STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

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TO PARTIES OF RECORD IN RULEMAKING 07-04-015

Enclosed is the Alternate Proposed Decision of Commissioner Chong to the Proposed Decision of Commissioner Simon previously mailed to you. This cover letter explains the comment and review period and provides a digest of the alternate proposed decision.

When the Commission acts on this agenda item, it may adopt all or part of it as written, amend or modify it, or set aside and prepare its own decision. Only when the Commission acts does the decision become binding on the parties.

Public Utilities Code Section 311(e) requires that an alternate to a proposed decision or to a decision subject to subdivision (g) be served on all parties, and be subject to public review and comment prior to a vote of the Commission.

Parties to the proceeding may file comments on the alternate proposed decision as provided in Article 14 of the Commission's Rules of Practice and Procedure (Rules), accessible on the Commission's website at www.cpuc.ca.gov. Pursuant to Rule 14.3 opening comments shall not exceed 15 pages.

Comments must be filed either electronically pursuant to Resolution ALJ-188 or with the Commission's Docket Office. Comments should be served on parties to this proceeding in accordance with Rules 1.9 and 1.10. Electronic and hard copies of comments should be sent to ALJ O'Donnell at jpo@cpuc.ca.gov and Commissioner Chong's Advisor Jane Whang at jjw@cpuc.ca.gov. The current service list for this proceeding is available on the Commission's website at www.cpuc.ca.gov.

/s/ PHILIP SCOTT WEISMEHL for
Angela K. Minkin, Chief
Administrative Law Judge

ANG:avs

Attachment

DIGEST

R.07-04-015: Motion into Reliability Standards for Telecommunications Emergency Backup Power Systems and Emergency Notification Systems Pursuant to Assembly Bill 2393.

Pursuant to Public Utilities Code § 311(e), the digest of the substantive differences between the Proposed Decision (PD) (Revision 1 filed June 17, 2008) and the alternate proposed decision (alternate) of Commissioner Chong, mailed on June 23, 2008, is as follows:

The primary difference between the PD and the alternate concerns the issue of backup power located on the customer's premises. The PD states the Commission's intent that facilities-based providers of telephony services be required to provide a battery backup power supply located on the customer's premises that would maintain the capability, for eight hours during a power outage, to make a necessary phone call. The PD also states that, under certain circumstances, such as for some disabled persons, it may be reasonable for the service provider to be responsible for maintenance and replacement of the backup power supply. Included in the requirement would be a customer education program. In furtherance of this intent, the PD requires the Commission's Communications Division (CD) to prepare a rulemaking for the Commission's consideration to do so.

The alternate declines to require telephony providers to provide a minimum amount of backup power on the customer's premises. Consequently, no rulemaking is ordered. In addition, the alternate requires CD to hold workshops to develop a customer education program. The result would be additional information on the Commission's website. Service providers' provision of customer education would be voluntary rather than a requirement.

The differences in outcome are due primarily to the differences in findings regarding costs and benefits and jurisdiction as discussed below.

Costs and Benefits

The PD concludes that a numerical comparison of costs and benefits of requiring eight hours of battery backup power can not be performed because the record is not sufficient to do so. It finds on a qualitative basis that the value of preserving human lives and property exceed any likely costs.

The alternate finds that most service providers already provide approximately eight hours of battery backup power at the customer's premises, the costs of a replacement backup power system could be significant and that if the FCC order specifying backup power requirements on the provider's network is overturned, a backup power requirement for the customer's premises would have little value. Because the alternate does not find that the benefits exceed the costs, it finds the requirement of § 776, that no standards be implemented unless the benefits exceed the costs, is not satisfied.

Jurisdiction

The PD finds that the Commission is not preempted by the Federal Communications Commission (FCC) from imposing standards on voice over internet protocol (VoIP) providers because the FCC preemption does not apply to fixed, as opposed to nomadic, VoIP providers.

The alternate concludes that the Commission is preempted by the FCC from imposing such a requirement on VOIP providers.

The PD finds that it is not preempted by the Cable Communications Policy Act of 1984 from applying the proposed requirement to cable service providers.

The alternate finds that the Commission does not need to address the question of jurisdiction over cable service providers because the requirement of § 776, that no standards be implemented unless the benefits exceed the costs, is not satisfied.

Decision **ALTERNATE PROPOSED DECISION OF COMMISSIONER CHONG**
(Mailed 6/23/2008)

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 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 Polytechnical Institute and State University and the October 2007 Southern California fire storms, have highlighted its importance. We provide a report to the Legislature that analyzes these two topics 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 §§ 776, 2872.5 and 2892.1 to the Public Utilities Code.[1] Sections 776 and 2892.1 address backup power systems while § 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 residential or small commercial customer's property by a facilities-based telecommunications service provider, and to develop and implement them if the benefits of the standards exceed the costs.

Pursuant to Section 776, we have reviewed the evidence on the record, and decline to require facilities-based service providers to provide and maintain a

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

minimum amount of time of backup power at the customer's premises.[2] We reach this conclusion because we have not been able to find, as required by the statute, that the benefits of a specific standard for battery backup power at customer premises outweigh the costs.

As an initial matter, any proposed rule for battery backup power at customer premises would only affect a certain segment of the telecommunications industry. For example, providers of two-way voice services over copper facilities power their network at the central office, and do not require power at the customer premises to provide their service.[3] In contrast, most, but not all, service providers offering two-way voice services over cable platforms, through Voice over Internet Protocol (VoIP), and Fiber-To-The-X (FTTx) require power at the customer's premises to provide services. The responses to informational requests and in the Commission's workshops indicated that most of these service providers are already voluntarily offering

[2] As used herein regarding backup power systems on the customer's premises, backup power refers to the amount of backup power necessary to maintain the capability of making a call, not continuous talk time.

[3] Customers individually may require power at their home in order to operate cordless telephone handsets, but the traditional wireline service provider does not require power at the customer premises to provide its services. Similarly, wireless providers would not be subject to customer premise power requirements, as they do not require power at customer premises to operate.

approximately 8 hours of battery backup power at the customer premises.[4] Most cable service providers indicated that they provide four to five hours of battery backup in the modem used to provide Voice over Internet Protocol telephone service, with ability to expand newer equipment designs to expand battery reserve by a factor of 2 or 3.[5] Service providers also have contingency plans in place to provide telecommunications services during emergency outages. Given that providers of two-way voice services over broadband facilities are already providing backup power at the customer premises, technology continues to change rapidly in this area, and the costs of designing a monitoring and replacement system may be significant, we do not find that the benefits of establishing a specific backup power standard at the customer premises outweigh the costs. Moreover, if the Federal Communications Commission (FCC) Order requiring backup power at telecommunications networks' systems[6] (currently on appeal) is overturned, any battery backup power requirement at the customer's premises side may provide little benefit.

Therefore, we direct our Communications Division to focus instead on holding workshops to design and develop a consumer education outreach plan

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[4] FAR at 5. The FAR indicates a full range of reserve backup power at customer premises from 4 to 20 hours, but the providers' actual responses assert that they are offering approximately 8 hours in backup power at customer premises.

[5] FAR at 34-35. There is potential for battery power to increase to 20 hours if batteries operate in sleep mode.

[6] *See In the Matter of Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks,* EB Docket No. 06-119, WC Docket No.06-63, Order on Reconsideration, FCC 07-177 (FCC Katrina Order or FCC Order 07-177) (2007). *See also*, discussion in text *infra*, regarding backup power at network side.

with a goal of informing customers about the backup battery issues that arise with various types of telecommunications services. This outreach plan should include (1) providing consumers with accurate and updated backup power information through Commission consumer education efforts and (2) encouraging each industry provider to provide voluntary consumer education plans to clearly communicate battery backup information in plain English, with attention to communities with special needs such as the non English speaking consumers and persons with disabilities.

Section 2892.1 requires the Commission, in consultation with the Office of Emergency Services (OES) and the Department of General Services (DGS), 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 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 (LECs) and commercial mobile radio service (CMRS) providers to have 24 hours of emergency backup power for central offices and 8 hours for cell sites, remote switches and digital loop carrier system remote terminals.[7] The order provides

[7] *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

Footnote continued on next page

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.[8] Therefore, we find that California should not separately establish back up power requirements as to central offices, cell sites, remote switches and digital loop carrier system remote terminals. Given that LECs and CMRS providers operate interstate systems, we see benefits in conforming to the federal requirement. Moreover, we find that we cannot conduct a full cost-benefit analysis, in part because the FCC's order is on appeal.[9] Instead, California should closely monitor the development of the federal requirements.

As to Best Practices, we find there has been substantial implementation by most service providers. However, there is some room for improvement by the small local exchange carriers and we encourage their implementation of the Best Practices.

We further find that 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.

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needed to continue operating the telecommunications network, including ongoing usage by customers.

[8] *See CTIA - The Wireless Association v. FCC,* No. 07-1475 (consolidated with USA *Mobility, Inc. v.* FCC, No. 07-1480).

[9] If the FCC order is reversed, the lack of federal backup power requirements would mean that any California-specific rule requiring backup power at the telecommunications network would impose specific and new costs on the provider for its California operations.

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 that California's emergency notification systems should be compatible with systems in other states and with federal requirements when they are established. Substantial work on standards for a nationwide emergency notification alert system for wireless devices is well underway at the federal level by the Federal Communications Commission, involving critical stakeholders. Therefore, we find that California should not separately establish standards. Instead, California should actively monitor the development of the federal requirements.

Through AB 2231, OES is required to examine policies, procedures and a framework to enhance public access to emergency alerts. We provide guidance to our Communications Division to continue the cooperation established with the OES in this proceeding with respect to enhancing emergency alerting in California.

This proceeding is closed.

2. Legislative Background

A central battery system was deployed by traditional landline phone providers in the 1920s to improve network operations, performance and reliability. As a result, batteries and generators located in the landline phone company'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 or landline phone service from a facilities-based provider through copper wires (*e.g.* AT&T, Verizon, or other incumbent local exchange carriers). Newer communications transmission technologies, however, including fiber optic and coaxial cable, 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 property of residential and small commercial customers by a facilities-based provider of telephony services. The Commission is to develop and implement such standards only 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.

Section 776 directs the Commission 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. Pub. Util. Code Section 776(a)(1)-(3). 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 OES and 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 systems 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 (911 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 such 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.[10]

Section 2892.1(a) provides that for the purposes of § 2892.1, "telecommunications service" means voice communication provided by a telephone corporation as defined in § 234, voice communications provided by a provider of satellite telephone services, voice communications provided by a provider of mobile telephony service as defined in § 2890.2, and voice communications provided by a facilities-based provider of voice communications utilizing Voice Over Internet Protocol (VoIP) 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 this proceeding within 18 months of AB 2393's effective date, *i.e.*, June 30, 2008.

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[10] 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.

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 Communications Division (CD) held three technical public workshops addressing the subject matter. The first workshop, held on June 5, 2007, addressed back-up power systems on residential and small commercial customers' property. The second workshop, held on June 6, 2007, addressed back-up power systems 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.[11]

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 we 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

[11] 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.

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 transmits the FAR to the Legislature and concludes the proceeding.[12]

The Commission is committed to ensuring that communications systems are available during emergencies. As part of that commitment, the Commission, on January 9, 2008 conducted a post-firestorm workshop in San Diego.[13] The purpose of the workshop was to review communication issues and challenges posed by the October 2007 firestorms in Southern California and to share the lessons learned. The workshop was well attended and provided useful information for the Commission on some issues relevant to this docket.[14]

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.[15]

4. Issues

The FAR breaks down the issues as follows:

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[12] The Commission does not adopt all the conclusions or statements in the FAR but has reviewed and relied on the FAR in its conclusions.

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

[14] The Commission 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.

[15] 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 1: Backup batteries installed on the property of residential and small commercial customers (also known as "customer premises equipment");
- 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 Property 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 for incumbent local exchange carriers (ILECs) was deployed in the 1920s to improve network operations, performance, and reliability. As a result, batteries and generators located in the ILEC'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 from a facilities-based ILEC or LEC through copper wires. 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 ILEC central office is provided by the electric utility. A system of batteries and diesel generators located at the ILEC central office ensures a continuous source of power in the event that the commercial power is interrupted.

The ILEC 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 ILECs 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 ILEC 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 equipment and cordless telephones, require electric utility power to operate.

Cable Television (CATV) Services: For traditional cable systems, if power is interrupted at the house, the television and cable set top box will not have power to operate. Therefore, there is no need for extensive backup facilities to keep broadcasting the TV signal. As cable companies expand their service offerings to include two way 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 cable headend locations (the equivalent of a central office) with batteries at some remote sites.

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 (FTTB) or Fiber-To-The-Curb (FTTC) 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 (FTTH) or Fiber-To-The-Premises (FTTP) 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, providers of two-way voice services over broadband facilities provide backup at the customer's premises. These service providers indicated that they provide about 8 hours of backup battery power at the customer premises.[16] Most cable systems provide 4-5 hours of battery backup in the modem used to provide Voice over Internet Protocol telephone service, with the ability to expand the battery reserve by a factor of 2 or 3 if requested.[17]

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 ILEC telephone service over copper wires normally consumes 1-2 watts. Other devices can use more power. For example, a digital subscriber line (DSL) modem provided by ILECs for broadband service can consume 5 watts in standby, and 6 watts in operation. A cordless phone or answering device on the customer's premises can consume 2-3 watts in standby, and 3-4 watts in operation. To reduce energy consumption and maximize

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[16] FAR at 34-35. (*See* also Table 4.) The FAR indicates a full range of backup power provided at customer premises from 4 to 20 hours, but the providers responses assert that they are offering approximately 8 hours in backup power at customer premises.

[17] *Id.* at 34.

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, 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 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, wind storms, wild fires, earthquakes, floods, human error and lightning. Those statistics reflect that the number of customers affected by a power outage lasting over four hours is, on average, 6.8% of the utility's customer base.[18] The number of customers affected by a power outage lasting more than 8 hours is about 3.9%.[19] These percentages do not necessarily reflect how many customers may not have telephone service during a power outage, however. As the FAR recognizes, many consumers have multiple telecommunications options available (traditional wireline and/or wireless cell-phone services);[20] and at this time, only a small number of customers statewide (under 1%) subscribe to two-way voice services supported over fiber (requiring backup battery power).[21] Therefore, the actual percentages of consumers that may lose telephone service during power outages would likely be much smaller percentages than listed above.

Extended power outages (greater than 14 hours) are caused by large or state-wide outage events such as wind-storms, extensive floods or large

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[18] FAR at 36-37.

[19] FAR at 37.

[20] A consumer may also have available wireless devices allowing texting and email options in a power outage.

[21] Approximately ½ of 1% of customers in California have FTTH or FTTP service in California today. *See* Verizon comments on Proposed Decision (May 29, 2008) at 6. Although this number will likely grow over time, this currently a very small percentage of California telecommunications customers. As discussed further below, the Commission may not have jurisdiction to impose requirements on other providers offering voice services over broadband facilities.

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. Because the FAR also finds that most consumers have multiple telecommunications means available to them (*e.g.*, both wireline service and cell phone service),[22] it is less likely that all of their telecommunications services will be lost simultaneously.

The FAR examined the costs of the battery backup unit related to FTTH service, but not for cable-modem or facilities-based VoIP service. Based on commercially available products used by carriers today, the FAR notes that there are several options available to increase the amount of backup power at the customer's premises for FTTH customers.[23] 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.[24] 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).[25]

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[22] FAR at 37.

[23] The FAR did not estimate the costs for backup power related to cable systems.

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

[25] Estimated wholesale prices.

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

Although the FAR estimates the costs associated with the wholesale cost of a battery backup unit for FTTH systems, the FAR did not include battery backup cost analysis for other two-way voice services over broadband facilities, such as cable-telephony or facilities-based VoIP services. Moreover, the FAR does not include the costs associated with designing a backup power system that would require the provider to monitor and replace the backup battery located at the customer premises, including the costs of redesigning providers' systems to implement a monitoring system, the costs of labor to monitor and replace batteries in individual customer's premises, and the difficult task of scheduling appointments with customers to replace batteries. Accordingly, the costs estimated in the FAR are not comprehensive, nor was a cost-benefit analysis conducted with regard to the costs that may be incurred by these different types of service providers offering two-way voice services over broadband facilities.

In addition, the FAR recognizes that any federal rules that the FCC may adopt on backup power issues (FCC 07-177) will have a "direct impact on the

telecommunications service providers in California as well as nationwide."[26] However, if the FCC's federal rules governing network side backup power are reversed by an appeal court, we acknowledge that there is no benefit to adopting backup power requirements for the customer premises.[27] Given that the FCC's Order is currently on appeal, a final cost-benefit analysis cannot yet be done on this issue.

5.2. FAR Recommendations/Options

Backup Time: Backup times currently provided by service providers offering two-way voice services over broadband facilities vary from 4 to 20 hours, but most providers indicated that the backup power averaged around 8 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.[28]

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

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[26] FAR at 22.

[27] FAR at 40 (noting that "[h]aving a long battery backup requirement at the customer premises is pointless, if the power reserve at the [remote terminal] site is exhausted.")

[28] Best Practices are addressed in Issue 4.

matches the general industry backup capacity for remote terminals that serve the customer premises.[29]

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 FCC Order 07-177 for eight hours of backup power at remote terminals.[30]

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.

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[29] 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.

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

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 for non ILEC provided communications services. Providing accurate, clear information to the customer for such systems will help maintain telecommunications during power emergencies.

The FAR offers the following options:

- Make such information available on the Commission's consumer-oriented web sites.[31]
- Require the service provider offering two-way voice services over broadband facilities to disclose battery backup system performance.[32]
- Encourage service providers offering two-way voice services over broadband facilities to include such information to consumers such as through advertising materials, brochures, the provider's public website, bill inserts, tailored information for consumers with special needs (*e.g.,* hearing or visually impaired), etc.

The FAR recommends 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.
- Where to find additional information.
- Battery replacement information.

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[31] In addition, the Commission can include this topic in its consumer education initiatives, which has included in the past public service announcements and advertisements, and the training of community based organizations who in turn train their communities on an issue.

[32] The Commission clarifies that it may only require this information for service providers over which it has jurisdiction.

- A recommendation that the customer should consider having an alternative means of communication for emergencies.[33]

The FAR also suggests 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.[34]

Other Options: The FAR suggests that the Commission may wish to consider encouraging service providers to offer optional services for persons with disabilities. Examples could include:

- Partially subsidizing the cost of additional battery backup capacity at the customer's premises.
- Providing a 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

As summarized above, the FAR recommends three different options regarding backup battery power standards for the Commission to consider and adopt. The first option, which would be to impose no minimum backup requirement, recognizes that many service providers have already implemented Best Practices and industry plans will provide emergency telecommunications services in power outages. The FAR states that the second option of four hours of battery backup time at customer premises generally matches the industry's

[33] This may be important if the customer has special needs such as medical, disability, etc.

[34] This may include for example recommending a second charged, back up battery be maintained, or a plan for a family or friend to assist the customer in an emergency.

general level of backup capacity at remote terminals serving customer premises. The third option of eight hours backup time would provide the equivalent amount of power at the customer premises, as is required by the FCC in its Order FCC 07-177 (*Katrina Order*) (imposing an eight-hour backup power requirement at the *network* side).[35]

On consideration of these three options, we find that there is insufficient information on the record to determine that the benefits of the proposed standards under options two and three would exceed the costs of adopting such standards. The FAR does not contain a comprehensive analysis of the costs and benefits of each technology, due in part to the lack of information on the record, and also because the FCC's *Katrina Order* is still on appeal. If the *Katrina Order* is overturned and the requirement for backup power at the *network side* is eliminated, any backup power requirement at the *customer premises* may provide minimal benefits (given that the larger network may not have reserve power).

Moreover, the evidence on the record supports our decision not to impose a specific backup power requirement at the customer premises. The evidence indicates that a strict requirement on providers for battery backup at the customer premises would be very costly and administratively difficult to implement. Such costs would include the development and design of battery monitoring systems as well as the costs to maintain and replace the batteries at customer premises, schedule appointments to enter customers' premises, and

[35] The FCC's Order 07-177 is currently on appeal at the D.C. Circuit.

conduct "truck rolls" to replace dead batteries.[36] In addition, because these backup battery units are on the customer's premises, the customer has better access to monitor and replace the units. The record reflects that these batteries are not difficult to replace and that providers offer detailed instructions and often illustrations regarding replacement of the batteries.[37] As a practical matter, imposing the requirement on the service provider to monitor and replace the batteries would mean that the customer would either have to notify the provider as to the need for battery replacement and wait for the provider to make an appointment at a mutually convenient time to have the provider make a trip out to replace a battery – something that the customer could have easily done on his or her own within a few minutes. Alternatively, such a requirement would mean that provider would have to design a system for monitoring the batteries from its own network and then arrange for an appointment to replace the battery at the customer premises. In either case, implementing this requirement would likely be costly and inefficient.

We also recognize that a rigid battery backup standard for customer premises may not be desirable, especially given that communications technology continues to change rapidly and the FAR recognized that these battery products

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[36] *See, e.g.*, AT&T Comments on PD (May 29, 2008), at 9.

[37] AT&T Comments on PD (May 29, 2008), at 3-4; Verizon Comments on PD (May 29, 2008) at 7-8. Moreover, Section 776(a)(3) suggests that any warning standards that the Commission considers for battery replacement are for warning "a customer" as to when his or her power system's charge is low or when the system cannot hold a charge. Pub. Util. Code Section 776(a)(3). This language indicates that the Legislature contemplated that such battery monitoring standards were for the purpose of ensuring that the customer be warned to monitor and replace the battery – not the service provider.

continue to undergo rapid evolution.[38] Imposing a rigid standard may mean that any such requirement falls short of what is currently available in the market for these battery backup devices. In fact, a specific standard may result in stifling the deployment of improved products in this area.

We do not believe that the lack of a specified power requirement will result in a lack of backup power for consumers. The record reflects that most service providers have implemented over 90% of the Best Practices related to backup power (addressed supra) and that, generally, these providers already are offering about 8 hours of backup power at the customer premises.[39] Given the high degree of implementation, any specific standard appears to be unnecessary. Accordingly, the proposed standard may not provide real practical benefits, but could impose significant costs (as discussed above). Encouraging service providers to implement industry best practices with regard to these issues may be the most effective way to ensure that backup power is available and offered consistent with changing technology.

Although the FAR discusses the fact that an 8 hour backup power requirement may reduce the number of consumers exposed to loss of telephone service, the FAR also recognizes that its estimated percentages of consumers vulnerable to such outages are the "worst case" values.[40] Consumers today have access to an array of telecommunications services. A recent National Health Interview survey found that 15.8% of American homes only used wireless service

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[38] *See* Verizon Comments on PD (May 29, 2008) at 11.

[39] FAR at 65.

[40] *See* FAR at 37.

(and do not have wireline service) during the second half of 2007.[41] Further, that survey found that 13.1% of American homes received all or most of their calls on their wireless phone despite having a wireline phone. Parties have also indicated that less than 1% of consumers in California today receive telephone service over FTTX lines. Therefore, even during a power outage, the numbers of consumers whose telephone service may be affected will be far less than the percentages affected by the power outage. Finally, we observe that, if a consumer's residence loses power for up to 8 hours or more, it is highly likely that the consumer will have been evacuated or moved to a different location.

Consumer safety is paramount. However, we find that, as a practical matter, it is administratively simpler and less costly for consumers to be responsible for battery backup units on their premises. Given the foregoing, we do not find that there is sufficient support on the record to require a minimum backup battery requirement at the customer premises. As discussed below, we note that we do not have jurisdiction to require battery backup times at the customer premises with regard to facilities-based Voice over Internet Protocol services. CCTA also argues that the Commission does not have jurisdiction to impose technical standards on cable systems. However, we need not reach the issue of jurisdiction over these issues in this decision, as we conclude that there is insufficient support in the record (cost-benefit analysis) for imposing a specific backup power requirement at customer premises.

We find that general customer outreach education on the issue of backup power at residential and small commercial customers' sites and how to

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[41] *Wireless Substitution, Early Estimates from National Health Interview Survey July - December 2007*, Center for Disease Control (June 2008).

use telecommunications services during an outage is critical. For example, 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. Therefore, 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. Although most service providers that offer two-way voice over broadband facilities appear to provide their consumers with detailed instructions regarding battery monitoring and replacement, we believe that additional education efforts as to all consumers (including those who are consumers of VoIP or cable services) in California would ensure that consumers are aware of the necessary battery replacement and monitoring that they may have to undertake.

We direct our Communications Division to hold workshops to design and develop a consumer education outreach plan with a goal of informing customers about the backup battery issues that arise with various types of telecommunications services. This outreach plan should include (1) providing consumers with accurate and updated backup power information via CPUC consumer education efforts and (2) encouraging each industry to provide voluntary consumer education plans to clearly communicate battery backup information in plain English, with attention to communities with special needs such as the non English speaking consumers and persons with disabilities.

Other issues that could be included in an educational plan would inform consumers about how to use their telecommunications services during emergencies. During an outage, customers should not use their telephones, except when necessary, to conserve backup power and allow the telecommunications system to be used for emergency services. In addition,

consumers may need to be aware of the retail sources for purchasing replacement or extra batteries and how to maintain and keep batteries fresh. The education plan should also provide information about backup power or batteries for wireless devices. Moreover, even customers with traditional wireline service should be made aware of issues such as the failure of cordless phones' operating during a power outage. In short, a consumer education effort should ensure that consumers are made aware of various emergency/power-related issues, in addition to the basic monitoring and replacement standards for a given backup battery unit at the customer premises.

For these reasons, we decline to require service providers[42] to provide and maintain a minimum amount of backup power on the customer's premises.

[42] We note again that, although there may be a question of jurisdiction over some of these service providers, we are not reaching that issue as we have determined not to impose any requirements on customer premise power.

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. Pub. Util. Code Section 2872 provides that the connection of ADADs to telephone lines is subject to the jurisdiction, control, and regulation of the Commission.

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. Such congestion is possible given that the systems are engineered for "rush hour" traffic and not engineered to carry extreme capacity loads. 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 provider in writing of the intended use of ADAD equipment.[43] 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

[43] Pub. Util. Code Section 2875 requires among other things that: No person shall connect any automatic dialing-announcing device to any telephone line without first making written application to the telephone corporation within whose service area telephone calls through the use of such device are proposed to be placed.

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. Some successes in California communities have been achieved in some localities. What is emerging is not, however, a unified system.

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, we note that there are advanced activities at the federal level pursuant to the WARN Act that are setting standards for a uniform federal system involving commercial mobile radio service systems.

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 the FCC by October 12, 2007.[44] 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 by the Department of Homeland Security's Federal Emergency Management Agency (FEMA), it was announced that FEMA would perform the unified aggregator/gateway role for the Commercial Mobile Alert System, mandated by the WARN Act.[45]

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

[44] 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.

[45] 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.

Notice of Proposed Rulemaking that addresses some of the Katrina Panel's recommendations.[46] 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 implementing notification

[46] 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.

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 § 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 taken significant positive actions relevant to such standards and this would allow a consistent national system. Since compatibility with federally established standards and protocols is essential, California should not separately establish standardized systems and protocols at this time.

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.[47] 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.[48]

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[47] 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.

[48] 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, 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.

7. Issue 3: Backup Power on the Telecommunications Network

7.1 FAR Analysis

This issue considers the backup power on the service provider's[49] network, which covers both (1) the main switching centers (wireline central offices, wireless switching centers, and CATV headends), and (2) outside plant (OSP) facilities not housed in the central office.[50] 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, 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

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

[50] 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.

with consideration given to the time necessary to install additional backup power or other measures to keep the terminals operational.

Most CATV 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 3-4 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. In June 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.

The backup power rule requires local exchange carriers, 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 8 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.[51] 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.

A number of petitions for reconsideration have been filed and the rules have not yet been published in the Federal Register. Thus the rules are not yet in force, 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 8 hours at critical sites.

[51] 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.

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 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 CATV 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 4-8 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 8 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. That is no longer the case, however. Because the FCC has developed national requirements, we find it is best for California to actively participate in the further development and implementation of them. 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.[52] 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

[52] 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.

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, CATV, satellite, and equipment providers).

To determine whether the Best Practices have been implemented, a questionnaire was prepared and sent to California wireline, wireless, and CATV 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 (2 large LECs, 4 small LECs, 3 wireless and 2 CATV). 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.

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 CATV. 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 CATV. 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 discerning 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. However, the staff should make recommendations if such incentive mechanisms may be warranted in some circumstances, and why.

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 Commissioner Simon's 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.[53] Commissioner Simon's Proposed Decision considers those comments and addresses the jurisdictional issues raised by several commenters. Specifically, several commenters asserted that we are preempted from requiring certain facilities-based service providers to provide backup power on the customer's premises. In contrast, we find that we do not need to reach the jurisdictional issue, for we have found that the record does not establish the cost-benefit analysis necessary to establish a standard for backup power at the customer premises. We have addressed other comments on Commissioner Simon's Proposed Decision above throughout the discussion sections of this Alternate Proposed Decision.

Section 776 of the Pub. Util. Code directed the Commission to consider the need for performance reliability standards and, if it found that the benefits exceed the costs, to develop and implement performance reliability standards, for all backup power systems installed on the property of residential and small commercial customers by a "facilities-based provider of telephony services."[54]

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[53] 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.

[54] Pub. Util. Code Section 776(a) provides that the standards shall do all 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.

Footnote continued on next page

The statute does not define "facilities-based provider of telephony services," but clearly, the Commission cannot implement or mandate standards for telephony providers that are not subject to its jurisdiction.

As an initial matter, traditional wireline service providers (offering two-way voice service over copper wires) or wireless service providers would not be subject to any potential requirements for battery power at customer premises, as their networks are not powered at the customer premises. We note that the Commission does not have jurisdiction to impose backup battery standards over VoIP providers as this Commission has recognized that it is premature to regulate VoIP services at this time. The FCC has an ongoing proceeding to determine the regulatory status of Internet-Protocol based services (including VoIP) and the FCC has preempted traditional telephony regulations such as certificate requirements on VoIP providers.[55] In D.06-06-010, the Commission noted that the issue of whether we may regulate VoIP services and the regulatory classification of VoIP service was an open question, and therefore, closed our rulemaking to determine whether to regulate VoIP services. We conclude that we do not have authority to impose a battery backup requirement at customer premises on VoIP providers at this time. Some parties have also argued that the Commission is preempted by the Cable Act from imposing technical standards on cable systems – whether those systems are offering

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(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.

[55] *See* D.06-06-010, at 2.

telecommunications services or video/television services.[56] We find that the record is insufficient to support establishing a specific customer premises power requirement, and therefore, find that it is not necessary to reach this issue in this decision.

Comments on Alternate Proposed Decision

The alternate proposed decision of Commissioner Rachelle Chong 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 _____ and reply comments were filed on _____.

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.

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[56] (*See* CCTA Comments on PD (May 29, 2008) (citing) 47 U.S.C. Section 544(e) states that "[n]o state or local franchising authority may prohibit, condition, or restrict a cable system's use of any type of subscriber equipment or any transmission technology.")

2. Traditional landline telephone service operated over copper lines is powered through the central office and thus not a subject of this proceeding as to back up power at the customer premises. Wireless telephone service also does not require power at the customer premises for the wireless provider to offer wireless service to a customer.

3. Customers may not know whether their non-traditional telephone service provided over broadband facilities is capable of operating during a power outage without battery backup, much less the limitations of such backup if required.

4. Service providers offering two way voice service over broadband facilities are currently offering about eight hours of backup power at the customer premises. These service providers include LECs using fiber networks, cable providers using Voice over Internet Protocol, cable-platforms supporting telephony, and "over the top" Voice over Internet Protocol providers.

5. Service providers have implemented contingency plans to provide telecommunications services during power outages.

6. Consumers today have access to an array of telecommunications services, including wireless services and Voice over Internet Protocol, as well as traditional wireline service over copper lines. A very small percentage of California customers (less than 1%) currently subscribe to telephone service over fiber.

7. Battery backup units for broadband facilities-based services are located on the customer's premises. Customers can easily monitor and maintain battery backup units on their premises.

8. The costs associated with implementing a battery monitoring and replacement system for FTTH or FTTP, cable, or Voice over Internet Protocol customers have not been fully estimated.

9. The record in this proceeding does not support establishing a specific backup power requirement at customer premises.

10. Customer education on backup power issues at the customer premises may be necessary.

11. The record is insufficient to implement any other proposed standards, including those for emergency notification systems or backup power not installed on customer premises.

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

13. 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 providers.

14. 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.

15. Regarding relative cost, 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.

16. 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.

17. 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.

Conclusions of Law

1. The Commission has satisfied the requirements of AB 2393.
2. Consideration of potential rules governing backup power at the customer premises would not extend to traditional telephone services offered over copper lines or wireless services.
3. Customers whose telephone is incapable of operating during a power outage without battery backup, should be made aware of this limitation through plain English disclosures at the time of subscription and fully educated about the available options for backup power.
4. The Commission does not have jurisdiction to impose backup power requirements on federally regulated facilities-based VoIP providers. The Commission declines to reach the issue of whether it has jurisdiction to impose backup power requirements on cable providers.
5. There is insufficient evidence on the record, including a cost-benefit analysis, to adopt any proposed standard for backup power at the customer premises.
6. The Commission should adopt the FAR for transmittal to the Legislature.
7. There should be a customer education plan to provide the necessary information to customers regarding backup power on the customer's premises. The Commission should direct the Communications Division to hold workshops to design and develop a consumer education outreach plan with a goal of informing customers about the backup battery issues that arise with various

types of telecommunications services. This outreach plan should include (1) providing consumers with accurate and updated backup power information via CPUC consumer education efforts and (2) encouraging each industry to provide voluntary consumer education plans to clearly communicate battery backup information in plain English, with attention to communities with special needs such as the non English speaking consumers and persons with disabilities.

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

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

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

11. This order should be effective immediately.

O R D E R

IT IS ORDERED that:

1. The Commission's Communications Division shall hold workshops to develop a consumer education plan with a goal of informing customers about the backup battery issues that arise with various types of telecommunications services.

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

3. 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.

4. Rulemaking 07-04-015 is closed.

This order is effective today.

Dated _____, at San Francisco, California.

INFORMATION REGARDING SERVICE

I have provided notification of filing to the electronic mail addresses on the attached service list.

Upon confirmation of this document's acceptance for filing, I will cause a Notice of Availability of the filed document to be served upon the service list to this proceeding by U.S. mail. The service list I will use to serve the Notice of Availability of the filed document is current as of today's date.

Dated June 23, 2008, at San Francisco, California.

/s/ ANTONINA V. SWANSEN
Antonina V. Swansen

********** PARTIES **********
****
SERVICE LIST **********
Last Updated on 08-MAY-2008 by: AJH R0704015 INITIALLIST

Cinta Putra
Ceo
3N
505 N BRAND BLVD., STE. 700
GLENDALE CA 91203
(818) 230-9700
cinta.putra@3nonline.com

Marc Ladin
CINTA PUTRA
Vp Global Marketing
3N
505 N. BRAND BLVD., SUITE 700
GLENDALE CA 91203
(818) 230-9700
marc.ladin@3nonline.com

David J. Miller
Attorney At Law
AT&T CALIFORNIA
535 MARKET STREET, ROOM 2018
SAN FRANCISCO CA 94105
(415) 778-1393
DavidJMiller@att.com

Joe Kieren
Director--Crcm
AT&T CALIFORNIA
2600 CAMINO REAL, STE. 2N503
SAN RAMON CA 94583
(925) 823-8188
joseph.kieren@att.com

Maryliz Dejong
Director--Regulatory
AT&T CALIFORNIA
525 MARKET STREET, SUITE 1928
SAN FRANCISCO CA 94105
(415) 778-1462
maryliz.dejong@att.com

Thomas J. Selhorst
Senior Paralegal
AT&T CALIFORNIA
525 MARKET STREET, RM. 2023
SAN FRANCISCO CA 94105
(415) 778-1482
thomas.selhorst@att.com

Tony Lloyd
AT&T CALIFORNIA
525 MARKET ST., 19TH FLR., RM. 6
SAN FRANCISCO CA 94105
(415) 778-1439
TL3673@att.com

Lesla Lehtonen
Vp Legal And Regulatory Affairs
CALIFORNIA CABLE & TELECOM ASSOCIATION
360 22ND STREET, SUITE 750
OAKLAND CA 94612
(510) 628-8043 X-107
ll@calcable.org

Maria Politzer
Legal Department Associate
CALIFORNIA CABLE TELEVISION ASSOCIATION
360 22ND STREET, NO. 750
OAKLAND CA 94612
(510) 628-8043 X126
mp@calcable.org

Jerome Candelaria
Assistant General Counsel
CALIFORNIA CABLE TV ASSOCIATION
360 22ND STREET, NO. 750
OAKLAND CA 94612
(510) 628-8043
Jfc@calcable.org

Sarah Deyoung
Executive Director
CALTEL
50 CALIFORNIA STREET, SUITE 1500
SAN FRANCISCO CA 94111
(925) 465-4396
deyoung@caltel.org
For: CALTEL

Carrie L. Cox
Vice President/Senior Counsel
CHARTER COMMUNICATIONS, INC.
12405 POWERSCOURT DRIVE
ST LOUIS MO 63131
(314) 543-2567
carrie.cox@chartercom.com
For: Charter Fiberlink CA-CCO, LLC

Kevin Saville
Associate General Counsel
CITIZENS/FRONTIER COMMUNICATIONS
2378 WILSHIRE BLVD.
MOUND MN 55364
(952) 491-5564
ksaville@czn.com

Mark P. Schreiber
Attorney At Law
COOPER, WHITE & COOPER, LLP
201 CALIFORNIA STREET, 17TH FLOOR
SAN FRANCISCO CA 94111
(415) 433-1900
mschreiber@cwclaw.com

Patrick M. Rosvall
Attorney At Law
COOPER, WHITE & COOPER, LLP
201 CALIFORNIA STREET, 17TH FLOOR
SAN FRANCISCO CA 94111
(415) 433-1900
smalllecs@cwclaw.com

Douglas Garrett
COX CALIFORNIA TELCOM, LLC
2200 POWELL STREET
EMERYVILLE CA 94608
(510) 923-6222
douglas.garrett@cox.com

K.C. Halm
DAVIS WRIGHT TREMAINE LLP
1919 PENNSYLVANIA AVE., NW, SUITE 200
WASHINGTON DC 20006
(202) 973-4287
kchalm@dwt.com
For: Charter Fiberlink CA-CCO, LLC

Suzanne Toller
Attorney At Law
DAVIS WRIGHT TREMAINE LLP
505 MONTGOMERY STREET, SUITE 800
SAN FRANCISCO CA 94111-6533
(415) 276-6500
suzannetoller@dwt.com
For: XO Communications

Katherine Weed
DISABILITY RIGHTS ADVOCATES
2001 CENTER STREET, FOURTH FLOOR
BERKELEY CA 94704-1204
kweed@dralegal.org
For: Disability Rights Advocates

Melissa W. Kasnitz
Attorney At Law
DISABILITY RIGHTS ADVOCATES
2001 CENTER STREET, THIRD FLOOR
BERKELEY CA 94704-1204
(510) 665-8644
pucservice@dralegal.org

Aloa Stevens
Director, Government&External Affairs
FRONTIER COMMUNICATIONS
PO BOX 708970
SANDY UT 84070-8970
(801) 944-3396
Aloa.Stevens@frontiercorp.com

Charlie Born
Manager, Gov'T & External Affairs
FRONTIER COMMUNICATIONS
PO BOX 340
ELK GROVE CA 95759
(916) 686-3570
charlie.born@frontiercorp.com

Joe Chicoine
Manager, State Government Affairs
FRONTIER COMMUNICATIONS
PO BOX 340
ELK GROVE CA 95759
(916) 686-3588
joe.chicoine@frontiercorp.com

Jeanne B. Armstrong
MICHAEL B. DAY
Attorney At Law
GOODIN MACBRIDE SQUERI DAY & LAMPREY
505 SANSOME STREET, SUITE 900
SAN FRANCISCO CA 94111
(415) 392-7900
jarmstrong@goodinmacbride.com
For: CTIA-The WIreless Association

Joseph F. Wiedman
Attorney At Law
GOODIN MACBRIDE SQUERI DAY & LAMPREY LLP
505 SANSOME STREET, SUITE 900
SAN FRANCISCO CA 94111
(415) 392-7900
jwiedman@goodinmacbride.com
For: CALTEL

Thomas J. Macbride, Jr.
Attorney At Law
GOODIN MACBRIDE SQUERI DAY & LAMPREY LLP
505 SANSOME STREET, SUITE 900
SAN FRANCISCO CA 94111
(415) 392-7900
tmacbride@goodinmacbride.com
For: California Association of Competitive Telecommunications Companies

Earl Nicolas Selby
LAW OFFICES OF EARL NICOLAS SELBY
418 FLORENCE STREET
PALO ALTO CA 94301-1705
(650) 323-0990
ens@loens.com
For: Cox California Telco, LLC

Sarah E. Leeper
Attorney At Law
MANATT, PHELPS & PHILLIPS, LLP
ONE EMBARCADERO CENTER, 30TH FLOOR
SAN FRANCISCO CA 94111
(415) 291-7461
sleeper@manatt.com

Richard Osborne
OFFICE OF EMERGENCY SERVICES
3650 SCHRIEVER AVE
MATHER CA 95655
(916) 845-8506
richard.osborne@oes.ca.gov

Sue Plantz
Acting Chief Technology Officer
OFFICE OF EMERGENCY SERVICES
3650 SCHRIEVER AVENUE
MATHER CA 95655
(916) 845-8552
sue.plantz@oes.ca.gov
For: Office of Emergency Services

Joy Willis
Operations Manager
SHASCOM 9-1-1
3101 SOUTH ST.
REDDING CA 96001
(530) 245-6500

Kathy Galey
Systems Administrator
SHASCOM 9-1-1
3101 SOUTH ST
REDDING CA 96001
(530) 245-6500

Mark Lyons
SIMPSON PARTNERS LLP
SUITE 1800
TWO EMBARCADERO CENTER
SAN FRANCISCO CA 94111
(415) 732-1701

Kristin L. Jacobson
SPRINT NEXTEL
200 MISSION STREET, SUITE 1400
SAN FRANCISCO CA 94105
(707) 816-7583
Kristin.L.Jacobson@sprint.com

Stephen H. Kukta
SPRINT NEXTEL
200 MISSION STREET, STE. 1400
SAN FRANCISCO CA 94105-1831
(415) 572-8358
stephen.h.kukta@sprint.com

Thalia N.C. Gonzalez
Attorney At Law
THE GREENLINING INSTITUTE
1918 UNIVERSITY AVENUE, 2ND FLOOR
BERKELEY CA 94704
(510) 926-4002
thaliag@greenlining.org
For: THE GREENLINING INSTITUTE

Marc O'Krent
THE TELEPHONE CONNECTION OF L.A. INC.
9911 WEST PICO BLVD., ROOM 680
LOS ANGELES CA 90035-2710
(310) 789-7979
mok@ttcmail.net

Christine Mailloux
Attorney At Law
THE UTILITY REFORM NETWORK
711 VAN NESS AVENUE, SUITE 350
SAN FRANCISCO CA 94102
(415) 929-8876
cmailloux@turn.org

Regina Costa
Research Director
THE UTILITY REFORM NETWORK
711 VAN NESS AVENUE, SUITE 350
SAN FRANCISCO CA 94102
(415) 929-8876 X312
rcosta@turn.org

Margaret L. Tobias
TOBIAS LAW OFFICE
460 PENNSYLVANIA AVE
SAN FRANCISCO CA 94107
(415) 641-7833
marg@tobiaslo.com

marklegal@sbcglobal.net

Marilyn Ash
U.S. TELEPACIFIC CORP.
620/630 3RD ST.
SAN FRANCISCO CA 94107
(510) 995-5600
ashm@telepacific.com

Jesus G. Roman
VERIZON CALIFORNIA INC
112 LAKEVIEW CANYON ROAD, CA501LB
THOUSAND OAKS CA 91362
(805) 372-6233
jesus.g.roman@verizon.com

Elaine M. Duncan
Attorney At Law
VERIZON CALIFORNIA INC.
711 VAN NESS AVENUE, SUITE 300
SAN FRANCISCO CA 94102
(415) 474-0468
elaine.duncan@verizon.com

William D. Wallace Esq.
VERIZON WIRELESS
1300 I STREET, N.W., SUITE 400 WEST
WASHINGTON DC 20005
(202) 589-3790
Bill.Wallace@VerizonWireless.com

Natalie Wales
Legal Division
RM. 4107
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 355-5490
ndw@cpuc.ca.gov

Rex Knowles
Regional Vice President
XO COMMUNICATIONS SERVICES, INC.
111 EAST BROADWAY, SUITE 1000
SALT LAKE CITY UT 84111
(801) 983-1504
rex.knowles@xo.com

********** **STATE EMPLOYEE** **********

Greg Girvan
ASM. LEVINE'S OFFICE
STATE CAPITOL, ROOM 5136

Edward Randolph
Asm Levine'S Office
ASSEMBLY COMMITTEE/UTILITIES AND COMMERC
STATE CAPITOL ROOM 5135
SACRAMENTO CA 95814
(916) 319-2083
edward.randolph@asm.ca.gov

Victor F. Banuelos
Consumer Protection & Safety Division
AREA 2-F
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-5267
vfb@cpuc.ca.gov

Mary Jo Borak
Division of Ratepayer Advocates
RM. 4209
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-1333
bor@cpuc.ca.gov

Tyrone Chin
Communications Division
AREA 3-E
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-1633
tch@cpuc.ca.gov

Kristine French
Energy Policy Advisory Committee Staff
707 3RD STREET, 1ST FLOOR
WEST SACRAMENTO CA 95605
(916) 375-5992
kristine.french@dgs.ca.gov

Brewster Fong
Division of Ratepayer Advocates
RM. 4209
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-2187
bfs@cpuc.ca.gov

Susan Georgis
Energy Policy Advisory Committee Staff
707 3RD STREET, 1ST FLOOR

SACRAMENTO CA 95814
(916) 319-2040
greg.girvan@asm.ca.gov

WEST SACRAMENTO CA 95605
(916) 375-5992
susan.georgis@dgs.ca.gov

Michael Greer
Division of Ratepayer Advocates
RM. 4211
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-2287
mg1@cpuc.ca.gov

Steve Koppman
Division of Ratepayer Advocates
RM. 4209
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-2256
sgk@cpuc.ca.gov

Simin Litkouhi
Communications Division
AREA 3-D
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-1865
sim@cpuc.ca.gov

Pamela Loomis
Executive Division
RM. 1050
770 L STREET, SUITE 1050
Sacramento CA 95814
(916) 327-8441
pcl@cpuc.ca.gov

Jeffrey P. O'Donnell
Administrative Law Judge Division
RM. 5111
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-3134
jpo@cpuc.ca.gov

Jane Whang
Executive Division
RM. 5029
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-2721
jjw@cpuc.ca.gov

Rosalina White
Consumer Service & Information Division
AREA 2-B
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-5355
raw@cpuc.ca.gov

********* **INFORMATION ONLY** **********

Michael Hynek
ACCESS SOLUTIONS, L.P.
17519 MUIRFIELD DRIVE
DALLAS TX 75287
(972) 732-1444
shynek@sbcglobal.net

Steven Le
Director
ADVANCED APPLICATIONS, SAIC
1275 COLUMBUS AVENUE
SAN FRANCISCO CA 94133
(415) 202-1804
HOA.D.LE@saic.com

Nathan Galzier
ALLTEL COMMUNICATIONS, INC.
4805 E. THISTLE LANDING DRIVE
PHOENIX AZ 85044
(602) 452-8444
nathan.glazier@alltel.com

Mike Borsetti
2200 GREEN ST.
SAN FRANCISCO CA 94123-4710
(415) 928-5695
mike@borsetti.com

Yvonne Smythe
CALAVERAS TELEPHONE COMPANY
PO BOX 37
COPPEROPOLIS CA 95228
(209) 785-2211
ysmythe@caltel.com

Daphne Rhoe
Dgs-Telecommunications Division
CALIFORNIA 9-1-1 EMERGENCY COMMUNICATION

Phyllis R. White
Executive Division
RM. 5306
505 VAN NESS AVE
San Francisco CA 94102 3298
(415) 703-1955
prw@cpuc.ca.gov

601 SEQUOIA PACIFIC BLVD.
SACRAMENTO CA 95814
(916) 657-9911
daphne.rhoe@dgs.ca.gov
For: Department of General Services

Izetta C.R. Jackson
Office Of The City Attorney
CITY OF OAKLAND
1 FRANK H. OGAWA PLAZA, 10TH FLR.
OAKLAND CA 94612
(510) 238-6629
ijackson@oaklandcityattorney.org

John A. Gutierrez
COMCAST CABLE COMMUNICATIONS, INC.
PO BOX 5147
12647 ALCOSTA BOULEVARD, NO 200
SAN RAMON CA 94544
(925) 973-7214
john_gutierrez@cable.comcast.com

Gregory T. Diamond
COVAD COMMUNICATIONS COMPANY
7901 LOWRY BLVD.
DENVER CO 80230
(720) 670-2018
gdiamond@covad.com

Esther Northrup
COX COMMUNICATIONS
350 10TH AVENUE, SUITE 600
SAN DIEGO CA 92101
(619) 266-5315
esther.northrup@cox.com

Michelle Salisbury
Paralegal
CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG PA 15317
(724) 416-2239
michelle.salisbury@crowncastle.com

Katie Nelson
DAVIS WRIGHT TREMAINE, LLP
505 MONTGOMERY STREET, SUITE 800
SAN FRANCISCO CA 94111-6533
(415) 276-6500
katienelson@dwt.com

Larry J Rowe

Richard L. Goldberg
Staff Counsel Iii (Specialist)
DEPARTMENT OF GENERAL SERVICES
707 3RD STREET, 7TH FLOOR, STE. 7-330
WEST SACRAMENTO CA 95605
(916) 376-5108
richard.goldberg@dgs.ca.gov

Renato Peruzzi
DEPT. OF TECHNOLOGY SERVICES
PO BOX 1810
RANCHO CORDOVA CA 95741-1810
(916) 657-9209
renato.peruzzi@dts.ca.gov

Stephanie Biederman
DISABILITY RIGHTS ADVOCATES
2001 CENTER STREET, FOURTH FLOOW
BERKELEY CA 94704-1204
sbiedermann@dralegal.org

Mike Robson
EDELSTEIN AND GILBERT
1127 11TH STREET, SUITE 1030
SACRAMENTO CA 95814
(916) 443-6400
mike@edelsteingilbert.com

James Skow
General Counsel
EMERGENCY COMMUNICATIONS NETWORK, INC.
9 SUNSHINE BLVD.
ORMOND BEACH FL 32174
(386) 676-0294
jskow@tbteam.com

Terry Ray
EXTENET SYSTEMS (CALIFORNIA) LLC
1901 S. MEYERS ROAD, SUITE 190
OAKBROOK TERRACE IL 60181
tray@extenetsystems.com

Anita Taff-Rice
Attorney At Law
EXTENET SYSTEMS, LLC
1547 PALOS VERDES MALL, NO. 298

Operations Section
DEPARTMENT OF GENEARAL SVCS, TELECOMM.
601 SEQUOIA PACIFIC BLVD
SACRAEMNTO CA 95814
(916) 657-9484
larry.rowe@dgs.ca.gov

WALNUT CREEK CA 94597
(415) 699-7885
anitataffrice@earthlink.net

Bob Glaze
150 FRANK H. OGAWA PLAZA 8TH FLOOR
OAKLAND CA 94612
(510) 238-2930
bglaze@oaklandnet.com

Brian "Tino" Granados
150 FRANK H. OGAWA PLAZA, 7TH FLOOR
OAKLAND CA 94612
(510) 238-6407
bgranados@oaklandnet.com

Efraim Petel
HORMANN AMERICA, INC.
837 ARNOLD DRIVE, SUITE 600
MARTINEZ CA 94553
(925) 228-2125 X-101
ep@hormannamerica.com

Sheila Harris
Manager, Government Affairs
INTEGRA TELECOM HOLDINGS, INC.
1201 NE LLOYD BLVD., STE.500
PORTLAND OR 97232
(503) 453-8119
sheila.harris@integratelecom.com

Vivienne Hedgpeth
Business Services Manager
IRVINE POLICE DEPARTMENT
1 CIVIC CENTER PLAZA
IRVINE CA 92606
(949) 724-7144
vhedgpeth@ci.irvine.ca.us

James Keene
Evp/Co-Founder
NATIONAL NOTIFICATION NETWORK
505 NORTH BRAND BLVD., STE.700
GLENDALE CA 91203
(818) 230-9723
james.keene@3nonline.com

Robert L. Delsman

Patrick J. Geoffrey
PACIFIC GAS & ELECTRIC COMPANY
MAIL CODE H12A
123 MISSION STREET, ROOM 1266
SAN FRANCISCO CA 94105
(415) 973-8096
pjg3@pge.com

Peter A. Casciato
Attorney At Law
PETER A. CASCIATO P.C.
355 BRYANT STREET, SUITE 410
SAN FRANCISCO CA 94107
(415) 291-8661
pcasciato@sbcglobal.net
For: Time Warner Telecom of Califronia, LP

Wendy A. Crosthwaite
ROSEVILLE POLICE DEPARTMENT
1051 JUNCTION BLVD.
ROSEVILLE CA 95678
(916) 774-5009
wcrosthwaite@roseville.ca.us

Nick Lordi
SAIC
NVC-2A483
331 NEWMAN SPRINGS ROAD
RED BANK NJ 07701
(732) 758-4019
nlj@research.telcordia.com

Eric Uller
SANTA MONICA POLICE DEPARTMENT
333 OLYMPIC DRIVE
SANTA MONICA CA 90401
(310) 458-8779
eric.uller@smgov.net

Jim Lites
SCHOTT & LITES ADVOCATES
1510 14TH STREET
SACRAMENTO CA 95818
(916) 444-7158

Attorney At Law
NEXTG NETWORKS OF CALIFORNIA, INC.
2216 O TOOLE AVENUE
SAN JOSE CA 95131
(408) 854-9681
rdelsman@nextgnetworks.net

jlites@schottlites.com

Michelle Rubalcava
SCHOTT & LITES ADVOCATES
1510 14TH STREET
SACRAMENTO CA 95818
(916) 444-7158
mrubalcava@schottlites.com

John P. Weiss
Chief Of Police
SCOTTS VALLEY POLICE DEPARTMENT
1 CIVIC CENTER DRIVE
SCOTTS VALLEY CA 95066
(831) 440-5670
jweiss@scottsvalley.org

John Wilson
SCOTTS VALLEY POLICE DEPARTMENT
1CIVIC CENTER DRIVE
SCOTTS VALLEY CA 95066
(831) 440-5670
jwilson@scottsvalley.org

Steve Peach
Director
SHASCOM 9-1-1
3101 SOUTH STREET
REDDING CA 96001
(530) 245-6505
steve@shascom911.com

Linda Burton
SIERRA TELEPHONE COMPANY, INC.
49150 ROAD 426
PO BOX 219
OAKHURST CA 93644-0219
(559) 642-0229
lindab@stcg.net

Susan Lipper
Senior Manager, Government Affairs
T-MOBILE USA, INC.
1755 CREEKSIDE OAKS DIVE, SUITE 190
SACRAMENTO CA 95833
(916) 643-8926
Susan.Lipper@T-Mobile.com

Andrew L. Rasura
Government And Regulatory Manager
TCAST COMMUNICATIONS, INC.

Spilios E. Makris, Ph.D
TELCORDIA TECHNOLOGIES
1 TELCORDIA DRIVE, RM RRC 1C-210
PISCATAWAY NJ 08854
(732) 699-6104
smakris@telcordia.com

Jesse W. Raskin
Legal Associate
THE GREENLINING INSTITUTE
1918 UNIVERSITY AVENUE, 2ND FLOOR
BERKELEY CA 94704
(510) 926-4009
jesser@greenlining.org
For: THE GREENLINING INSTITUTE

Robert Gnaizda
Policy Director/General Counsel
THE GREENLINING INSTITUTE
1918 UNIVERSITY AVENUE, SECOND FLOOR
BERKELEY CA 94704
(510) 926-4006
robertg@greenlining.org
For: THE GREENLINING INSTITUTE

Stephanie Chen
Legal Associate
THE GREENLINING INSTITUTE
1918 UNIVERSITY AVENUE, 2ND FLOOR
BERKELEY CA 94704
(510) 926-4011
stephaniec@greenlining.org
For: THE GREENLINING INSTITUTE

Natasha Rabe
THE NTI GROUP
15301 VENTURA BLVD., BLDG. B, STE 300
SHERMAN OAKS CA 91403
(818) 808-1710
nrabe@ntigroup.com

Robin D. Richards

24251 TOWN CENTER DR., 2ND FLOOR
VALENCIA CA 91355
(661) 253-5030
arasura@tcastcom.com

Arun K. Handa
Principal/Director
TELCORDIA TECHNOLOGIES
331 NEWMAN SPRING ROAD, ROOM NVC 2Z-343
RED BANK NJ 07701
(732) 758-2119
ahanda@telcordia.com

THE NTI GROUP
15301 VENTURA BLVD., BLDG. B, STE. 300
SHERMAN OAKS CA 91403
(818) 808-1710
rrichards@ntigroup.com

William Nusbaum
Attorney At Law
THE UTILITY REFORM NETWORK
711 VAN NESS AVENUE, SUITE 350
SAN FRANCISCO CA 94102
(415) 929-8876
bnusbaum@turn.org

Natasha Hood
TYCO ELECTRONICS POWER SYSTEMS
1088 CAMPANILE
NEWPORT BEACH CA 92660
(949) 706-2530
natasha.hood@tycoelectronics.com

Roy J. Davis
TYCO ELECTRONIS CORP. POWER SYSTEMS
3000 SKYLINE DRIVE
MESQUITE TX 75149
(972) 284-2635
roy.davis@tycoelectronics.com

Michael Shames
Attorney At Law
UTILITY CONSUMERS' ACTION NETWORK
3100 FIFTH AVENUE, SUITE B
SAN DIEGO CA 92103
(619) 696-6966
mshames@ucan.org

Jacque Lopez
VERIZON CALIFORNIA INC.
CA501LB
112 LAKEVIEW CANYON ROAD
THOUSAND OAKS CA 91362-3811
(805) 372-6664
jacque.lopez@verizon.com

Lorraine A. Kocen
VERIZON CALIFORNIA INC.
112 S. LAKEVIEW CANYON ROAD, CA501LS
THOUSAND OAKS CA 91362-3831
(805) 372-6945
lorraine.kocen@verizon.com

Rudolph M. Reyes
Regulatory Counsel
VERIZON CALIFORNIA INC.

Thomas Mahr
Vice President And General Counsel
VERIZON WIRELESS
15505 SAN CANYON AVE E305
IRVINE CA 92618
thomas.mahr@verizonwireless.com

Lisa Barr
Dispatch Administrator
WEST CITIES POLICE
911 SEAL BEACH BLVD.
SEAL BEACH CA 90740
(562) 594-7243
LBarr@west-comm.org

Leon M. Bloomfield
WILSON AND BLOOMFIELD LLP
1901 HARRISON STREET, SUITE 1620
OAKLAND CA 94612
(510) 625-8250
lmb@wblaw.net

711 VAN NESS AVENUE, SUITE 300
SAN FRANCISCO CA 94102
(415) 749-5539
rudy.reyes@verizon.com

Michael Bagley
VERIZON WIRELESS
15505 SAND CANYON AVENUE
IRVINE CA 92612
(949) 286-8008
michael.bagley1@verizonwireless.com