ATTACHMENT A

Workshop Report

In Rulemaking 07-04-015 on the Reliability Standards for Telecommunications Emergency Backup Power Systems and Emergency Notification Systems Pursuant to Assembly Bill 2393

Telecommunications Emergency Backup Power at the Customer Premises: Customer Education, Accessibility and Implications

Communications Division

November 2009

MEMORANDUM

This report is prepared by the staff of the Communications Division. It memorializes results of the three workshops ordered in Decision (D.) 08-09-014. It contains staff's analysis, findings and recommendations. This report was prepared by, Simin Litkouhi, Lisa Prigozen, Jim T. Pachikara, and Matthew A. Karle (Intern); supervised by Sazedur Rahman; managed by Robert Wullenjohn; and under the direction of Jack Leutza.
This report is also available at the Commission's website:
http://www.cpuc.ca.gov/PUC/telco/

DRAFT

Executive Summary

The vast majority of California's residential communications customers have only one source of electricity to their premises, and that is commercial electrical power at 120 volts (v) from their local electric utility. For the purposes of this report, "commercial power" is defined as this 120v distribution of electrical power from the electric utility. A growing number of communications services are migrating to networks that require this electric power at the customer premises, thus creating a need for a backup power option for customers when commercial electric power is out.

On September 29, 2006, Assembly Bill 2393 (AB 2393, Ch. 776, Stats 2006), Levine, "Telecommunications: Emergency Service" was signed into law. It directed the California Public Utilities Commission (the Commission or CPUC) to investigate the need for performance reliability standards for backup power units[1] (BBU's) installed on the premises of residential and small commercial customers by telecommunications service providers[2]. This Bill pertains to the communications services delivered via fiber-optic or coaxial cable[3] to the customer premises. To satisfy these requirements, the Commission opened this rulemaking on April 12, 2007. In considering the structure of this proceeding, the intent was to look for solutions that will ensure that customers have sufficient backup power, and enable customers to make informed decisions about their services and take action to ensure continued access to communications services.

On September 4, 2008, the Commission issued Decision (D.) 08-09-014 in which it was indicated that customer education programs regarding backup power were needed. In addition, the Commission determined that the proceeding should remain open for further investigation into the need for standards for backup power units located at the customer premises. As a result, workshops were held on November 24, 2008, February 2, 2009 and March 9, 2009 to gather further information on backup power.

This is the Communication Division Staff ("Staff") Report on that series of workshops. The recommended customer education requirements pertain to providers of voice services that are offered over facilities that would require battery backup power at the residential customer premises.[4] Its goal is to fully inform the Commission in setting policy that will ultimately safeguard the ability of residential communications customers

[1] "Backup power units" refers to small equipment units at the customer premises containing a backup battery to operate the customer's communications equipment absent external power.

[2] "Service Provider" refers to providers of commercial voice services. See Chapter 1 for more detail about why backup power at the customer premises is necessary for some communications services.

[3] In California, Incumbent Local Exchange Carriers (ILECs) such as Verizon and AT&T California are migrating to fiber-optic networks, Competitive Local Exchange Carrier (CLEC) cable companies such as Comcast and Cox are delivering voice service over the coaxial cables that are already delivering cable television service to the end user.

[4] The CPUC fulfilled the AB 2393 requirements and sent a report to the legislature in May 2008. In subsequent Decision (D.)08-09-014, in the second phase of this proceeding, the CPUC asked for recommendations on customer education programs. This report focuses on residential customers only.

to make and receive necessary phone calls during power outages[5], including 9-1-1 calls and emergency notification alerts.

The first workshop was held on November 24, 2008, addressing customer education and outreach.[6] The second workshop was held February 2, 2009, addressing the technical capabilities of backup power units and whether there is a need for equipment performance standards. The third workshop was held March 9, 2009, addressing the backup power needs of people with disabilities, as well as customers with special needs due to language, health, age, medical condition, or some other factor.

Highlights of Staff Findings

Below are several of the most prominent findings of this phase of the proceeding. Findings from each workshop can be found in sections 2.4, 3.5, and 4.5 respectively. Overall, Staff found a gaps between what customers need to know in order to make informed decisions, and the customer information that is available and presented to them. Key findings include:

- Communications services delivered via fiber-optic or coaxial cable requires backup power at the customer's premises during a commercial power outage (i.e., in the absence of an external 120v power source).[7]
- California's service providers offering voice service over fiber-optic or coaxial cable provide the customer with a backup battery unit and battery that provide approximately 8 hours of standby time[8] or approximately 4 hours of talk time[9]. As 97% of power outages last less than two hours[10], current backup power provided should be considered a sufficient and reasonable level of backup power from an economic or practical point of view.
- Providers of voice service over coaxial cable (cable companies) monitor backup power customer premises equipment remotely and take responsibility for the equipment's maintenance and/or replacement, while providers of voice service over fiber (including Verizon, AT&T, and SureWest) provide the initial backup battery, but specify that it is the customer's responsibility to monitor and replace the battery when necessary.

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[5] "Power outage" refers to the unavailability of commercial power from the customer's energy utility, such as Pacific Gas and Electric, Southern California Edison, San Diego Gas and Electric, etc.

[6] "Outreach" refers to activities intended to convey any message, i.e. how the service provider intends to get the message to its customers.

[7] Fiber-optic can be fiber-to-the-home (FTTH), (sometimes identified as fiber-to-the-premises (FTTP)), or fiber-to-the-node (FTTN) and is installed in many new developments; coaxial cable is what is used by cable companies such as Comcast and Cox.

[8] "Standby" means that the device is on and ready to make or receive a call. "Final Analysis Report: Reliability Standards for Telecommunications Emergency Backup Power Systems and Emergency Notification Systems Pursuant to California Public Utilities Code § 776, § 22872.5 and § 2892", May 9, 2008, p.34

[9] "Talk time" means that the device is in active continual use for communications where the power use will vary but is greater than 50% more than the power needed in the idle or standby state. (Final Analysis Report p. 34)

[10] Final Analysis Report, p. 285.

- All service providers use battery backup units that allow customers to easily replace the backup battery. AT&T, Verizon and SureWest have programs in place to ensure that individuals with mobility limitations are able to replace their backup batteries. However, these programs need improvement because they rely on the customer notifying the service provider of any special needs.[11] Other carriers have no similar processes in place.
- Some customers may need assistance from their service providers in monitoring the backup battery unit, and/or replacing the backup battery.
- Although customer premises backup power units may provide voice service during a power outage, customers with disabilities may not have access to communications services if their assistive equipment[12] does not have backup power. However, this issue is independent of whether the communications service is provided over copper wire, fiber-optic or coaxial cable.
- It may be more effective for customers with disabilities to receive low battery warnings in formats other than on-equipment lights or alarms. These could be text messages, e-mails, or alerts sent via a vibrating pager, and others.
- Alternative sources of 120v power, such as a generator, a commercially available universal power source (UPS)[13], fuel cell, or solar electricity system can provide customers with additional backup power that could power communications service for longer periods.
- AT&T, Verizon, SureWest and Frontier provide an initial BBU backup battery, but not subsequent replacement backup batteries. Comcast, Cox, and the Small LECs provide the initial BBU backup battery and subsequent replacements.
- AT&T and Verizon have customer information in formats accessible to customers with sensory disabilities. Other service providers do not provide materials in accessible formats but communicate with hearing-impaired customers via TTY[14].
- None of the service providers provide information on backup power equipment in any language other than English, much less the language in which that the provider marketed its services.

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[11] AT&T's U-verse Voice customers must self-identify on each call. All other customers with disabilities receiving traditional telephone service over FTTH or otherwise are tagged and calls from those customers are automatically routed to the National Sale and Service Center for Disability and Aging.

[12] "Assistive equipment" refers to any device used by a person with sensory disabilities to enable them to use communications services.

[13] A UPS (Universal Power Supply) is a portable power device that can support most electronic equipment. A UPS is smaller and less powerful than most generators, but larger and more powerful than BBU's.

[14] "TTY" stands for TeleTypewriter, also called TDD (Telecommunications Device for the Deaf), wherein a user terminal with keyboard input and printer or display output used by the hearing and speech impaired. The device contains a modem and is used over a standard analog phone line. If a recipient does not have a corresponding terminal device, TDD/TTY users dial a relay service composed of operators who receive the typed messages, call the recipients and speak the messages to them. The operators also type the responses back to the TDD/TTY user.

Summary of Staff Recommendations

Based on its investigation in this proceeding, Staff recommends that all service providers offering voice services over facilities that would require battery backup power at the customer premises have a mandated customer education program that states what backup power is provided to the customer and what customers can expect from this backup power. These recommendations are intended to bridge any gaps in knowledge that prevent customers from making good decisions regarding their communications and personal safety. Mandatory elements of customer education programs should include:

1. **Communications Service Information** including: a clear statement that the communications service requires commercial or alternative power, and that a Backup Battery Unit (BBU) will power their communications service for a limited amount of time provided that the backup battery and BBU are maintained; a clear statement of how long the BBU will power a single access voice line and how standby and talk time affect backup battery performance; a statement that the customer can supplement the provider's backup power or provide his or her own power to the equipment in the absence of commercial power from the electric utility through a generator, UPS, fuel cell, solar system or some other external source of electricity
2. **BBU Equipment Information** including: clearly stated responsibilities of both the customer and the service provider regarding the BBU; directions on how to physically replace the battery; a clear explanation of the BBU indicators, especially how the customer will know if the battery needs to be replaced.
3. **Backup Battery Availability and Replacement Information** including: make, model and type of the backup battery sufficient to identify a replacement battery; whether the battery is rechargeable and, if so, whether it is fully charged when installed or purchased; where these batteries are available, such as from the service provider, retail stores or online; where there are other compatible batteries (specify type) which can be purchased from other retail providers, as well as notice as to whether the service provider has tested these batteries; how long the initial battery provided by the service provider should last, and that battery life is based on type, usage, age, and temperature; availability of assistance with BBU backup battery monitoring and replacement, and notification that assistance is available.
4. **Emergency Preparedness Information** including: that during a power outage communications services should only be used for emergency purposes and that necessary calls should be short; that a corded phone should be kept that could be directly plugged into a telephone jack or a fully charged cellular telephone when possible; that cordless phones will not work without a 120v power source.
5. **Backup Battery Unit Demonstration** at point of installation showing how to monitor and replace the backup battery in the BBU, even for those service providers who remotely monitor the customer premises backup batteries, a demonstration of all indicators, and a signature or other customer acknowledgement that the replacement method of the BBU battery has been demonstrated.

6. **Availability of Customer Information in Accessible Formats, and Notification of this Availability**, including information in: large print, Braille, compact disc or digital audio file, and electronic text available to screen reading software. This information should fully contain whatever information is given to other customers.
7. **Availability of Customer Information in Languages other than English** to customers in the same non-English language in which the provider marketed its services, and notification of the availability of these materials.

Chapter 1 - Introduction

1.1 Assembly Bill 2393

This proceeding was enacted pursuant to AB 2393 to address the needs of customers who purchase communications service dependant on commercial electric power.[1] An important objective of AB2393 is to provide for continuity of service in the event of a commercial power outage. While some residents meet or supplement their electricity needs in other ways, the vast majority of Californians rely on commercial power to their homes and businesses.

As more communications services come to require commercial electric power, the loss of power to these services becomes a public safety concern. Loss of electrical power could cause a customer to not be able to make emergency calls such as to 9-1-1, or to receive emergency notification calls from local officials. These incoming emergency notification calls could contain critical information on evacuation routes, disaster recovery, and where to seek medical information, shelter, and other resources. AB 2393 seeks to address this by considering issues surrounding backup power at the customer's premises for telecommunications services.

Traditional telephone service over the copper wire network[2] is powered by generators at the central office, such that communications services are usually available even during a power outage. The fiber-optic and coaxial cable that are increasingly being used to provide communications services cannot carry electricity the way that copper could, and so backup power solutions for these products must be at the customer's premises.

Currently, the equipment employed by service providers on the customer's premises (referred to as a Battery Backup Unit, or BBU) can provide 8 hours of backup power. While power outages are fairly common occurrences with many diverse causes[3], power outages outlasting this 8 hour 'threshold' are fairly rare. Ninety-seven percent of power outages last less than 2 hours, and the vast majority of those lasting more than two hours are restored by the fourth hour, such that the current level of backup power provided at the customer premises should be sufficient for continued connectivity.

It is important that customers understand that their service depends on commercial power, and that they have the information necessary to maintain their service and to make an informed decision regarding the purchase of an extended backup power source. BBU's require some amount of maintenance that traditional copper wireline telephone service does not, and the batteries that power them require monitoring. Customers must be made aware of this. Some customers will require power during those outages which result in a loss of service, and they should be well informed in order to make that determination.

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[1] "Commercial Power" is the electric power provided by the customer's energy utility, such as Pacific Gas & Electric, San Diego Gas & Electric or Southern California Edison.

[2] Service Provider's Network in this case is the traditional Public Switched Telephone Network (PSTN).

[3] Final Analysis Report, p. 285.

In AB 2393, the California legislature mandated that the Commission investigate the performance expectations and customer awareness of the need for backup power and the BBU which provides it. In Phase I of this proceeding, the Final Analysis Report submitted to the legislature stated that 97% of power outages last less than two hours[4], and that backup power capability provided by service providers is designed to provide between 4 and 20 hours of backup power, with 8 hours being the most common design goal[5]. This can be considered a reasonable amount of backup time, sufficient in more than 97% of outages.

However, this is only true if the BBU and backup battery are functioning as intended, and there remains the possibility of an extended outage which will outlast backup power and leave the customer without service. Therefore, a high level of customer understanding is necessary to:

- Ensure that backup power equipment is functioning as intended, that the backup battery is fully charged, and that battery and service level indicators on the BBU are regularly monitored.
- Enable the customer to make informed decisions about whether to augment the backup power at his/her premises in case of an extended power outage, which includes an accurate expectation of how long the backup power provided by the service power will last.

1.2 Structure of Proceeding R.07-04-015

Pursuant to AB 2393, the Commission initiated Rulemaking 07-04-015 to ensure that customers have sufficient backup power for communications during power outages, as well as enable customers to make informed decisions about their services and take action to ensure continued access to communications services. The problem is twofold: there is not only a potential lack of communications services during power outages, but also a lack of customer awareness about this vulnerability.

In the Phase I decision, the Commission ordered Staff to conduct a series of workshops in the second phase of this proceeding (Phase II), to examine the current practices of service providers in providing backup power, determining whether there is a need for technical standards for BBU's, or mandates regarding customer notification and education about BBU's. The Commission asked for recommendations on customer education programs regarding backup battery installation and maintenance, particularly for people with disabilities, the elderly, and others with special needs.

Staff conducted three workshops: The first workshop addressed customer outreach and education issues and was held November 24, 2008. The second workshop explored technical capabilities in order to determine the need for performance standards for backup power equipment at the customer's premises, and was held February 2, 2009. The third workshop was held March 9, 2009, and explored questions pertaining to people with disabilities; as well as customers with various special needs due to language, health,

[4] Final Analysis Report, p. 285.
[5] Final Analysis Report, pp. 30-34.

age, medical condition, or other factors. All workshops were held at the California Public Utilities Commission chambers in San Francisco.

1.3 Factors Affecting BatteryLife

Customer premises BBU's should be able to sustain power to services for a period longer than most power outages, which requires a battery capable of powering the BBU. How long a BBU battery will power services, or the battery's reserve time, depends on a number of factors, including the wattage used by the customer's communications equipment.

The major factors that affect reserve time, in order of impact, are:[6]

- Usage – The more the phone or other communications equipment is used, the more power is consumed and the faster the battery is depleted.
- Operational Modes – A phone in standby mode uses less power than a phone in use
- Battery Type – A lithium ion battery has more power capacity than a lead acid battery, but is also more costly. All of the BBU batteries currently used by California's service providers are either lithium ion or sealed lead-acid.
- Battery Age – As batteries age, their ability to store energy is reduced.
- Battery Location (Temperature) – Batteries should be located in areas of moderate temperatures, as abnormally high or low temperatures can affect battery capacity or life. For example, a battery exposed to cold winter conditions could lose up to 50% of its reserve time.

[6] Final Analysis Report p. 35

Chapter 2 – Outreach and Education Workshop

2.1 Purpose of Workshop

In the Phase 1 Decision (D.08-09-014), Finding of Fact 9 states that "[t]here should be a customer education plan to provide necessary information to customers regarding backup power on the customer premises." Staff and voice service providers were directed to work together on customer outreach and education with regard to backup power and continuation of service during a power outage. In data request responses and at the workshop, parties described existing customer education and outreach programs, effective messages, and gave input as to what a comprehensive customer education program for the elderly, disabled, and limited English proficient populations should look like.

2.2 Data Request Responses

Staff received responses to its data request from 11 parties, representing California's licensed Incumbent Local Exchange Carriers (ILECs), high-volume Competitive Local Exchange Carriers (CLECs), and several prominent consumer advocacy groups.[7] The responses revealed varying types of customer education programs among service providers, generally corresponding to the degree to which service providers have begun offering voice service over fiber or coaxial cable. Brief summaries of the responses are provided below.

AT&T California (AT&T) and Verizon, the two service providers with the majority of California's fiber-to-the-premises (FTTP) customers, have the most comprehensive structures in place to inform customers about the need for backup power, options for backup power use, explanations and instructions for the BBU's, and website links and phone numbers available for additional help. Both AT&T and Verizon submitted copies of their customer materials for FTTP voice services.

Comcast and Cox, who are offering an internet protocol (IP) based voice service along with cable television and often broadband internet service over coaxial cables, remotely monitor BBU batteries. These service providers remotely monitor the BBU's at the customer premises, and replace faulty or depleted batteries with no additional fee. Although this provisioning of backup batteries is a reliable method for ensuring limited power availability during a power outage, these service providers do not provide customer education in the event that there is an immediate need to replace the batteries which the service provider cannot fulfill.

Consumer advocacy groups stressed the need for specific materials and targeting for people with disabilities, limited English proficiency, and seniors. They also suggested that the CPUC review service provider customer information materials, as well as provide additional information on CPUC websites such as calphoneinfo.com. Both The Utility Reform Network (TURN) and the CPUC's Division of Ratepayer Advocates

[7] ILECs and CLECs are licensing terms for communications service providers.

(DRA) provided checklists of suggested essential elements for customer outreach and education programs. Some service providers, notably AT&T, also suggested several of these same elements. The suggested elements about which customers should be educated include:

1) The communications service's dependence on commercial electrical power (i.e., the purpose of the BBU)

2) The capabilities and limitations of BBU's and their internal backup batteries.

3) The length of time phones will operate during a power outage, including specifics on standby time and talk time; and distinctions between the two.

4) The power limitations of cordless phones for all communications services.

5) BBU maintenance requirements and clearly delineated responsibilities for maintenance tasks.

6) Potential health or safety risks.

7) Battery specifications and replacement information.

8) Potential risks of interruption of voice service from backup systems.

9) How to use communications and emergency services during a power outage or widespread emergency, including E-9-1-1 capabilities and limitations.

10) Where to find additional information/FAQs.

2.3 Presentations at Outreach and Education Workshop

Several participants had prepared presentations for the Outreach and Education Workshop. Others participated in discussion but had no formal presentation. The input of participating parties is summarized below.

Verizon[8]

Verizon's fiber-based service, known as FiOS[9], delivers telephone, high-speed data, and video service all on a single pair of fibers. It includes three network equipment components at the customer premises, which were displayed at the workshop: The Optical Network Terminal (ONT), the Optical Power Supply Unit (OPSU), and the BBU.

The BBU has several indicator lights and an audible alarm. There is also the Battery Emergency Use button, also commonly referred to as the "blue button." To protect the customer from losing all communications services during a power outage the BBU automatically shuts down with approximately one hour of emergency use remaining in the battery. In an emergency, pressing this button will reboot the ONT, and provide up to one hour of battery life for bidirectional phone use.

[8] Kurt Rasmussen, Mike Joyce, Jesus Roman; Verizon. November 24, 2008 Outreach and Education Workshop, CPUC, San Francisco. See transcript beginning p.19

[9] Stands for "Fiber Optic Service." FiOS is a Verizon's data, voice and digital cable service provided over fiber optic cables.

Verizon provides emergency preparedness information to all customers of copper and fiber-based voice services in its telephone directory and in its required annual customer notice. Currently, this information does not cover FTTP / FiOS battery backup because that information only applies to small group of customers and Verizon believes such information is likely to cause confusion among customers that have service provisioned over the copper network. All Verizon FTTP/FiOS customers receive additional targeted customer information which does cover the FiOS battery backup. However, this could lead to confusion as FiOS customers receive both the directory provided to copper customers and the FiOS customer package, which may contain different information.

Verizon representatives communicate backup power information to their FiOS customers in three ways: 1) At the point of sale, the customer representatives have a script that includes explaining the limitations of the backup battery and the requirement of electrical power. 2) During installation, this information is also communicated to customers by the Verizon technician, whose script and checklist include reviewing the BBU backup battery with the customer. The technician is required to explain the equipment being installed, how it works, and the meaning of all the different visual and audio alerts. 3) Verizon's last attempt to disclose critical information for its FiOS customers is to educate them through written materials left behind with the customer, which contain descriptions and illustrations. Stickers are provided for customers to place on their phones as a reminder that the battery will power the line for up to eight hours.

Verizon's customer materials state that the customer is responsible for backup battery replacement. This information is also available at Verizon's website or by calling a 24-hour help line, from which a replacement battery may be ordered. During service installation, the customer is shown how to replace the battery and there are pictorial descriptions in the FiOS Guide and on the inside cover of the BBU.

Verizon recommends a broad based customer education program that considers the disabled population, as well as elderly and those with limited English proficiency. Environmental factors such as geographical areas that are prone to floods, fires, wind, or snow should be considered when developing the information criteria. With all these factors to include Verizon suggested that the CPUC play a major role in customer outreach, using calphoneinfo.com as well as the Commission's relationship with CBO's, State and local agencies, and emergency service providers.

AT&T California[10]

AT&T began by agreeing that customer education plans should be sufficiently broad to educate all customers and include information on visual and audible alarms, and presenting descriptions and explanations of customer premises equipment.

AT&T's customer information text examples show several points where a customer is explicitly informed that their fiber-based service requires electricity, how the BBU functions, the length of continued connectivity that the customer can expect, and

[10] Colin Petheram, AT&T. November 24, 2008 Outreach and Education Workshop, CPUC, San Francisco. See transcript, beginning p. 97

how these conditions affect the customer's ability to call 9-1-1 and receive emergency notification calls. These include point of sale disclosures, a confirmation letter, and a checklist within the installation technician's script to review with each customer.

AT&T U-verse customers must sign off on the U-verse 9-1-1 acknowledgement, and are given a separate flyer specifically about the backup battery and the U-verse service's dependence on electrical power, as well as stickers to place on their telephone equipment with this information. Voice service customers with a residential gateway (RG) (rather than an ONT) are also sent instructions regarding their BBU unit by e-mail with language explicitly mentioning 9-1-1. U-verse Voice customers provisioned on FTTH has an ONT in addition to an RG.

AT&T stated that their BBU backup battery manufactured by Belkin is commercially available.. The backup batteries used for AT&T's fiber-based customers are the same as those used for Verizon's FiOS BBU.

AT&T suggested that the Commission utilize the California Telephone Access Program (CTAP), Telecommunications Education & Assistance in Multiple languages (TEAM), and www.calphoneinfo.com as vehicles to reach customers, including those with disabilities and/or limited English proficiency.

AT&T's customer materials are available in accessible formats such as Braille, large font, or via email to be read by screen reader software such as JAWS. For customers with limited English proficiency, AT&T often uses 800 numbers as an efficient means to distribute information and suggests the same system could enable customers to order backup power information in accessible formats. The customer could dial an 800 number and request a document in Braille or large font or request that the material be e-mailed to them so that they would be able to use a screen reader software program such as JAWS.

For new customers at a residence that has previously had U-verse service, AT&T advises that the customer notify the technician and check the battery at service initiation because AT&T will not automatically check the old battery for the ONT, but a new RG battery is provided to every new U-verse Voice subscriber. This means that the customer may be starting U-verse service with a deficient ONT battery and AT&T notifies the customers of such in writing.

Cox[11]

Cox's packet switched telephone service requires power to a telephone modem at the customer's premises. Customers can decide where on their premises the modem should be installed. The only limitation on its placement is that the device must be in reasonable proximity to an existing jack, in order for all jacks in the house to function similarly. This service includes a backup battery, which Cox remotely monitors. When the battery needs to be replaced, Cox provides the customer with a replacement by mail along with instructions for placing them in the telephone modem, as well as a toll-free

[11] Doug Garrett, Cox, November 24, 2008 Outreach and Education Workshop, CPUC, San Francisco. See transcript beginning p. 71

number for customers to call for assistance. If in-person assistance is needed or desired, Cox will send a technician to the customer's location to replace the battery at no cost to the customer.

Cox complies with the FCC's 2005 decision in its IP-enabled Services proceeding[12], which requires customer disclosure concerning battery backup systems at the customer premises. Cox discloses information about backup power issues at the customer premises in advertising and marketing materials, including product brochures, Cox's website, during the sales process, via a sticker to be placed on the telephone modem, and in welcome information provided during the service installation.

Cox recommends that customers be informed that telephone service should only be used for emergency purposes during a commercial power outage. In addition, Cox recommends that customers keep a corded phone available as well as a fully charged cellular telephone as alternative backup communications. Where possible, Cox suggests that customers register both their wireline and cellular telephone numbers with county or municipal emergency notification programs.

Finally, in regards to customers with disabilities, Cox believes that the type of education programs addressing their needs will likely depend upon the unique service offerings of each service provider.

SureWest[13]

SureWest did not give a formal presentation at this workshop, but did participate in the workshop discussions.

When SureWest VoIP service is installed the customer has discretion as to the location of the BBU. The only physical limitation is that it must be placed in proximity to the modem which it will power. For fiber service, the BBU is generally installed outside the home, often in the garage, but can be installed inside at the customer's request. SureWest will install the BBU in a sheltered area to prevent temperature extremes. In flood prone areas the unit will be installed at a higher level.

Small LECs[14]

Only two small LECs, Kerman and Calaveras, offer an FTTP voice product at this time, and both companies have made the decision to monitor and replace the batteries on behalf of the customer, similar to the cable companies. In light of this choice, the companies do not provide formal materials or instructions to the customer regarding the backup battery. Rather, the companies assume full responsibility for determining the battery life, and for replacing the batteries when necessary.

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[12] FCC Order 05-116 issued May 19, 2005

[13] Greg Gierczak, SureWest, November 24, 2008 Outreach and Education Workshop, CPUC, San Francisco. See transcript beginning p. 72

[14] Patrick Rosvall, Small LECs, November 24, 2008 Outreach and Education Workshop, CPUC, San Francisco. See transcript beginning p. 73

Both companies do inform customers upon installation that this is a different kind of service that requires batteries if there is no commercial or external power to the equipment, and that the customer should call the service provider if they have any questions. Should a problem arise with the battery, these companies will send a technician to the premises to fix or replace the battery at no charge.[15]

Kerman, Calaveras and other Small LECs beginning to offer FTTP service are developing written customer informational materials about the difference in electricity needs between FTTP and service offered over traditional copper facilities. In the meantime, the companies rely on the explanations from installers and on their own monitoring and replacement of batteries to ensure that sufficient power remains in place.

Comcast[16]

Comcast did not make a presentation at this workshop, but did participate in the discussion and provided details of their outreach and education efforts, as well as information about Comcast's practices with regard to backup power at the customer premises. Comcast installs an Embedded Multimedia Terminal Adaptor (eMTA) on the customer premises, rather than an ONT or Residential Gateway.

Comcast informs customers about power issues at the point of sale in a number of ways. Customers sign off that they have read backup power disclosures, and are provided stickers for the eMTA containing backup power information. Comcast follows the model provided by the FCC's guidelines in its VoIP 9-1-1 order,[17] and stated that its informational stickers on equipment, customer disclosures, and other information comply with these FCC standards.

Comcast's standard protocol is to ask the customer at the time of installation where they would like the eMTA to be located. The one limitation for eMTA placement is that it must be proximal to a phone jack. Comcast offered cable modem service before offering phone service, so for most customers the eMTA is also located near a computer. Comcast does not generally install the eMTA in garages or other spaces where indicator lights could be missed or where temperature extremes could hasten battery degradation; however, ultimately the decision of where to install the unit is left to the customer.

Comcast does not charge for replacement batteries. They can be picked up at Comcast outlets with advanced notice, but Comcast's preferred method is to drop ship. The battery itself is easy to change, no more complicated than changing a cell phone battery.

Comcast remotely monitors batteries in real-time. When the battery has passed a certain threshold of degradation, a battery is drop shipped to the customer with a letter and instructions about how to replace it. If for some reason the customer is unable to

[15] Small LEC follow-up e-mail excerpts (Patrick Rosvall to Simin Litkouhi 2/3/09)
[16] John Gutierrez, Comcast. November 24, 2008, Outreach and Education Workshop, CPUC, San Francisco. See transcript, p. 27-28.
[17] FCC Order 05-116 requiring customer disclosure concerning battery backup systems at the customer premises, issued May 19, 2005.

replace the battery themselves, Comcast will arrange for a technician to go to the customer's premises and replace the battery for them.

When electric power is unavailable and the backup battery is used to power the eMTA, Comcast indicated that video and data services would be shut down in order to keep voice services up, and that the eMTA automatically resets itself after a power outage.

Comcast pointed out that there are a variety of commercially available universal power solutions available to meet the needs of various customers, ranging from gas generators that power an entire house to a backup power source for personal computers that keeps the power on just long enough to shut down the system properly. Comcast aims to educate the public broadly about what their additional power options are, given their specific needs.

Disability Rights Advocates[18]

There were three specific issues highlighted by Disability Rights Advocates:

- The limitations of current education programs for customers with disabilities including the need for informational materials to be available in formats accessible to the customer
- Specific barriers to connectivity for those with disabilities
- The need to inform people with disabilities about the need for backup power for their communications equipment.

Disability Rights Advocates described limitations of spoken presentations for people who are deaf or hearing-impaired and written information for those with vision impairments, and how these might be provided through video interpreters written materials in Braille or large-type print, and online information accessible to screen-reading software which interprets website for persons with vision impairments.

However, they also noted that the internet cannot be the exclusive means of providing any source of information because many Californians still lack internet access, and people with disabilities in particular are disproportionately likely to be among them. Additionally, people with disabilities are more likely to be low income, so any customer education program that relies on telling people to buy additional equipment is severely limited in its usefulness for people with disabilities as well as for other low-income Californians.

Disability Rights Advocates pointed out that, regardless of how effective an education program is, people with mobility limitations may not be able to install replacement backup batteries independently, so a process should be developed for customers to have a resource. This could be a service provided by the communications service provider, a CPUC program or a subsidy for people who are low-income. In the meantime, if there is no program to assist in changing the batteries, they believe it would

[18] Melissa Kasnitz, Disability Rights Advocates. November 24, 2008 Outreach and Education Workshop, See transcript beginning p. 39.

be crucial to specifically educate people that they need to make their own arrangements for having their batteries changed, and that this should be highlighted in education materials and emergency preparedness checklists.

Regarding targeting outreach to disabled communities, Disability Rights Advocates recommends working with disability-oriented Community-Based Organizations (CBO's), utilizing disability-specific internet chat groups and listservs[19]; and using other media, such as magazines and journals that are specifically targeted to people with disabilities.

The Utility Reform Network (TURN) [20]

TURN's review of the service provider data request responses led them to conclude that current education and outreach practices are inadequate, and are not provided in a timely manner. TURN additionally stated that materials provided in telephone directories and in annual notices do not explicitly address the need for backup power for some types of services, and that they do not adequately address variance in actual battery performance depending on environmental conditions, usage, and the 'elapsed time since installation.'

TURN reminded the Commission that the bill analysis for AB 2393[21] stated that homeowners often do not know why the backup battery was installed, how long telephone service will operate under backup power, or what the maintenance requirements are for such systems.

TURN noted that Verizon does inform FiOS customers about backup power, but that the information could be presented more clearly. For example, the installation technician script does not make it clear that the new voice system requires electricity to operate and that the system relies on a backup battery in the event of a power outage. It fails to explicitly tell the consumer that they are responsible for maintenance and replacement of the backup battery. The backup power section of the FiOS user guide is labeled "Continuous power when you need it." TURN is concerned that a customer who isn't technologically savvy might take this at face value and not realize that in the case of a prolonged power outage, they actually would not have continuous power.

TURN believes that, not only should customers be fully informed about the need for battery backup power for service over fiber lines, but that they should also be informed about their right to receive service over copper. This refers to situations where a carrier is replacing copper wire with fiber cable. TURN believes that customers should have the right to retain service over copper, especially if the customer has not initiated any change in his or her subscribed communications services.

TURN suggests that at a minimum, information provided to customers should include:

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[19] A "listserv" is an electronic mailing list to which participants can post.

[20] Regina Costa, TURN. November 24, 2008, Outreach and Education Workshop, CPUC, San Francisco. See transcript beginning p. 9

[21] TURN cites AB 2393 Bill Analysis, Date of Hearing May 10, 2006 in submitted presentation documents.

1) What is the purpose of the battery?

2) What is the shelf life of a battery; and under what conditions will it deteriorate?

3) Is there a warranty that the customer has on this battery provided by the telecom provider? If so, then they should know the terms; if not, they should know that there isn't. Customers should know what it could cost to replace the battery, and how they would go about getting it replaced.

4) How long will a battery provide backup power under normal conditions, and for what purposes?

5) Who owns the battery, and who is responsible for its maintenance and replacement?

TURN suggested that the Commission use regulations adopted by the FCC for VoIP providers concerning access to 9-1-1 service as a model for its own efforts.[22]

TURN believes that customer education programs should be provided through a variety of sources, and in a variety of ways. These efforts should include the CPUC, service providers, and presence at community fairs, etc. In addition, TURN should work with local emergency service providers to develop a packet of information which they could disseminate to their communities. The more sources of information that are made available to customers, the better off customer are.

2.4 Findings

Table 1 shows Staff's review of customer education elements and whether these are currently part of service providers' customer information programs. Explanations of elements marked "yes", "no", "na" or "need improvement" are included in the list following the table. Staff made these determinations based on the service provider's submitted materials, data request responses, information provided at the workshop, and further investigation.

[22] FCC Order 05-116 requiring customer disclosure concerning battery backup systems at the customer premises, issued May 19, 2005.

Table 1

Customer Education Program Elements and Service Provider Inclusion of Those Elements

Essential Customer Education Program Elements	AT&T	Verizon California	Comcast Phone of CA	COX California Telecom	SureWest	Frontier	Small LECs[23]
1. Notification of the communications service's dependence on external electrical power (i.e., the purpose of the BBU)	Yes	Yes	Yes	Yes	Yes	Need Improvement	Need Improvement
2. Notification at point of sale that the customer will not be able to make or receive calls without a source of electrical power	No	No	No	Yes	No	No	No
3. How long phones will operate during a power outage, including explaining how stand-by time and talk time affect battery duration	No	No	No	Yes	No	No	No
4. How to use communications and emergency services during a power outage or widespread emergency, including E-9-1-1 capabilities and limitations	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement	No	No
5. How long the backup battery should last	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. That the backup battery's life is dependent on type, usage, age and storage temperature	Yes	No	No	No	No	No	No
7. How to monitor the BBU backup battery by checking the BBU indicators, including how often the customer should check them, and how to know when the backup battery needs to be replaced	Yes	Yes	Need Improvement	Need Improvement	Yes	Need Improvement	Need Improvement
8. How and where to get a replacement battery	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement	No	No

[23] These conclusions do not apply to majority of the Small LECs that do not provide voice services that needs battery power at the premises.

Essential Customer Education Program Elements (continued)	AT&T	Verizon California	Comcast Phone of CA	COX California Telecom	SureWest	Frontier	Small LECs
9. Battery specifications: make, model, type	Need Improvement	Need Improvement	Yes	Yes	Yes	No	No
10. How to replace the BBU backup battery	Yes	Yes	No	Yes	Yes	Yes	No
11. Notification that new service at a previously served residence will not have a new BBU battery installed	No	No	No	NA	No	No	No
12. The power limitations of cordless phones for all communications services	No	No	No	No	No	No	No
13. Outreach efforts beyond point of sale or annual disclosures that provide opportunity for customers to get the message	No	No	No	No	No	No	No
14. Where to find additional information/FAQs	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement

Table 1 Results: Below is the summary and explanation of Staff's findings on customer information program elements.

1. *Notification of the communications service's dependence on external electrical power (i.e., the purpose of the BBU)*
   Yes: Five of seven service provider responders inform customers of the service's dependence on commercial power both verbally and in writing.
   Need Improvement: Frontier and Small LECs informally notify customers of the service's dependence on commercial power, but have not yet established procedural requirements for customer education. Small LECs claim that formal education materials are forthcoming.

2. *Notification at point of sale that the customer will not be able to make or receive calls without a source of electrical power*
   Yes: Cox provides this information at the point of installation

   No: The service providers do not explicitly inform customers at the point of sale that dependence on electrical power means that they may not be able to make or

receive calls during an emergency without a backup source of electrical power, and that battery backup units will power services for a limited time.

3. *How long phones will operate during a power outage, including explaining how stand-by time and talk time affect battery duration*
   Yes: Cox provides this information at the time of installation of eMTA.

   No: The service providers adequately state how long phones will operate during a power outage. They also do not explain what stand-by and talk time are, and how they will affect backup battery duration.

4. *How to use communications and emergency services during a power outage or widespread emergency, including E-9-1-1 capabilities and limitations*
   Need Improvement: Five of seven service providers provide limited information on how best to use communications services during a power outage. However, customers of Verizon, AT&T, and SureWest are given conflicting information that is not consistent between the main telephone directory and user guides for specific fiber-based services. Cox and Comcast should augment user information on how to use communications services during emergencies.
   No: Frontier and Small LEC's provide no information on how best to use communications services during a power outage or emergency, and no information regarding E-9-1-1 capabilities and limitations.

5. *How long the backup battery should last*
   Yes: All of the service providers adequately state how long the backup battery should last before replacement is needed.

6. *That the backup battery's life is dependent on type, usage, age and storage temperature*
   Yes: AT&T **in the RG BBU provide this type of information**

   No: The service providers explain to customers that backup battery capacity will decline over time based on type, age, temperature, and usage.

7. *How to monitor the BBU backup battery by checking the BBU indicators, including how often the customer should check them, and how to know when the backup battery needs to be replaced*
   Yes: AT&T, Verizon and SureWest show the customer how to monitor the BBU's backup battery life by checking the BBU indicators, including how often the customer should check them, and how to know when the backup battery needs to be replaced.
   Need Improvement: Comcast, Cox, Frontier and the Small LECs do explain how to monitor the BBU's backup battery life, but do not explain how often the customer should check the BBU monitors. This is because these service providers remotely monitor the customer's BBU backup battery, and take responsibility for notifying the customer when the backup battery needs to be replaced. However, as shown in the workshops, this is not a full-proof method for maintaining the BBU on the customer's premises, and so does not obviate the need for customers to be fully informed on how to monitor this equipment.

8. *How and where to get a replacement battery*
   Need Improvement: AT&T and Verizon provide 800 numbers where customers can order replacement BBU backup batteries. However, customer materials and workshop presenters point out that these batteries are readily available at many retail outlets, which they are not.
   Need Improvement: Comcast and Cox send replacement BBU backup batteries to customers when their remote monitoring of BBU backup batteries indicates that a replacement is necessary. Customers are not informed of other outlets to get replacement batteries, or that they can request BBU backup batteries from the service provider. SureWest in its owner's manual states that replacement battery can be purchased at any SureWest Customer Service Center or any American Power Conversion (APC) reseller. This information should also be displayed in a clear, easy-to-understand language in an easily found location, such as on the BBU itself.
   No: Frontier and the Small LECs do no adequately tell customers how and where to get a replacement BBU backup battery.

9. *Battery specifications: make, model, type*
   Yes: Comcast, Cox and SureWest provide sufficient information to customers regarding battery specifications.
   Need Improvement: AT&T and Verizon provide some information, but not enough to make it easy for customers to obtain a comparable battery.
   No: Frontier and the Small LECs do not provide enough information about the BBU backup battery for the customer to find a replacement.

10. *How to replace the BBU backup battery*
    Yes: Four service providers, AT&T, Verizon, SureWest and Frontier, have formal processes in place during service installation to ensure that the customer is shown how to replace the BBU backup battery.
    No: Comcast, Cox and the Small LECs do not have formal mechanisms in place to ensure that the customer knows how to change the BBU backup battery. This is, in part, because these three service providers take responsibility for the BBU backup battery monitoring and replacement.

11. *Notification that new service at a previously served residence will not have a new BBU battery installed*
    NA: Not Applicable to Cox.

    No: None of the other service providers have processes to notify customers that new service at a previously served residence will not have a new backup battery installed. This means that the customer is unaware of the elapsed time since installation of the backup battery, which does affect the backup battery's performance.

12. *The power limitations of cordless phones for all communications services*
    No: None of the service providers adequately inform customers regarding the power limitations of cordless phones for all communications services.

13. *Outreach efforts beyond point of sale or annual disclosures that provide opportunity for customers to get the message*

No: None of the service providers engage in outreach efforts beyond the points of sale and installation to ensure that customers get the message.

14. *Where to find additional information/FAQs*
Need Improvement: All service providers need improvement in informing customers about where to find additional information/FAQs. Service providers with online help or 800 numbers should list these resources more prominently in customer information materials and websites.

Additional Issues

- Potentially Insufficient Language – Advocacy groups pointed out instances where customer information may not be sufficient. Statements such as "when your battery does need to be replaced, you can purchase a sealed lead acid battery at a major electronics outlet or home improvement store[24]" do not provide sufficient information for the consumer to purchase a similar quality battery as was originally installed.
- Elapsed Time Since Installation (2nd Resident) - Service providers generally do not replace a BBU battery that is already installed on the customer's premises. So if a customer is not the first to initiate service at a particular location, that customer will not receive a new backup battery but rather rely on the existing battery already in the BBU before service was ordered. This is especially likely at multi-dwelling residences where BBU's may be powering more than one customer's communications services.
- Garage BBU Installations - Many BBU's are installed in garages where temperature variation between day and night can be quite significant. This placement reduces the life of the backup battery, as discussed in Chapter 1. If a BBU is installed in the garage, it is unclear whether the customer is warned that the battery life will be affected.
- Targeted Outreach Component – Some parties expressed enthusiasm for public education campaigns by service providers in conjunction with public safety agencies, emergency management, the private sector, faith-based and community groups as a means of getting necessary information to customers. Public education messages distributed via public safety announcements, newspaper articles, and website pages and links would enhance the effect of customer education efforts.
- Encouraging Preparedness - Service providers should inform customers of the need to be prepared for an emergency, and how the customer should use communications services during an emergency situation. This includes planning for service availability in the event of a power outage. Suggested elements of customer information on emergency preparedness include:
    - Encouragement to keep a universal power supply fully charged
    - Encouragement to keep a cell phone fully charged

[24] AT&T U-verse Guide, 2008

- Encouragement to use communications services only for important calls during emergencies
- Encouragement to register with local agency's emergency notification call program.

- Retail Availability of Backup Batteries -

  According to both AT&T and Verizon, replacement batteries for the BBU are available online and at retail outlets such as Home Deport, Lowes or Radio Shack. A Google search using the model number and manufacturer of the backup batteries used by both Verizon and AT&T revealed a number of purchasing options, both from online and traditional retail outlets. Customers familiar with shopping online would have little trouble in locating a battery, purchasing it, and having it shipped to them. The many roughly equivalent model numbers could, however, cause confusion to some customers, making it difficult to comparison shop without extensive research.

  The backup battery used by Verizon and AT&T was much more difficult to locate in stores. Staff contacted three major retailers (Lowes, Home Depot, and Radio Shack) in an attempt to locate replacement batteries. Of the three, only Home Depot had the battery available and on the shelf, retailing for $29.00. Radio Shack had two compatible batteries available, but sells them only online and does not stock them in its stores. Lowes also claimed to have two models available, but neither was stocked. The batteries were available by special order only, and would arrive at the store in approximately 10 days, priced at $31.65 and $31.64.

  Employees at the three stores contacted were not familiar with BBU's or the batteries needed to power them. A customer without specific knowledge (model number or store-specific product number) of the battery that they wanted to purchase would have extreme difficulty in locating the unit, even with the assistance of sales staff. Batteries available at Home Depot and Lowes were listed as automatic gate opener batteries. A customer looking for a replacement battery for a BBU might not know to look for a gate opener battery. When asked about a back up battery for a BBU powering a VoIP phone, sales staff at both stores stated that no such battery was carried. When asked about an FTTH battery, some sales staff were able to identify the battery, but there is no mention of an FTTH backup battery in any AT&T's or Verizon's customer information materials.

  Table 2 below shows Staff's experience in trying to procure a backup battery from the retail outlets mentioned by service providers during the workshop.

Table 2

Backup Battery Retail Availability

	Radio Shack	Lowes	Home Depot
Available in store	no	no	yes
Available for special order	no	yes	yes
Available online	yes	in store pick up only	yes
Price	$30	$31.65	$29
Shipping:	free (promotional, normally $6.05), 3 - 8 business days	free shipping to store, will not ship to a home address	$6.50, 3-7 business days
Listed as:	Sealed Lead Acid Battery	Automatic gate opener battery	Automatic gate opener battery
Model #:	23-9026, 23-9030	FM150, GRB1	FM150
Store contacted:	in person	phoned	phoned
Sales staff able to locate battery without model number?	no	no	no
Time spent	5 minutes	15 minutes	30+ minutes

In order to make replacement batteries more accessible to customers, service providers should list approved battery replacement vendors from whom customers can obtain replacement batteries, as well as an 800 number where customers can obtain more information and get answers to questions on the BBU and/or backup battery, including the option to order a replacement battery directly from the service provider.

2.5 Summary of Recommendations

These recommendations are intended to ensure that critical information is presented to communications customers and reflect Staff's consideration of what customers need to know in order to make informed decisions. Staff recommends a mandatory customer education program for service providers offering voice service over non-copper facilities. This program should contain the following required elements:

Communications Service Information:

1. A clear statement that the communications service requires commercial power, and that a BBU will power their communications service for a limited amount of time
2. A clear statement of how long phones will operate during a power outage, including explaining how stand-by time and talk time affect battery duration
3. A clear statement that the customer can provide his or her own power to the equipment in the absence of commercial power from the utility through a generator, UPS, fuel cell, solar system or some other external source of electricity

BBU Information:

4. Instructions on how to monitor the BBU backup battery by checking the BBU indicators, what all of the indicators signal, how often the customer should check them, and exactly how the customer will know if the backup battery needs to be replaced
5. Clearly stated responsibilities of both the customer and the service provider regarding the BBU
6. Instructions on how to replace the battery, including in-person demonstration during service installation

Battery Information:

7. Exact specifications on the backup battery sufficient to identify a replacement battery, including make, model and type
8. Whether the battery is rechargeable, and if so, whether it is fully charged when installed or purchased
9. Whether the customer is beginning service with a new BBU backup battery or, if not, when their BBU backup battery was installed (applicable when the customer is beginning service at a previously served residence with a previously installed BBU)
10. How and where the customer can obtain a replacement BBU backup battery, including whether the batteries are available from the service provider, and, if not, where they can be obtained via retail stores or online
11. How long the battery should last, and that battery life will deteriorate over time based on type, usage, age, and temperature.

General Information on Phone Usage during Power Outages:

12. Customers should be informed that, during a power outage, communications services should only be used for emergency purposes and that necessary calls should be short.
13. Customers should be advised to have a corded phone that could be directly plugged into a telephone jack available or a fully charged cellular telephone when possible, and that cordless phones will not work without a 120v power source

Chapter 3 – Technical Standards Workshop

3.1 Purpose of Workshop

The purpose of the Technical Standards workshop, held February 2, 2009, was specifically to determine whether there is a need for technical standards for backup batteries or BBU's. In order to make that determination, the Commission held this workshop to learn the specifics of backup power for communications devices and networks. These included the types of batteries and devices in use, their life expectancy, maintenance requirements, indicator options, warranty availability, and any expected new technologies that the Commission should consider.

Please note that, due to unforeseen circumstances, Staff was unable to create a transcript of this workshop.

3.2 Technical Standards Workshop Data Request Responses

As with the other workshops, Staff distributed a data request prior to the workshop. Specific data requests were sent to both AT&T and Verizon, but not to other parties. These two service providers were also invited to submit any technical specifications and/or terms of service.

AT&T California

AT&T provided their data request response and a copy of their U-verse Terms of Service to Staff, along with diagrams and descriptions of AT&T U-verse voice service, including the ONT (Optical Network Terminal) and RG (Residential Gateway), and details of the types of backup batteries used in both.

AT&T indicated that they do not provide a warranty for backup battery power because the functioning of any battery during a power outage is subject to many conditions beyond AT&T's control. AT&T additionally does not provide a guarantee of battery backup time. AT&T stated that both the RG and ONT backup batteries are covered by three years' warranties provided by the battery manufacturers.

AT&T does not provide stickers on batteries showing initial installation date, however for U-verse voice customers, stickers are provided that warn of the need for electrical power for voice service to function.

AT&T does not have the capability to remotely monitor battery life and does not envision supporting remote monitoring. AT&T's RG does not have a power down sequence similar to Verizon's, and as such, POTS and an Ethernet port remain active for the extent of battery life. AT&T's BBU cannot power a customer's telephone equipment, such as cordless phones and assistive equipment, if they require external power.

AT&T stated that generic auxiliary power supplies such as a UPS, a generator, fuel cell, or a solar power transmission device, could be connected to AT&T's customer premises equipment as a power supply. Any device could be used; however, AT&T did not state knowledge of any specific devices and has no plans to make an auxiliary battery pack option available.

AT&T recommends that customers purchase replacement batteries through AT&T's approved vendor. AT&T does not recommend using any other replacement battery for its U-verse BBU. The unit was designed for AT&T U-verse voice service and AT&T cannot confirm that other replacement batteries will properly function with the unit. AT&T makes available to the customer a battery replacement and recycling service through Belkin in order to ensure the ongoing functioning of the battery backup unit.

New customers moving into a residence previously serviced by AT&T U-verse voice service will be provided with an RG and new battery, but not a new battery for the ONT. AT&T recommends that new customers check on the status of the ONT battery but does not encourage the installation technician to test the backup battery.

Upon placing an order for service, customers are informed that battery backup power is required in the event of a power outage. This information is included in the order confirmation document. In addition, at the time of installation customers receive: (1) the Terms of Service providing detailed information about BBU for both the ONT and RG; (2) a 9-1-1 acknowledgement form which the customer will review and execute advising them of the configuration of RG and/or ONT at their premises and the respective needs for BBU; (3) a document entitled "Important Customer Information Regarding your AT&T Voice Service" which is left with the customer; (4) 9-1-1 stickers for their handsets; and (5) a copy of the BBU manual.

> AT&T customers served by FTTP who subscribe to Plain Old Telephone Service (POTS) also have an ONT. The confirmation letter provided to these customers explains about the battery and their responsibility to maintain it. This information is also available to customers through AT&T's interactive voice response system (automated help line).

AT&T's submitted U-Verse Terms of Service outlines the need for backup power to customer premises equipment, namely the ONT and/or the RG in order for IP based services to function. AT&T provides the initial battery for BBU's for both the ONT and RG at service installation; however their Terms of Service specifies that "AT&T will not provide support for, or be responsible for, ongoing maintenance or management of, customer-owned equipment, including the initial RG battery backup unit provided to AT&T U-verse Voice customers."[25]

In a section titled Interruptions, Limitations, and Modifications to Service, AT&T asserts that by accepting the Terms of Service, the customer is accepting that U-verse voice is dependant on network availability and power availability, and therefore that AT&T does not guarantee 'continuous or error-free' service.

AT&T devotes an additional section of their Terms of Service to backup power issues. It informs of the need for continuous power to maintain service, and places responsibility for battery maintenance and/or replacement with the customer. It also goes over the need to have separate power for cordless telephones.

The Terms of Service also contains a section regarding U-verse voice and 9-1-1. AT&T makes no warranty that U-verse voice service will be uninterrupted, timely,

[25] AT&T U-verse Voice and TV Terms of Service, p. 4

secure, or error-free or that battery backup power will be sufficient to maintain the service through power outages. 9-1-1 service over AT&T U-verse voice service will not function if the RG fails or is not configured correctly or if the AT&T U-verse voice service is interrupted or not functioning for any reason. In the event of a power outage, customers may be required to reset or reconfigure the equipment prior to being able to use their services, including for calling 9-1-1[26]. AT&T strongly recommends that customers maintain an alternative means of accessing 9-1-1, such as wireless phones.

Verizon

Verizon makes available a detailed description of the battery used in their BBU, and noted a number of specific third party batteries fitting the same specifications and available at a variety of retail outlets. However, Verizon has not tested these third party batteries as they provide initial batteries at service installation.

Verizon will provide a replacement battery for a fee, unless the battery fails within the warranty period, in which case the replacement battery is provided free of charge. The replacement batteries provided are the same as the original batteries. Information on the battery replacement program is communicated to the customer via Verizon's FiOS User Guide. Customers are directed to visit: www.gsbattery.com for battery replacements. Through Verizon's replacement program, the cost of the replacement battery is $49.95 including shipping. Verizon's vendor does not have a process to return the old battery, and directs customers to dispose of the battery following local community guidelines.

Verizon provided specific information to Staff regarding their cost per unit for the BBU, and battery. They noted that they do not include an auxiliary battery pack on their BBU because consumers lack interest in the option, but that that the feature is enabled on each BBU deployed by Verizon should that change. Verizon additionally provided Staff with specific information about tests performed on their BBU's. A sticker is placed on the battery at the time the battery is charged and tested. The installation date is normally within 2 months of that date.

Verizon can monitor battery status remotely but does not have any automated systems to notify customers when the battery needs replacement. When the battery level has dropped to 70% of its rated capacity, the indicator light will be red for replacement but the battery will still provide backup for a limited time thereafter. The BBU's alarms will alert the customer as to the state of the battery.

3.3 Technical Standards Workshop Presentations and Discussion:

AT&T California[27]

AT&T began by again outlining its services and battery backup options. AT&T spoke briefly about the types of power outages that can affect telephone service, noting that commercial power reliability can vary widely according to a number of factors,

[26] AT&T U–verse Terms of Service, p. 9
[27] Joe Bailey, February 2, 2009, Technical Standards Workshop, CPUC, San Francisco.

including cause, utility company, and season. Most power outages are brief, with 95% of outages lasting less than 86 minutes; 98% lasting less than 4 hours[28]. A very small percentage of outages are of long duration, and these are typically caused by widespread, catastrophic events.

AT&T's U-verse Voice does require battery backup power to operate in the absence of commercial or other electric power. U-verse can be delivered via FTTN or FTTP network connection. On both networks, a BBU is connected to the residential gateway, to which phones, televisions, and computers can then be connected. The BBU and a new battery are provided upon service installation, and will typically provide battery power for up to 4 hours for a single line of voice service.

Over AT&T's FTTP network, an additional battery backup exists at the point at which the fiber comes into the home, the ONT which has its own BBU. This unit and a new battery are provided with service installation and will keep the service working for up to eight hours in the event of an outage.

Again, it should be noted that new service at a previously-served residence may not require BBU or ONT installation. This means that new customers at these locations may begin fiber voice service with an aged ONT backup battery that will not be as effective as a new backup battery would be.

Comcast[29]

Comcast provides digital telephone service via an eMTA installed on the customer premises. This eMTA includes a lithium ion battery, which will provide telephone service for 6-8 hours of standby time, or 4-6 hours of talk time. A depleted battery takes approximately 10 hours to fully recharge.

Comcast educates customers to keep the eMTA plugged into a dedicated electrical outlet and not to leave the battery out of the eMTA. Comcast will make a second battery available at the request of the customer, as well as replacing the original battery.

Comcast outlined several additional backup power options for the customer premises, which can provide backup power indefinitely so long as there is available fuel.

For continuous E-9-1-1 service, Comcast employs a generator at its headend switching facilities, in addition to backup batteries installed at network power supply points with mobile backup generators, as well as the customer premises backup power solutions outlined above.

Cox[30]

For its residential voice service, Cox uses a lithium ion battery installed in the eMTA, with a typical reserve capacity of 4 to 6 hours of talk time and 6 to 10 hours of

[28] Joe Bailey, AT&T, February 2, 2009

[29] Joe Mardesich, John Gutierrez, Comcast, February 2, 2009, Technical Standards Workshop, CPUC, San Francisco.

[30] Mark Adams, Doug Garret, Cox, February 2, 2009, Technical Standards Workshop, CPUC, San Francisco.

standby time. For commercial voice services Cox specifies a minimum of 8 hours talk time for a smaller line telephone modem (e.g. 2 line) via lithium ion battery, or a UPS to satisfy the 8-hour runtime standard for a larger multi-line telephone modem (e.g. 8 and 12 line).

Cox estimates that the battery life of the lithium ion battery in its BBU's will be 4-6 years before needing to be replaced, and that batteries will typically require 10 to 36 hours to return to a full charge after power is restored.

Although battery status is monitored remotely by Cox, the customer premises modems include indicator lights to alert when the battery is low or bad. Through its monitoring, Cox flags batteries for replacement if they are missing or maintain less than 80% of original capacity. Once it has been flagged, Cox will contact the customer to schedule a replacement, beginning with a phone call to set up replacement battery installation and follows with two mailings. If there is no response, there is no further activity, although this year Cox is looking at automating the process and possibly adding direct informational mailings. Cox attempted a pilot program of automatically sending batteries to customers in Las Vegas but found that most were never installed and discontinued the pilot program.

Cox believes that battery equipment at the customer premises is the most cost-effective solution for typical power outages, and that the FCC will in the future be adopting specific standards for network backup power.

However, Cox noted that, as customer choices may augment the benefit of backup power at customer premises, customer choices can also negate that benefit. Many users now have a secondary technology available with a much longer power reserve capacity than most BBU's can provide. It is common for technologically savvy customers to mix and match backup power equipment among various devices.

Verizon[31]

Verizon's FiOS service includes 3 network components at the customer premises, the ONT, the OPSU (Optical Power Supply Unit), and the BBU. The ONT is the termination of the fiber line, and converts optical data sent over the fiber into various services such as internet, TV, and voice service to the home. The OPSU is the power supply that powers the ONT and charges the battery in the BBU. The BBU contains the battery and powers the network connection in the event of a power loss.

The BBU has a number of alarms and indicators, among which are 4 visual indicators, a 'replace battery' light which signals that the battery is operating at less than 70% of original capacity and needs to be replaced, an 'on battery' light, indicating that the unit is running on battery power, an 'auxiliary battery' light, indicating that an auxiliary battery power supply has been connected to the unit, and a 'system' light, which indicates that the unit is operating properly.

[31] David Henkel, Verizon, February 2, 2009, Technical Standards Workshop, CPUC, San Francisco.

The BBU additionally has audible indicators which sound when the battery is missing or needs replacing, or when the battery reaches less than 50% capacity. These alarms are 80-85db, approximately 'smoke alarm' level.

The Verizon BBU also contains what Verizon refers to as the 'Blue Button', which can be manually engaged to provide up to 1 hour of additional emergency use after initial battery support time is exhausted.

During an outage the BBU battery will typically provide 8 hours of service at room temperature. When a loss of power is reported, FiOS begins to power down services according to the following sequence: Video is shut off after 30 seconds, Data is shut off after 5 minutes, and telephone service is supported for the duration of battery backup support.

The battery used in the Verizon BBU is a sealed lead acid non-spillable battery, which should last a minimum of three years before needing to be replaced. Verizon offers a no-questions-asked replacement warranty for the original term of service. Batteries outside of the warranty period are the customer's responsibility to replace. Batteries are easily available commercially, or can be obtained from Verizon, and typically cost between $15.75 and $49.95.

Verizon provides information on backup battery related issues to customers in a number of ways. New customers are informed at the point of sale by sales representatives, technicians review battery information at the time of installation, and customers are given a FiOS Customer Guide book which provides details about the BBU and battery, including replacement information.

Verizon also provides ongoing service support for existing customers via the FiOS customer support website, Verizon's Fiber Solutions Center, and via telephone support. The Customer Support phone number is permanently printed on the front of the ONT, near the indicator lights.

SureWest[32]

SureWest provides information on its backup battery to customers during the sales call and at the time of installation. At the point of installation, the technician discusses the reason for the BBU and reviews the battery information with the customer at that time. In addition, the customer is required to review and sign SureWest's Authorization and Acknowledgment of Installation and Service Terms and is provided with SureWest's Reference Guide handbook which provides diagrams demonstrating how the customer is to replace the uninterruptible power supply.

SureWest provides a 90-day warranty and informs the customers that it is their responsibility to monitor and replace the battery and that the customer is responsible for maintaining and /or replacing the backup battery by periodically checking to assure the backup battery is still operational. SureWest does not remotely monitor battery life. The battery used in SureWest's BBU is a sealed lead acid non-spillable battery which

[32] Greg Chamberlain, SureWest, February 2, 2009, Technical Standards Workshop, CPUC, San Francisco.

provides up to 8 hours of standby time when new and the manufacture state will last between 3 to 5 years before needing to be replaced.

SureWest's policy is to use a permanent marker (e.g. Sharpie) to legibly indicate the date of the new battery on replacement battery installation so that it is readily visible when the batter backup unit's cover is removed. It is SureWest policy to install a new battery on all new install, reconnects and existing BBU equipment replacements. SureWest installs its BBU normally in the garage where is protected from outside elements and where the customer can easily access the BBU. This ensures that the customer is able to replace the battery themselves. SureWest tests the battery upon installation to make sure it's condition is good and will function properly. SureWest does not test third party batteries. SureWest sells a replacement batter for $34.99 that can be acquired at any of its customer service centers.

SureWest now installs a BBU that in the event of a lengthy power outage, a Battery Emergency Use button (i.e. similar to the Verizon Blue button) can be pushed to provide power for emergency calls in prolonged electrical outage. Pressing this button provides enough power for a few telephone calls even after most of the battery's charge has been used.

SureWest's BBU has both audible and visual alarms. The four visual alarms are similar to Verizon's and has a system status light for indication that the unit is operating properly, a batter light for indication that the unit is operating on battery power, a replace battery light indicating the customer should replace the battery and an auxiliary power light for indicating that an auxiliary power supply has been connected to the unit.

In addition, there is a button to silence the audible alarm and a button to provide additional emergency battery use after the initial battery support time has been exhausted.

Small LECs[33]

The only Small LECs who are currently offering service over FTTP are Calaveras and Kerman, and both of those companies are doing so on a very limited basis (essentially one housing tract for each company).[34] From a technical standpoint, both Kerman and Calaveras are using similar batteries to the other companies. When new, the batteries provide up to 8 hours of standby time. The battery units do have indicator alarms, but they are also monitored remotely, and the companies replace the batteries typically before the alarms ever go off.

3.4 Additional Power Sources

A number of additional backup power solutions are or will be available commercially to users of communications services. During the technical standards workshop, there was a significant amount of discussion regarding solutions such as a UPS, generator, fuel cells, solar power systems, etc.

[33] Patrick Rosvall, Small LECs, February 2, 2009, Technical Standards Workshop, CPUC, San Francisco.
[34] Small LEC follow-up e-mail excerpts (Patrick Rosvall to Simin Litkouhi 2/3/09)

The workshop discussion included several questions on where responsibility lies for educating customers about the availability of UPS devices. Generally, advocacy groups thought that service providers should be obliged to inform customers that these devices may be used with customer premises equipment. Service providers felt that these devices were outside the scope of their responsibility.

By consensus, the outcome was that language informing customers about other available sources of backup power should be part of the customer education program, but that service providers should not bear any responsibility for the functioning or reliability of any individual device, or its interconnection with communications customer's premises equipment. Customers should be informed that they have the option to augment the backup power at their premises if they wish.

Taking this approach, additional backup capacity beyond the battery backups installed by service providers is at the discretion of customers. Informed customers can make their own determination about whether extended backup beyond the BBU is desirable.

3.5 Findings

Tables 3 below summarizes Staff findings on current service provider practices and the backup power equipment on the customer's premises. Explanations of practices marked "yes", "no" or "need improvement" are included in the list following the table. Staff made these determinations based on the service provider's submitted materials, data request response, workshop participation, and further investigation.

Table 3

Current Service Provider Practices on Backup Power Equipment at the Customer's Premises

Current Practices for Customer Premises Backup Power Equipment	AT&T	Verizon California	Comcast	COX California Telecom	SureWest	Frontier	Small LECs
1. Reasonable backup battery power is provided at the customer premises?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. BBU is designed so that the customer can change the backup battery?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Service provider remotely monitors backup battery?	No	No	Yes	Yes	No	No	Yes
4. Provide initial BBU backup battery?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Provide subsequent replacement BBU backup batteries?	No	No	Yes	Yes	No	Yes	No
6. Communications service has E9-1-1 location information capability?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7. BBU has both visual and audible alarm to alert the customer that the backup battery needs replacement?	Yes	Yes	No	No	Yes	No	No
8. When multiple technologies are served, shut down sequence prioritizes voice service over data and video?	No	Yes	Need Improvement	Yes	Yes	No	No
9. Warranty provided on the BBU backup battery?	Yes	Yes	Yes	Yes	Yes	No	No

Table 3 Results: Below is the summary and explanation of Staff's findings on backup power equipment at the customer's premises.

1. *Reasonable backup battery power is provided at the customer premises?*
   Yes: All service providers currently have adequate practices to ensure that reasonable backup battery power is provided at the customer's premises. As noted previously, currently provisioned BBU's with a fully charged backup battery provide enough electricity to power communications services through the vast majority of power outages.[35]

[35] Final Analysis Report, pp. 30-34, 285

2. *BBU is designed so that the customer can change the backup battery?*
   Yes: All service providers use BBU's designed so that customers can replace the backup battery. Several of the BBU's in use also have replacement instructions directly on the equipment.

3. *Service provider remotely monitors backup battery?*
   Yes: Comcast, Cox, and the Small LECs remotely monitor the backup batteries in their customer's BBU.
   No: AT&T, Verizon, SureWest and Frontier do not monitor BBU backup batteries, but rather rely on the customer to monitor the backup battery level by periodically checking the BBU indicators, or hearing or seeing a low-battery alarm.

4. *Provide initial BBU backup battery?*
   Yes: All service providers provide the initial BBU backup battery.

5. *Provide subsequent replacement BBU backup batteries?*
   Yes: Those service providers who remotely monitor the BBU backup battery, Comcast, Cox and the Small LECs will send necessary replacement batteries to the customer with no additional charge.
   No: AT&T, Verizon SureWest and Frontier provide the initial BBU backup battery, but do not provide any subsequent backup battery replacements.

6. *Communications service has E9-1-1 location information capability?*
   Yes: All service providers have E9-1-1 location information capabilities.

7. *BBU has both visual and audible alarm to alert the customer that the backup battery needs replacement?*
   Yes: The BBU's used by AT&T, Verizon and SureWest have both visual and audible alarms to signal that the backup battery needs to be replaced.
   No: BBU's used by Comcast, Cox, Frontier and the Small LECs have only a visual indicator to signal that the backup battery needs to be replaced, such that they may not be noticed if the BBU is installed in a closet or garage where the customer may not see it.

8. *When multiple technologies are served, shut down sequence prioritizes voice service over data and video?*
   Yes: Verizon, Cox and SureWest employ a tiered shut down sequence that preserves backup battery power for voice service by first shutting down data and video services.
   Need Improvement: Comcast has a shutdown sequence that assures that non-essential services such as TV and internet are shut down in order to prolong battery life for voice communications, but it is unclear whether this sequence is automatic or consistent.
   No: AT&T**,** Frontier and the Small LECs do not have a prioritized shut down sequence when multiple technologies are served.

9. *Warranty provided on the BBU backup battery?*
   Yes: AT&T Verizon, Cox, Comcast, and SureWest each provide a warranty on the initial BBU backup battery.

No: Frontier and the Small LECs do not provide a warranty on the BBU backup battery.

Additional Issues:

- BBU's in Garages - Several service providers stated that BBU's are often installed in the customer's garage or elsewhere on the outside of the home where they may not be protected from extreme temperatures and inclement weather, which are known to adversely affect battery life. Additionally, without regular visual access, customers may miss visual alarms and indicators.
- Battery Level Indicators - Regarding backup battery level indicators, Disability Rights Advocates suggested that a standardized audible tone and visual signal be developed for BBU's to indicate that battery replacement is needed. They also recommended additional options for low battery warning indicators, such as text messages, e-mails or vibrating pages.
- National Efforts - Parties noted that network equipment backup power standards are currently being addressed nationally by the FCC and national advocacy organizations. Network backup power standards should improve over time, enabling a quicker recovery from emergency situations which may damage communications service equipment. However, the network standards under discussion do not pertain to the equipment at the customer premises.

3.6 Recommendations

Staff does not recommend technical standards for backup power equipment at the customer's premises at this time. Instead, Staff again finds several crucial gaps in current service provider customer education practices that should be remedied, and reiterates the following recommendations from Chapter 2:

1. Service providers should provide exact specifications of backup power equipment at the customer's premises, including the backup battery make, model and type, whether the battery is rechargeable and, if so, whether it is fully charged when installed or purchase. This could also include a list of approved battery types and retailers who sell these batteries.
2. Service providers should be required to instruct customers on how to monitor and replace the battery in their BBU, even for those service providers who remotely monitor the customer premises backup batteries.
3. There should be some form of record with a signature or other customer acknowledgement that the replacement of the BBU battery has been demonstrated.
4. Service providers should inform the customer of exactly how to obtain a replacement battery in clear, easy-to-understand language in an easily found location, such as on the BBU itself.

5. Service providers may, but should not be required to, include in customer information materials where to find compatible batteries from other manufacturers or retail providers, and whether those batteries have been tested by the service provider.
6. Service providers should inform customers about the usefulness of alternative power devices during prolonged power outages, but should not be liable for their use with customer premises equipment.

Chapter 4 – Accessibility Workshop

4.1 Purpose of Workshop

The informative presentations by advocacy groups at the Customer Outreach and Education workshop in November 2008 revealed the need for a third workshop to explore questions pertaining to people with disabilities, as well as customers with various special needs due to language, health, age, medical condition, or other factors. The purpose of the Accessibility Workshop, held March 9, 2009, was to learn about the unique customer information and communications technology needs of certain populations of customers. Issues fall into one of two categories:

- Technological and service issues: those pertaining to adaptive equipment, equipment accessibility, assistance with battery replacement, etc.
- Customer education issues: those pertaining to customer information materials, targeting outreach for customers with disabilities, seniors, customers with limited English proficiency, etc.

4.2 Underserved Populations

Three specific groups were discussed during the workshops as being particularly underserved in terms of either technological or customer information accessibility:

- Senior citizens – Seniors are more likely to have mobility limitations and sensory impairments that may limit their access to both equipment and customer information. As of the 2000 census, 11% of California's population was 65 years or older, with 5% 75 years or older.
- Customers with disabilities – As of the 2000 census, California had nearly 1 million residents with sensory disabilities, 2.2 million residents with physical disabilities, and 1.4 million residents with mental disabilities. While these categories are not mutually exclusive (a resident can have both sensory and physical disabilities, for example), they do indicate a significant population requiring additional consideration.
- Customers with limited English proficiency - Approximately 10%, or roughly 3.4 million Californians reported in the 2000 census that they speak either limited or no English. Of this population, approximately 75% speak Spanish.

4.3 Accessibility Workshop Data Request Responses

As with the other workshops, a set of questions was sent to all participants in the form of a data request. The responses to the data request revealed that, while AT&T and Verizon make efforts to accommodate customers with disabilities or special needs, these efforts need improvement, and do not include outreach components. All service providers claim that they will assist any customer upon request, but do not proactively notify customers that assistance and/or accommodations are available.

Service providers knew about the assistive devices used with their services only to varying degrees. Several expressed interest in learning more about the power backup needs of assistive equipment. None provide battery backup power specifically for assistive equipment.

In terms of specific communication channels for people with disabilities, if customers have self-identified and notified the service provider of any special needs, those will be listed in customer profiles and taken into account when delivering emergency service and/or equipment. Otherwise, service providers do not have mechanisms in place to communicate specifically with customers with disabilities during a widespread power outage other than their means of contacting all customers.

Service providers use the same customer information materials for all customers, and most service providers distribute this information in accessible formats for those with visual or hearing impairments so that people with disabilities have access to the same information as the general population.

At the point of installation, the standard practice of service providers includes working with each customer to determine the placement of backup power equipment at the customer's premises. For some services, facilities must be located adjacent to the customer's computer, which is presumably already accessible to the customer. Service providers report ample opportunity for questions, explanations and discussions of individual customer needs at the point of installation.

Verizon and AT&T, as the largest service providers, have more advanced customer service procedures in place to accommodate people with disabilities or special needs. Both have call centers specifically devoted to people with disabilities, although these call centers serve all people with disabilities and are not specific to fiber-based voice services requiring backup battery power during an outage.

4.4 Accessbility Workshop Presentations and Discussion

Workshop presentations were more informal at this workshop, largely because most information on technologies and existing outreach and education programs had already been presented to the Commission at one of the prior workshops. Service providers were eager to learn about the issues affecting customers with disabilities.

Disability Rights Advocates[36]

Disability Rights Advocates opened by introducing the issue of backup power for assistive telecommunications equipment. People with disabilities rely on numerous assistive devices including: TTY machines, video phones, video relay services, amplified telephones, CapTel phones (used by people who can speak but are unable to hear), phones with loud and/or visual ring signals, voice activated phone dialers, large keypad phones, hands free handsets or hands free speakerphones, talking caller ID machines, and increasingly the use of computers as telecommunications devices. Each of these devices requires electric power.

[36] Melissa Kasnitz, Disability Rights Advocates. March 9, 2009, Accessibility Workshop, CPUC, San Francisco. See transcript beginning p.6.

Disability Rights Advocates reminded the Commission that the goal of AB 2393 is to ensure that all telecommunications customers have and retain the ability to make and receive emergency calls during a power outage as networks migrate from copper wiring to other forms of infrastructure. For many people with disabilities, that ability is also dependent on their assistive devices. If these assistive devices are unavailable because of a power outage, then people with disabilities have no ability to make or receive emergency calls, even if their BBU is powering the service provider's customer premises equipment.

They recognize that the Commission itself can't set backup power or performance reliability standards for assistive equipment, but believes it is in line with this investigative proceeding to evaluate this issue. They hope that the Commission will recommend further action to the state legislature on the need for backup power for assistive communications equipment. Disability Rights Advocates stated the Commission must address this issue or people with disabilities who can't use telephones directly during a power outage will be denied the benefits of the ongoing investigation and work that the Commission and the providers are doing in this proceeding.[37]

On the issue of battery level indicators on BBU's at the customer premises, Disability Rights Advocates believes that the Commission should set performance reliability standards to the extent that they address the needs of people with disabilities. Specific recommendations include battery function indicators that are standardized to ensure both an audible tone and a visual signal, and other options such as text messages, e-mails, or pager alerts.

On the need for customer information to be disseminated in accessible formats targeted to those who need the information, Disability Rights Advocates has routinely provided information on how to effectively target to people with disabilities. All printed material should be available in alternative, accessible formats, including large print, Braille, audio cassette, compact disc or digital audio file, and electronic text available to screen reading software. Additionally, printed information distributed to all customers should have key information on how to receive the information in accessible formats and TTY numbers with the same prominence as other customer service phone numbers.

On assistance in changing batteries for customers with mobility limitations, Disability Rights Advocates believes that providers should offer some form of battery maintenance option. For providers who have indicated that they will change batteries at the request of the customer, there should be an initial step of informing customers that this service is available.

TADDAC[38]

The Telecommunications Access for the Deaf and Disabled Administrative Committee of California (TADDAC) works with and oversees Commission work with

[37] Ibid, pp. 10-11.
[38] Phil Kaplan, TADDAC. March 9, 2009 Accessibility Workshop, CPUC, San Francisco. See transcript, p.18-19

disabilities issues as they affect telecommunications, including an advisory role in the Deaf and Disabled Telecommunication Program (DDTP).

Many people with disabilities rely not only on communication through their own computer, but on relay services which are enabled by computers. These services may not be covered by the state right now, but that technology is advancing quickly to TADDAC urges the Commission to continue to think ahead. TADDAC also noted that during or after a power outage, assistive devices which do not have continuity of functionality often need to be reconfigured, or have lost information in memory storage.

From its involvement with the DDTP pilot project of distributing Sidekicks (short messaging service devices) to hearing-impaired customers, TADDAC noted that the backup batteries must have wide and expedient availability in order to be an effective means of ensuring power.

TADDAC also reminded the Commission of the importance of BBU's having both visual and audio indicators.

AT&T California[39]

AT&T has an established national call center for people with disabilities and seniors in Oakland, California, where they have 44 service representatives that are specially trained and can use phone or TTY. Customers generally self-identify, such that and AT&T will only know that the customer is disabled if the customer proactively informs them. Once AT&T knows the customer has a disability, they tag their account, noting any special needs. There are currently 90,000 customers with such accounts in California, and any inquiry calls to AT&T's main 800 number from these tagged accounts will automatically be routed to the service center for people with disabilities in Oakland.

At the point of sale, callers to AT&T service representatives (who can communicate via TTY and also take calls in Spanish) receive an explanation of the requirement for battery backup for fiber to the premises and U-verse Voice, just as in any AT&T business office or call center. Service representatives will then also explain battery replacement options.

When a customer places an order for fiber to the premises, the service representative explains that their telephone service requires electrical power to function, and that if a power outage occurs, they will not be able to make or receive calls including those to 9-1-1 unless they have a properly functioning backup battery. AT&T provides a backup battery during the initial installation of service at the customer premises. Replacement batteries can be ordered by calling an 800 number printed directly on the battery.

AT&T stated that if a customer is not the first person to have ordered service at the premises, the customer should check the battery at service initiation and replace it if necessary, and that customers should also check their battery periodically on an ongoing

[39] David Pojtinger, AT&T, March 9, 2009, Accessibility Workshop, CPUC, San Francisco. See transcript, p.21-25

basis. It is unclear from the materials submitted, however, when and where customers are informed of this need to check the battery at service installation.

At the point of installation, the technician discusses with the customer the best location for the BBU, which must be within 100 cable feet of the ONT. For a residential gateway installed with U-verse Voice or VoIP, the BBU is installed within 6 feet of the RG near customer's home entertainment center or the customer's computer.

AT&T provided sample wording of the disclosures given by service representatives, installation technicians, and in the text of the service order confirmation letter. These samples included information about service during a power outage, customer premises equipment functionality and maintenance, and the relation of these issues to the customer's ability to make and receive emergency calls such as 9-1-1. The verbiage of the installation technician's disclosure is quite detailed and includes descriptions of both visual and audible BBU indicators.

Verizon

Similar to AT&T, Verizon operates a specialized call center, the Verizon Center for Customers with Disabilities, where representatives receive special training in order to meet the needs of visual, hearing and mobility impaired customers. This training includes information about new adaptive technology. It is unclear whether the customer must know to call this particular center, or if accounts are tagged and automatically routed, as with AT&T.

When customers with disabilities contact the Verizon Center for Customers with Disabilities about fiber telephone service, they are provided the same information about battery backup that is provided to all Verizon customers. For hearing impaired customers, TTYs are used. Information may also be found at Verizon's website, http://fioshelp.verizon.com, which is in accessible format for the visually impaired.

Verizon will install the ONT and BBU in a customer-agreed upon location, with consideration of customer accessibility. Technicians can contact the Verizon FiOS Jeopardy Desk or the Verizon Center for Customers with Disabilities for issues that arise during installation. For hearing impaired customers, technicians can communicate with the customer by written message.

The FiOS User Guide is provided to all customers in print, and is available on Verizon's website in an accessible format that includes battery monitoring and replacement information. The ONT includes both visual and audible alarms, and the BBU has visual indicators. The FiOS User Guide is provided, is also available on Verizon's website and includes battery monitoring and replacement information. The ONT includes both visual and audible alarms.

Verizon will visit customer premises to replace a battery upon request at no charge (at technician discretion) if there is an accessibility issue for the customer.

4.5 Findings

Table 4 below shows that in all areas there is a need for improvement for many of the accessibility factors that were identified in the workshop. Explanations of practices

marked “yes”, “no” or “need improvement” are included in the list following the table. Staff made these determinations based on the service provider’s submitted materials, data request response, workshop participation, and further investigation.

Table 4

Accessibility

Current Service Provider Practices Regarding Accessibility	AT&T	Verizon California	Comcast Phone of CA	COX California Telecom	SureWest	Frontier	Small LECs
1. Provide all customer information materials in formats accessible to customers with sensory disabilities?	Yes	Yes	No	No	No	No	No
2. Use targeted outreach to make customers with disabilities aware of available materials, accommodations, and assistance?	Need Improvement	Need Improvement	No	No	No	No	No
3. Provide all information on backup power equipment at the customer premises in all the languages in which the provider marketed its services?	No	No	No	No	No	No	No
4. Provide opportunity for customer to choose location of BBU for accessibility and ease of use?	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement
5. Ensure customers with sensory disabilities can detect the BBU backup battery level indicators and low-battery warnings?	No	No	No	No	No	No	No
6. Use BBU’s with both audible and visual signals, or have a means of transmitting low battery warnings to customers with sensory disabilities via text messages, email alerts, vibrating pager, etc.?	Yes	Yes	No	No	No	No	No
7. Provide assistance with battery replacement at the customer's request?	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement	Need Improvement
8. Ensure that individuals with mobility limitations are able to replace their backup batteries?	Need Improvement	Need Improvement	No	No	No	No	No

Table 4 Results: Below is the summary and explanation of Staff's findings on customer education and accessibility of backup power equipment at the customer's premises.

1. *Provide all customer information materials in formats accessible to customers with sensory disabilities?*
   Yes: AT&T and Verizon provide customer information in formats accessible to customers with sensory disabilities.
   No: Comcast, Cox, SureWest, Frontier and the Small LECs do not provide materials in accessible formats, but communicate with hearing-impaired customers via TTY.

2. *Use targeted outreach to make customers with disabilities aware of available materials, accommodations, and assistance?*
   Need Improvement: Although AT&T and Verizon have customer information materials available in accessible formats, but only if the customer identifies himself or herself to the service provider as a disabled customer.
   No: Comcast, Cox, SureWest, Frontier and the Small LECs have no accessibly formatted materials, and therefore no targeted outreach to customers with disabilities.

3. *Provide all information on backup power equipment at the customer premises in all the language in which the provider marketed its services?*
   No: None of the service providers provide information on backup power equipment at the customer's premises in all the languages the provider marketed its services. Verizon provides a Spanish version of FiOS guide, but not in any other languages.

4. *Provide opportunity for customer to choose location of BBU for accessibility and ease of use?*
   Need Improvement: All service providers claim that they provide an opportunity for placement of backup power equipment at the customer's premises to maximize accessibility and ease of use for customers with disabilities, but only at the customer's request. Service providers should actively notify customers of this opportunity.

5. *Ensure customers with sensory disabilities can detect the BBU backup battery level indicators and low-battery warnings?*
   No: None of the service providers have any formal process in place to ensure that battery level indicators and low-battery warnings are detectable by customers with sensory disabilities.

6. *Use BBU's with both audible and visual signals, or have a means of transmitting low battery warnings to customers with sensory disabilities via text messages, email alerts, vibrating pager, etc.?*
   Yes: The BBU's used by AT&T, Verizon and SureWest have both visual and audible alarms to signal that the backup battery needs to be replaced.
   No: BBU's used by Comcast, Cox, Frontier and the Small LECs have only a visual indicator to signal that the backup battery needs to be replaced.

7. *Provide assistance with battery replacement at the customer's request?*
   Need Improvement: All service providers will provide battery replacement assistance at the customer's request. However, no service providers actively inform customers that this assistance is available.

8. *Ensure that individuals with mobility limitations are able to replace their backup batteries?*
   Need Improvement: AT&T, Verizon and SureWest have programs in place to ensure that individuals with mobility limitations are able to replace their backup batteries, but these programs need improvement because they rely on the customer notifying the service provider of any special needs.
   No: Comcast, Cox, Frontier and the Small LECs have no processes in place to ensure that customers can replace the BBU backup battery.

Additional Issues

- Backup power for assistive devices - Although outside the scope of this proceeding, participating parties are very aware that backup power for assistive devices will be necessary for most customers with disabilities and will likely continue to press for clarity as to who is responsible for addressing this additional backup power need. No service providers currently provide customers any customer education regarding these devices.

- Self-Identification – Service providers rely on the customer to notify them of any disabilities or special needs. Once a customer "self-identifies" as disabled or having a special need, AT&T and Verizon offer the customer all of the accommodations, materials, and assistance provided by their programs for these customers. However, if the customer does not self-identify, they are not made aware of these programs and will not receive the materials, accommodations and assistance that they may require. Comcast and Cox do not have specific program geared towards people with disabilities or special needs.

4.6 Recommendations

Again, Staff finds that a lack of customer knowledge is the primary factor preventing customers, regardless of any disability or special need, from making fully informed decisions. Staff again recommends remedying this with additions to current customer education programs:

1. Service providers should be required to provide all customer information materials in accessible formats: large print, Braille, compact disc or digital audio file, and electronic text available to screen reading software and should notify all customers that these materials are available. This information should contain the same information given to other customers.

2. Service providers should provide assistance with backup battery units, including backup battery replacement, to any requesting customer, and should notify all customers that this assistance is available.

Chapter 5 – Conclusions and Recommendations

Staff set out to present the issues identified in AB 2393. Staff sent out data requests, held workshops, and solicited. These issues are primarily:

- Whether residential and small business customers have sufficient backup power capability to have communications services available for emergency calls during a power outage.
- Whether residential and small business customers have sufficient information about battery backup power during commercial power outages upon which to make informed decisions about their communications services.
- Whether service providers are adequately addressing the needs of customers with disabilities or other special needs.

5.1 KeyFindings

1. Communications services delivered via fiber-optic or coaxial cable to the customer premises will require backup power at the customer's premises in the absence of an external 120v power source (i.e., during a commercial power outage).
2. California's service providers offering voice service over fiber-optic or coaxial cable provide the customer with a backup battery unit and battery that will provide up to 8 hours of standby time or up to 4 hours of talk time. As 97% of power outages last less than two hours, current backup power provided should be considered a sufficient and reasonable level of backup power.
3. Providers of voice service over coaxial cable (cable companies) monitor backup power customer premises equipment remotely and take responsibility for the equipment's maintenance and/or replacement, while providers of voice service over fiber (including Verizon, AT&T, and SureWest) provide the initial backup battery, but specify that it is the customer's responsibility to monitor and replace the battery when necessary.
4. All service providers use battery backup units that allow customers to easily replace the backup battery. AT&T,Verizon and SureWest have programs in place to ensure that individuals with mobility limitations are able to replace their backup batteries, but these programs need improvement because they rely on the customer notifying the service provider of any special needs. Other carriers have no similar processes in place.
5. Some customers may need assistance from their service providers in monitoring and maintaining backup power equipment at the customer's premises, including assistance with replacing the backup battery.
6. Although customer premises backup power units may provide voice service during a power outage, customers with disabilities may still not have access to

communications services if their assistive equipment does not have backup power.

7. It may be more effective for customers with disabilities to receive low battery warnings in formats other than on-equipment lights or alarms. These could be text messages, e-mails, alerts sent via a vibrating pager, or other means.
8. Alternative sources of 120v power, such as a generator, a commercially available universal power source (UPS), fuel cell, or solar electricity system can provide customers with additional backup power that could power communications service for longer periods.
9. AT&T, Verizon, SureWest and Frontier provide only the initial battery, but do not automatically replace faulty backup batteries. Comcast, Cox, SureWest, and the Small LECs provide an initial battery and replace faulty backup batteries..
10. AT&T and Verizon provide most customer information in accessible formats. Other service providers do not provide materials in accessible formats but communicate with hearing-impaired customers via TTY.
11. No Service providers provide information on backup power equipment at the customer's premises in any language other than English, regardless of the language in which the provider marketed its services.

5.2 Recommendations

Staff's overall conclusion is that, given a full understanding of their communications service's relationship with commercial electrical power, as well as all backup power equipment on their premises, customers will be able to make sound decisions about their communications service options during a power outage. A fully informed customer will be able to make his/her own determinations regarding alternative means of communication, alternative power sources, and emergency preparedness. At present, the main obstacle to customers making these informed decisions is a lack of information, or access to information, on their service and its accompanying equipment. Therefore, the recommendations in this report are meant to provide communications customers with the information they need.

Staff recommends that all service providers offering voice service over non-copper facilities have a mandated customer education program that states what backup power is provided to the customer and what customers can expect from this backup power. Mandatory elements of customer education programs should include:

1. **Communications Service Information** including: a clear statement that the communications service requires commercial or alternative power, and that a BBU will power their communications service for a limited amount of time provided that the backup battery and BBU are maintained; a clear statement of how long the BBU will power a single access voice line and how standby and talk time affect backup battery performance; a statement that the customer can provide his or her own power to the equipment in the absence of commercial power from the electric utility through a generator, UPS, fuel cell, solar system or some other external source of electricity

2. **BBU Equipment Information** including: clearly stated responsibilities of both the customer and the service provider regarding the BBU; directions on how to replace the battery; a clear explanation of the BBU indicators, especially how the customer can determine whether if the battery needs to be replaced.
3. **Backup Battery Availability and Replacement Information** including: make, model and type of the backup battery sufficient to identify a replacement battery; whether the BBU backup battery is rechargeable and, if so, whether it is fully charged when installed or purchased; where these batteries are available, such as from the service provider, retail stores or online; where there are other compatible batteries (specify type) which can be purchased from other retail providers, as well as notice as to whether the service provider has tested these batteries; how long the initial battery provided by the service provider should last, and that battery life is based on type, usage, age, and temperature; availability of assistance with BBU backup battery monitoring and replacements, and notification that assistance is available.
4. **Emergency Preparedness Information** including: that during a power outage communications services should only be used for emergency purposes and that necessary calls should be short; that a corded phone should be kept that could be directly plugged into a telephone jack or a fully charged cellular telephone when possible; and that cordless phones will not work without a 120v power source
5. **Backup Battery Unit Demonstration** at point of installation showing how to monitor and replace the backup battery in the BBU, even for those service providers who remotely monitor the customer premises backup batteries, a demonstration of all indicators, and a signature or other customer acknowledgement that the replacement of the BBU battery has been demonstrated.
6. **Availability of Customer Information in Accessible Formats, and Notification of this Availability**, including information in: large print, Braille, compact disc or digital audio file, and electronic text available to screen reading software. This information should fully contain whatever information is given to other customers.
7. **Availability of Customer Information in Languages other than English** to customers in the language in which they were marketed, and notification of the availability of these materials.

(END OF ATTACHMENT A)