Battery back-up for superfast broadband services which use fibre optic technology

Proposed guidelines on General Condition 3 for next generation fibre access

Consultation

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Closing Date for Responses: 6th September 2011

Contents

Section 1

Executive summary

1.1 Superfast broadband is now being widely deployed across the UK, offering new capabilities to customers, such as high definition video streaming, as well as significantly enhancing existing ones such as teleworking. It also provides a framework onto which new and innovative services can be provided in the future.

1.2 Superfast broadband can be delivered to customers in a variety of ways, but the focus of this consultation is the provision of fibre all the way to the customer's premises. Although this is expected to result in the highest speed broadband capability to customers, optical fibre does have one intrinsic limitation with respect to the traditional copper line. A conventional telephone draws the necessary power for operation from the local exchange via the copper telephone wires, and as a result can continue to function even when there is a power cut at the premises. However, optical fibres are unable to support this arrangement as they do not conduct electricity.

1.3 The consequence of this limitation in fibre optic networks is that in the event of a power failure at the household, and absent of any other measures, the telephone would cease to function. Hence calls, including calls to the emergency services, would not be possible.

1.4 In practice, alternative power to support calls over optical fibre networks during a power cut is supplied via a battery backup facility installed at the customer's premises. This is the solution we observe being adopted by fibre optic superfast broadband schemes around the world.

1.5 We believe that a battery should always be provided to customers taking fibre optic superfast broadband because if no battery backup facility were provided, this would represent a risk to life as consumers may have no viable alternative to the fixed line telephony service in order to contact the emergency services.

1.6 The question that arises is the length of time over which battery backup should remain operational when the power cut occurs. It is this question that this consultation seeks to address. Given the expected growth in fibre optic networks over the next few years and in light of recent survey evidence that suggests that communications providers are adopting a mix of power backup solutions in their current deployments, we believe that this represents an appropriate time to address this issue.

1.7 Ofcom proposes to reduce the requirement on communications providers to provide battery back-up from 4 hours to 1 hour for the following reasons:

- The majority of power cuts that take place in the UK last for much less than an hour with longer outages increasingly unlikely, hence 1-hour of back-up will provide protection for most of the time during power cuts. In addition, the widespread adoption of mobile phones increases the protection available to consumers;

- The backup power supply unit needed to support 1 hour of back-up are smaller, lighter and more discrete than those needed to support 4 hours, hence are more likely to be accepted by customers at installation;

- The batteries that provide 1 hour of back-up are easier to buy, install and recycle than those needed for 4 hours, thus they are more likely to be maintained by customers. Batteries providing 1 hour back-up are also expected to be less expensive to procure, both for communications providers and potentially, in the case of replacement, consumers;

- A battery backup facility of 1 hour allows the ability to make an emergency call in situations where the reason for the call is linked to the reason for the power cut.

1.8 Ofcom also acknowledges that in some cases consumers may need greater protection and therefore we consider that communications providers should take appropriate steps to address such needs. Approaches may include the development of an enhanced protection facility that is provided to those individuals that need additional protection. We would, however, examine on a case by case basis, the approaches taken by communications providers to address the needs of their customers.

1.9 The purpose of this consultation is to gather feedback from stakeholders with respect to the above proposals.

Next steps

1.10 This 10 week consultation will close on 6th September 2011. Based on the feedback we receive, we currently expect to make a statement on the issue of battery backup for fibre access deployments in the autumn 2011.

Section 2

Background and introduction

2.1 The deployment of superfast broadband (SFBB) to households represents a profound change in the range of services and applications that consumers can enjoy. In particular, those SFBB deployments that provide optical fibre directly to the premises offer a substantial increase in bandwidth that can be delivered to the home compared with conventional copper lines. Indeed, the bandwidth that can be supported by fibre technology is so high that it may be considered 'future-proof' in that no further infrastructure technology improvement has yet been identified.

2.2 Although fibre to the premises (FTTP) provision leads to superior broadband experience to the customer, optical fibre is unable to supply electrical power from the local exchange to the customer premises in the same way that traditional copper wires are able to do. As a result, in the event of a power cut at a household, and absent of other measures, all services supported by the optical fibre network, including telephony, will cease to function. In contrast, customers using conventional phone services using copper wires should still retain the ability to make a telephone call using their corded telephone.

2.3 In practice, alternative power to support calls over optical fibre networks during a power cut is supplied via a battery backup facility installed at the customer's premises. This is the solution we observe being adopted by fibre optic superfast broadband schemes around the world.

2.4 The consequential loss of telephony as a result of power failure has been an issue for a number of innovative telephony services over the years. For example, Voice over IP (VoIP) applications, whereby the customer's broadband provides telephony-like services, also rely on local power being supplied to the broadband modem.

2.5 Ofcom has previously reviewed VoIP technology with regard to the ability to access emergency services and has issued a statement on this matter[1]. We found that customers taking VoIP services could expect that the service would be capable of allowing contact to the emergency services, and if this were not the case, that the resulting delay in accessing an appropriate phone could result in increased harm. As a result we required that, in general, VoIP services should be able to support emergency calls[2].

2.6 For similar reasons, customers may expect that the phone service provided by FTTP technology would remain available in the event of a domestic power failure as this capability has always been present for traditional copper-wire telephony.

2.7 Another significant technology introduction in this context was the DECT phone. Many DECT phones (or more precisely, their base-stations) that are common in households across the UK are totally reliant on the mains power to maintain operation. While the loss of power could prevent a call to the emergency services to

[1] "Regulation of VoIP Services: Access to the Emergency Services", December 2007, http://stakeholders.ofcom.org.uk/consultations/voip/statement/

[2] Specifically it states (para 1.29): "Under the modification to GC 4, all type 2 and type 4 VoIP services, except "Click to Call" services, that allow users to make calls to national numbers, must provide 999 / 112 access at no charge."

be made from premises either with DECT phones or using FTTP technology, there are practical and regulatory differences between these technologies.

2.8 From a practical perspective a customer with a DECT phone wishing to maintain the ability to call the emergency services can always choose to retain a wired telephone. Similarly, a customer taking a VoIP service may also have the ability to keep a conventional telephone solely for the purpose of making emergency calls. However, for customers of FTTP, similar options may not be available as there may not be a working copper line to use.

2.9 Customers of fibre access technology are less likely to have an operational copper line available for traditional telephony services, either because the premises is in a new-build development in which there is no copper line available, or because the existing phone line has been discontinued in favour of fibre and hence is no longer operational. In such cases, the consumer is reliant on the FTTP technology to make fixed-line telephone calls, including those to the emergency services. Given this potential lack of choice it is appropriate for Ofcom to consider the extent of consumer protection that should be put in place.

2.10 These practical differences are reflected in the regulatory regime which regulates networks but not customer equipment. The FTTP optical network terminal ("ONT") represents the interface between the operator's network and the customer's in-home wiring. It is this unit that requires backup power to be provided in order for telephone calls to be made in the event of a power cut. The ONT forms part of the electronic communications network as apparatus comprised in the transmission system within the definition set out in section 32 of the Communications Act 2003. This means that regulatory obligations concerning an electronic communications network would include elements up to and including the ONT. This is unlike consumer devices, such as DECT phones, that fall under different regulatory regimes, such as those concerning radio equipment and telecommunications terminal equipment.

2.11 In 2008, Ofcom consulted and subsequently released a statement on next generation access provision in new build (Greenfield) sites[3]. The statement addressed a number of issues, including the battery backup of customer premises equipment (specifically the ONT). We stated:

2.11.1 Para 1.12: "*We would expect the network providers to initially supply the relevant customer premise equipment with a backup power supply.*"

2.11.2 Para 1.13: "*The decision about the exact length of time a backup power supply should last is for network and service providers to determine. However, to provide an indication of what level of time we would consider practicable and reasonable, we support the option chosen by new build fibre providers that are generally initially opting for backup lasting at least 4 hours. This is also in line with the options followed internationally.*"

2.12 Following the release of the new-build statement Ofcom issued, in May 2009, additional guidance to the industry in relation to new-build developments, which again included the issue of battery backup[4]. In this guidance, Ofcom reiterated its position as set out in the earlier statement: "*We expect PTN and PATS providers to come to their own agreements about how long backup should last in order for them*

[3] Next Generation New Build - Delivering super-fast broadband in new build housing developments, Ofcom, Sept 2008.
[4] New Build Investment Guidance on Telecoms Regulation, Ofcom, May 2009.

to feel comfortable that they have taken all reasonable practicable steps to provide uninterrupted access to emergency services. However, to provide an indication of what level of time we would consider practicable and reasonable, we support the option chosen by many new build fibre providers that are generally initially supplying backup lasting 4 hours. It is recognised that this solution may change over time."

2.13 At that time, deployments of next generation access technology, particularly in the UK, were still very much in their infancy. In recognition of this, we anticipated that a review of the issue of battery backup would be required as and when circumstances indicated that it was necessary.

2.14 Both BT[5] and Virgin Media[6] have announced publically that they intend to deploy fibre to the premises (FTTP) technology in addition to their existing fibre to the cabinet (FTTC) and cable TV (CATV) technology deployments/upgrades. As a result of these and additional potential schemes arising from the HM Government's Broadband Delivery UK (BDUK) programme that has recently commenced, we anticipate that FTTP deployments over the coming years will significantly increase.

2.15 Additionally, Analysys Mason, on behalf of Ofcom, has recently completed a study into existing next generation access deployments across the UK, particularly examining smaller, local/regional schemes[7]. This report reviewed these developments with regard to a number of different attributes and capabilities (including, for instance, their scale, technology use, business model and wholesale access products). One of the findings of the report stated: "*Access providers are taking very different approaches to providing battery back-up at the customers' premises to support a lifeline telephony service in the event of power failure.*" On this issue, it concluded that: "*Ofcom has provided clarification as to the requirements in the past, but different approaches are still being taken, and greater clarity needs to be provided.*"

Consequences of 4 hour battery provision

2.16 Due to the power consumption of FTTP equipment, batteries providing sufficient power for the systems to remain operational for a number of hours are generally bulky units. Examples from the UK[8] and elsewhere[9] indicate that long duration (4-8 hour) batteries can be large units, potentially hampering the installation process as suitable space needs to be identified in proximity to the optical network termination equipment and available mains power. These practical problems may diminish the theoretical benefit they offer over shorter duration alternatives.

2.17 Lead-acid batteries are commonly used for such backup purposes due to their maturity and reliability in providing similar capabilities for uninterruptable power supplies (UPS) for the computer hardware. However, their large size can present issues to consumers when the batteries need replacing, either because such materials generally require special disposal arrangements and can be expensive to

[5] 'BT's Results Presentation for the Second Quarter Ended 30th September 2010'; www.btplc.com
[6] "Virgin Media lays new digital foundations with Persimmon Homes", Press release, November 2010, pressoffice.virginmedia.com
[7] "UK local fibre access deployment study", Analysys Mason, January 2011. http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/local-fibre-access.pdf
[8] See, for example, http://www.openreach.co.uk/orpg/home/updates/archivedbriefings/superfastfibreaccessbriefings/archivedsffabriefings.do (July - Sept 09 briefing)
[9] http://www22.verizon.com/regulatory/files/FTTP_060105.pdf

procure, in cases where the customer takes responsibility for battery maintenance or involves accommodating an engineering visit in cases where the communications provider retains such responsibility.

2.18 From a customer perspective, the provision of larger battery backup facilities presents a number of significant issues from their initial installation through to their ongoing maintenance. As a result, the deployment of larger batteries may be counter-productive as customers may refuse to accept them for installation or fail to subsequently maintain them properly. This would result in customers receiving far less protection as a result of the battery backup facility than a theoretical analysis would suggest.

2.19 In light of these issues we believe that communication providers may find that the installation of such units in the course of FTTP deployment can present a number of challenges in terms of:

- the upfront deployment costs associated with long-duration battery provision;
- non-trivial installation processes (particularly in older premises in which the necessary space may not be easily identifiable);
- customer reluctance to accept and subsequently maintain the battery backup units.

2.20 The way that communications providers have addressed, and continue to address, these challenges may give rise to the variations in battery backup solutions that the survey of local/regional NGA deployments has identified.

2.21 We therefore believe that a review of the guidance regarding battery backup for FTTP deployments is now appropriate.

2.22 To inform our examination of battery backup we have drawn from a number of sources in order to understand the likelihood that battery backup would be called upon to support an emergency call and the consequences to communications providers and consumers in deploying and maintaining such backup.

2.23 The remainder of this consultation document is structured as follows:

- Section 3: We discuss our duties and the basis on which we propose to adopt guidelines to address battery backup for FTTP.
- Section 4: We set out the options we have considered and the criteria against which these options have been assessed, along with the overall scope of the consultation.
- Section 5: We summarise key aspects and evidence forming part of our impact assessment of those options.
- Section 6: We set out our proposed guidelines, particularly key principles (if adopted) that we would expect to take into account in investigating communications providers' compliance with their obligations under GC3 in the context of fibre access provision.

2.24 Stakeholders are invited to respond to specific questions, particularly regarding the principles proposed. Following the conclusion of this consultation, we expect to publish a statement in the autumn.

Question 1: Do you agree that Ofcom's guidance on battery back-up lifetime needs to be reviewed at this time?

Section 3

Our duties

Introduction

3.1 We believe that guidelines on the issues covered by this consultation would have the benefit of contributing to effective regulation by improving transparency and understanding, including future investment decisions taken by stakeholders. In this Section, we explain the basis for them along with our policy objectives.

Basis for our proposed guidelines

3.2 When the new EU communications regime was implemented in the UK on 25 July 2003, licences granted under the Telecommunications Act 1984 were replaced by the General Authorisation regime. The General Authorisation is subject to the General Conditions of Entitlement. These Conditions are imposed by Ofcom under Part 2 of the Communications Act 2003 and they apply to the providers specified in them.

3.3 The requirements in GC3 were initially imposed in July 2003 to implement the Community obligations in Article 23 of the Universal Service Directive (2002/22/EC). That Article has been replaced by a new Article 23 by virtue of Article 1(14) of the so-called Citizens' Rights Directive (2009/136/EC). On 23 May 2011, Ofcom published its statement entitled 'Changes to the General Conditions and Universal Service Conditions – Implementing the revised EU framework'[10]. That statement includes our decisions on changes made to GC3, which now reads (in the relevant part):

> 3.1 The Communications Provider shall take all necessary measures to maintain, to the greatest extent possible:
>
> […]
>
> (c) uninterrupted access to Emergency Organisations as part of any Publicly Available Telephone Services offered.

3.4 That obligation applies to a "Communications Provider" as defined in GC3.3, namely "a person who provides Publicly Available Telephone Services and/or provides a Public Communications Network over which a Publicly Available Telephone Service is provided". The expression "provide" (and cognate expressions) is to be construed in accordance with section 32(4) of the Communications Act 2003. It will therefore depend on the factual circumstances in each case as to who is to be regarded as "providing" the services or network for the purposes of GC3. It is the responsibility of communications providers to ensure that they apply and comply with these obligations (where they apply to them); the failure of which may lead to Ofcom's intervention. However, as explained in this consultation, we note that the apparatus installed in the customers' premises into which customers connect their in-home equipment in the present context (i.e. the ONT) constitutes an integral part of an electronic communications network, but the customer premises equipment (CPE), such as the telephone, does not.

[10] http://stakeholders.ofcom.org.uk/binaries/consultations/gc-usc/statement/Statement.pdf

3.5 For reasons discussed in this consultation, we consider that it is important to propose guidelines on the specific issues covered by them to set out our general approach in investigating compliance of the GC3 obligations. The basis for any guidelines we may decide to adopt is therefore something that appear to us incidental or conducive to the carrying out of our functions under the Communications Act 2003, in particular for the purposes of taking any enforcement action going forwards.

Policy objectives

General duties

3.6 Under the Act, our principal duty is to (a) to further the interests of citizens in relation to communications matters and (b) to further the interests of consumers in relevant markets, where appropriate by promoting competition. We consider that safety of life matters represent an important citizen interest and therefore are central to this consultation.

3.7 In performing our duties, we are also required to have regard to a range of other considerations, which appear to us to be relevant in the circumstances. In this context, we consider that a number of such considerations are relevant, for example, the circumstances of citizens who appear to us as needing special protection, the desirability of encouraging the availability and use of high speed data transfer services and the desirability of encouraging investment and innovation in the telecommunications market.

3.8 In performing our principal duty, we must also have regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed, and any other principles appearing to Ofcom to represent the best regulatory practice. We also place emphasis on the following of Ofcom's own general regulatory principles[11] as particularly relevant to the proposed guidelines:

- ensuring that our interventions are evidence-based, proportionate, consistent, accountable and transparent in both deliberation and outcome;
- seeking the least intrusive regulatory mechanisms to achieve our policy objectives;
- consulting widely with all relevant stakeholders and assessing the impact of regulatory action before imposing regulation upon a market.

3.9 We believe that our proposed guidelines will achieve these objectives by providing stakeholders with clarity and certainty on how in general we intend to approach compliance with GC3 in relation to the specific issues covered by the guidelines. Our proposed general and non-binding approach are summarised in the principles set out in Section 6.

3.10 However, we wish to make it clear that, even if we decide to adopt these guidelines, we may depart from them in individual cases. They are simply intended to set out the general approach we would normally expect to take in investigating compliance with the GC3 obligations, but they will not have binding legal effect and each case will be considered on its own merits. If we decide to depart from them, we will set out

[11] http://www.ofcom.org.uk/about/sdrp/

our reasons for doing so and they may be subject to further review and revision from time to time.

Specific duties for fulfilling Community obligations

3.11 GC3 is a condition of entitlement set under section 45 of the Communications Act 2003 and it therefore falls under the regulatory framework harmonised across the European Union. As such, section 4 of the Act requires us to act in accordance with the six Community requirements prescribed by that section. Whilst we would not set or modify GC3 by adopting the proposed guidelines, we have had regard to those requirements in reaching our proposals to ensure that they are consistent with these Community requirements.

3.12 Of these requirements, we believe that the following are particularly relevant in this review:

- to promote competition in the provision of electronic communications networks and services, associated facilities and services;
- to promote the interests of all persons who are citizens of the European Union;
- to encourage, to such extent as Ofcom considers appropriate for certain prescribed purposes, the provision of network access and service interoperability, namely securing efficient and sustainable competition; efficient investment and innovation and the maximum benefit for customers of communications providers.

3.13 We consider that our proposed key principles address these requirements by (among other things) promoting regulatory predictability and promoting efficient investment and innovation in new and enhanced infrastructures (here FTTP), whilst taking due account of the variety of conditions relating to competition and consumers that exist in the various geographic areas within a Member State (particularly with regard to our proposed principle concerning enhanced protection).

3.14 We also consider that our proposed guidelines are consistent with our duty to take account of the desirability of carrying out our functions in a manner which, so far as practicable, does not favour one form of networks or services over another. GC3 remains technologically neutral, but we explain in this consultation why the taking of certain proportionate steps for fibre access due to its technology are needed to properly comply with the GC3 obligations.

3.15 We have also considered whether our proposed approach is consistent with our policy with regard to battery backup for the provision of VoIP services[12]. Our general guidance explains that the decision to provide battery backup for Customer Premises Equipment ("CPE") should be left to the VoIP service provider, who may provide such a facility as part of a service offering. We expressed that view in relation to the provision of VoIP services (particularly when provided over existing xDSL, cable modem, licensed wireless and UMA) involves the use of CPE which is not powered by the broadband service or network termination point or equipment. That general guidance recognised the diversity of VoIP services in the market and their evolving and innovative nature. The provision of battery backup for VoIP services is often related to terminal equipment such as home computers. In contrast, our proposed approach here deals with the typical FTTP installation case whereby the ONT, for

[12] "Regulation of VoIP Services", March 2007, Annex 5.

which the battery backup is essential, forms part of the electronic communications network itself (see Section 2 above). Therefore, we do not consider that the same considerations apply as between FTTP and VoIP services in general.

3.16 In summary, we consider that our proposed guidelines are consistent with our statutory duties under both sections 3 and 4 of the Act, because they are likely to further the interests of citizens, promote competition and encourage efficient investment in infrastructure as well as secure the maximum benefit for consumers. We set out our reasoning for this view in the following sections of this consultation document.

Section 4

Options considered

4.1 This Section sets out the options we have considered for the purpose of proposing guidelines with respect to battery backup for fibre access deployments. The criteria against which these options have been considered are also discussed along with clarification as to the extent and remit of this consultation.

Options and criteria

4.2 We consider that the options for battery backup fall into four main categories:

- Retaining our support for 4 hour battery backup provision;
- Increasing the minimum battery backup duration;
- Reducing the minimum battery backup duration;
- Removing the requirement to provide battery backup for FTTP.

4.3 Each of these options will have consequential implications on the parties involved in different ways and to different extents. We believe that the principal criteria that reflect the consequences of battery backup on both consumers and communications providers are:

- the level of protection afforded by the solution with respect to the risk that such protection would be called upon;
- the costs associated with the provision of the solution, and the possible risk to infrastructure investment and competition that may result;
- the costs and practicalities associated with the maintenance (i.e. replacement) of batteries, and the risk and consequences if such maintenance does not occur;
- the potential environmental issues of battery disposal;
- the issues that could arise in accommodating the solution by consumers and the potential implications for the adoption of FTTP.

4.4 We have taken into account the above criteria in assessing the options for our impact assessment.

Scope of consultation

4.5 To provide clarity as to the extent of this consultation, we define what we consider to fall with the scope of this review.

4.6 This consultation is concerned with the facilities provided at customers' premises as a result of a provision of fibre to the premises technology. Such facilities generally involve the provision of mains power to allow the network termination equipment to operate and it is for these solutions that this consultation is directed[13].

4.7 This consultation is not concerned with fibre to the cabinet-based solutions in which power for telephony services is provided along the copper wire and therefore no customer installed battery backup to maintain telephony services is necessary.

4.8 We appreciate that no network will be 100% available as a number of factors may cause an attempted call to emergency services to fail. These include the malfunction of the network equipment or external cable dig-up or that the customer had maintained the battery poorly (e.g. not replaced the batteries when necessary). While we accept that such factors do impact on the overall availability of service, for the purposes of this consultation, we consider only the duration of the battery backup facility in the customer premises.

4.9 Therefore, this consultation is not concerned with the provision of facilities in the local exchange or core network to support uninterrupted access to emergency facilities. Moreover, it is not concerned with the availability of mobile networks.

4.10 The consultation does, however, concern the provision of fibre to households or business premises that rely on fibre for fixed-line telephony irrespective of whether premises have legacy copper lines available. Hence the guidelines proposed would generally apply to both FTTP 'overlay' and 'new-build' solutions.

4.11 The particular concern of this consultation is the ability for consumers to access emergency services in the event of a single domestic power failure. As a result, the longevity times should refer to the time available to allow for appropriate standby time plus time for a call to the emergency services. We understand that for current fibre access technology active and standby power usage is very similar, but for the avoidance of doubt the distinction between the two times is made.

Question 2: Do you agree with the scope of this consultation as set out in Section 4?

[13] Ofcom is aware of technologies intended to allow optical power to be provided from the exchange through the fibre to support analogue telephony. Providers are free to investigate and deploy such technology instead of batteries, which would not fall within the specific remit of this consultation. However, as we are currently unaware of commercial deployments of this technology, the focus of this consultation remains on battery provision for FTTP deployments to offer protection against domestic power failure.

Section 5

Specific impact issues

Introduction

5.1 The analysis presented in the entirety of this consultation represents an impact assessment, as defined in section 7 of the Communications Act 2003. However, this Section summarises specific aspects of the impact assessment we have carried out, including associated evidence.

The citizen and/or consumer interest

5.2 In the previous Section, we set out the principles and duties that we believe are relevant in this consultation, particularly regarding the interests of citizens, and the criteria against which the options have been assessed. All of these criteria affect the citizen/consumer either directly or indirectly. From the consumer perspective, we believe that these criteria can be summarised in the following terms:

- the level of protection afforded by the solution with respect to the risk that such protection would be called upon (in particular the likelihood that the backup facility would be called upon in an emergency);
- the costs associated with the provision of the solution, and the possible risk to infrastructure investment and competition that may result. High deployment costs incurred by communications providers could result in limited availability of fibre access services offered to consumers, and such costs may be passed on to customers;
- the costs and practicalities associated with the maintenance (i.e. replacement) of batteries (irrespective of whether the communications provider or the consumer takes responsibility for the battery maintenance), and the risk and consequences if such maintenance does not occur;
- the potential environmental issues of battery disposal/recycling;
- the issues that could arise in accommodating the solution by consumers and the potential implications for FTTP adoption.

Ofcom's policy objective

5.3 We describe our duties, including policy objectives, in Section 3.

5.4 To achieve these duties and objectives, we specifically seek to:

- allow for the protection of consumers in the event of a power cut to enable emergency calls where proportionate;
- minimise, where possible, the burden on consumers in accepting and maintaining the protection solution;

- promote efficient levels of investment in fibre access deployment and encourage competition in these markets.

Evidence used in impact assessment

5.5 Table 1 (provided by Ofgem) lists the fraction of domestic power outages (longer than 3 minutes) in the UK that were restored within the timescales indicated. This information includes comparable statistics over the last five years.

5.6 The figures provided here represent all outages including High Voltage transmission (that tends to result in shorter duration outages for large numbers of customers) and Low Voltage distribution (resulting in fewer customers being affected, but usually for longer).

5.7 The information illustrates two key points. Firstly that power outage durations have been relatively stable over recent years and hence there is no evidence to suggest that they are likely to significantly deteriorate in the near term. This is important as any proposals need to be relevant and appropriate over time.

5.8 Secondly, it highlights the fact that the majority of power outages last less than 1 hour, with long outages (>3hours) representing a small fraction (around 12%) of the total outages experienced in a year.

5.9 This information is relevant to our assessment as it bounds the overall benefits of longer duration batteries due to the diminishing incremental benefit that such batteries would provide. As will be discussed later, a backup facility will provide protection for the first period in outages that exceed the battery duration. As a result, the figures presented in Table 1 are, on their own, insufficient for a determination of appropriate power backup longevity.

Table 1. UK domestic power outage duration percentages.

Year	***05/06***	***06/07***	***07/08***	***08/09***	***09/10***
From 3 minutes up to but excluding 1 hour	59%	56%	57%	59%	60%
From 1 hour up to but excluding 2 hours	24%	23%	24%	23%	21%
From 2 hours up to but excluding 3 hours	8%	8%	8%	8%	7%
From 3 hours up to but excluding 6 hours	6%	8%	7%	7%	7%
From 6 hours up to but excluding 12 hours	3%	4%	3%	3%	4%
From 12 hours up to but excluding 18 hours	1%	1%	1%	1%	1%

Source: Ofgem

5.10 Table 2, also provided by Ofgem, provides the number of outages (interruptions) of over 3 minutes' duration that 100 customers experience per year. For example, in 2009/2010, 100 customers suffered around 72 outages in the year, or put another way, the probability that a typical customer would suffer a power interruption in that year was around 0.72 (or around 500 days between interruptions). This has been broadly consistent over the past five years. It should be noted that these figures are aggregated for the entire UK; variations arise for different power distribution network operators in different geographic locations[14].

Table 2. UK domestic power outages per 100 customers per annum.

Year	*05/06*	*06/07*	*07/08*	*08/09*	*09/10*
Power Interruptions per 100 customers	74	88	77	73	72

Source: Ofgem

5.11 Table 3 provides an approximate breakdown of emergency call statistics derived from data provided by the 999/112 liaison committee. This information provides an appreciation of the volume of potentially life-saving emergency calls that are made on an annual and daily basis.

Table 3. Breakdown of emergency calls in UK 2009/2010

Metric	*Approximate number per year*	*Approximate number per day*
Total number of 999/112 calls	31.4million	86,000
Of which were made from land-lines[15]	12million	33,000
Of which are connected to emergency services[16]	7.1million	20,000
Of which were (ex-ante) deemed 'urgent'[17]	2.1million	6,000

[14] An example of geographic (or more precisely, electricity distribution network organisation) variation of power interruptions can be found here: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=122&refer=NETWORKS/ELECDIST/QUALOFSERV

[15] Source: S. Beresford, 999/112 Liaison committee (Mar 2011)

[16] The ratio of connected/unconnected calls is assumed the same for fixed line and mobile calls.

[17] Assumes that 30% of calls are triaged as Category A – potentially life-threatening at the time of call. From VoIP consultation response: http://stakeholders.ofcom.org.uk/binaries/consultations/voip/responses/doh.pdf

The benefit of battery backup to support emergency calls

5.12 There are two distinct situations whereby an emergency call may be required during a power cut to a premises. The first is where there is a link (or correlation) between the reason for the call and the cause of the power cut. The second situation is where the call and power cut are independent events (i.e. they are uncorrelated).

5.13 Although no figures are available to quantify the number of correlated events, we believe that when such circumstances do arise, the benefit of having a battery backup to allow emergency calls is significant. Statistically, a very short duration battery would be sufficient to allow calls to be made concerning emergencies linked to the start of the power cut. However, as we will discuss later, in practice the length of time that a battery would need to remain operational in such circumstances would be dependent on activities that occur on human timescales, and we consider that a battery duration of 1 hour would be appropriate to cater for these situations.

5.14 Considering uncorrelated (independent) events, from the information in Table 3, it follows that the probability that a typical household (of the 24 million households in the UK[18]) would make a fixed-line, urgent emergency call on a given day is around 1 in 4,000.

5.15 From Table 1 the probability that the power outage would be less than 1 hour is 60%; less than 2 hours 81% etc. For calls that are uncorrelated with the cause of the power cut a battery backup facility of 1 hour would ensure that all emergency calls made in a 60 minute power outage would be successful and half of those made during a 2 hour outage should be successful. In this manner the effective protection offered by various battery durations can be estimated as shown in Table 4.

5.16 From Table 4 a battery backup of 1 hour should be able to support calls for around 74% of the time during power outages, and a 4 hour backup should be able to support calls for around 94% of the time given the relative infrequency of long-duration power outages.

5.17 This means that for battery backup facilities between 1 and 4 hours, in the event of a power cut, the FTTP system should be operational between 74% and 94% of the time. This needs to be considered in the context of not only the likelihood of a power cut taking place, but also the probability that an emergency call needs to be made at the same time as the outage.

5.18 From a customer's perspective the ability to successfully make an emergency call will depend on the likelihood of a power failure occurring at the same time (at least around 1 in 500 from Table 2, which means that for around 99.8% of days no significant power cut occurs) and the probability that the backup power was still operational.

[18] http://www.communities.gov.uk/housing/housingresearch/housingstatistics/housingstatisticsby/householdestimates/livetables-households/

Table 4. Protection offered by battery backups of different durations

		Fraction of outages that a battery would be operational			
		Battery duration (hours)			
Outage duration (hours)	***Fraction of outages of this duration***	***1***	***2***	***3***	***4***
1	0.6	0.6	0.6	0.6	0.6
2	0.21	0.11	0.21	0.21	0.21
3	0.07	0.02	0.05	0.07	0.07
6	0.07	0.01	0.02	0.04	0.05
12	0.04	0.00	0.01	0.01	0.01
18	0.01	0.00	0.00	0.00	0.00
Total		***0.74***	***0.89***	***0.93***	***0.94***

5.19 From Table 4, for a 1 hour battery backup this probability is 0.74 (in other words, 26% of the time for 0.2% of days), which means that for around 99.95% of the time, an emergency call is possible (or, put another way, for just over 4 hours in a year a customer would find themselves unable to make a call due to a power outage). For a two hour battery backup, this increases to 99.98%, and for a 4 hour battery this increases to 99.99% (which translates to around 1 hour in a year that customer would typically be unable to make a call as a result of a power cut). We also note, and discuss later, that many customers have mobile phones, which greatly increases their capability of contacting the emergency services in the event of a power failure.

5.20 The data provided in Tables 2 and 3 allow an estimation of the likelihood that an emergency call is made during a power cut to be made. A high-level calculation using this data (that assumes all households are served by FTTP and that the power failure and emergency call are independent events) indicates that the probability that the emergency call is made on the same day as the power failure is of the order of one in two million.

- It should be noted that the probability of the emergency call occurring at the same time of the day as a power failure would be significantly less than this figure, particularly if they are indeed independent events.

5.21 A number of additional factors need to be considered in our analysis. Factors that are qualitatively considered include:

- The proportion of emergency calls that result in a net benefit to society/consumers. Table 3 provided a figure of 'urgent' calls made to the emergency services on an annual and daily basis. However, on subsequent attendance, not all such calls actually result in life saving assistance. For example, in our analysis of access to emergency services from voice over IP (VoIP) technology we assumed that 12% of connected calls to the ambulance

service were subsequently deemed life-saving[19]. Although the primary concern is the risk to life resulting from lack of access to emergency services, we note that there can be value in responding promptly to non-urgent yet nonetheless legitimate emergency calls hence the provision of batteries can offer additional consumer benefit in this respect. However, exact figures for legitimate call volumes to all emergency services and consequential benefits cannot readily be obtained.

- The number of households that will be served by FTTP. As discussed in the introduction (Section 2), we anticipate that the number of premises serviced by FTTP could increase substantially over the coming years as a result of investment by large and smaller communications providers in both urban and rural areas. The greater the number of premises that are served with FTTP technology, the more likely an emergency call is made from such a premises, hence increasing the probability that such a call may require the protection provided by a fibre-access battery backup facility.

- DECT phone usage. If a household exclusively uses DECT phones (i.e. no corded phones), then it is very likely that in the event of a power failure telephone calls are not possible as the DECT base-station generally requires power for its continued operation. It is difficult to estimate the number of households that rely exclusively on DECT phones to make calls.

- Mobile phone take-up and availability. From our market reviews, we know that mobile phone coverage and handset take-up in the UK[20] is very high (around 95% and 90% respectively). However, the ability to make an emergency call is also dependent on the mobile network to support the call. In addition to the general availability of the mobile communications network, consideration is also necessary of correlated events between failures of domestic electricity power and of the local mobile communications network. Even in situations where a customer has access to an operational mobile phone, the initial attempt to make an emergency call may be via the fixed line phone. In our consideration of emergency calls from VoIP technology we concluded that delays resulting from seeking an alternative phone represented a substantial risk to life. We believe that similar circumstances could arise as a result of a non-functioning FTTP phone.

5.22 Given the uncertainties in these factors, it is not possible to make an accurate assessment of the likelihood that an urgent emergency call would be made from a fibre access line at the same time that a power outage had occurred at the premises. However, it is likely that such a probability would be many millions to one. Furthermore, taken together with the data from Table 4, in the event of such an occurrence, the probability that the call cannot be made because the backup power supply is exhausted reduces further.

5.23 In order to assess the potential benefit that battery backup provision could provide, both the probability of such provision being required as well as the value that can be attributed to a successful call. Although figures to estimate the typical economic value of life (including injury) have been produced by the UK government to assist in

[19] "Regulation of VoIP Services: Access to the Emergency Services", (consultation) July 2007 http://stakeholders.ofcom.org.uk/consultations/voip/?a=0

[20] http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/cmr10/

cost benefit analyses[21], particularly for transport and civil engineering purposes, there are a number of ways and different assumptions that can be used in trying to quantify it. We are minded to take a cautious approach in this respect given the difficulties associated with assigning a financial value to a life.

Summary

5.24 In this subsection we have shown that:

- The probability that an emergency call would be made at the same time as a domestic power failure can be extremely small (of the order of many millions to one).
- Each year millions of urgent calls are made to the emergency services. The number made from fibre access lines, hence relying on battery backup in the event of a power cut, will depend on the rollout of FTTP as well as DECT and mobile phone usage and availability.
- The protection offered by a battery backup of 1 hour is such that it should remain operational for around 74% of the time during power outages. This rises to 94% for a 4-hour battery lifetime.
- We anticipate that there would be a correlation between power outages and emergency calls. We expect that this would lead to more calls being made during power cuts, many being made fairly soon after the outage, thus increasing the effective protection of shorter battery backups.

5.25 We judge that the provision of battery backup in fibre access deployments does provide a necessary benefit to consumers, although the increased level of protection offered falls significantly after the first hour.

Consumer and stakeholder implications of battery provision

5.26 Although providing a necessary benefit to consumers, we acknowledge that the provision of batteries will also impose burdens and costs on customers as well as on communications providers. To determine a level of protection that can be considered proportionate these implications also need to be reviewed. For this, battery technology and costs need to be examined.

5.27 We note from FTTP manufacturers that the power consumption of optical termination terminals (ONTs) can be of the order of 8-10W[22]. While we are aware of activities to introduce power saving modes in such equipment[23], we are not aware of any widespread implementations to date.

5.28 We also note that batteries can be obtained in a variety of forms, sizes, materials and capacities. While standardised battery sizes are widely available for general use, bespoke battery forms may be suitable for specific applications where space or power requirements are significant. It is also important to note that batteries of

[21] http://www.hse.gov.uk/economics/eauappraisal.pdf
[22] See for example, http://www.tellabs.com/products/1000/tlab1600ont_714g.pdf, or http://www.globaltele.com.ua/rus/filesarhiv/362/ONT.pdf
[23] "Power Saving Modes for GPON and VDSL2", E. Trojer, P.E. Eriksson (http://www.ieee802.org/3/10GEPON_study/email/pdfV3kikUObAl.pdf)

standardised sizes may exhibit different power capacities[24], hence to achieve a given battery longevity both the physical size and the capacity (usually measured in mAh) are crucial parameters. As discussed earlier in this section (paragraph 5.4) these consequences fall into the following themes:

- The level of protection afforded by the solution with respect to the risk that such protection would be called upon;
- The costs associated with the provision of the solution, and the possible risk to infrastructure investment and competition that may result;
- The costs and practicalities associated with the maintenance (i.e. replacement) of batteries, and the risk and consequences if such maintenance does not occur;
- The potential environmental issues of battery disposal;
- The issues that could arise in accommodating the solution by consumers, and the potential implications for the adoption of FTTP.

Access to emergency services

5.29 As noted in Table 1, the majority of power cuts last less than 1 hour, with longer outages increasingly unlikely. Therefore, the additional protection provided by batteries of longer durations becomes increasingly small. To protect against all power failures a battery backup of many hours, possibly days, would be required.

5.30 It is also necessary to consider the length of time that a call (or series of calls) to the emergency services may take to complete. While calls to emergency services typically last less than 5 minutes, some may last longer as *in situ* assistance may be provided via the phone. Additionally, the emergency call centre may call back to gain more information prior to the arrival of emergency services.

5.31 Even where there is a high correlation between the power outage and the emergency call (for example from a common cause), there may be delays between an incident and the consequent emergency call being made due to the fact that reactions would take place on human timescales.

5.32 Consequently, for a battery backup facility to offer effective protection there is a minimum longevity that needs to be offered for such protection to be practically viable.

Battery accommodation and maintenance by consumers

5.33 Noting the power consumption that would need to be provided to support ONT equipment, the burden on communication providers, and particularly on consumers, for their accommodation and ongoing maintenance would be dependent on the battery size, technology, capacity and cost. This is particularly important as if the costs and practicalities of the batteries and their maintenance are significant then there is a risk that they would not be maintained over time, and as a result the benefits of protection would be lost.

[24] See for example comparisons between rechargeable AA batteries: http://www.rechargeable-battery-review.com/consumer-batteries/aa-battery-tests/aa-nimh-battery-performance.html

5.33.1 For example, to supply power to an ONT requiring 8W for 4 hours, over 10 'AA' (1.25V, 2400mAh) batteries would be required. As discussed in Section 2, to support such lifetimes a bespoke battery would normally be provided with a dedicated charging facility. This places two burdens on the customer; the first is accommodating the unit in proximity to both the ONT and mains power outlet, and the second in battery replacement costs[25] that are likely to be high. There are also environmental concerns regarding the disposal of such batteries due to the materials used in such batteries. There is no evidence to suggest that battery technology will advance to the extent of significantly reducing the size, materials and cost of batteries in the medium term.

5.33.2 Conversely, protecting the same ONT for 1 hour would require only 3 'AA' batteries, which would present fewer issues to a customer seeking to purchase them. If FTTP providers choose to use bespoke batteries for space or operational/integration reasons, the batteries themselves should still remain small units that can be delivered to customers relatively easily. Small batteries would also ease the recycling/disposal challenge as readily available facilities and processes should be able to accommodate the battery types.

5.34 In light of the customer impact associated with large (i.e. long duration) battery installation/provision, there is a risk that potential FTTP customers would be unable or unwilling to accommodate the units in the premises. This could be particularly acute in older premises in which the ONT location may be remote from a usable power socket or where the household size and interior layout could restrict the locations where a battery may be safely installed.

5.35 Furthermore, batteries that are expensive to replace and/or require replacement processes that are either non-trivial or entail an engineer visit may not be maintained by customers over time. In such an event, the actual benefits of such provision would be significantly reduced compared to their theoretical value.

5.36 For smaller battery durations, the size, weight and cost of battery units reduces in relative proportion. Batteries, particularly those of standard specifications (e.g. 'AA', 'PP3'), can be obtained from a variety of sources including supermarkets and on-line retailers, thus encouraging price competition between vendors to the benefit of consumers.

5.37 As a result, we consider that smaller battery durations offer customers flexibility as to how to accommodate the battery solution, as well as increasing the likelihood that consumers maintain/replace the batteries as and when required. This should ensure that the levels of protection available closely match the original expectations, particularly over time.

5.38 Given the technologies available we expect that the size of the battery backup units and the costs of maintenance would rise at least in approximate proportion to the longevity of the protection offered, and potentially faster due to the changes in battery technology and levels of customization that may be necessary to support such timescales.

[25] If the communication provider takes responsibility for battery replacement, then the associated costs are likely to be passed on to the customer.

Deployment and installation costs for communication providers

5.39 The consideration of the consequences of battery solutions also needs to include the costs associated with their initial development and installation. These costs are borne initially by the communication provider, although may be passed on to the consumer.

5.40 Battery backup provision costs comprise the cost of the charging unit in which the batteries reside (which may be integrated with or separate from the ONT) and the batteries themselves. Such costs would be expected to increase in approximate proportion to the longevity of the battery solution. From inspection of uninterruptable power supply facilities, battery solutions offering many hours protection could potentially cost tens of pounds per customer.

5.41 Such costs need to be set in context of the costs associated with FTTP deployments generally. Previous analysis of potential FTTP deployments has indicated that overall costs of fibre access provision can be in excess of £2000 per customer[26], although this analysis assumed a certain take-up rate of service whereas in practice FTTP deployments are likely to be targeted to areas where take-up is expected to be high and deployment costs anticipated being lower. This analysis also estimated that the costs of customer premises equipment (CPE) may be around £80[27], which remains constant irrespective of take-up.

5.42 Therefore battery solutions that offer many hours' protection could represent several percent of the overall FTTP deployment costs, and a very large fraction of the customer premises equipment costs.

5.43 In constructing a business case for FTTP a number of factors need to be incorporated including the infrastructure and equipment costs, anticipated take-up levels and service prices. Battery backup costs could be considered as an important cost element in such calculations.

5.44 If the resulting business case for the communications provider is too weak, then this may result in the communications provider not deploying FTTP technology either in a particular area or in general.

Summary of analysis and the preferred option

5.45 Ofcom's objective in this consultation is to determine a battery backup expectation that is needed so that it offers consumers sustainable levels of protection that are proportionate to the risks that exist and that allow appropriate investment in fibre access technology to be adopted that comply with the obligations under GC3.

5.46 In our impact assessment we have found that:

- The likelihood of an emergency call being made during a power outage is small, although an exact quantification is difficult due to a number of factors involved.

[26] "The costs of deploying fibre-based next-generation broadband infrastructure", Analysys Mason, Sept 2008, Figure 1.3.
[27] "The costs of deploying fibre-based next-generation broadband infrastructure", Analysys Mason, Sept 2008, Section 3.1.2.

These factors include the correlation between power cut and emergency call and the number of customers that would be reliant on the battery backup.

- The additional levels of protection provided by battery backup diminish significantly after the first hour.
- The consequences of installing, accommodating and maintaining battery backup facilities rise in relative proportion to the longevity of the protection.
- There is a minimum longevity of battery backup that needs to be available in order for it to remain effective.

5.47 As noted above, we consider that four main options are available:

- Retaining our support for 4 hour battery backup provision.
- Increasing the minimum battery backup duration;
- Reducing the minimum battery backup duration.
- Removing the requirement to provide battery backup for FTTP.

5.48 As a result of the above assessment, we have assessed these options with respect to the criteria set out in Section 4. We summarise below our findings for each assessed option.

Retaining support for 4 hour battery backup

5.49 We consider that the widespread provision of 4 hour battery backup facilities would:

- Provide customers with full protection for 90% of all power failures, and protection for the first four hours for all other outages, leading to an overall protection of around 94% of the time during a power outage.
- Incur very high provisioning costs to the communications provider (CP), risking reduced investment in fibre access technologies and limiting competition in such areas.
- Incur high costs for the replacement of the batteries as and when they deteriorate.
- Have a large environmental impact due to the size and technology used to provide 4 hour capability.
- Face installation issues at customers' premises due to their intrinsic size and weight.

5.50 Accordingly, we consider that retaining a 4 hour battery backup expectation would be disproportionate to both communication providers and to consumers given the levels of protection afforded compared to the costs and burdens that result.

Increasing the minimum battery duration to beyond 4 hours

5.51 The same arguments apply for the case of extending the minimum battery duration, except that the additional benefits afforded by such batteries continue to diminish

whereas the associated costs and implications of such batteries continue to rise significantly. As a result we consider that increasing the minimum battery duration would be disproportionate to both communications providers and consumers.

Removing requirement for battery backup for fibre access provision

5.52 With respect to removing the expectation of providing a battery, we think that such a solution would:

- Incur no provisioning or maintenance costs to either communications providers or consumers.
- Have no associated issues with battery installation, replacement or disposal.
- Provide fixed-line customers with no facility to contact the emergency services in the event of a power failure, irrespective of duration.

5.53 Accordingly, we consider that the absence of a battery backup facility, while offering a simple FTTP deployment solution, would not meet the obligations under GC3. The aim pursued by GC3 is to take *all necessary* measures to maintain, *to the greatest extent possible*, *uninterrupted* access to emergency organisations as part of any PATS offered. Thus, it is against that aim which proportionality needs to be assessed.

Reduction of battery backup duration

5.54 We consider that a reduction of the minimum battery lifetime would meet the obligations under GC3 to allow access to emergency services, while representing a proportionate and sustainable solution for consumers and communications providers.

5.55 In particular, we consider that a minimum battery backup of 1 hour offers the most effective benefit as:

- It provides customers with full protection for 60% of all power failures, and protection for the first hour for all other outages, leading to an effective protection of around 74% of the time during a power outage.
- The costs for 1 hour batteries are expected to be significantly lower than those for 2 or more hours as such costs are expected to rise in relative proportion to the longevity.
- Battery lifetimes much less than 1 hour may not offer effective consumer protection due to the practical timescales within which events may take place.
- Battery replacement and disposal can be conducted via normal practices and domestic disposal/recycling facilities, hence could be more likely to be maintained by consumers.
- Installation in the consumer premises should be easier than larger battery solutions, hence could be more readily accepted by consumers.

5.56 Accordingly, we consider that a minimum battery backup provision of 1 hour constitutes a proportionate measure for communication providers to adopt in their FTTP deployments, offering protection to customers in a manner that is sustainable over time, for the majority of cases.

Enhanced protection for vulnerable consumers

5.57 As discussed above, we propose that 1 hour minimum battery duration constitutes a necessary measure for communications providers to deploy as part of their FTTP installation to allow customers to access emergency services.

5.58 However, we have based this proposal of a backup facility of 1 hour from an analysis of information that is aggregated at the national level and represents a solution that is expected to meet the needs of the majority of consumers and citizens. However, due to the statistical variations that would exist at a disaggregated level, it is likely that there will be a small number of individual consumers for whom additional protection beyond 1 hour may be necessary in order to provide a commensurate level of protection, for example households that have a history of long-duration power outages.

5.59 There are also vulnerable customers who depend on 999/112 services to a far higher extent than the majority of the population and for whom additional protection would be particularly important. Therefore we consider that communications providers should take appropriate steps to address such needs.

5.60 We recognise, however, that there are a number of different approaches that communications providers may adopt in order to address the needs of such customers.

5.61 One approach may be the development of an enhanced protection facility that is provided to those individuals that need additional protection.

5.62 Other options may include the deployment of a common, enhanced, protection facility to all customers in order to minimise, for example, development costs, while still addressing the needs of individual vulnerable customers.

5.63 We would consider the approaches adopted by communications providers on a case by case basis to determine whether they address the needs of their customers.

Section 6

Proposed principles for consultation

6.1 This Section describes the proposed key principles that we believe would provide communications providers (to whom GC3 applies) with the general guidance in assessing their compliance with obligations under GC3.

6.2 The principles proposed arise from our consideration of matters discussed in previous Section, including our impact and equality assessment.

6.3 Should we decide to adopt the proposed principles (with any modifications), they will supersede our position regarding battery backup for FTTP as set out in previous statements[28] and guidance[29] in their relevant parts and those documents should be read accordingly.

Principle 1: A battery must always be provided

6.4 We consider that the provision of a battery backup capability for fibre access installations represents a minimum necessary measure for communications providers to deploy, allowing consumers to access the emergency services from fixed line communication services.

6.5 By battery backup, we are referring to one or more self-contained units capable of providing electrical power over an extended period of time (see Principle 2 below). Conversely, we consider that making battery backup merely an optional capability for consumers to elect to have provided would not meet the obligations under GC3.

6.6 If the consumer takes responsibility for the replacement of batteries, then the communications provider should provide appropriate guidance as to how this is achieved.

6.7 The battery backup unit should have a facility making the customer aware that the battery is low or has failed, so that a replacement can be obtained promptly.

Question 3: Do you agree that a battery backup facility should always be provided?

[28] Next Generation New Build - Delivering super-fast broadband in new build housing developments, Ofcom, Sept 2008.
[29] New Build Investment Guidance on Telecoms Regulation, Ofcom, May 2009.

Principle 2: Default battery lifetime should be a minimum of 1 hour

6.8 We consider that 1 hour battery backup capability represents an appropriate minimum level of protection to provide to customers taking FTTP services for the majority of cases. In other words, if a communications provider would be provide battery backup capability of less than 1 hour in any particular case, we would expect to find the obligations under GC3 have not been complied with.

6.9 It is, however, the responsibility of communications providers (to whom GC3 applies) to ensure that they in all cases meet the obligations under GC3. This may mean that in specific cases that enhanced protection with battery backup capability of more than 1 hour should be provided to the customers in question.

6.10 In this context, we remind communications providers of other regulatory obligations that may apply and be relevant to battery backup. In particular:

- General Condition 9: In offering to provide, or providing, a connection to a PCN and/or PECS, Communications Providers (as defined for GC9) shall specify (among other things) at least the services provided, including in particular whether or not access to Emergency Services and Caller Location Information is being provided, and any limitations on the provision of access to Emergency Services. We consider that information about battery backup capability is relevant to that obligation.

- General Condition 10: Communications Providers (as defined for GC10) shall ensure the publication of clear and up to date information on prices/tariffs as well as standard terms and conditions, in respect of access to and use of PATS, including a description of the PATS offered and any types of maintenance service offered.

- Annex 3 to General Condition 14: Service Providers (as defined for GC14) shall provide certain minimum consumer information to Domestic and Small Business Customers, including clear and readily accessible information, during the Sales Process, in the Terms and Conditions of Use and in any User Guide; that, although access to Emergency Calls is provided, the Service may cease to function if there is a power cut or failure.

6.11 Therefore, in addition to providing the minimum battery backup provision discussed above, we also would expect that the sufficient information is available so that prospective customers can make an informed decision as to whether to take the service, and if so, allow customers to derive and maintain the maximum benefit from the battery backup. Customer information could include:

- The key differences between fibre access technology and the existing copper-based telephony provision, particularly with respect to the ability to make calls in the event of a power outage at the premises.

- The levels of backup that the offered solution provides and what this means for the customer in terms of fixed-line access to the emergency services in the event of a power failure.

- What equipment the battery supports (usually only the optical network terminal), hence the implications if, for example, DECT phones are used in the household.

- The capacity/characteristics of the battery to support the minimum level of backup (for example the associated Ah rating).

- The importance of maintaining power to the ONT whenever possible to prevent unnecessary battery usage/drain and to maximise the availability of the telecommunications network (for example, not to switch the power off at night).

6.12 It is anticipated that there will be a small number of individual consumers for whom additional protection beyond 1 hour may be necessary in order to provide a commensurate level of protection, for example households that have a history of long-duration power outages and vulnerable customers who depend on 999/112 services to a far higher extent than the majority of the population and for whom additional protection would be particularly important. Therefore we consider that communications providers should take appropriate steps to address such needs.

6.13 We recognise, however, that there are a number of different approaches that communications providers may decide to adopt in order to address the needs of such customers.

6.14 One approach may be the development of an enhanced protection facility that is provided to those individuals that need additional protection.

6.15 Other options may include the deployment of a common, enhanced, protection facility to all customers in order to minimise, for example, development costs, while still addressing the needs of individual vulnerable customers.

6.16 We would consider the approaches adopted by communications providers on a case by case basis to determine whether they address the needs of their customers.

6.17 Noting the pace of technological developments, we are likely to revisit this guidance as and when required to reflect any relevant developments, such as FTTP ONT power consumption, inherent battery technology, electricity distribution networks, alternative communications methods and FTTP take-up and usage patterns.

Question 4: Do you agree that the proposed minimum battery longevity of 1 hour is appropriate?

Question 5: Do you agree with our proposed approach to address the needs of individual customers requiring additional protection?

Section 7

Next steps

7.1 Following the responses to this consultation we intend to publish a statement in the autumn setting out our guidance to the telecoms industry with respect to new-build next generation access provision.

Annex 1

Responding to this consultation

How to respond

A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 6th September 2011**.

A1.2 Ofcom strongly prefers to receive responses using the online web form at http://www.ofcom.org.uk/consult/condocs/superfast-broadband , as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email BatteryBackup@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.

A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Tim Gilfedder
Floor 3,
Strategy, Chief Economics and Technology Group,
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7981 3333

A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Tim Gilfedder on 020 7981 3550.

Confidentiality

A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether

all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/about/accoun/disclaimer/

Next steps

A1.11 Following the end of the consultation period, Ofcom intends to publish a statement in the autumn 2011.

A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.

A1.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

A1.16 Vicki Nash
Ofcom
Sutherland House
149 St. Vincent Street
Glasgow G2 5NW

Tel: 0141 229 7401
Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

Annex 2

Ofcom's consultation principles

A2.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A2.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A2.3 We will be clear about who we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A2.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 3

Consultation response cover sheet

A3.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.

A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.

A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.

A3.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing ☐

Whole response ☐

Part of the response ☐

Name/contact details/job title ☐

Organisation ☐

If there is no separate annex, which parts?

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here. ☐

Name

Signed (if hard copy)

Annex 4

Consultation questions

A4.1 This section presents the specific questions that Ofcom seeks responses to in relation to this issue.

Question 1: Do you agree that Ofcom's guidance on battery back-up lifetime needs to be reviewed at this time?

Question 2: Do you agree with the scope of this consultation as set out in Section 4?

Question 3: Do you agree that a battery backup facility should always be provided?

Question 4: Do you agree that the proposed minimum battery longevity of 1 hour is appropriate?

Question 5: Do you agree with our proposed approach to address the needs of individual customers requiring additional protection?