Decision 08-09-014 September 4, 2008

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Rulemaking on the Commission's Own Motion into Reliability Standards for Telecommunications Emergency Backup Power Systems and Emergency Notification Systems Pursuant to Assembly Bill 2393.	Rulemaking 07-04-015 (Filed April 12, 2007)

DECISION ADDRESSING STANDARDS FOR TELECOMMUNICATIONS BACKUP POWER SYSTEMS AND EMERGENCY NOTIFICATION SYSTEMS PURSUANT TO ASSEMBLY BILL 2393

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DECISION ADDRESSING STANDARDS FOR TELECOMMUNICATIONS BACKUP POWER SYSTEMS AND EMERGENCY NOTIFICATION SYSTEMS PURSUANT TO ASSEMBLY BILL 2393

1. Summary

This decision concludes the first phase of a proceeding that has examined several topics involving backup power supply for telecommunications systems and notification to the public of emergencies using those systems. This proceeding was initiated at the direction of legislation enacted in response to Hurricane Katrina and other disasters. Recent events, including the April 16, 2007 shootings at the Virginia Polytechnic Institute and State University and the October 2007 Southern California firestorms have highlighted the importance of public safety communications in both localized and widespread emergency events.

Accordingly, we provide a report to the Legislature that analyzes topics of emergency backup power and notification systems and provides recommendations to enhance the reliability of our telecommunications network and its ability to notify the public in case of emergencies.

Assembly Bill (AB) 2393, signed into law on September 29, 2006, added Sections 776, 2872.5 and 2892.1 to the Public Utilities Code.[1] Sections 776 and 2892.1 address backup power systems while Section 2872.5 addresses emergency notification systems.

Section 776 requires the Commission to consider the need for performance reliability standards for backup power systems installed on a

[1] All section references are to the Public Utilities Code unless otherwise indicated.

residential or small commercial customer's premises by a facilities-based telecommunications service provider, and to develop and implement them if the benefits of the standards exceed the costs.

From a public safety perspective, it is necessary that customers have the ability to make necessary phone calls and to receive emergency notifications for a reasonable period of time during extended power outages. We direct staff in the second phase to design and develop a consumer education and outreach plan with a goal of informing customers about backup power considerations for various telecommunications services on their premises. The question for the third phase is whether rules for battery power at customer premises are also necessary. If rules are necessary, they should be designed to achieve this goal at the lowest reasonable cost without hindering the evolution of telecommunications technology. This proceeding remains open for further consideration of these issues and whether rules for informing customers regarding backup power are necessary. Before establishing any such standards, the Commission will determine that the benefits exceed the costs, as required by the statute, and that the implementation of such standards by service providers is reasonable and feasible.

Section 2892.1 requires the Commission, in consultation with the Office of Emergency Services and the Department of General Services, to determine the need for backup power systems, other than those located on the customer's premises, and to determine performance criteria. The Commission is also to determine whether the Best Practices for backup power systems recommended by the Federal Communications Commission's (FCC) Network Reliability and Interoperability Council in

December 2005 (Best Practices) have been implemented by service providers. In addition, the Commission is required to determine the feasibility of using zero greenhouse gas emission fuel cell systems to replace diesel generators for such backup power systems.

Since this section was signed into law, the Federal Communications Commission issued an order that requires local exchange carriers and commercial mobile radio service providers to have 24 hours of emergency backup power for central offices and eight hours for cell sites, remote switches and digital loop carrier system remote terminals.[2] The order provides exemptions for smaller providers. We have no reason to believe that the federal requirement is unreasonable. However, it is not yet in effect and the order is currently on appeal. Therefore, we find that California should not separately establish backup power requirements for central offices, cell sites, remote switches and digital loop carrier system remote terminals, at this time. Instead, California should closely monitor and, where necessary, actively participate in the development of the federal requirements. When such requirements are established, California will be in a much better position to determine whether additional standards are needed.

As to Best Practices, we find there has been substantial implementation by most service providers. However, there is some room

[2] *See* FCC Order 07-177. When used in connection with facilities other than those located on the customer's premises, the amount of backup power refers to power needed to continue operating the telecommunications network, including ongoing usage by customers.

for improvement by the small local exchange carriers and we encourage their implementation of the Best Practices.

We further find fuel cell systems for backup power are far more costly than diesel backup power systems. Additionally, diesel backup power systems are not a significant cause of greenhouse gases because they are used infrequently. Thus, we do not recommend fuel cells as a preferred means of providing backup power at this time.

Section 2872.5 requires the Commission, in consultation with the Office of Emergency Services and the Department of General Services, to determine whether there should be design and operation standards for notification systems used by entities, such as police, firefighters and emergency medical personnel, that are authorized to use automatic dialing devices to notify the public in the event of local emergencies. The Commission is not to establish standards unless the benefits exceed the costs.

We find California's emergency notification systems should be compatible with systems in other states and with federal requirements when they are established. Therefore, we find that California should not separately establish standards at this time. Instead, California should closely monitor and, where necessary, actively participate in the development of the federal requirements. When such standards are established, California will be in a much better position to determine whether additional standards are needed.

Through AB 2231, the Office of Emergency Services is required to examine policies, procedures and a framework to enhance public access to emergency alerts. The Department of General Services manages 9-1-1

Emergency Communications for the State of California. We expect our Communications Division to continue the cooperation established with the Office of Emergency Services and the Department of General Services in this proceeding with respect to enhancing emergency alerting in California.

2. Legislative Background

A central battery system was deployed by telecommunications service providers in the 1920s to improve network operations, performance and reliability. As a result, batteries and generators located in the provider's central office were able to power both the central office and the customer's telephone in the event of a power outage, assuming the telephone system is otherwise intact. The same continues to be true today for customers receiving wireline service from a facilities-based provider through copper wires. However, newer communications transmission technologies, including fiber optic and coaxial cable facilities, do not provide power to the customer's telephone. Thus, they may require distributed backup power systems, both in the network and at the customer's premises, in order to have this capability.

Section 776 [AB 2393(1)] requires the Commission to consider the need for performance reliability standards for backup power systems installed on the premises of residential and small commercial customers by a facilities-based provider of telephony services. The Commission is to develop and implement such standards if the benefits of the standards exceed the costs. This statute also requires the Commission to report back to the Legislature on the results of this proceeding.

The Commission was directed to consider the following standards: minimum operating life, minimum time period in which a telephone system with a charged backup power system will provide the customer with sufficient electricity for emergency usage, and a means to warn the customer when the backup system's charge is low or when the system can no longer hold a charge. In developing any such standards, the Commission is to consider current Best Practices and the technical feasibility of establishing battery backup requirements.

Automatic dialing-announcing devices are used in emergency notification systems by law enforcement agencies, fire protection agencies, public health agencies, public environmental health agencies, city or county emergency services planning agencies, and private for-profit agencies operating under contract with, and at the direction of, one or more of these agencies. These are automatic devices that store phone numbers and disseminate a prerecorded message to those phone numbers in the event of an emergency.

Section 2872.5 [AB 2393(2)] requires the Commission, in consultation with the Office of Emergency Services (OES) and the Department of General Services (DGS), to determine whether standardized notification systems and protocols should be used by entities that are authorized to use automatic dialing devices to facilitate notification of affected members of the public in the event of local emergencies. The Commission is not to establish standards unless the benefits of the standards exceed the costs. The Commission is also required to provide any recommendations it may have for funding notification systems and any statutory modifications

needed to facilitate notification of affected members of the public during local emergencies.

As noted above, providers of telecommunications service generally install backup power systems on their own facilities so that their networks can operate when the electric utility serving the property has a power outage. The backup power systems are designed to enable the telecommunications networks to function and customers to contact a public safety answering point operator (9-1-1 service) during an electrical outage. These backup power systems are often batteries supplemented by diesel-powered electric generators, which recharge the batteries. In addition to telephony providers' own motivation to ensure network reliability and operational efficiencies, minimizing communications service disruptions is widely beneficial for public safety and economic wellbeing.

Section 2892.1 [AB 2393(3)] requires the Commission, in consultation with OES and DGS, to determine the need for backup power systems not located on the customer's premises and to determine performance criteria. If the Commission determines it is in the public interest, it is required to develop performance reliability standards for such backup power systems and implement the standards if the benefits exceed the costs. In developing such standards, the Commission is to consider current Best Practices and technical feasibility for establishing battery backup requirements.

The Commission is also to determine whether the Best Practices for backup power systems have been implemented by service providers. In addition, the Commission is required to determine the feasibility of the use

of zero greenhouse gas emission fuel cell systems to replace diesel generators for such backup power systems.[3]

Section 2892.1(a) provides that for the purposes of Section 2892.1, "telecommunications service" means voice communication provided by a telephone corporation as defined in Section 234, voice communications provided by a provider of satellite telephone services, voice communications provided by a provider of mobile telephony service as defined in Section 2890.2, and voice communications provided by a facilities-based provider of voice communications utilizing Voice over Internet Protocol or any successor protocol.

The Commission was required to report to the Legislature on the results of the investigation before January 1, 2008, and complete the proceeding within 18 months, *i.e.*, November 30, 2008.

3. Procedural Background

AB 2393 (AB 2393, Ch. 776, Stats 2006), Levine, "Telecommunications: Emergency Service" was signed into law on September 29, 2006, and became effective on January 1, 2007. The Commission opened this rulemaking on April 12, 2007.

The CD held three technical workshops addressing the subject matter. The first workshop, held on June 5, 2007, addressed backup power systems on residential and small commercial customers' premises. The second workshop, held on June 6, 2007, addressed backup power systems

[3] Section 42801.1 of the California Health and Safety Code defines greenhouse gas as including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

on service provider premises. The third workshop, held on June 19, 2007, addressed emergency notification systems.

Subsequently, CD issued information requests to augment the information gathered at the workshops and provide the opportunity for input from individuals and organizations who did not attend the workshops. In addition, CD visited service provider locations.[4]

AB 2393 required the Commission to send a report on its investigation to the Legislature before January 1, 2008. On December 6, 2007, the Commission instructed the Executive Director to send the required report to the Legislature. The report addressed the process followed in this investigation up to that point, but did not reach any conclusions regarding the issues being considered.

The Final Analysis Report (FAR) is the final report prepared by CD and its consultants in this proceeding. It provides analyses of the topics identified in AB 2393 and options for addressing them. On April 11, 2008, a draft FAR was mailed to the service list for comment. Based on the comments received on the draft, the FAR was revised and is included herein as Attachment A. This decision adopts the FAR for transmittal to the Legislature and addresses the next steps the Commission should take.

The Commission is committed to ensuring that communications systems are available during emergencies. As part of that commitment, Assigned Commissioner Simon conducted a post-firestorm workshop on

[4] The Commission sought the participation of service providers, equipment venders, public agencies and others with an interest in emergency backup power and notification systems in this proceeding.

January 9, 2008, with service providers, alerting equipment vendors, first responders and other interested persons in San Diego.[5] The purpose of the workshop was to review communication issues and challenges posed by the October 2007 firestorms in San Diego County and to share the lessons learned. Commissioner Simon held a similar firestorm communications meeting with San Bernardino County first responders and community leaders on June 20, 2008. Both meetings were well attended and provided useful information on issues in this docket.

The Communications Division staff will issue a report addressing the performance of communications networks and emergency notification systems during the firestorms and the practices and procedures used by local entities, vendors and service providers. The report will include recommendations to improve emergency notification, response and communications facilities restoration in California.

In addition to the above, the Commission's staff is currently participating in the AB 2231 Alert and Warning Work Group convened by OES on March 27, 2008.[6]

4. Issues

The FAR breaks down the issues as follows:

- Issue 1: Backup batteries installed on the premises of residential and small commercial customers;

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[5] Pursuant to an Assigned Commissioner's ruling dated April 12, 2008.

[6] AB 2231 (Ch.764, Stats 2006), Pavley, required the Director of OES to convene a working group to consider and make recommendations with respect to a system for the transmission of emergency alerts to the public through a public-private partnership.

- Issue 2: Standardization of emergency notification systems and protocols;
- Issue 3: Backup power on the telecommunications network;
- Issue 4: Level of implementation of Best Practices by the different telecom industry segments; and
- Issue 5: Feasibility of the use of zero greenhouse gas emission fuel cell systems for backup power systems located at telecommunications service provider facilities.

We will address the issues in this order.

5. Issue 1: Backup Batteries Installed on the Premises of Residential and Small Commercial Customers

5.1. FAR Analysis

Electrical power is a key to ensuring end-to-end telecommunications service. A central battery system was deployed in the 1920s to improve network operations, performance, and reliability. As a result, batteries and generators located in the service provider's central office were able to power both the central office equipment and the customer's telephone in the event of a power outage (assuming the telephone system was otherwise intact). The same continues to be true today for customers receiving wireline telephone service that utilize copper wire facilities. However, newer communications transmission technologies, including fiber-optic and coaxial cable, require distributed backup power systems, in the network and at the customer's premises, in order to maintain service because they otherwise may not be able to power the customer's telephone.

The primary power to operate the central office is provided by the electric utility. A system of batteries and diesel generators located at the

central office ensures a continuous source of power in the event that the commercial power is interrupted.

The network is designed with a 99.99% availability objective for the link from the central office to the customer. To meet this very high reliability objective, the traditional telecommunications service providers paid a great deal of attention to the design and implementation of the backup power plant at the central office. How each type of provider attempts to achieve high reliability is discussed below.

> Wireline Services: Traditional wired telephone service does not require power at the customer's premises since the telephone obtains power through the copper wires from the central office. However, some customer-owned equipment, such as caller identification boxes and cordless phones, require electric utility power to operate.
>
> Cable Television (cable) Services:[7] For traditional cable systems, if power is interrupted at the home, the television will not operate. Therefore, there is no need for extensive backup facilities to keep broadcasting the television signal. As cable service providers move to expand their service offerings to include voice and data, they are putting in place powering schemes similar to those provided by the traditional telecommunications service providers. These include backup power at headend locations (the equivalent of a central office) with batteries at some remote sites. However, customer premises equipment requires battery backup power to operate during a power outage.
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> Broadband Services and Fiber Architectures: For these systems, the portion of the network close to the customer's premises is considerably different from traditional telephony. For Fiber-to-the-Building or Fiber-to-the-Curb

[7] Cable is referred to as CATV in the FAR.

> systems, where the provider's fiber optic system is not connected directly to the customer's premises, the backup power units are usually contained within an enclosure located in close proximity to, or inside, the customer's premises. For Fiber-to-the-Home or Fiber-to-the-Premises systems, where the provider's fiber optic system runs all the way to the customer's premises, the battery backup is located on the customer's premises.

Most, but not all, broadband service providers provide backup at the customer's premises. Four to 20 hours of battery backup were typically cited by parties. These service providers indicated that they provide up to 8 hours of backup battery power at the customer's premises.[8] Most cable systems provide four to five hours of battery backup in the modem used to provide Voice over Internet Protocol telephone service with the ability to expand the battery reserve, if requested, by a factor of 2 or 3.[9]

For a given battery capacity, the amount of reserve time for a device depends on its power usage expressed in watts. The usage varies depending on whether the device is on standby where the device is ready to make a call, or in active use. The delivery of traditional telephone service over copper wires normally consumes one to two watts. Other devices can use more power. For example, a digital subscriber line modem can consume five watts in standby, and six watts in operation. A cordless phone or answering device on the customer's premises can consume two to three watts in standby, and three to four watts in operation. To

[8] FAR at 34 – 35.

[9] *Id*. at 34.

reduce energy consumption and maximize reserve time during an outage, video and data services should be disconnected as soon as possible.

How long a battery will supply power to the customer also depends on the customer's use during a power outage. If the customer makes multiple calls or a few lengthy calls to friends, family, the local power company or local officials, the load is large and the battery will drain fast. If provided with sufficient education, however, customers can be encouraged to conserve their backup power during a power outage or emergency situation by making only necessary calls.

Other factors that affect how long a battery can provide power, in order of impact, include:

Operational Modes – Greater use of sleep, idle and standby modes will reduce the load on the battery.

Battery Type – Some types of battery have more capacity for a given size than others.

Battery Age and Quality of Manufacture – As batteries age, their capacity to store energy is reduced. Lower quality batteries will deteriorate faster.

Battery Temperature – A battery exposed to hot or cold conditions will be able to provide power for a lesser amount of time than at moderate temperatures.

Design of Customer Equipment – Some savings are possible through selection of more energy-efficient devices, however the savings are usually small.

In order to evaluate the implications of establishing minimum performance standards for backup power it is necessary to assess the tradeoffs between the impact of electrical power outages on customers and the costs of providing sufficient battery backup time to minimize the interruption of telecommunications service.

Using California electric utility statistics from the last 10 plus years, a number of significant outage events were profiled, including heat waves, windstorms, wildfires, earthquakes, floods, human error and lightning. Based on the analysis of this information, the risk of a customer losing telephone service during an outage event decreases from 6.8% for systems with four hours of backup power, to 3.9% for systems with eight hours of backup power.[10] The addition of more battery capacity to achieve 15-20 hours of backup will further reduce the risk from the 3.9% to roughly 2.0%.

Extended power outages (greater than 14 hours) are caused by large or state-wide outage events such as windstorms, extensive floods or large earthquakes where not only power is lost but widespread physical damage to telecommunications plant and customer equipment is likely. In such a case, the telecommunications network may be disrupted such that the customer is unable to make a call regardless of amount of backup power available to the customer. Based on the above data, the FAR concludes that eight hours of backup is more than sufficient for the vast majority of the power outages. The FAR also finds that, since most consumers have multiple telecommunications means available to them (*e.g.*, both wireline service and cell phone service) it is less likely that all of their telecommunications services will be lost simultaneously.

[10] The hours of backup indicated here refer to the ability to make a call rather than continuous talk time. The risk percentages are the proportions of the electric utility's customers who loose power for more than the specified time during an outage event.

Based on commercially available products used by carriers today, there are several options available to increase the amount of backup power at the customer's premises. Where service is provided to the customer's premises over fiber optic cable, each customer's premises will have an optical network terminal (ONT). The inclusion of a standard battery backup unit (BBU) with the ONT costs approximately $15 and provides 6.5 hours of backup power at a load of 10-watts.[11] The next level of protection involves the addition of a basic external battery pack. This would cost another $20 per unit and extend the available backup power to 13 hours assuming the same load. Finally, to achieve more than 13 hours of backup, a high-capacity battery pack would be required at a cost of $50 per unit ($30 over the basic pack).[12]

This cost analysis is based on an anticipated load of 10-watts in the event of a power outage. Energy is required to (1) monitor battery status and alarm systems, (2) signal the presence and status of the customer to the network, and (3) provide service. The assumed 10-watt load is representative of the higher loads reported for various current Fiber-to-the Home systems. If the load is reduced, the hours of backup power will increase for the same cost. For instance, the use of the standard ONT/BBU device that would provide 6.5 hours of backup at a 10-watt load may yield approximately 10 hours of backup power at a 6-watt load. Decreasing the load on the battery through using low-power standby modes and idle

[11] Inclusion of the BBU costs $15 over and above the cost of the ONT.

[12] Estimated wholesale prices.

settings on customer equipment is more cost-effective and permanent than simply adding extra batteries.

5.2. FAR Recommendations/Options

Backup Time: Backup times currently provided by service providers vary from 4 to 20 hours. The backup time should not exceed the backup time of the service provider's network. Having a long battery backup time requirement at the customer's premises serves no purpose if the provider's network is down.

The FAR offers the following options for backup time:

1. No minimum backup requirement. This option recognizes that current implementation of the Best Practices and industry contingency plans have proven adequate to provide emergency telecommunications services in many power outage situations.[13]
2. Set a minimum backup power requirement of four hours for the telephone to be available for emergency use, not four hours of talk time. This matches the general industry backup capacity for remote terminals that serve the customer premises.[14]
3. Set a minimum backup power requirement of eight hours for the telephone to be available for emergency use, not eight hours of talk time. This would match the recent FCC requirement of Order 07-177 for eight hours of backup power at remote terminals.[15]

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[13] Best Practices are addressed in Issue 4.

[14] Remote terminals are equipment on the provider's network that are located between the central office, or equivalent for other types of providers, and the customer's premises.

[15] *See* Issue 3; Backup Power on the Telecommunications Network.

The FAR states that if either Option 2 or 3 is selected, the Commission should allow an exemption to the requirement for mitigating circumstances such as unreasonably high cost to the provider or customer.

Contingency options could include enhanced battery capacity at the customer's premises with monitoring and replacement by the service provider for a fee or offering a cell phone for emergency use.

Minimum Operating Life: Battery useful life depends on the quality of the battery, the environment in which the battery is located (temperature, etc.), how often the battery is discharged and recharged, and the load on the battery when used. Battery useful life can vary from 1 to 10 years. If the service provider remains the battery owner and is responsible for maintenance, the Commission may need to address the providers' battery maintenance programs.

If the customer is the owner, there is a risk that the batteries will not be replaced on an appropriate schedule, resulting in reduced capacity or failure.

One of the more effective options is to educate customers on the pros and cons of backup battery ownership, care, and maintenance; so as to help the customer make appropriate purchasing or service decisions.

Battery Status: Some battery status monitoring systems have colored lights to indicate system status. Others have audio signals, although the alarm is often not particularly loud. If the BBU or cable modem which does the monitoring loses power, the customer may not realize or notice problems with battery status until telecommunications service is lost. The FAR suggests that options for improving the battery status indicators include customer education to make the customer aware

of the availability and capabilities of backup battery service. The FAR also notes that the options for monitoring and alarms will increase the load on the battery and decrease the available backup time.

The FAR offers the following options:

- Require a series of announcement options to be offered to the customer. Options could include brighter or flashing lights for deaf or hearing impaired customers, and variable volume or pitch for blind, visually-impaired, or hearing-impaired customers.
- Require a text or voice message to be automatically sent from the battery monitoring system to a specific telephone number.

Customer Education: As noted above, customer education is a critical factor in maximizing the potential of backup power systems. Providing accurate, relevant information to the customer is an effective tool to use in helping maintain telecommunications during emergencies.

The FAR offers the following options:

- Make such information available on the Commission's web site.
- Require the service provider to disclose battery backup system performance.
- Specify how such information may be provided to consumers such as through advertising materials, brochures, the provider's website, bill inserts, tailored information for consumers with special needs (*e.g.*, hearing or visually impaired), etc. The FAR states that information buried in service agreements is not an effective means of communication.

The FAR states that the information provided to the customer should include:

- Why the backup power was installed.
- What the backup power does and does not do.
- How long the phones can operate under backup power.
- The need for backup power to call E-911 in power outages.
- What the maintenance requirements are.
- Potential risks from such backup power systems.
- Battery replacement information.
- Where to find additional information.
- A recommendation that the customer consider having an alternative means of communication.

The FAR also states that education programs should address the special needs of groups such as the deaf, disabled, or visually impaired regarding the options available to them to extend the life of the backup battery.

Other Options: The FAR says the Commission may wish to consider encouraging service providers to offer optional services for disabled or other Californians with special needs. Examples could include:

- Partially subsidizing the cost of additional battery backup capacity at the customer's premises.
- Providing low cost backup service such as a cell phone for emergencies.
- Offering incentives to community service groups to assist customers with disabilities in emergencies.

5.3. Discussion

This proceeding is post 9-11, Katrina, and Virginia Tech. The narrow purpose of the Section 776 portion is to assess whether California residential and small business consumers are able to make and receive

telephone calls for a reasonable time after the commercial power to their premises fails. There is no need to—and we do not by way of this decision—revisit our decision to forbear object regulation of VoIP providers. However, Section 776 does require that we implement standards as to backup power on the customer's premise only if the benefits exceed the costs.[16] As discussed above, the FAR addresses costs to some degree but does not quantify benefits. Thus, there is insufficient information on the record of this proceeding to perform an empirical cost-benefit analysis. Additionally, we recognize that the FCC's Katrina Order is still on appeal and, if overturned, would have dramatic implications on cost/benefit assessments of potential backup power customer premises rules.

There is, however, a paradigm shift underway in the delivery of voice communications. Customers may not know whether their telephone is capable of operating during a power outage without battery backup, much less the limitations of such backup if required. In an emergency that coincides with a power outage, the inability to make a phone call to obtain emergency services could lead to property loss or damage. More importantly, it could lead to injuries and fatalities.

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[16] Section 776(a) provides that the standards shall do the following:

(1) Establish minimum operating life.

(2) Establish minimum periods of time during which a telephone system with a charged backup power system will provide the customer with sufficient electricity for emergency usage.

(3) Establish means to warn a customer when the backup power system's charge is low or when the system can no longer hold a charge.

Residential and small business customers whose telephone is incapable of operating during a power outage without battery backup must be made aware of this limitation and educated about the available options for backup power. From a public safety perspective, during an extended power outage, it is necessary that customers have the ability to make necessary phone calls and receive emergency notifications for a reasonable period of time. The question is whether rules are necessary for service providers to inform their customers about service limitations during a power outage, what customer options and responsibilities are, and whether rules are necessary to compel service providers to provide a minimum level of backup power.

If rules are necessary, they should be designed to achieve this goal at the lowest reasonable cost without hindering the evolution of telecommunications technology. This proceeding remains open for further consideration of these issues.

5.4. Consumer Outreach and Education

We believe efforts are needed to ensure that consumers of voice service over fiber, coax and broadband facilities are made aware of the necessary battery replacement and monitoring. Accordingly, an issue to be addressed in the next phase (Phase 2) of this proceeding is the current best practices of service providers in notifying consumers about battery backup power capabilities in a power outage, and how these practices could be enhanced. Another issue for this phase is how the Commission may best educate consumers of their battery backup power options and subsequent responsibilities so that they know their options when choosing a service provider.

We direct Commission staff to focus on these issues in our Consumer Protection Initiative programs, which have included: public service announcements and advertisements; training of community based organizations who in turn train their communities on an issue; Commission consumer websites, such as http://www.calphoneinfo.com; and other consumer education and outreach programs.

Staff and voice providers should work together on customer outreach and education on the issues of backup power and telephone service during an outage, including, for example: backup power issues at the customer premises of residential and small business customers where telephone service is offered over fiber optic lines and coaxial cable; how to use communication services during a power outage; recommendations on second charged, backup batteries for emergencies and/or for family and friends, particularly if the customer has a disability, is elderly or has other special needs. We note, moreover, consumers with traditional wireline service should be made aware of issues such as the failure of cordless phones during commercial power outages.

We expect staff to examine these issues in addition to whatever customer education efforts service providers are already making. Thus, we direct staff to hold a workshop with parties to identify the various technologies, their backup power limitations and how best to describe to customers those limitations, consumer options and responsibilities. In this workshop, we expect industry parties, based on their experience, to assist staff in developing an efficient message to customers.

5.5. Performance Reliability Standards

The Commission will consider in a third and final phase of this proceeding whether there is need to establish performance reliability standards for backup power systems installed on the premises of residential and small commercial customers by all facilities-based providers of telephony services (including those that do not have certificates of public convenience and necessity with this Commission). In considering whether to adopt such standards, the Commission staff will collect information on what individual providers are offering and what industry best practices are with regard to battery backup power. Before establishing any such standards, the Commission will determine that the benefits exceed the costs, as required by the statute, and that the implementation of such standards by service providers is reasonable and feasible.

6. Issue 2: Standardization of Emergency Notification Systems and Protocols

6.1. FAR Analysis

AB 2393 requires the Commission to open an investigation to determine whether standardized notification systems and protocols should be utilized to facilitate notification of affected members of the public of local emergencies.

Sections 2871 to 2876 define the parameters for the connection and use of Automatic Dialing Announcing Devices (ADADs). They were written to regulate mass dialing for non-emergency uses, and exempt various entities, including those using it for emergency notification. Since

they were written, telecommunications technology has evolved such that the requirements in those sections may be out of date.[17]

AB 2393 requires the Commission to determine whether standardized notification systems and protocols should be used by entities that are authorized to use ADADs to facilitate notification of affected members of the public in the event of local emergencies. The current set of notification systems work and save lives. However, there may be issues regarding optimization, performance, and operations of notification systems.

An important consideration is whether activation of emergency communications systems during an emergency causes network congestion sufficient to hinder such communications. While such congestion is possible, the FAR found no specific evidence that random activation of notification systems causes sufficient congestion to hinder emergency communications. However, other activities (such as mass dialing of 9-1-1 in a large scale emergency) may also create congestion. The FAR finds that, through an education process, those who use the notification systems to broadcast alerts (alert initiators) could be made aware that they may need to throttle back their notification alert system in order to lessen any adverse impacts on service providers.

The FAR finds that notification system vendors, in general, are not familiar with the § 2875 requirement to notify the telephone service

[17] Section 2872 provides that the connection of ADADs to telephone lines is subject to the jurisdiction, control and regulation of the Commission.

provider in writing of the intended use of ADAD equipment.[18] In addition, service providers seem to lack clearly defined policies for ADAD users (*i.e.,* which individual or organization to call within their company and what information should be exchanged with respect to § 2875). The FAR recommends that California encourage alert initiators to comply with §§ 2871-2876 and the service providers' guidelines.

Open communications between the service provider and alert initiator is essential. When a service provider does not expect a mass notification or the mass notification is not programmed in a way to avoid system congestion, the service provider may be forced to block calls to prevent congestion or a widespread telecommunications outage. If, instead of balancing the desire to send mass notifications with the service provider's need to manage traffic to avoid system overload (and thus defeat the purpose of sending emergency notifications), alert initiators ignore service provider warnings of blocked calls and system congestion they impose a greater burden on the network. This illustrates the need for further dialogue between service providers and alert initiators in order to reach mutual agreements on operating parameters for alert initiators.

New communications technologies enable local authorities to notify the public in an emergency by a phone call or text message delivered to wireline or wireless devices, including cell phones and text pagers. What is emerging is not, however, a unified system.

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[18] Section 2875 requires among other things that: no person shall connect any automatic dialing-announcing device to any telephone line without first making

Footnote continued on next page

Without common communication protocols, manufacturers are developing emergency notification systems that require proprietary software. Each system remains targeted toward those living in a particular area with people unable to communicate with those who may be across county or municipal boundaries. For example, an escape route recommended by one county may lead people onto a road that is impassable in the next county.

Given the embryonic nature of standards and other federal initiatives, the lack of maturity of systems and operational experience of statewide systems, the FAR concludes that the current state of technology can not support a statewide rollout. However, there are activities at the federal level that should be considered.

6.2. Federal Activities

6.2.1. Warning, Alert and Response Network (WARN) Act

The WARN Act established the Commercial Mobile Service Alert Advisory Committee (CMSAAC) to develop recommendations on technical standards and protocols to facilitate commercial mobile radio service (CMRS) transmission of emergency alerts. It is intended to establish a framework by which CMRS providers may voluntarily transmit emergency alerts. It required the CMSAAC to develop and recommend standards and protocols related to the Emergency Alert System (EAS) to

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written application to the telephone corporation within whose service area telephone calls through the use of such device are proposed to be placed.

the FCC by October 12, 2007.[19] The resulting CMSAAC report was submitted to the FCC on October 12, 2007. Subsequently, on April 9, 2008, the FCC in a First Report and Order (FCC 08-99 in PS Docket No. 07-287), adopted technical standards, protocols and procedures to enable CMRS providers to transmit emergency messages to customers. Implementation requires that a federal entity be designated to collect and transmit alerts to wireless carriers.

In a May 30, 2008 press release, the Department of Homeland Security's Federal Emergency Management Agency (FEMA) announced that it would perform the unified aggregator/gateway role for the Commercial Mobile Alert System, mandated by the WARN Act.[20]

6.2.2. FCC Review of the Emergency Alert System

On May 31, 2007, in the Review of the Emergency Alert System, EB Docket No. 04-296, the FCC adopted a Second Report and Order and Further Notice of Proposed Rulemaking that addresses some of the

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[19] EAS is designed to provide the President of the United States with the ability to address the public in the event of a national emergency. Beginning in 1993, the President allowed state and local emergency information to be transmitted using EAS. Since then, EAS has been used to transmit local emergency messages using TV and radio broadcast stations, cable and wireless cable systems. In October 2005, the FCC expanded EAS to require participation by digital television broadcasters, digital broadcast radio, digital audio radio service and digital broadcast satellite. EAS is regulated by the FCC and administered by the Department of Homeland Security through the Federal Emergency Management Agency.

[20] Dept. of Homeland Security FEMA release Number HQ-08-090, released May 30, 2008, entitled, "FEMA to assume Aggregator/Gateway Role for Nationwide Cell Phone Alert System."
http.//www.fema.gov/news/newsrelease.fema?id=43619

Katrina Panel's recommendations.[21] The order is intended to promote the development of digital technologies and delivery systems for emergency alerts. The order requires EAS participants to accept messages using the Common Alerting Protocol, which is to be the groundwork for next generation EAS systems. The order, while approved, has not yet been published. In a news release, the FCC stated that it will explore the technical and financial viability of expanding the EAS to other technologies such as wireless and the Internet. We find this federal development to be very positive.

6.3. FAR Options/Recommendations

The FAR offers the following options for consideration:

1. The FAR suggests that the national standards in the area of mass wireless notification should be allowed to fully unfold before considering specific standards or protocols for California.
2. While waiting for the national standards to develop, OES could consider hosting a workshop to draft an optional set of minimum and model criteria for notification systems. The intent would be to share the procurement and operational experience of those who have such systems, rather than to develop standards. At the individual discretion of the various institutions with notification systems, the optional criteria could be utilized in procuring and

[21] The Katrina Panel was established by the FCC in January 2006. It was tasked with reviewing the impact of Hurricane Katrina on telecommunications and media infrastructure, including public safety communications, reviewing the sufficiency of the recovery effort with respect to this infrastructure, and making recommendations to the FCC for improving disaster preparedness, network reliability and communications among first responders. Its report was submitted to the FCC on June 12, 2006.

implementing notification systems. Such criteria should consider the needs of persons with disabilities.

3. California could consider promoting more communications between service providers, alert initiators and vendors. This could include encouraging service providers to work with alert initiators and vendors to (1) provide a single point of contact at each service provider to work with the alert initiators to educate them on the service provider's concerns and (2) develop a set of guidelines for system installation and operation to minimize any impacts on the service provider's network.

6.4. Discussion

The intent of Section 2872.5 was to determine whether standardized notification systems and protocols should be adopted. Emergency alerts can be generated at the local, state and federal levels. Depending on how large a geographic area needs to be alerted, there may be multiple alert systems using a variety of communications mediums (wireline and wireless telecommunications systems, radio, television, etc.). It is essential that these systems be able to interact in a manner that facilitates notification of the appropriate people as soon as possible with the necessary information. Therefore, there should be some form of standards to facilitate this interaction.

As demonstrated by AB 2393 and AB 2231, we acknowledge the leadership of the California Legislature in pursuing the development of improved emergency notification systems. However, the FCC has also taken significant positive actions relevant to such standards. Since compatibility with federally established standards and protocols is

essential, California should not separately establish standardized systems and protocols at this time.[22]

Instead, we will continue to monitor, and where necessary, actively participate in the development of the federal requirements. When such requirements are established, California will be in a much better position to determine whether additional standards and protocols are needed. Towards this end, we expect CD to monitor the development and implementation of federal standards and keep us apprised of significant developments.

We further expect CD to continue the cooperation established with OES in this investigation with respect to enhancing emergency alerting in California.[23] In that regard, we expect CD to continue to actively participate in the OES AB 2231 Alert and Warning Work Group effort to develop recommendations for the Legislature concerning policies, procedures and protocols that will lay the framework for an improved warning system for the public.[24]

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[22] Section 2875 already requires automatic dialing-announcing vendors to coordinate with telephone corporations.

[23] Two California emergency alert workshops were convened in August 2007 to bring together government and industry subject matter experts to review current efforts and discuss California's emergency alert systems and capabilities, with specific focus on wireless systems. These workshops were part of a comprehensive effort by the Lieutenant Governor, OES and the Commission to examine policies, procedures and a framework for public-private partnerships with providers of mass communications systems to enhance public access to emergency alerts.

[24] OES is the chief responding state agency for all California disasters. Over the course of the next year, members specified in AB 2231, subject matter experts,

Footnote continued on next page

We are encouraged by the facilitation CD staff is providing the DGS 9-1-1 Office and service providers to resolve billing and infrastructure concerns. We also expect staff will continue to work with OES, DGS, and first responders on issues raised in the above referenced San Diego Workshop and San Bernardino Roundtable regarding notification system technologies, contracting and interoperabilities.

7. Issue 3: Backup Power on the Telecommunications Network

7.1. FAR Analysis

This issue considers the backup power on the service provider's[25] network, which covers both (1) the main switching centers (wireline central offices, wireless switching centers, and cable headends), and (2) outside plant (OSP) facilities not housed in the central office.[26] OSP facilities include all the facilities between the central office and the customer premises. OSP remote terminals are powered from the electric utility grid.

Batteries have been traditionally used as the backup power source for OSP remote terminals supplying up to eight hours of backup power. With increasing demands for connectivity and higher service expectations,

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stakeholders and interested parties will meet to discuss how to enhance the alert, notification and warning system in California. The first meeting was held on March 27, 2008 at OES headquarters.

[25] In this case, "service provider" refers to all providers of two-way voice services and does not exclude traditional wireline or wireless service providers.

[26] When used in connection with facilities not on the customer's premises, the amount of backup power refers to power needed to continue operating the telecommunications network, including ongoing use by customers.

the required amount of backup power for OSP remote terminals has increased over the last decade. Deployment of higher capacity battery systems has increased to meet this increased backup power need. The wide range of climates and locales for OSP remote terminals place environmental, thermal, and pollution stresses on the equipment, including the batteries. More recently new types of batteries have been introduced as backup power sources with higher capacities.

Various industry guidelines generally require a minimum of four hours, with a design objective of eight hours, of backup power at remote terminals. The design objective is usually cited as eight hours at a fixed call rate with consideration given to the time necessary to install additional backup power or other measures to keep the terminals operational.

Most cable and wireless systems use similar design guidelines and batteries for providing power backup. Currently, there is greater variability in the amount of backup power at wireless sites and the need for backup power is reduced because their architecture may allow for re-configuration of the coverage zone for a specific cell site to reduce outage impact.

The FAR finds that most service providers have at least four hours of backup power with larger providers having greater than eight hours of backup power at over 90% of their remote locations. The FAR reaches the following general conclusions:

- A minimum reserve of at least four hours of battery backup power is standard for remote terminals.
- Most remote terminals of wireline providers are designed to have eight hours of backup power.

- Most wireless remote terminals have emergency power backup, with 80% having four or more hours of backup power.

The FAR notes that some smaller providers rely on the incumbent provider's network as their backup plan for the service they offer, while medium sized wireless companies design for a minimum of four hours of backup power with some having more.

The FAR finds that industry standards for battery backup power for remote terminals provide for a minimum of three to four hours with a design objective of 8 hours. The FAR states that the current backup capacity and design criteria used for remote terminal and central office facilities have proven successful in providing emergency communications in more than 95% of power outages.

The FAR states that providing additional backup power at central offices by increasing fuel supplies for the backup generators would require larger fuel tanks with commensurate environmental safeguards and hazard reduction protocols. The additional costs of such increased fuel capacity are far greater than the alternate approach of having an efficient fuel delivery schedule and contingency plans in case of an emergency. Similarly, the cost of permanently adding battery capacity at a remote terminal is higher than having a contingency plan for delivery of new batteries or portable generators.

7.2. FCC Backup Power Rule

In January 2006, the FCC established the Katrina Panel to review the impact of Hurricane Katrina on the telecommunications infrastructure in the affected area and make recommendations on ways to improve disaster preparedness, network reliability and communications among first

responders (police, firefighters, emergency medical personnel, etc.). The Katrina Panel released its report on June 12, 2006. On June 19, 2006, the FCC issued a Notice of Proposed Rulemaking inviting comments on what actions it should take regarding the Katrina Panel's recommendations. On July 26, 2006, the FCC issued a public notice asking those providing comments on the Notice of Proposed Rulemaking to address the applicability of the recommendations to all types of natural and man-made disasters and whether the panel's recommendations are broad enough to take into account other geographic regions, the susceptibility of various regions to particular types of disasters and the communications capabilities of the regions.

On June 8, 2007, the FCC released the Katrina Panel Order directing its Public Safety and Homeland Security Bureau to implement several of the panel's recommendations. As a result, the FCC adopted, in Order 07-177, a backup power rule. (See *In the Matter of Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks* (EB Docket No. 06-119) (2007) 22 FCC Rcd. 10541, as modified by *In the Matter of Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, Order on Reconsideration, released October 4, 2007 (22 FCC Rcd. 18013).)

The backup power rule requires local exchange carriers (LECs), including incumbent local exchange carriers and competitive local exchange carriers, and CMRS providers to have emergency backup power for all assets normally powered by the serving electric utility. The assets include central offices, cell sites, remote switches and digital loop carrier system remote terminals. LECs and CMRS providers are required to have

24 hours of emergency backup power for central offices and eight hours for cell sites, remote switches and digital loop carrier system remote terminals. Class B LECs and non-nationwide CMRS providers serving no more than 500,000 customers are exempt.[27] Additionally, compliance is not required where compliance is precluded by federal, state, tribal or local law or legal obligation, or where there is a safety or health risk.

On February 28, 2008, the United States Court of Appeals for the District of Columbia Circuit granted a motion to stay the FCC's rule, pending court review. (*CTIA v. FCC,* Case No. 07-1475, consolidated with 07-1477, 07-1480, 2008 U.S. App. LEXIS 4942.) Thus, the rules are not yet in effect and may be modified.

7.3. FAR Options/Recommendations

The FAR suggests that industry design standards are useful for emergency planning:

- 24 hours of fuel storage at the central office facilities with contingency plans for rapid resupply of fuel as needed, and
- Four hours (minimum) of backup power at remote terminals with an objective of eight hours at critical sites.

There may be mitigating circumstances that prevent achieving these design objectives. Regulatory compliance conflicts can easily arise with Federal Environmental Protection Agency rules, local fire codes, hazardous materials loadings and building safety rules. Many remote

[27] Class B companies are those companies having revenues from regulated telecommunications operations that are less than an indexed revenue threshold. The 2006 threshold was $134 million.

terminals may be located in restricted rights-of-way, have prohibitions in lease agreements, have limited floor loadings on roof tops, or have other restrictions that limit the addition of heavy batteries with toxic compounds to the site. In addition, a wireless service provider may have flexibility at cell sites that allows boosting the power of adjacent sites to enhance the coverage area, or have roaming agreements with other carriers. For a cable or wireline service provider, acceptable contingency plans may entail rapid response repair crews that can be dispatched for restoration of service, or some other emergency response plan to re-route traffic and maintain service.

The FAR recommends that any such mitigating circumstances be documented by the service provider, including a demonstration that an emergency plan is in place. The FAR also recommends providing flexibility to service providers to allow for software engineering and network re-configuration as a response to an emergency.

7.4. Discussion

The intent of § 2892.1 was to determine the need for backup power systems not located on the customer's premises and performance criteria for such systems. Service providers have recognized the need for backup power and installed such systems. The FAR found that most service providers have backup power for 24 hours at central office facilities and four to eight hours at remote terminals.

Since this section was signed into law, the FCC has issued an order that requires LECs and CMRS providers to have 24 hours of emergency backup power for central offices and eight hours for cell sites, remote switches and digital loop carrier system remote terminals. The order

provides exemptions for smaller providers. We have no reason to believe that the stated federal requirement is unreasonable. However, it is not yet in effect and is on appeal.

The Legislature showed foresight in passing this legislation because progress was not being made at the federal level. However, that is no longer the case. Since the FCC has developed national requirements, we find it best for California to actively participate in the further development and implementation of them. When such requirements are established, California will be in a much better position to determine whether additional standards are needed, including whether smaller providers should be exempt. Additionally, only the incremental costs of the California standards as compared to the federal requirements would need to be addressed because the costs of implementing federal requirements will be a cost of doing business for service providers. We expect CD to monitor the development and implementation of the federal requirements and keep the Commission and the Legislature apprised of significant developments.

8. Issue 4: Level of Implementation of Best Practices by the Different Telecommunications Industry Segments

8.1. FAR Analysis

Best Practices provide recommendations regarding system design, construction and operation that are intended to ensure the reliability and interoperability of telecommunications networks, including during

emergencies.[28] For example, Best Practice Number 7-7-0701 provides that network operators, service providers and property managers should provide security for portable generators. Best Practice Number 7-7-1029 provides that network operators and service providers should periodically review their portable power generator needs to address changes to the business. There are 98 Best Practices related to power for all segments of the telecommunications industry (wireline, wireless, cable, satellite, and equipment providers).

To determine whether the Best Practices have been implemented, a questionnaire was prepared and sent to California wireline, wireless, and cable providers. The questionnaire was aimed at collecting statistical information on the level of implementation, the effectiveness of the Best Practices, and the costs of implementation.

The questionnaires were distributed on August 27, 2007. Eleven providers responded (two large LECs, four small LECs, three wireless and two cable). One of the small LEC responses was a joint response from 14 small LECs. The FAR finds that the responses received adequately represent such providers so that conclusions can be drawn from the results.

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[28] Network Reliability and Interoperability Council (NRIC) VII, Focus Group 1C, "Analysis of the Effectiveness of Best Practices Aimed at E-911 and Public Safety, F Report," December 2005. NRIC is a federal advisory committee to the FCC operating on two-year cycles. The purpose of NRIC-VII was to provide recommendations to the FCC that, if implemented, would ensure the reliability and interoperability of wireless, wireline, satellite, cable and public data networks, including emergency communications.

Based on the responses, the FAR finds that implementation rates for the Best Practices are 98% for large LECs, 73% for small LECs, 91% for wireless and 93% for cable. For the Best Practices related only to backup generator deployment, the implementation rates are 98% for large LECs, 70% for small LECs, 90% for wireless and 90% for cable. As to effectiveness, the great majority of the Best Practices are considered by the providers to be effective to some degree while almost half of the responses indicate they are very effective. Regarding relative cost, most providers consider them to be costly to implement. The responses also indicate that the responding service providers have less understanding of the cost of implementing the Best Practices than they do of their effectiveness or the extent of their implementation.

The difficulty that smaller LECs have in implementing the Best Practices seems to be rooted in the capital costs associated with additional batteries, generators, and other backup hardware.

8.2. FAR Options/Recommendations

The FAR recommends the Commission encourage small LECs to implement the Best Practices and continue participating in FCC and industry sponsored forums for Best Practices. Another option is the use of incentive mechanisms to encourage improvements in backup capacity and contingency planning.

8.3. Discussion

The FAR indicates substantial implementation of the Best Practices. However there is some room for improvement by the small LECs. As recommended in the FAR, we encourage their implementation. In addition, we require CD to further investigate small LEC implementation,

including any reasons for non-implementation, and report the results to the Commission along with recommendations for further action if appropriate. As to incentive mechanisms, it is not clear that they are needed and we decline to offer them at this time. Staff should, however, make recommendations, and explain why, if an incentive mechanism may be warranted in some circumstances.

9. Issue 5: Feasibility of Zero Greenhouse Gas Emission Fuel Cell Systems for Backup Power Systems at Telecommunications Service Provider Facilities

9.1. FAR Analysis

This issue involves an economic comparison between traditional diesel generator and fuel cell backup power systems. The long history of diesel generators allows considerably more accurate information on capital costs and operational costs to be available. This is in marked contrast to the fuel cell cost information, which contains much more conjecture and is, therefore, far less precise. Some of the factors to be considered include:

- Installed First Costs – including site preparation and the basic capital cost of generator equipment & accessories.
- Installation Costs – including planning, engineering and testing.
- Underground Fuel Storage Tank Costs – including monthly monitoring charges.
- Recurring Operational Expenses -– including maintenance, repairs, fuel and monthly tests of the engine or fuel cell.
- Safety and Regulatory Compliance – including monitoring, pollution control and reporting to governmental agencies.

The FAR provides a comparison of the installed first costs and annual recurring expenses for the diesel and fuel cell alternatives on a per kilowatt (kW) basis. For the diesel alternative, the installed first costs range from about $800 to about $1,400 per kW, while the fuel cell cost estimates vary from about $4,000 to over $20,000 per kW. Even with a 50% improvement in installed first cost, fuel cells are many times more expensive. Annual recurring expense estimates for diesel range from about $5 to about $79 per kW, while the fuel cell expense estimates vary from about $473 to about $504 per kW.

One of the fundamental reasons for the above wide ranges of results for fuel cells is the state of fuel cell technology today. Existing fuel cells have limited capacities while most typical telecommunications applications require capacities in the 30 kW (for wireless radio sites) to 1,000 kW (for wireline central offices). In addition, their long-term reliability is unproven.

As the fuel cell systems gain acceptance and broader use in all types of sizes and installations, the technical feasibility issues may be resolved. If the relative cost to the service provider can be reduced, fuel cell systems may become more economically attractive.

Currently there are a few demonstration projects which show that some of the capacity and storage problems can be solved. However, the high initial capital costs will limit widespread use of fuel cell systems in telecommunications networks over the next 5-10 years.

9.2. FAR Options/Recommendations

The FAR recommends that the Commission consider encouraging use of clean diesel engines as much as possible to reduce harmful

emissions and encouraging field trials of alternate energy (fuel cell, solar and wind). Such actions would have to be done in concert with other federal and state government agencies.

9.3. Discussion

Backup power systems are used only during maintenance testing and when there is an outage. Such outages are infrequent. Because they are rarely operated, there is no reason to believe they are a significant source of pollutants. The FAR demonstrates that fuel cell systems are far more costly than diesel backup power systems. Thus there is no apparent reason to believe that fuel cells should be a preferred means of providing backup power at this time. However, this may change over time as the technology develops.

10. Comments on Proposed Decision

The proposed decision (PD) of Commissioner Timothy Alan Simon in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on May 29 and reply comments were filed on June 3, 2008. Comments were filed by the Division of Ratepayer Advocates, The Utility Reform Network, Disability Rights Advocates, Pacific Bell Telephone Company d/b/a AT&T California (AT&T), Verizon California Inc. (Verizon), California Cable and Telecommunications Association (CCTA), Cox California Telecom LLC and Time Warner Telecom of California, LP, Surewest Telephone and Surewest Televideo (collectively Surewest), and

jointly by the small LECs.[29] All comments were considered and changes were made as appropriate.

11. Category and Need for Hearings

In the order instituting this rulemaking, we preliminarily determined that the category of this proceeding is quasi-legislative and that no hearings were necessary. No party has questioned these preliminary determinations and we confirm them.

12. Assignment of Proceeding

Timothy Alan Simon is the assigned Commissioner and Jeffrey P. O'Donnell is the assigned Administrative Law Judge in this proceeding.

Findings of Fact

1. As described herein, the Commission has completed the tasks specified in AB 2393.

2. Implementation rates for the Best Practices are 98% for large LECs, 73% for small LECs, 91% for wireless and 93% for cable.

3. For the Best Practices related only to backup generator deployment, the implementation rates are 98% for large LECs, 70% for small LECs, 90% for wireless and 90% for cable.

[29] Small LECs include Calaveras Telephone Company, Cal-Ore Telephone Company, Ducor Telephone Company, Foresthill Telephone Company, Happy Valley Telephone Company, Hornitos Telephone Company, Kerman Telephone Company, Pinnacles Telephone Company, The Ponderosa Telephone Company, Sierra Telephone Company, Inc., The Siskiyou Telephone Company, Volcano Telephone Company, and Winterhaven Telephone Company.

4. The great majority of the Best Practices are considered by the providers to be effective to some degree while almost half of the responses indicate they are very effective.

5. Most providers consider the Best Practices to be costly to implement. The responses also indicate that the responding service providers have less understanding of the cost of implementing the Best Practices than they do of their effectiveness or the extent of their implementation.

6. For the diesel backup power, the installed first costs range from about $800 to about $1,400 per kw, while the fuel cell cost estimates vary from about $4,000 to over $20,000 per kw. Even with a 50% improvement in installed first cost, fuel cells are many times more expensive. Annual recurring expense estimates for diesel range from about $5 to about $79 per kw, while the fuel cell expense estimates vary from about $473 to about $504 per kw.

7. Existing fuel cells have limited capacities while most typical telecommunications applications require capacities in the 30 kw (for wireless radio sites) to 1,000 kw (for wireline central offices). In addition, their long term reliability is unproven.

8. Customers whose telephone is incapable of operating during a power outage without battery backup must be made aware of this limitation and educated about the available options for backup power.

9. There should be a customer education plan to provide necessary information to customers regarding backup power on the customer's premises.

Conclusions of Law

1. The Commission has satisfied the requirements of AB 2393.

2. The Commission should adopt the FAR for transmittal to the Legislature.

3. Regarding implementation of the Best Practices, there is some room for improvement by the small LECs and we encourage their implementation.

4. There is no apparent reason to believe that fuel cells should be a preferred means of providing backup power at this time.

5. The category of this proceeding is quasi-legislative and hearings are not necessary.

6. This order should be effective immediately.

O R D E R

IT IS ORDERED that:

1. The Final Analysis Report, included herein as Attachment A, is adopted for transmittal to the Legislature.

2. The Commission's Executive Director shall cause a copy of this decision, with Attachment A, to be provided to the appropriate entities within the Legislature.

3. Rulemaking 07-04-015 .remains open for further consideration of the need for rules pertaining to backup power systems installed on a residential or small commercial customer's premises and whether rules for informing customers regarding backup power are necessary.

This order is effective today.

Dated September 4, 2008, at San Francisco, California.

MICHAEL R. PEEVEY
President
DIAN M. GRUENEICH
JOHN A. BOHN
RACHELLE B. CHONG
TIMOTHY ALAN SIMON
Commissioners

We reserve the right
to file a joint concurrence.

/s/ MICHAEL R. PEEVEY
President

/s/ RACHELLE B. CHONG
Commissioner

ATTACHMENT A

Final Analysis Report

There are no revisions to the original Attachment. This Report can be retrieved at:

http://docs.cpuc.ca.gov/PUBLISHED/GRAPHICS/84115.PDF

Concurrence of President Michael R. Peevey and
Commissioner Rachelle Chong
Decision Addressing Standards for Telecommunications Backup Power Systems and Emergency Notification Systems Pursuant to Assembly Bill 2393
Item 35
September 4, 2008

We concur in this revised decision as it removes aspects that we had found initially objectionable, primarily the conclusion that the Commission should require certain voice providers to provide eight hours of back up power on the customer's premises. This conclusion did not meet the required statutory cost-benefit test pursuant to Pub. Util. Code § 776.[1] We support the current version in which this Commission will continue the rulemaking to focus on consumer education related to back up batteries and take a fresh look at the need for an eight hour back up battery rule for customer premises equipment.

This proceeding raises complex and challenging technical and jurisdictional issues. At the heart of the issue is that the technology of how voice communications service is being delivered is changing. There is no longer one black landline telephone, powered from the central office using commercial power (or, when the commercial power is out, through a system of batteries and diesel generators). Instead, our California consumers today receive voice service using many modern technologies and platforms, including wireless, fiber-optic and coaxial cable. The latter two technologies require back up power systems in the network and at the customer's premises for the phone to work in a power outage.

There are many areas in this proceeding on which we agree with our colleagues. We agree that consumers need to be educated on emergency backup power issues as to the voice technology they pick. In this regard, the decision correctly recognizes that consumer education on battery back up issues is an important piece and should be focused on first in the next phase of the proceeding.

It is our hope that the carriers and the staff can work together to develop an accurate, voluntary consumer education plan for the Commission's use on our consumer website and community based organization (CBO) outreach efforts, such as the Telecommunications Education and Assistance in Multiple-languages (TEAM) program. We also would expect that the carriers will agree to actively educate consumers on the back up power issues at time of sale and upon installation. Carriers compete on this issue of back up power, and there is no reason why the carriers will not agree to providing clear information on this aspect during their marketing efforts. This Commission has worked well with the carriers in our implementation of our Consumer Protection Initiative, and we have no doubt that we will continue to work together in good faith on consumer education.

The decision also correctly finds that California does not need to establish a standardized emergency notification system and protocols in light of existing federal action in this area pursuant to the (Warning Alert and Response Network) WARN Act and the establishment of the Commercial Mobile Service Alert Advisory Committee. This Advisory Committee has developed recommendations on technical standards and protocols to facilitate commercial

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[1] AB 2393 (Ch.776, Stats 2006) added Sections 776, 2872.5 and 2892.1 to the Public Utilities Code.

mobile radio service (CMRS) transmission of emergency alerts, and the FCC adopted them in April. In May, FEMA agreed to be the unified aggregator/gateway role for this Commercial Mobile Alert System, so steady progress is being made. We commend the CMRS carriers for their active participation in this FCC process. California looks forward to this emergency notification system being implemented within our state's borders. Given our many fires and earthquakes in this state, emergency notification systems have tremendous potential to help authorities notify people who may be in harm's way.

We also agree with the decision's conclusion that there is no need at this time for California to separately establish back up power requirements for central offices, cell sites, remote switches, and digital loop carrier system remote terminals, due to development of federal requirements which are on appeal in the courts system. We should wait and see how the federal rules develop, and how they impact our actions at a state level.

The decision also correctly declines to take action at this time on the issue of the feasibility of zero green house gas emission fuel cell systems for back up power for telecommunications service providers' facilities. This is an area where costs did not exceed benefits, and a California-only requirement for fuel cell backup power systems made no sense when viewed on a national level. We do, however, encourage the carriers to review the evolving fuel cell technologies to see where they may benefit their facilities, particularly in remote communications sites.

There is one issue where we remain concerned about the decision's approach, and that is the issue of whether California-specific standards for battery back up power at the customer premises of small businesses and residents are necessary.

This is clearly an important public safety issue because, in emergencies, consumers must be able to call 9-1-1 for help on fiber system and cable VOIP phones.

AB 2393 gave us clear guidance that we need to consider the need for California-specific back up battery standard using a cost benefit analysis. And so, because the majority of my colleagues want to continue to look at whether rules are necessary in this rulemaking proceeding, we point out that the cost benefit standard has been set by law, and our record should satisfy this statutory standard.

We have had over a year to develop the record. We hired a consultant, Telcordia that worked with us through three technical workshops and several informational requests and developed the Final Analysis Report. The Final Analysis Report was unable to find that the benefits of a customer premise battery backup standard exceed the costs of implementing such a standard. Again, this is the critical assessment that is required by the statute before we can adopt any standard.

Upon closer inquiry, Telecordia found that nearly all the carriers have between four and 20 hours of reserve battery back up power at the customer premises. The service providers indicated they provide up to 8 hours of back up battery power at the customer's premises. The average power outage in the U.S. according to JD Power and Associates was 7.9 hours for 2007.

Thus, it appears that current practices delivering 8 hours of back up power to customer's premises should be generally adequate to provide emergency voice service during typical power outages. We would have found that the current carrier practice is adequate and rules are not necessary, but would consider

monitoring technological advances in back up battery on an ongoing basis to ensure our carriers keep up with best practices on a national level.

Further, the record indicates that the implementation of battery backup power standards would be costly and administratively difficult to implement. Additional battery back up costs for fiber systems may layer on additional costs of $15-$50 which will be passed on to consumers. There is no data in the record on costs for cable systems.

Moreover, the FCC's *Katrina Order* - which dictates a federal standard for *network-side* power - is on appeal and its status is in flux. If this FCC order is overturned, it could have a significant impact on the cost-benefit analysis required for adopting a standard for customer-premises power. Obviously, if there is no power on the network side, whether there is power on the customer premises side becomes irrelevant. We believe this appeal should be closely monitored.

Further, the universe of consumers impacted is relatively small. According to the FCC, as of June 2007, 30.3 million Californians – that's about 80% of all our residents -- have wireless phones and can use those to call 9-1-1. And 18.5 million incumbent phone company customers don't have this back up power issue.

Today, consumers purchase and replace batteries for their smoke detectors, cell phones, and cordless phones without difficulty. Once consumers understand there is a battery involved, they can easily learn to replace the battery. It is not difficult. We ask our colleagues to proceed with regulatory restraint in this back up battery area, remembering that our commitment to a level playing field in this competitive world of telecommunications and more flexible regulations.

For these reasons, we support and concur in this item today.

/s/ MICHAEL R. PEEVEY
Michael Peevey

/s/ RACHELLE B. CHONG
Rachelle B. Chong

San Francisco, California
September 4, 2008