/or pressure data).

The company shall gain confirmation by consulting complainants (if any) and/or customers at high points on the system.

Stop time is when water is restored to the first cold water tap at a property – taken as being operational equivalent to $> 3\text{m}$ head of pressure at the main. In the event of pressure logging being unavailable, the time should be determined from the latest of:

- As advised by notification from customer;
- Indications from flow or pressure monitoring to indicate return to normal supply conditions; or
- Verified modelled data (calibrated, maintained, reflective of the network at the time of the incident and validated with contemporaneous flow and/or pressure data).

It is the responsibility of the company to demonstrate that supply conditions have been restored and available to all previously affected customers from the time determined from the

above. In the absence of physical evidence, the company shall gain confirmation by consulting complainants (if any) and/or customers at high points on the system.

The company shall apply the precautionary principle, using the start and finish times and the properties affected that will give the highest supply interruption value in the event of uncorroborated or conflicting data.

Property counts

Property counts shall use the best available information. This should be from the GIS, but paper records and DMA or similar data can be used where recently connected properties have not yet been input to the GIS. Properties shall count as having lost supply whether or not occupied. Properties permanently disconnected will be excluded from the count.

Attention should be paid to the incremental nature of supply loss. For example, for a burst when supply is lost progressively across an affected area, the time/properties affected relationship should be established. Where the loss is gradual, the supply interruption should be considered incrementally.

Properties affected by more than one interruption during the report year

Properties which are affected by more than one interruption during the report year should be reported separately for each interruption. This means, for example, that a property affected by three supply interruptions would be reported three times, once for each interruption.

Short term restoration of supply

For the cumulative effect of an interruption to be ignored and interruptions to be treated as separate occurrences, properties must have supplies restored for a minimum period of 1 hour. When shorter gaps occur the duration is counted from the start of the first interruption until the last restoration of supply.

Records

It should be possible to correlate and reconcile the company's reported figures for asset health and customer services data relating to reports of and complaints about interruptions to supply².

Evidence for subsequent challenge shall as a minimum be stored where the loss of supply has lasted greater than 150 minutes and for split time events, with the purpose of being available for assurance audit. Water companies should store supporting evidence for the quantification of the supply interruption metric for a minimum period of 10 years. This will start with the report year 2017/18 and companies will need to report on an indicative basis for 2016/17.

Companies must maintain records of all reportable incidents of supply in the form of a supply interruptions dataset. The aim of the dataset is to allow verification and audit of the reported information and to enable the identification of the properties affected. It should contain information on the timing, duration and sufficient information to enable all properties affected by interruptions lasting three hours or more to be identified. The dataset should include:

- Properties affected (by name and location or number and street or GIS polygon);
- Date and time of interruption(s);
- Duration of each interruption and time supply restored; and
- The name of the person responsible for entering records in the system.

The information in the supply interruptions dataset should be available for verification of incidents and evaluation of ODI penalties and outperformance payments.

Compliance Check List

The Compliance checklist in Annex A shall be completed and presented with the reported figure.

Alongside their performance, companies should report on what proportion of their start/stop times has been informed by each data source (customer contact/pressure and flow data/modelled data/valve operation). This could help inform assessments of the validity of comparing different companies.

For each component on the checklist, and for the overall performance measure, companies will report a confidence grade.

² Customer service data should also include social media contact with customers.

References

This document is based upon the Ofwat Guidance in place for the June Return 2011 submissions of water companies, Chapter 2, Key Outputs, Water Service – 2. The information pertaining to DG2, Population and DG4 has been removed and the DG3 narrative adjusted to reflect the deliberations of the Water UK Convergence in Performance Measures – Water Supply Interruptions Practitioners Group (SIPG) and the assembled view of stakeholders.

Annex A: Compliance Checklist

In the guidance a company is requested to complete this checklist for submission with its value for supply interruptions minutes lost.

The elements of each component to be assessed separately based on the following rules:

Compliance for elements is reported against:

R	Not compliant with the guidance and having a material impact on reporting
A	Not compliant with the guidance and having no material impact on reporting.
G	Fully-compliant with the guidance

An overall RAG to be assigned for each component based on the following rules:

Compliance for overall components is reported against:

R	There are one or more red elements in the component or the combined effect of amber elements is considered to produce a material impact.
A	Half or more of the elements in the component are amber and the combined effect of the amber elements is considered not to produce a material impact.
G	More than half of the elements in the component are green

	Component	Compliant (R/A/G)	Reason for any non-compliant components	Confidence grade
1	Property Counts			
2	Start Time			

a	Evidence to support start time			
b	Treatment of 3m pressure definition			
c	Treatment of blocks of flats			
3	Stop Time			
a	Evidence to support stop time			
b	Treatment of 3m pressure definition			
c	Treatment of blocks of flats			
4	Short Term Restoration of Supply			
5	Exclusions			
6	Calculation of Performance			
7	Application of Precautionary Principle			
8	Records			

9	Properties affected >1 interruption in year			
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For each component on the checklist, and for the overall performance measure, companies will report a confidence grade.

Confidence grades provide a reasoned basis for companies to qualify the reliability and accuracy of the data. Companies should employ a quality-assured approach in the methodology used to assign confidence grades, particularly if sampling techniques are in place.

The confidence grade combines elements of reliability and accuracy, for example:

- A2 Data based on sound records etc. (A, highly reliable) and estimated to be within +/- 5% (accuracy band 2)

Reliability and accuracy bands are shown in the tables below.

Reliability Band	Description
A	Sound textual records, procedures, investigations or analysis properly documented and recognised as the best method of assessment.
B	As A, but with minor shortcomings. Examples include old assessment, some missing documentation, some reliance on unconfirmed reports, some use of extrapolation.
C	Extrapolation from limited sample for which Grade A or B data is available.
D	Unconfirmed verbal reports, cursory inspections or analysis.

Accuracy band	Accuracy to or within +/-	But outside +/-
1	1%	-
2	5%	1%
3	10%	5%
4	25%	10%
5	50%	25%
6	100%	50%
X	Accuracy outside +/- 100 %, small numbers or otherwise incompatible (see table below)	

Certain reliability and accuracy band combinations are considered to be incompatible and these are blocked out in the table below.

Compatible confidence grades				
Accuracy band				
	A	B	C	D
1	A1			
2	A2	B2	C2	
3	A3	B3	C3	D3
4	A4	B4	C4	D4
5			C5	D5
6				D6
X	AX	BX	CX	DX

